



Karen B. Salmon, Ph.D.
State Superintendent of Schools

TO: Members of the State Board of Education
FROM: Karen B. Salmon, Ph.D.
DATE: September 22, 2020
SUBJECT: Career and Technical Education

PURPOSE:

The purpose of this agenda item is to provide an overview of the revised vision and direction for career and technical education (CTE).

BACKGROUND/HISTORICAL PERSPECTIVE:

Maryland CTE Four-Year State Plan

In 2019, the Division of Career and College Readiness convened stakeholders to revise the vision and direction for CTE. Input from stakeholders informed the development of the Maryland CTE Four-Year State Plan. The four-year CTE plan provides a summary of the degree to which CTE programs in the state address the needs of employers and focused on:

1. Implementing a career and technical education (CTE) comprehensive local needs assessment to support data informed decisions to improve CTE systems and programs of study;
2. Aligning CTE programs of study to high-wage, high-skill, and/or in-demand careers;
3. Strengthening the CTE teacher and faculty pipeline;
4. Promoting innovative practices to reshape where, when, how, and to whom CTE is delivered;
5. Expanding the reach and scope of career guidance and academic counseling;
6. Increasing recruitment of specific student groups in CTE programs of study; and
7. Establishing new program quality measures and related levels of performance to optimize outcomes for students.

In May 2020, the US Department of Education approved the Maryland CTE Four-Year State Plan.

Maryland Methods of Administration Plan

In June 2020, stakeholders convened to develop Maryland's Methods of Administration (MOA) Plan. The MOA plan aims to ensure that all students have equal access to high-quality CTE programs of study. MOA is facilitated through the US Department of Education Office of Civil Rights. The Maryland MOA plan describes how MSDE will implement federal MOA requirements to support equitable student access to CTE programs of study. The Maryland MOA plan is purposefully aligned to the Maryland CTE Four-Year State Plan to ensure a consistent approach to CTE statewide.

CTE Standards Review

Over the course of the last year, the Division of Career and College Readiness convened stakeholders to facilitate a comprehensive review of standards, courses, and credits for each CTE program of study. The purpose of the review was to ensure that all CTE programs of study aligned to industry standards and provided the opportunity for students to earn industry and/or postsecondary credentials.

The Maryland CTE Four-Year State Plan, MOA Plan, and Standards Review documents establish the foundation for the revised direction for CTE in Maryland.

EXECUTIVE SUMMARY:

The revised direction and vision for CTE in Maryland was informed by input from over 300 stakeholders over the course of a year. The revised direction was guided by the Maryland Workforce Innovation and Opportunity Act State Plan, Maryland Every Student Succeeds Act Consolidated Plan, Maryland Commission on Innovation & Excellence in Education recommendations, and the requirements outlined in the Strengthening Career and Technical Education for the 21st Century Act. The revised direction for CTE will expand opportunities available for students successful prepare for college and careers.

ACTION:

Information for discussion

Attachments (4)

Attachment I – Career and Technical Education PowerPoint

Attachment II – Maryland Career and Technical Education Four-Year State Plan

Attachment III – Maryland Career and Technical Education Methods of Administration Plan

Attachment IV – Career and Technical Education Programs of Study: A Comprehensive Review of Standards, Credits, and Credentials for Each Program of Study



MARYLAND STATE
Department of Education

Revising the Vision and Direction for Career and Technical Education in Maryland

Maryland State Board of Education

September 22, 2020





We are.....

- ✓ Career and Technical Education
- ✓ Career and Technical Student Organizations: FBLA, FFA, SkillsUSA
- ✓ Apprenticeships
- ✓ STEM Education
- ✓ Computer Science
- ✓ Technology Education
- ✓ Financial Literacy
- ✓ Pathways in Technology Early College High School
- ✓ Dual Enrollment
- ✓ Curriculum Vetting
- ✓ Leadership Development
- ✓ Teacher and Principal Evaluation
- ✓ School Improvement
- ✓ Equity and Civil Rights Compliance

We are the
Division of Career and College Readiness

Vision for Career and Technical Education

Each student has access and the opportunity to engage in career programs of study that:

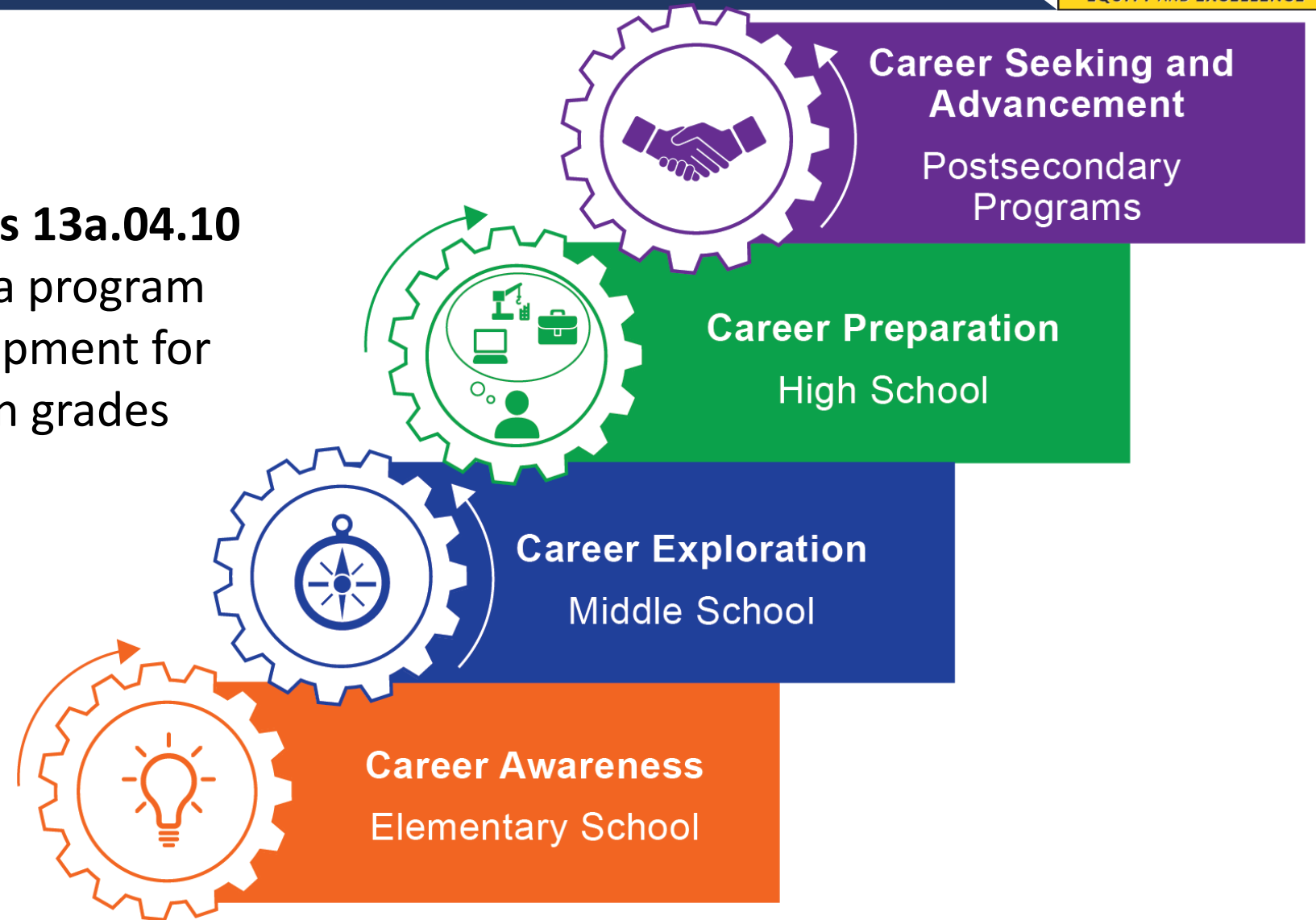
- ✓ align to high-skill, high-wage, and/or in-demand careers;
- ✓ lead to earning industry-recognized and/or postsecondary credentials that will allow entrance and/or advancement in a specific career cluster; and
- ✓ provide career-based learning experiences that require the application of academic and technical knowledge and skills in a work setting.



Career and Technical Education (CTE) Starts in Elementary School

Code of Maryland Regulations 13a.04.10

All school systems must have a program of instruction in career development for college and career readiness in grades PreK-12.

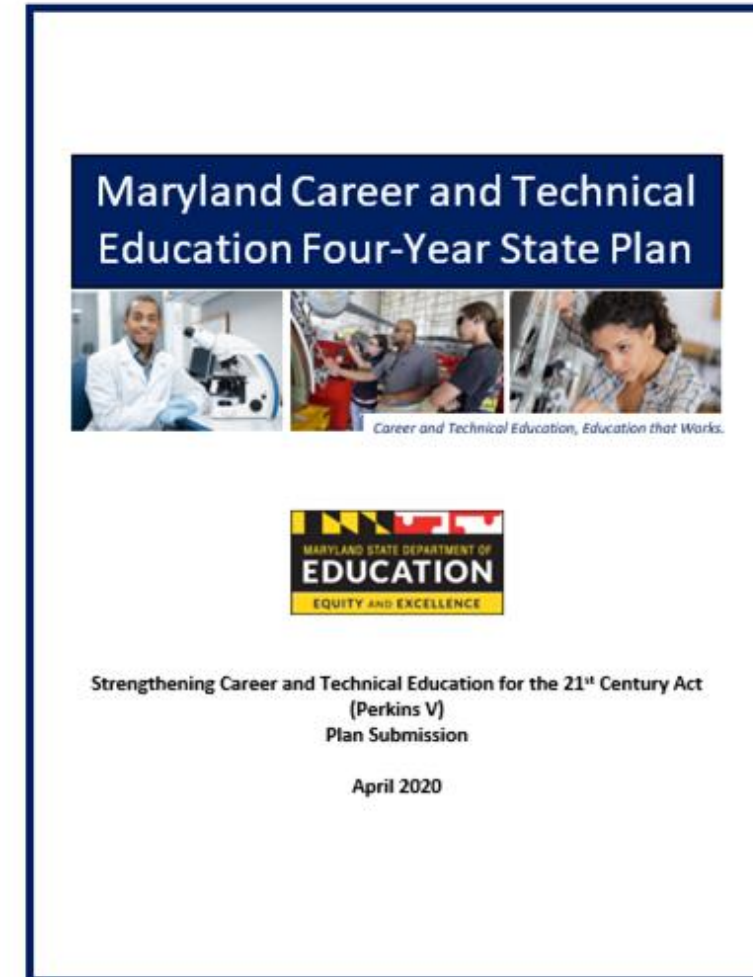


Maryland's Four-Year Plan was One of the First Approved by the US Department of Education



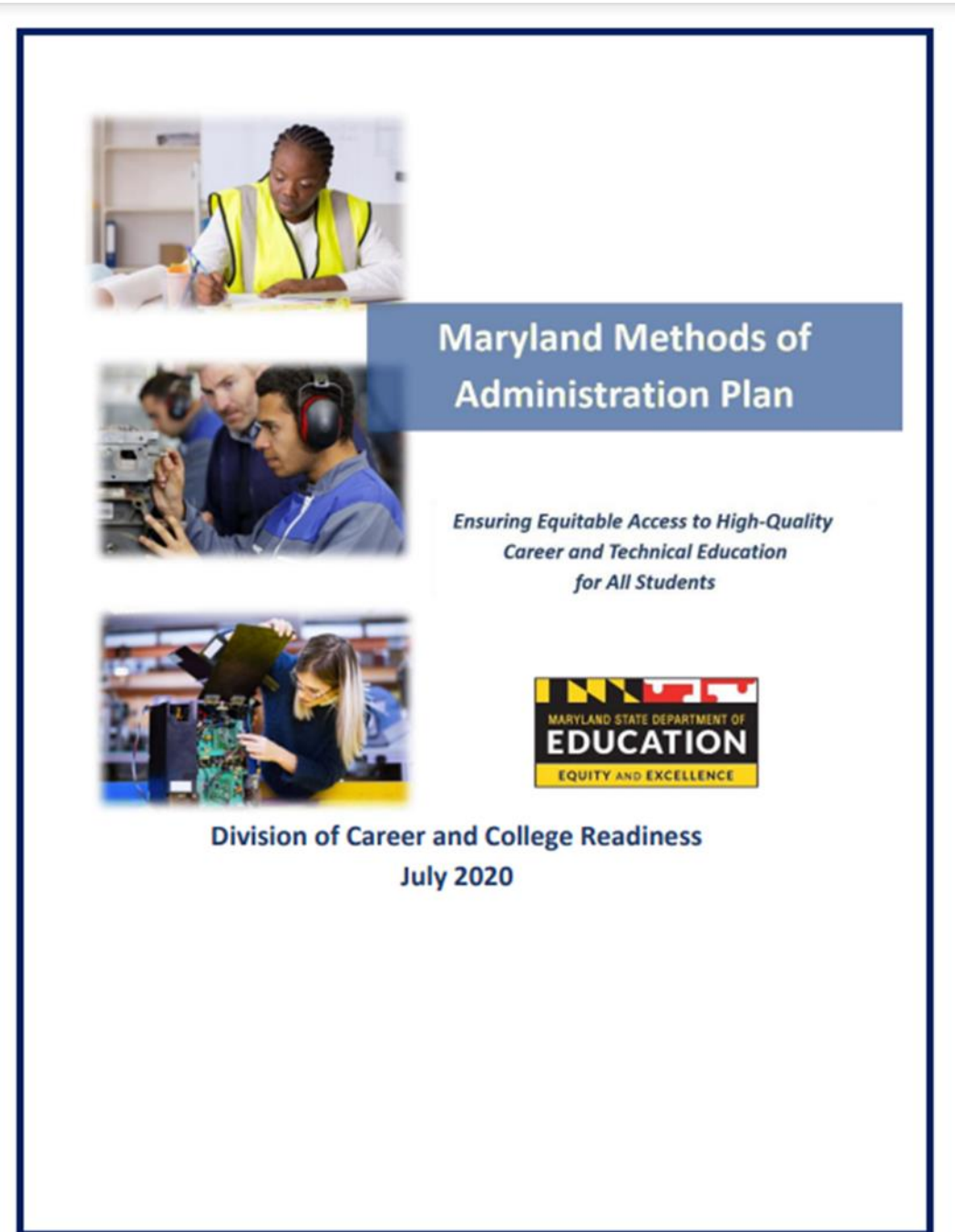
Plan identifies strategies to:

1. Implement a CTE needs assessment to support data informed decisions that improve CTE systems and programs of study;
2. Align CTE programs to locally identified high-wage, high-skill, or in-demand career fields;
3. Strengthen the CTE teacher and faculty pipeline;
4. Promote innovative practices to reshape where, when, how, and to whom CTE is delivered;
5. Expand the reach and scope of career guidance and academic counseling;
6. Increase recruitment of specific student groups in CTE programs; and
7. Establish new program quality measures and related levels of performance to optimize outcomes for students.



Methods of Administration (MOA) Plan

- ✓ Establishes equitable access to CTE programs.
- ✓ Ensures that all students have equitable CTE experiences.
- ✓ Describes how federal requirements will be implemented.



The image shows the cover of a report titled "Maryland Methods of Administration Plan". The cover features three photographs: a man in a yellow safety vest writing, two men in a classroom setting, and a woman working on a circuit board. The title is in a blue box. Below the title is the subtitle "Ensuring Equitable Access to High-Quality Career and Technical Education for All Students". The Maryland State Department of Education logo is present, with the tagline "EQUITY AND EXCELLENCE". At the bottom, it says "Division of Career and College Readiness" and "July 2020".

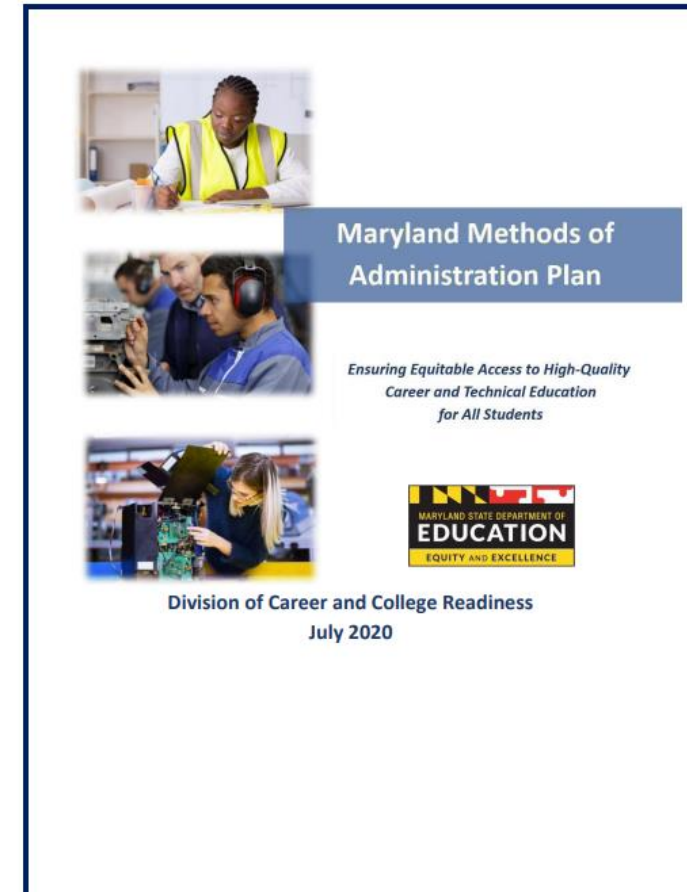
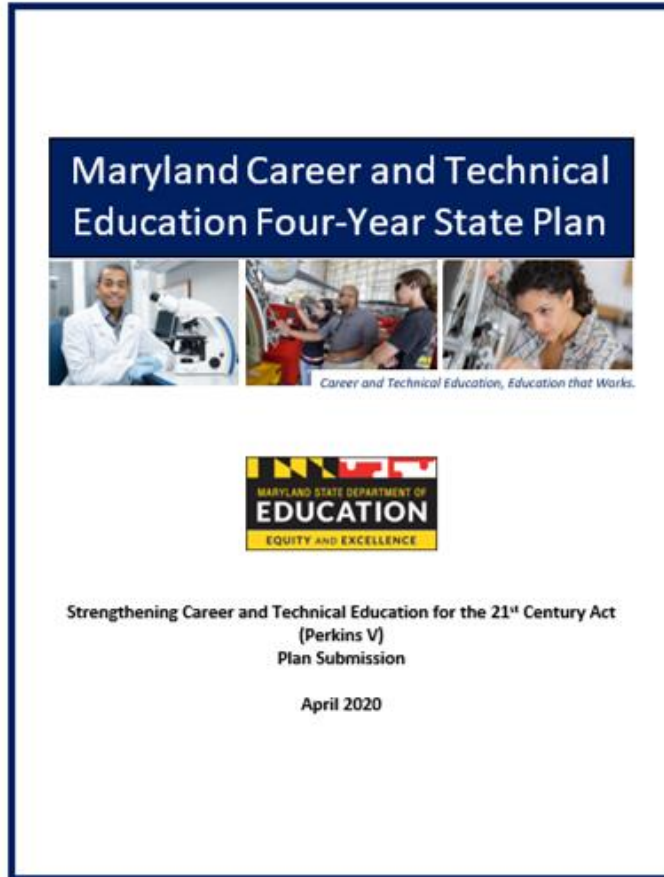
Maryland Methods of Administration Plan

Ensuring Equitable Access to High-Quality Career and Technical Education for All Students

MARYLAND STATE DEPARTMENT OF EDUCATION
EQUITY AND EXCELLENCE

Division of Career and College Readiness
July 2020

Federally Required Plans that Guide the Direction for Career and Technical Education



Maryland State Department of Education is the Lead Agency for Implementing Federal Career and Technical Education Requirements

43% of High School Students are Enrolled in Career and Technical Education Programs

Highest Enrolled Programs:

- ✓ Human Resource Services
- ✓ Business Management Finance
- ✓ Information Technology
- ✓ Manufacturing Engineering and Technology

Programs of Study are Organized into Career Clusters



Arts, Media, and Communications



Business Management and Finance



Construction and Development



Consumer Services, Hospitality and Tourism



Environmental, Agriculture and Natural Resources



Health and Biosciences



Human Resource Services



Information Technology



Manufacturing, Engineering and Technology



Transportation Technologies



Career Research and Development



Apprenticeship Maryland

Overview of Career and Technical Education Programs of Study



- Approximately 60 CTE programs of study across Maryland
- Each program of study:
 - ✓ consists of 3-6 credits
 - ✓ aligns to industry standards
 - ✓ provides opportunity to earn industry and/or postsecondary credentials

Career and Technical Education Programs of Study

A comprehensive review of standards, credits, and credentials for each program of study.



Division of Career and College Readiness
September 2020

CTE Programs of Study Tables

Reviews:

- ✓ Required Courses
- ✓ Minimum Number of Credits
- ✓ Industry Standards
- ✓ Industry Certifications
- ✓ Postsecondary Credentials
- ✓ Career and Technical Student Organization

Transportation Technologies

Advances in science and engineering are producing major innovations in transportation technology, resulting in faster movement of people and goods at lower costs and with less environmental and safety risks. These innovations require additional skills to manage and maintain transportation equipment. CTE programs provide opportunities for students to prepare for careers in the automotive industry.

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Automotive Technology Maintenance and Light Repair- Plus (ASE)	<ul style="list-style-type: none"> • Electrical/Electronic Systems and HVAC • Suspension and Steering and Brakes • Maintenance Light Repair Powertrain and Engine Repair/ Performance 	4	National Institute for Automotive Service Excellence (ASE)	Entry Level ASE -- Certification for: Maintenance Light Repair (MLR) Optional: Brakes, Electrical/ Electronic Systems, and/or Suspension & Steering	Community College of Baltimore County: Catonsville - 5 credits Pennsylvania College of Technology - up to 15 credits	SkillsUSA
Autobody/ Collision Repair Technician	<ul style="list-style-type: none"> • Non-Structural Analysis and Damage Repair • Principles of Painting and Refinishing • Advanced Painting and Refinishing 	6	Standards from the National Institute for Automotive Service Excellence (ASE) Standard from the Inter-Industry Conference on Auto Collision Repair I-CAR	Entry Level ASE certification for: <ul style="list-style-type: none"> • Non-structural Analysis and Damage Repair • Painting and Refinishing • Structural Analysis and Damage Repair I-CAR-Platinum ProLevel 1 Credentials for the <ul style="list-style-type: none"> • Refinish Technician and/or • Non-Structural Technician • Steel GMA Welding 	Pennsylvania College of Technology - 10 -16 Credits	SkillsUSA

Junior Reserves Officers' Training Corps (JROTC) Added to CTE Programs of Study for 2020-2021 School Year



Over 7,000 Students Enrolled

JROTC Program	Number of School Systems
Army	10
Navy	11
Air Force	6
Marine Corps	3

CTE Programs are Monitored for:

Access

CTE Disproportionate Enrollment for:

- Gender
- Race
- Economically Disadvantaged
- Students with Disabilities
- English Learners

Equity

CTE Disproportionate Performance for:

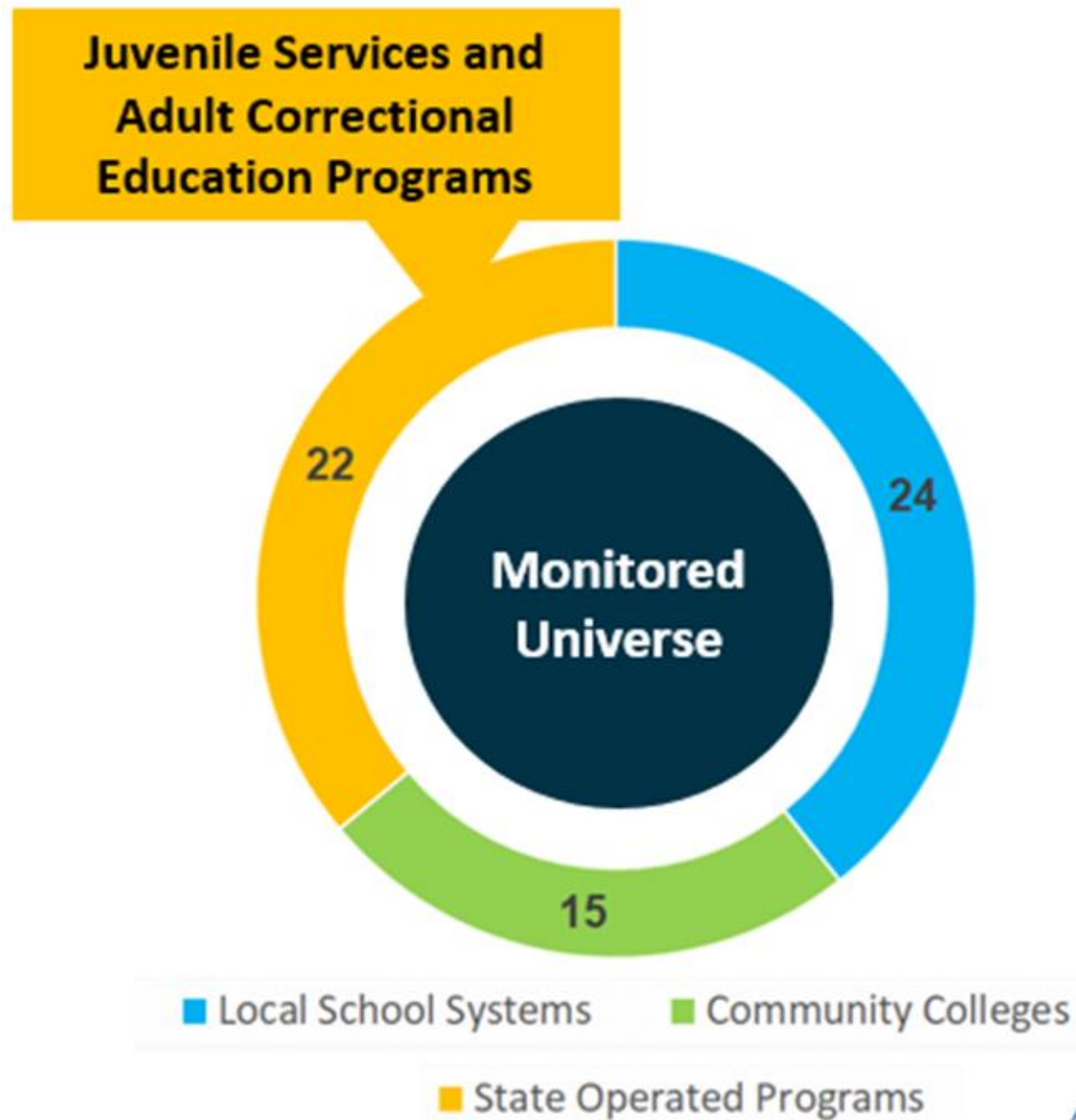
- Gender
- Race
- Economically Disadvantaged
- Students with Disabilities
- English Learners

Program Quality

Indicators of:

- CTE Program Performance
- Time Since Last Review

Any Public Institution Receiving Federal Funds and Offering CTE Programs Are Monitored for Access, Equity, and Program Quality



Next Steps

The Division of Career and College Readiness will Continue to:

- ✓ Collaborate with employers to inform CTE programs of study
- ✓ Proactively address Kirwan Recommendations
- ✓ Expand CTE opportunities for students including out-of-school time CTE
- ✓ Ensure all students have equitable CTE experiences



Career and Technical Education, Education that Works.



Maryland Career and Technical Education Four-Year State Plan



Career and Technical Education, Education that Works.



**Strengthening Career and Technical Education for the 21st
Century Act
(Perkins V)
Plan Submission**

April 2020

Maryland State Department of Education

Karen B. Salmon, Ph.D.
State Superintendent of Schools

Carol A. Williamson, Ed.D.
Deputy State Superintendent of Teaching and Learning

Brigadier General Warner I. Sumpter (Retired)
President, Maryland State Board of Education

Tiara Booker-Dwyer
Assistant State Superintendent

Division of Career and College Readiness

Marquita Friday, Director of Career Programs

Nina Roa, Director of Finance and Legislation for Career Programs

Nicassia Belton, Ed.D., Director of Data and Accountability for Career Programs

Charles (Chuck) Wallace, Coordinator of Career Programs and Student Organizations

Osh Oshitoye, Ph.D., Coordinator of Data and Accountability for Career Programs

Traci Verzi, Interim Coordinator of Finance and Legislation for Career Programs

Jennifer Griffin, Career Programs and Apprenticeship Specialist

Charles (Scott) Nichols, Career Programs, STEM, and Computer Science Specialist

Elissa Hozore, Computer Science Specialist

China Wilson, Ph.D., Equity and Civil Right Compliance Specialist

Dean Kendall, Career Programs and Grants Specialist, Region I

Nancy Hauswald, Career Programs and Grants Specialist, Region II

Office of Leadership Development and School Improvement

Ed Mitzel, Executive Director of Leadership Development and School Improvement

Laura Liccione, Coordinator of Academic Improvement

Morrall Thompson, Coordinator of Systematic Improvement

Lori Ellis, Ed.D, Leadership Development Specialist

Katherine Key, Data Analyst

Tara Corona, Continuous Improvement Specialist

Anders Alicea, Instructional Transformation Specialist

Mary Minter, Ed.D., School Leadership Support Specialist

Felicia Lanham Tarason, Ed.D., School Leadership Support Specialist

Larry Hogan, Governor

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For inquiries related to Department policy, please contact:

Agency Equity Officer

Equity Assurance & Compliance Office

Office of the Deputy State Superintendent for Finance and Administration

Maryland State Department of Education

200 West Baltimore Street, Baltimore, MD 21201-2595

410-767-0426 – Voice; 410-767-0431 – Fax; 410-333-6442 - TTY/TDD

For inquiries regarding this publication, please contact Tiara Booker-Dwyer, Assistant State Superintendent for the Division of Career and College Readiness, at tiara.booker-dwyer@maryland.gov or 410.767.3676.

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Executive Summary

The vision for career and technical education (CTE) in Maryland is for each student to have access and opportunity to engage in career programs of study that:

- ✓ align to high-skill, high-wage, or in-demand careers;
- ✓ lead to earning industry-recognized and/or postsecondary credentials that will allow entrance or advancement in a specific career cluster; and
- ✓ provide career-based learning experiences that require the application of academic and technical knowledge and skills in a work setting.

The *Maryland Career and Technical Education Four-Year State Plan* is grounded in the state goals and vision for CTE; guided by requirements of the federal *Strengthening Career and Technical Education for the 21st Century Act* (Perkins V); and informed by the Maryland Workforce Innovation and Opportunity Act (WIOA) State Plan, the Maryland Commission on Innovation and Excellence in Education (Kirwan Recommendations), and stakeholders representing business, higher education, workforce and economic development, and local school systems.

Essential to the state plan is the requirement that local school systems, community colleges, and employers collaborate to:

1. Complete a CTE needs assessment to ensure that CTE programs of study offered by a school system or community college address regional workforce needs;
2. Align CTE programs of study to high-wage, high-skill, or in-demand career fields;
3. Align CTE curriculum to industry and academic standards;
4. Establish and implement structures that will allow for 45% or more of high school students to complete a CTE program of study, earn industry-recognized credentials, or complete an apprenticeship by 2025;
5. Strengthen the CTE teacher and faculty pipeline;
6. Promote innovative practices to reshape where, when, how, and to whom CTE is delivered;
7. Expand the reach and scope of career guidance and academic counseling;
8. Increase recruitment of specific student groups in CTE programs; and
9. Establish new program quality measures and related levels of performance to optimize outcomes for students.

Key components of the state plan include expanding programs such as Apprenticeship Maryland and Pathways in Technology Early College High (P-TECH) School; preparing students with disabilities for occupations that lead to self-sufficiency; including military career pathways; and providing equal access and supports for students to complete CTE programs of study and earn recognized industry credentials.

Funding to support CTE programs of study will be provided to local school systems, community colleges, Juvenile Services Education System, and the Adult Correctional Education System in alignment with state plan priorities and federal law requirements. Increased accountability measures will be implemented to ensure that students experience high-quality career programs of study that prepare them for career success.

I. Narrative Description

A. Plan Development and Consultation

Statutory Requirements: Plan Development and Consultation

1. Describe how the State plan was developed in consultation with the stakeholders and in accordance with the procedures in section 122(c)(2) of Perkins V. See Text Box 1 for the statutory requirements for State plan consultation under section 122(c)(1) of Perkins V.
 2. Consistent with section 122(e)(1) of Perkins V, each eligible agency must develop the portion of the State plan relating to the amount and uses of any funds proposed to be reserved for adult career and technical education, postsecondary career and technical education, and secondary career and technical education after consultation with the State agencies identified in section 122(e)(1)(A)-(C) of the Act. If a State agency, other than the eligible agency, finds a portion of the final State plan objectionable, the eligible agency must provide a copy of such objections and a description of its response in the final plan submitted to the Secretary. (Section 122(e)(2) of Perkins V)
 3. Describe opportunities for the public to comment in person and in writing on the State plan. (Section 122(d)(14) of Perkins V)
-

1. Consultation with Stakeholders for Plan Development

Career and technical (CTE) education establishes a foundation to prepare Maryland’s current and future workforce. The strategic direction and program content for CTE is informed by a variety of stakeholders to create an education and workforce pipeline that proactively address career demands in Maryland. The Maryland State Department of Education (MSDE) engaged over 300 stakeholders to inform the Maryland CTE Four-Year State Plan. Stakeholders participated in workgroups and statewide meetings. The four-year CTE state plan was informed by representatives from:

- secondary and postsecondary CTE programs. This included eligible recipients and representatives of two-year minority-serving institutions and historically Black colleges and universities and adult CTE providers. Teachers, faculty, school system leaders, school leaders, specialized instructional support personnel, career and academic guidance counselors, and paraprofessionals also informed plan development. Maryland does not have tribally controlled colleges or universities, Indian Tribes, or Tribal organizations. Charter schools in Maryland were represented since they are included in the local school system for Perkins funding purposes.
- interested community representatives, including parents, students, and community organizations.
- representatives from the Governor’s Workforce Development Board.
- members and representatives of special populations.
- representatives of agencies serving out-of-school youth, homeless children and youth, and at-risk youth.
- representatives of business and industry.

Four workgroups met to inform content for specific sections of the plan. Letters of invitation to participate in State workgroups were sent to individuals and entities as required in the *Strengthening Career and Technical Education for the 21st Century Act* (Perkins V). Recommendations for workgroup participants were also made by people who responded to the letters of invitation. Additional names of individuals who expressed interest in participating in the development of the State plan were collected from local CTE directors from each of Maryland’s 24 school systems; recommendations from community college Perkins Plan coordinators; members of Local Advisory Councils and Program Advisory Committees; the Maryland Association of Community Colleges; the Public School Superintendents Association of Maryland (PSSAM); the Governor’s Workforce Development Board; the State’s Economic and Workforce Development State Agencies; representatives from Maryland’s ten career clusters; private citizens; parents; affinity groups representing special education, rehabilitation services, library services, and non-public schools.

MSDE team members facilitated each of the four workgroups and recorded their input. The four workgroups were as follows:

Workgroup 1: Local Application/Needs Assessment/Monitoring

This group examined and provided input on the:

- local application for funding;
- comprehensive needs assessment;
- process to monitor CTE programs;

- improvement plan requirements when performance targets are not met by the 90% threshold;
- involvement of stakeholders in CTE programs;
- improvement of academic and technical skills for CTE students;
- process to stay abreast of current labor market data on high-skill, high-wage, or in-demand industry sectors or occupations; and
- the process to use data to drive funding and program decisions.

Workgroup 2: Accountability and Performance Targets

This group provided input on:

- performance measures and state and local targets for CTE concentrators;
- ways to address disparities or gaps in performance;
- how to capture accurate data, especially for those who have exited or completed a program and earned an industry credential;
- elements of a state improvement plan; and
- elements of a local improvement plan.

Workgroup 3: Special Populations

This group examined ways that Maryland can recruit and ensure that special populations are active participants in CTE. They examined and provided input on the following topics:

- providing equal access to CTE programs;
- providing supports to ensure success;
- preparing special populations for high-skill, high-wage, or in-demand industry occupations;
- establishing supports that enable success to meet or exceed performance levels;
- preparing special populations for nontraditional careers;
- preventing and addressing barriers for success;
- ensuring and preparing special populations for the next learning level; and
- serving students who are members of special populations in student organizations.

Workgroup 4: Preparing an Educated and Skilled Workforce

This group examined and provided input on:

- aligning industry requirements to CTE programs of study;
- providing career guidance and academic counseling to ensure success of students in CTE programs of study;
- ensuring that in-demand industry sectors or occupations are part of CTE programs of study;
- providing adequate and equitable professional learning opportunities for educators;
- ensuring that Maryland's definition of a CTE program of study is easily understood and contains the requirements stated in the federal act;
- aligning Maryland's CTE programs of study to workforce development activities and the education and skill needs of the employers in the state;
- joining with other state workforce agencies to align the strategic vision of meeting the skilled workforce needs of employers, including emerging in-demand industry sectors and occupations;
- assisting counselors and others in making information available about CTE programs of study;
- collaborating with other workforce partners to align efforts;

- expanding upon the recruitment and preparation of teachers, including pre-service teachers, in CTE programs of study; and
- involving key stakeholders in preparing Maryland’s future workforce.

There were three in-person workgroup sessions. Guiding questions specific to workgroup topics were provided to each workgroup. This approach provided the opportunity for participants to provide in-depth input on their specific plan component. During lunch and at the end of the meeting, participants were provided summaries of the outcomes from each workgroup.

Statewide meetings were held through in-person and virtual sessions. Meetings began with providing an overview of the requirements of the *Strengthening Career and Technical Education for the 21st Century Act* (Perkins V) and assessing the current state of CTE in Maryland. Participants also examined goals defined by state law. [The More Jobs for Marylanders Act](#) established a state goal that 45% of high school students will complete a CTE program of study, earn industry-recognized credentials, or completed a registered youth or other apprenticeship by 2025. Education Article §10-205(A) established a goal that at least 55% of Maryland’s adults will hold at least an associate’s degree by 2025. Meeting participants were charged to ground their input in the requirements established by Perkins V and the goals established by state law.

At statewide meetings, breakout sessions were held to allow participants to provide in-depth input on specific sections of the plan. Participants rotated through several breakout sessions. During lunch and at the end of the day, a summary was shared so that participants could review input from all stakeholders. Follow-up meetings, both in-person and virtual, were held so that stakeholders could see how their input was included in the plan.

Outcomes from each workgroup and statewide meeting were used to inform content in the state plan. A comprehensive list of meeting dates and outcomes from each meeting can be found in [Table 1](#). The comprehensive list of stakeholders by name and organization can be found in [Appendix A](#). There were no objections to the State Plan.

MSDE will continue to engage stakeholders to implement the content of the Maryland CTE Four-Year State Plan. Quarterly meetings will be held with CTE directors and community college points of contact. Representatives from industry, local school systems, community colleges, special population groups, and parents will participate in monitoring visits, career counseling activities, teacher and faculty recruitment activities, and other CTE specific initiatives that support the implementation of state plan. Continued stakeholder engagement will also occur through the statewide CTE Advisory Committee. The Advisory Committee is led by the Maryland Business Roundtable for Education and consists of stakeholders representing Workforce Development Boards, Chamber of Commerce, Economic Development, Department of Labor, local school systems, institutions of higher education, special population groups, and parents.

2. Amount and Uses of Funds for CTE

The amount and uses of funds for CTE was informed by participants from workgroups, statewide meetings, and public hearings. Items discussed in workgroups and statewide meetings included percentage of the CTE reserve fund, allocation of funds between secondary and postsecondary

recipients, and whether to expand CTE programs eligible for Perkins funding. Based on public input and review of data, it was decided that funding for CTE will be allocated as follows:

- 15% of Perkins funds are retained by the MSDE for state administration and leadership.
- 85% of Perkins funds are awarded for CTE at the postsecondary and secondary levels.
 - 5% of funds are awarded through competitive reserve fund grants to support CTE at postsecondary or secondary levels.
 - 65% of the remaining amount is allocated to secondary CTE.
 - 35% of the remaining amount is allocated to postsecondary CTE.

Postsecondary and secondary institutions are required to spend Perkins funds to address needs identified in the [Maryland CTE Comprehensive Local Needs Assessment](#). CTE reserve funds are used to support state CTE priorities in alignment with the vision and goals for CTE and innovative CTE programs. Reserve fund grants are awarded through a competitive grant process. In addition to reserve fund grants, the state allocates funds annually in competitive grants to local school systems and community colleges for the implementation of innovative CTE programs and practices ([House Bill 1415](#)). As a result, the MSDE uses only 5% of the 85% pass through funds for the CTE reserve fund.

The MSDE and the Maryland Higher Education Commission are the sole agencies for approval of CTE programs of study at the secondary and postsecondary levels. The MSDE approves the use of funds at the secondary and postsecondary levels.

The MSDE will continue to comply with the required percentages identified in Perkins V to allocate funding. Consultation will continue to occur between the Maryland Higher Education Commission and the MSDE in making the decision about the allocation of funds to community colleges and school systems. Currently, Maryland does not allocate funds for Adult Education through Perkins. The representative from the Department of Labor, where Maryland's Adult Education programs are housed, was involved in the development of the Maryland CTE Four-Year State Plan.

3. Opportunities for the Public to Comment In Person and In Writing on the State Plan

Meetings, hearings, and public comment periods were held to provide the opportunity for stakeholders to provide input on the Maryland CTE Four-Year State Plan. [Table 1](#) identifies all of the opportunities that were provided for stakeholders to inform plan content. Meetings began with providing an overview of the requirements of the *Strengthening Career and Technical Education for the 21st Century Act* (Perkins V), assessing the current state of CTE in Maryland, and mapping the desired state for CTE in Maryland. Participants also examined goals defined by state law and recommendations from Maryland Commission on Innovation and Excellence in Education. Stakeholders had the opportunity to participate in breakout sessions during statewide meetings to provide in-depth feedback on each section of the plan. Stakeholder feedback was incorporated in the submitted state plan. Key feedback included providing additional opportunities for students with disabilities to engage in career programs, revising the career counseling model, establishing structures to build career awareness in elementary school, expanding career and technical student organizations, and developing a CTE advisory committee.

Table 1: Opportunities to Provide Input In Person or In Writing on the State Plan

Meeting or Public Comment Date	Participants	Outcomes
October 11, 2018 October 25, 2018 November 9, 2018	CTE Workgroup members representing local school systems, community colleges, business/industry, parents, professional organizations, and special population groups.	Four workgroups were held to inform state plan content. Workgroups were as follows: 1. Local Application/Needs Assessment/Monitoring 2. Accountability and Performance Targets 3. Special Populations 4. Preparing an Educated and Skilled Workforce
July 16, 2019	National Center for Homeless Education	Introductory discussion about serving homeless youth under CTE in Maryland.
July 24, 2019	Maryland Career and Technical Administrators Meeting (MCTA)	The MCTA meeting provided the opportunity for participants to provide input on the vision for CTE and discuss the four-year state plan.
August 1, 2019	<ul style="list-style-type: none"> • Local School Systems, • Community Colleges, • CTE Professional Organizations, • Business and Industry • Governor’s Workforce Development Board, and • Governmental Agencies (Maryland Department of Labor and Maryland Division of Rehabilitation Services). 	The CTE State Plan Meeting was held to gather input to inform the development of the Maryland CTE Four-Year State Plan focusing on the vision and accountability system for CTE.
August 6 – October 7, 2019	60 Day Public Comment Period on Accountability Section of the State Plan	The public had the opportunity to provide input in writing on the accountability section of the state plan.
September 19, 2019	CTE Directors	The CTE Local Directors’ Meeting was held to gather input from local school system leaders to inform the development of Maryland CTE Four-Year Plan focusing on the needs assessment, local application, and monitoring process.
September 26, 2019	Community College Perkins Coordinators	The CTE Perkins Coordinators’ Meeting was held to gather input from community college representatives to inform the development of Maryland CTE Four-Year Plan focusing on the

Meeting or Public Comment Date	Participants	Outcomes
		needs assessment, local application, and monitoring process.
October 11 – November 11, 2019	30 Day Public Comment Period on Entire State Plan	The public had the opportunity to provide input in writing on the entire state plan.
October 21, 2019	Maryland Career and Technical Administrators Meeting (MCTA)	The MCTA meeting provided the opportunity for members (CTE Directors, principals, etc.) to provide input on the entire four-year state plan.
October 22, 2019	Maryland State Board of Education	The State Board of Education had the opportunity to review and provide input on the draft plan.
October 24, 2019	<ul style="list-style-type: none"> Local School Systems, Postsecondary Institutions, and Business and Industry 	Meeting participants had the opportunity to discuss components of the state plan focusing on P-TECH.
October 25, 2019	<ul style="list-style-type: none"> Business and Industry, Chamber of Commerce, Workforce Development, Local School Systems, and Postsecondary Institutions 	<p>Meeting participants informed state plan content focusing on:</p> <ul style="list-style-type: none"> Improvements to career guidance that assist students in making informed academic and career and technical education decisions. Support for the integration of employability skills in CTE programs of study. Support for programs and activities that increase access, student engagement, and success in STEM. Support for expanding work-based learning opportunities that are aligned to CTE programs of study.
November 18, 2019 November 19, 2019 November 20, 2019	Regional Public Hearings	Participants had the opportunity to provide feedback on the entire state plan.
December 3, 2019	Maryland State Board of Education	State plan shared with the State Board of Education for approval. The State Board of Education approves the Maryland CTE Four-Year State Plan.
December 11, 2019	Governor’s Workforce Development Board	The final Maryland CTE Four-Year State Plan in shared with the Governor’s Workforce Development Board.

All materials for meetings and public comment periods can be found in the [Maryland Perkins V CTE State Plan Dropbox folder](#).

All public hearings were announced through social media, statewide meetings, e-mail, MSDE's website, Dropbox, and the *Maryland Register*. The first hearing appeared in the [Maryland Register, Volume 46, Issue 1](#), Friday, January 4, 2019 on page 26. The second hearing appeared in [Maryland Register, Volume 46, Issue 2](#), Friday, January 18, 2019 on page 36. Additional public hearings for the CTE Four Year State Plan occurred on November 18, 19, and 20, 2019. Due to the continual feedback provided by various workgroups throughout the state plan development process, only one public testimony was received along with nine observers attending the public hearing. [Appendix D](#) details the one public comment that was shared during the hearing.

Public comment periods were announced through social media, e-mail, statewide meetings, MSDE's website, and Dropbox. By the time the plan was published for public comment, all concerns, other than those raised in the one public testimony, had been addressed through workgroups and statewide meetings.

The MSDE provided several opportunities prior to public comment and public hearing periods for all stakeholders to provide input on the plan. Feedback provided by stakeholders was incorporated into the plan and shared with stakeholders. This resulted in minimal input during public comment and public hearing periods.

The Maryland CTE Four-Year State Plan was presented to the Maryland State Board of Education on [October 22, 2019](#). The Maryland State Board of Education received information on the state plan and had the opportunity of provide input. The minutes of the October 22, 2019 State Board of Education were approved at the [December 3, 2019](#) State Board of Education Meeting when the final version of the state plan was presented and approved. The minutes for the December 3, 2019 meeting were approved at the [January 28, 2020](#) meeting.

After approval by the State Board of Education, the Maryland CTE Four-Year State Plan was submitted to the Governor for the thirty-day comment period on January 9, 2020. The Maryland CTE Four-Year State Plan was submitted to the U.S. Department of Education, Office of Career Technical and Adult Education by the April 2020 deadline.

B. Program Administration and Implementation

Statutory Requirements: Program Administration and Implementation

1. State's Vision for Education and Workforce Development
 - a. Provide a summary of State-supported workforce development activities (including education and training) in the State, including the degree to which the State's career and technical education programs and programs of study are aligned with and address the education and skill needs of the employers in the State identified by the State workforce development board. (Section 122(d)(1) of Perkins V)
 - b. Describe the State's strategic vision and set of goals for preparing an educated and skilled workforce (including special populations) and for meeting the skilled workforce needs of employers, including in existing and emerging in-demand industry sectors and occupations as identified by the State, and how the State's career and technical education programs will help to meet these goals. (Section 122(d)(2) of Perkins V)
 - c. Describe the State's strategy for any joint planning, alignment, coordination, and leveraging of funds between the State's career and technical education programs and programs of study with the State's workforce development system to achieve the strategic vision and goals described in section 122(d)(2) of Perkins V, including the core programs defined in section 3 of the Workforce Innovation and Opportunity Act (29 U.S.C. 3102) and the elements related to system alignment under section 102(b)(2)(B) of such Act (29 U.S.C. 3112(b)(2)(B)); and for programs carried out under this title with other Federal programs, which may include programs funded under the Elementary and Secondary Education Act of 1965 and the Higher Education Act of 1965. (Section 122(d)(3) of Perkins V)
 - d. Describe how the eligible agency will use State leadership funds made available under section 112(a)(2) of Perkins V for each of the purposes under section 124(a) of the Act. See Text Box 2 for the required uses of State leadership funds under section 124(a) of Perkins V. (Section 122(d)(7) of Perkins V)

1. State's Vision for Education and Workforce Development

a. State-Supported Workforce Development Activities

Workforce development in Maryland represents a continuum of career awareness, exploration, preparation, and career seeking and advancement. Workforce development starts as early as elementary school and continues through secondary, postsecondary, and adult education. Every two years, the Maryland Department of Labor releases [Maryland Occupational Projections](#). The MSDE regularly reviews occupational projections to ensure that Maryland CTE career clusters are in alignment with workforce needs in Maryland. There are currently ten career clusters in Maryland:

1. Arts, Media, and Communications
2. Business Management and Finance
3. Construction and Development

4. Consumer Services, Hospitality, and Tourism
5. Environmental, Agriculture, and Natural Resources
6. Health and Bioscience
7. Human Resource Services
8. Information Technology
9. Manufacturing, Engineering and Technology
10. Transportation Technologies

Each [career cluster](#) has CTE programs of study containing content aligned to academic standards, industry standards, and employability skills. CTE programs of study provide the opportunity for students to engage in workplace learning experiences and earn postsecondary and/or industry-recognized credentials. Each program of study also provides the opportunity for students to participate in [Career and Technical Student Organizations](#) (CTSOs). CTSOs are co-curricular learning experiences that extend course instructional content by engaging students in hands-on learning experience connected to CTE programs of study.

Workforce development activities are coordinated through collaborative partnerships. Each CTE program of study has a Program Advisory Committee. The Program Advisory Committee consists of representatives of business and industry from specific career fields; postsecondary, secondary, and workforce training programs; and special population student groups. Program Advisory Committees meet several times throughout the school year to inform, review, and monitor CTE programs of study. Each Committee is charged with reviewing curricula, equipment, assessments, course content, and professional learning experiences at the secondary and postsecondary levels to ensure alignment to industry and academic standards. Often, the Program Advisory Committee is a joint one between the school system and community college for the specific CTE program. Having one Program Advisory Committee serve both levels helps to ensure that CTE secondary programs are aligned with those at two and four year colleges. At least two meetings are held annually, but most Program Advisory Committees meet more frequently and are continuously engaged with CTE educators to ensure program quality. CTE programs of study are updated regularly through the support of the Program Advisory Committee as industry requirements evolve.

Maryland statute (Annotated Code of Maryland, Education Article 21, Section 101 [§21-101]) requires local school systems and community colleges to have an overarching Local Advisory Council. The Local Advisory Council consists of representatives from the various Program Advisory Committees and senior level business representatives. A joint Local Advisory Council between a local school system and its local community college is required if both are eligible for federal CTE funding. If either the school system or the community college does not meet the minimum criteria to receive federal CTE funding as stated in Perkins V, then the Local Advisory Council is comprised of a representative of each of the Program Advisory Committee for the recipient that is eligible for the federal CTE funding.

Program Advisory Committees and Local Advisory Councils must contain representatives that serve special population students as defined in Perkins V. This ensures that each program of study has the supports necessary for the success of all students. Guidance for Local Advisory Councils and Program Advisory Committees is provided in the [Career and Technical Education Local Advisory Council and Program Advisory Committee Policies and Procedures Guide](#).

Efforts to ensure success for members of special populations are provided through the Division of Early Intervention and Special Education Services by having staff:

1. participate on local Program Advisory Committees with representation from local transition coordinators and transition professionals from the Division of Early Intervention and Special Education Services and
2. engage with two and four year colleges partnering with local special education programs to promote career pathways that align with current CTE programs.

The MSDE is collaborating with the Maryland Business Roundtable for Education to establish a CTE Advisory Committee. This Committee is charged with providing guidance and direction for the statewide system of CTE. The Committee will be led by the Maryland Business Roundtable for Education and include members from the Governor’s Workforce Development Board, Department of Labor, Chamber of Commerce, Economic Development, Maryland Career and Technical Administrators Organization, local school systems, postsecondary institutions, Maryland Higher Education Commission, and representatives that serve special population students as defined in Perkins V. [Table 2](#) summarizes councils, committees, and boards that inform workforce development activities in Maryland.

Table 2: Summary of Councils, Committees, and Boards that Inform Workforce Development Activities Maryland

Name	Charge and Membership
Program Advisory Committees	<p>Charge: To inform, review, and monitor individual CTE programs of study.</p> <p>Membership: Each CTE program of study must have a Program Advisory Committee at the state, postsecondary, and secondary levels. Members must include business and industry representatives from career fields that align to the program of study. Members must also include representatives that serve special population students as defined in Perkins V.</p>
Local Advisory Councils	<p>Charge: To provide direction and guidance to meet regional workforce needs.</p> <p>Membership: Councils are formed between the local school system and community college for the region. Members include representatives from each local Program Advisory Committee. Members must also include representatives that serve special population students as defined in Perkins V.</p>
Maryland CTE Advisory Committee	<p>Charge: To provide guidance and direction for the statewide system of CTE.</p> <p>Membership: The Committee will be led by the Maryland Business Roundtable for Education and include members from the Governor Workforce Development Board; Department of Labor, Chamber of Commerce, Economic Development; Local School Systems, Postsecondary Institutions; Maryland Higher Education Commission; Maryland Career and Technical Administrators Association; and</p>

Name	Charge and Membership
	representatives that serve special population students as defined in Perkins V.
Governor’s Workforce Development Board	<p>Charge: Chief policy-making body for workforce development.</p> <p>Membership: The Governor’s Workforce Development Board is a business-led board of 53 members consisting of the State Superintendent of Schools, presidents of community colleges and universities, elected officials, representatives of business and labor, and representatives of nonprofit organizations.</p>

In addition to Program Advisory Committees, Local Advisory Councils, Maryland CTE Advisory Committee, and Governor’s Workforce Development Board, workforce development activities are also informed by collaborative partnerships among the Maryland Department of Labor and the Maryland Department of Commerce.

Maryland’s workforce development activities include joint efforts from all economic and workforce development agencies. CTE programs of study address the State’s need for a skilled workforce, are based on all aspects of an industry, and are designed to help students make informed decisions regarding career pathways. They afford students with opportunities for employment and focused secondary and postsecondary education. Specific process steps and criteria to develop and adopt state-approved programs are outlined in the [Policies and Procedures for the Development and Continuous Improvement of CTE Programs of Study](#).

CTE programs of study typically consist of a sequence of non-duplicative courses of increasing rigor aligned to academic and industry standards. Programs are developed in collaboration with curriculum experts and State Advisory Groups comprised of cluster and occupation related industry representatives. Each program of study contains occupation-specific curriculum focused on industry required skills and knowledge, essential employment skills development, rigorous academic standards, and value-added elements such as mentorships, internships, apprenticeships, dual enrollment, articulated/transcripted credit, and industry-recognized credentials. Additionally, students have the opportunity in every school system to participate in Career and Technical Student Organizations (CTSO) that further develop essential skills required for career development.

CTE programs of study are in continuous improvement and kept current through partnerships with representatives from key stakeholder groups that serve on the Program Advisory Committee. All but one of Maryland’s secondary CTE programs of study provide opportunities for students to earn early college credit, industry recognized credentials, or both. The Careers in Cosmetology CTE Program of Study offers students an opportunity to earn the state license; however, a business degree is the only postsecondary program for students who wish to pursue further study.

Examples of CTE Programs that Address High-skill, High-wage or In-demand Career Fields

Information Technology (IT)

Maryland is home to more than 12,000 IT and cybersecurity companies as well as more than 60 government agencies focused on cyber-crime. In 2017, the Governor issued an [executive order](#) to strengthen computer science education for all students in order to meet the demands of the 21st century workforce and prepare students for the jobs and careers of the future.

The Information Technology Career Cluster, was expanded to include computer science and cybersecurity CTE program options to address Maryland’s growing workforce need. Programs in computer science and cybersecurity are supported at all levels (secondary and postsecondary) by employers and industry leaders. IT professionals serve on advisory committees, provide professional learning opportunities for teachers and faculty, and work-based learning opportunities for students. In addition, IT professionals assist with presentations at statewide conferences and symposia where they share their expertise with CTE students, faculty, and teachers and industry leaders and employers.

In response to the growing need for IT professionals, cybersecurity pathways were added to the IT Networking Academy (Cisco) CTE Program; the Oracle Database Academy CTE program was updated; the Project Lead The Way Computer Science CTE Program was adopted for statewide implementation; and K-12 Computer Science standards were developed and approved by the State Board of Education. Moving forward, MSDE will continue to expand computer science and IT related programs, provide CTE Reserve Fund Grants for new programs, and offer ongoing professional learning to teachers.

Project Lead the Way (PLTW) Biomedical Science (BMS)

PLTW Biomedical Sciences program is one of Maryland’s leading Science, Technology, Engineering, and Mathematics (STEM) focused CTE programs of study. The PLTW BMS program is a sequence of courses aligned with national learning standards, which follow a proven hands-on, real-world problem-solving approach to learning. Students explore the concepts of human medicine and are introduced to topics such as physiology, genetics, microbiology and public health. Through activities, like dissecting a sheep’s heart, students examine the processes, structures and interactions of the human body – often playing the role of biomedical professionals. They also explore the prevention, diagnosis and treatment of disease, working in teams to investigate and design innovative solutions to the health challenges of the 21st century such as fighting cancer with nanotechnology. There are 50 PLTW BMS programs in 87% of Maryland’s school systems. Students who complete four courses in the PLTW BMS at a PLTW certified high school can apply to receive up to eight transcribed credits from Stevenson University. PLTW BMS students may also sit for the Biotechnician Assistant Credentialing Exam (BACE).

Academy of Health Professions (AHP)

Maryland has expanded its Nursing Assistant program, now called the Academy of Health Professions, well beyond its original focus of preparing students for careers as Certified Nursing Assistants (CNA) and Geriatric Nursing Assistants (GNA). Students enrolled in the AHP program may now pursue

certifications as Certified Clinical Medical Assistants (CCMA), Pharmacy Technicians, Dental Assistants and Personal Trainers. Early college credit is also available through Maryland's AHP affiliate, Stevenson University, for students who complete the AHP program.

Homeland Security and Emergency Preparedness (HSEP)

Maryland is positioned in a critical location in the United States with many federal agencies or large installations within its borders such as the Social Security Administration, National Security Agency, Food and Drug Administration, NASA's Goddard Space Flight Center, Naval Air Systems Command, National Institutes of Health, Beltsville Agricultural Research Center, The Naval Academy, and several military bases, as well as airports, ports for shipping and receiving cargo, and passenger cruise ship terminals. Therefore, to satisfy a growing workforce demand, the HSEP CTE program of study was developed to address the increasing need to protect not only these federal and military installations but due to the proximity of Washington DC to also guard against public safety threats both natural and manmade.

The HSEP program was developed with representatives from local school systems, community colleges, baccalaureate degree granting institutions, representatives from industry who are experts in the field, Maryland Emergency Management Agency (MEMA), workforce development professionals, economic development personnel and the MSDE. The program integrates government, academia, and private sector training/educational initiatives; aligns with the national skills standards in this career area including the Department of Homeland Security (DHS) Office of Domestic Preparedness (ODP) Responder Guidelines and the Office of Domestic Preparedness Security Guidelines for Prevention and Deterrence. It provides students with college level work and articulated credit and/or industry recognized credentials through University of Maryland, University College and the Mid-Atlantic Center for Emergency Management (MACEM) at Frederick Community College (FCC). The program offers three career strands which align with the six mission areas of the United States Department of Homeland Security. They are: Homeland Security Sciences; Criminal Justice/Law Enforcement; and Information/Communications Technology.

The MACEM at FCC serves as the postsecondary affiliate partner which provides updates to curriculum as well as professional development for instructors, many who have come from the law enforcement/emergency management/homeland security career fields. During the 2018 year, the MACEM worked with the Maryland Apprenticeship and Training Program within the Maryland Department of Labor to develop a registered apprenticeship in Emergency Management. Other partners in this endeavor included: MEMA, Maryland Emergency Management Association, Montgomery and Anne Arundel Community Colleges, University of Maryland University College, Higher Education Federal Emergency Management Agency (FEMA) at the Emergency Management Institute in Emmitsburg, the International Association of Emergency Managers, and Maryland employers with the need for emergency management-related staffing. The registered apprenticeship is a three-year program with both workplace and academic outcomes. It includes 2,000 hours each year in the field under the direction of a knowledgeable supervisor, and 144 hours (nine credits each year) through one of the partner institutions. Maryland looks forward to growing this new registered apprenticeship during the coming years. The MACEM also developed and delivered a workshop on Inspiring Gender Diversity in the Workplace Today which featured women in the emergency

management career field as well as lessons learned from the women of Katrina and how gender, race and class matter in an American Disaster.

Teacher Academy of Maryland (TAM)

In order to address the growing need for teachers, the TAM was developed to increase the pipeline of people entering the teaching profession. Maryland imports over 60% of the teachers needed to fulfill its teaching positions and still many positions remain temporarily filled with long term substitutes. TAM was developed with many partners including: local school systems; community colleges; baccalaureate degree granting institutions; the Maryland Higher Education Commission; the University System of Maryland; and the Maryland State Department of Education through two areas: the Division of Career and College Readiness, and the Division of Educator Certification and Program Approval. It is based upon Maryland's Associate of Arts in Teaching degree which completely transfers to teacher education programs at baccalaureate degree granting institutions leaving the remaining third and fourth year courses to complete.

The TAM program consists of four courses in a sequence culminating in a Teacher Academy Internship where students are partnered with a certified teacher and develop lesson plans, present lessons, evaluate student performance on selected activities and other aspects associated with the education field. TAM is implemented in 22 of Maryland's 24 school systems and has 10 statewide articulation agreements for three or more transcribed credits with both public and private colleges and universities in the state. In addition, some of the colleges and universities also provide scholarships to TAM students who matriculate to the institution of higher education as a declared education major. The scholarships range from \$500 - \$1,500 per semester for up to eight semesters to \$10,000 per year for up to four years. TAM students can also earn industry recognized credentials such as the ParaPro which in Maryland allows immediate entry into employment in the education field, as well as PraxisCORE. In Maryland, if students make the cut score on the SAT, it is counted in lieu of having to take the PraxisCORE.

Medium/Heavy Truck (Diesel) Technician

Diesel technology advances quickly, and local school systems continue to offer the latest innovations in this program of study. Many students who complete these programs are immediately employed, due to Maryland's location on the major north-south traffic corridor of the eastern U.S., as well as being a railroad hub (with trains powered by diesel locomotives), and home to one of the busiest ports in the country. Diesel generators, used to produce electrical power, are also manufactured in Maryland and installed throughout the country, and technicians are needed to build, install and service these generators. Technicians entering this field command high wages, and those who continue their education and specialize in areas such as marine diesel or power generation are extremely valuable to employers.

The cost to a school system to initiate a diesel program is extremely high, yet Maryland received state funding for CTE Innovation Grants to fund two new programs beginning in fall, 2019. These additions will bring the number of programs to seven, and the hope is that more diesel programs will come on line as State funding continues in future years. With the lowest unemployment rate in Maryland in decades, diesel technicians are in demand.

Postsecondary Programs

Maryland’s 16 community colleges are essential for the education and training of the region’s workforce. Each college closely monitors current and emerging business and industry needs, and continuously updates programs being offered. For example, Howard Community College convenes a Commission on the Future every five years that brings together approximately 100 community members, mostly from the business and industry sectors, to foster community participation in preparing the college and its programs to meet the needs of the future. Other Maryland community colleges convene similar work groups and task forces to generate new ideas for programs and program improvements, such as *Journey to the Future* at Harford Community College. These work groups and task forces have been instrumental in creating new programs in emerging fields, such as Additive Manufacturing Technology, Geographical Information Systems, Geosciences, Construction Science and Management, Digital Design and Management, and multiple levels of Cybersecurity programs that have established the Maryland Interstate 95 corridor as the premier cybersecurity region in the United States.

Colleges also work directly with employers and government agencies to support course development and instruction, including relationships with Engineering Solutions Inc. (ESI), Amazon Web Services (AWS), Northrop Grumman, the National Security Agency (NSA), and the Federal Emergency Management Agency (FEMA). Finally, due to Maryland’s proximity with Washington, DC, some community colleges have been designated as “White House Tech Hire” entities that, with support from local economic development authorities, expedite job placement and promote synergy between education, government, and business/industry to assure educational and occupational programs that provide education on all aspects of an industry.

CTE Legislation for Workforce Development

In 2018, the Maryland legislature passed a law appropriating \$2 million annually to award CTE Innovation Fund grants to partnerships of secondary, postsecondary, and business/industry representatives to benefit students, including students with disabilities (Chapter 361/HB1415). Grant applications were due by December 28, 2018. A total of 17 grants were awarded. This was the first time that dedicated funding to CTE was appropriated in over 20 years. The CTE Innovation Grant provides funding to develop and implement a CTE curriculum framework and pathway that is innovative and includes promising practices that are used by the best CTE programs around the world in order to meet current and emerging workforce needs. The grant provides funding to develop CTE pathways or apprenticeships that lead to high-wage, and in-demand careers in support of Maryland’s workforce and economic development needs as documented by labor market information. For secondary CTE Pathway Development the partnership must include at least one county board of education, one community college, and one industry partner. The pathway must include a CTE sequenced program of study incorporating academic and technical courses that enables students to qualify to earn an industry-recognized credential; and/or a skills credential issued by the Department of Labor; and/or early college credit, dual enrollment for high school students where appropriate, advanced placement in a registered apprenticeship, and include collaboration with at least one identified specific industry partner and at least one community college. For the postsecondary CTE Pathway development, the partnership must include a sequence of courses leading to an industry-

recognized credential (license or certificate), may include opportunities for students to earn a lower division certificate or an Associate's Degree, allow students the opportunity to earn college credit or advanced placement in a registered apprenticeship, and include collaboration with at least one identified specific industry partner and at least one county board of education. An apprenticeship may also be developed or expanded under this grant program which would be the adoption of the Apprenticeship Maryland Program developed at the secondary level or an apprenticeship program at the postsecondary level which is registered with the Maryland Department of Labor. Maryland's CTE Innovation Grants focused on the following in-demand, as well as new and emerging career and workforce areas: biotechnology; physical therapy and rehabilitation; construction management apprenticeship; aviation technology; histotechnology; artificial intelligence and cloud computing (the first one in the state); diesel technology and cybersecurity.

Career Pathway Initiatives

The State has invested \$1,000,000 of WIOA Governor set-aside funds for demonstration projects that support career pathway initiatives. The grant, targeted to low-skilled jobseekers, including individuals with limited English proficiency (LEP) and those with low reading, writing, and math skills, who may lack high school diplomas. This and other WIOA programs prepares participants for career pathways in local demand sectors by providing access to training, education, job placement, and career development services, while addressing basic needs and life issues that are barriers for success, in order to place participants in long-term, well-paying jobs. The State will continue to support the success of career pathways with technical assistance, clear guidance, and innovative funding mechanisms.

WIOA also places emphasis on serving out-of-school youth, yet Maryland's WIOA partners remain committed to ensuring that clearly defined career pathways exist for in-school youth as well. The workforce system has a strong relationship with the CTE system across the state. Postsecondary CTE program leaders are members of the Local Workforce Development Board, bringing to the table the workforce investment activities in which they are actively engaged. Many CTE administrators at the secondary level also sit on Local Workforce Development Boards. Members are actively engaged with businesses and workforce providers to understand how CTE programs can meet industry needs. In some areas of the state, school systems and community colleges are well represented on Local Workforce Development Boards by having them serve as their overarching Local Advisory Council. In other instances, business representatives from a Local Workforce Development Board may also be asked to serve a member of the Program Advisory Committee. Community Colleges contribute to their Local Workforce Development Boards through in-kind and monetary contributions. There is a shared sense of responsibility to provide CTE programs of study that will assist local residents, including members of special populations, to receive the education needed to not only enter into a career field but to advance in that career as well.

Counselors' Conference

MSDE sponsors a biannual Counselors' Conference which is attended by over 300 professional school counselors, principals, school-based and central office staff and postsecondary and business representatives from across the state. The conference format provides information on specific in-demand careers and the Maryland CTE programs of study that prepare students for those careers.

Attendees learn about Maryland's CTE Programs of Study including student recruitment strategies, developing partnerships with business and industry, industry certification, college credit options, and career development strategies. The conference offers attendees a chance to hear from instructors, employers, students and others, about the importance of new and emerging career fields. Through an employer panel, employers share their needs for future workers, what they look for in potential employees, and other factors that help counselors and CTE staff understand the additional workforce skills needed for employment. Employers have the opportunity to meet students and provide information that helps CTE teachers and counselors better prepare students for careers.

b. Strategic Vision and Set of Goals for Preparing an Educated and Skilled Workforce

The state’s strategic vision and goals for preparing an educated and skilled workforce are informed by [Maryland’s Workforce Innovation and Opportunity Act \(WIOA\) Plan](#); [2017-2021 Maryland State Plan for Postsecondary Education](#); [Maryland Every Student Succeeds Act Consolidated State Plan](#); and [the Maryland Commission on Innovation & Excellence in Education Report. The More Job for Marylanders Act](#) established a state goal that 45% of high school students will complete a CTE program of study, earn industry-recognized credentials, or completed a registered youth or other apprenticeship by 2025. Education Article §10- 205(A) established a goal that at least 55% of Maryland’s adults will hold at least an associate’s degree by year 2025. These documents work in concert to establish a foundation that will prepare an educated and skilled workforce in Maryland. The Maryland CTE Four-Year State Plan was intentionally developed to align with priorities identified in each document.

[Figure 1](#) summarizes the vision for CTE in Maryland.

Figure 1: Vision for Career and Technical Education in Maryland

Vision for Career and Technical Education in Maryland

Each student has access and the opportunity to engage in career programs of study that:

- align to high-skill, high-wage, or in-demand careers;
- lead to earning industry-recognized and/or postsecondary credentials that will allow entrance or advancement in a specific career cluster; and
- provide career-based learning experiences that require the application of academic and technical knowledge and skills in a work setting.

Division of Career and College Readiness

MSDE regularly communicates the goals and vision for CTE to local school systems, community colleges, advisory groups and other stakeholders. Funding for CTE is allocated to recipients in alignment with the state’s vision and goals for CTE. Local school systems, community colleges, and other funding recipients are held accountable for implementing the state’s vision and goals for CTE through monitoring visits.

Maryland's Workforce Innovation and Opportunity Act Plan

[Maryland's Workforce Innovation and Opportunity Act \(WIOA\) Plan](#) identifies *The Benchmarks of Success for Maryland's Workforce System*. The Benchmarks seek to strengthen and enhance the workforce system through commitment to innovation, collaboration, and a true systems approach among the state's many workforce partners. The corresponding benchmarks are focused around a central vision of increasing the earning capacity of Marylanders by maximizing access to employment, skills and credentialing, life management skills, and supportive services.

Maryland's *Benchmarks of Success* are strategic goals focused on increasing the earning capacity of Marylanders by developing a system responsive to the needs of Maryland's jobseekers and businesses. They are:

1. Increase the earning capacity of Maryland's workforce system customers by maximizing access to employment;
2. Increase the earning capacity of Maryland's workforce system customers by maximizing access to and use of skills and credentialing;
3. Increase the earning capacity of Maryland's workforce system customers by maximizing access to and use of life management skills;
4. Increase the earning capacity of Maryland's workforce system customers by eliminating barriers to employment; and,
5. Strengthen and enhance the effectiveness and efficiency of Maryland's workforce system.

Each strategic goal has a set of corresponding benchmarks in which to measure success toward achieving the goal. Maryland's WIOA Target Populations are: Displaced Homemakers; Eligible migrant and seasonal farmworkers; Ex-offenders; Homeless individuals; Individuals facing substantial cultural barriers; Individuals with disabilities, including youth with disabilities; Individuals within two years of exhausting lifetime eligibility under Part A of the Social Security Act (Individuals who are English language learners; Individuals who are unemployed, including the long-term unemployed; Individuals who have low levels of literacy; Individuals without a High School Diploma; Low income individuals (including TANF and Supplemental Nutrition Assistance Program [SNAP] recipients); Native Americans, Alaskan Natives, and Native Hawaiians; Older individuals; Single parents (including single pregnant women and non-custodial parents); Veterans; and Youth who are in or have aged out of the foster care system. To the extent that the populations also address the populations in Perkins V, CTE is a partner in the state's workforce development system. CTE programs of study enhance the opportunities provided to achieve the goals of the workforce development system in order to improve the lives of Marylanders. The Maryland CTE Four-Year State Plan incorporates *The Benchmarks of Success* identified in [Maryland's Workforce Innovation and Opportunity Act \(WIOA\) Plan](#).

2017-2021 Maryland State Plan for Postsecondary Education

The Maryland Higher Education Commission is charged with producing a statewide plan every four years that clearly outlines the priorities and major goals for the state's postsecondary system. In 2017, the [Maryland State Plan for Postsecondary Education](#) was released. It identified three primary goals for the postsecondary community in Maryland.

- Goal 1: Access: Ensure equitable access to affordable and quality postsecondary education for all Maryland residents.

- Goal 2: Success: Promote and implement practices and policies that will ensure student success.
- Goal 3: Innovation: Foster innovation in all aspects of Maryland higher education to improve access and student success.

Each goal highlights the current challenges higher education in Maryland faces and provides several strategies as opportunities to address those challenges. Key strategies identified that connect with CTE include:

- ✓ Align academic programs with CTE programs for a smooth transition.
- ✓ Work with local school systems to improve middle college programs that award degrees.
- ✓ Create and improve relationships with local professional school counselors and college access professionals.
- ✓ Expand outreach to communicate with non-traditional students and offer alternative pathways to access postsecondary education.
- ✓ Improve policies regarding academic program review that meet the State's needs – e.g., workforce shortages, do not duplicate, do not saturate, allow for responsiveness, do not sacrifice student growth and development, and allow for career exploration and goal setting.
- ✓ Create pathways of information sharing for students regarding employment, careers, and industries in Maryland.
- ✓ Find ways to incorporate career advising into academic advising.
- ✓ Create or expand existing career centers to be an essential element of a student's academic experience.
- ✓ Increase internship opportunities to improve career planning.
- ✓ Support local apprenticeship programs by coordinating efforts in required instruction for Registered Apprenticeships.
- ✓ Support faculty and staff in integrating career advising and internship opportunities.

The Maryland CTE Four-Year State Plan incorporates strategies identified the [Maryland State Plan for Postsecondary Education](#).

Maryland Every Student Succeeds Act Consolidated State Plan

The [Maryland Every Student Succeeds Act \(ESSA\) Consolidated State Plan](#) outlines strategies to improve school performance, strengthen teacher pipelines, and improve data collection and analysis. The strategies identified in Maryland's ESSA plan directly connect to CTE. For example, the Maryland ESSA plan requires low-performing schools to engage in a root cause analysis process. The outcomes of the root cause analysis conducted in some schools identified the need to improve the quality of CTE programs of study. The outcomes of the root cause analysis process will be used to inform content in the [CTE local application](#) for school systems.

Maryland's ESSA plan has embedded CTE measures that support the school quality/student success and readiness for postsecondary success performance indicators. Students can meet measures for the school quality/student success indicator by attaining concentrator status or higher. The readiness for postsecondary success indicator can be met in part by completing a youth or other apprenticeship program approved by the Maryland Apprenticeship Training Council; attaining CTE concentrator status and completing an industry certification aligned with an MSDE-approved CTE program; or completing an MSDE-approved CTE program.

Maryland Commission on Innovation and Excellence in Education

The Maryland Commission on Innovation and Excellence in Education released a [report](#) that contains recommendations to improve college and career readiness pathways. The recommendations called for a redesign of CTE pathways. The recommendations from the report were used to inform the development of Maryland CTE Four-Year State Plan. A summary of recommendations for CTE are as follows:

- Establish a CTE Committee to create a system focused on developing the talent needed for staffing the high-tech industries on which Maryland's future depends.
- Create an advisory group to provide advice on skills standards that can be used to drive the new Maryland CTE system.
- Ensure all middle and high school student have ready access to individuals who can counsel and advise them on CTE pathway options and help them navigate among the available and emerging opportunities.
- Combine classroom education and training (the theory) with learning in a workplace (the practice).
- Ensure the CTE system is informed by a close relationship between CTE providers and the State's economic development, workforce development, and labor agencies.

More Jobs for Marylanders Act of 2017

The [More Jobs for Marylanders Act of 2017](#) calls for 45% of students to complete a CTE program of study, earn an industry-recognized credential, or complete a youth or other apprenticeship program. The More Job for Marylanders Act goal is also included in the approved Maryland ESSA Consolidated State Plan and its measures are embedded in the State's accountability system. This data will be captured in the Comprehensive Local Needs Assessment.

Various ways in which Maryland, with the support of local school systems, is attempting to reach the 45% goal are through:

- implementation of the youth Apprenticeship Maryland Program;
- providing additional financial support for credentialing examinations;
- identification of additional value-added industry-recognized credentials;
- continuing to implement action-based research practices, such as the National Alliance for Proficiency in Equity Program Improvement Process for Equity, to ensure barriers are reduced for non-traditional and underrepresented students;
- increasing work-based learning experiences via partnerships with more business and workforce development organizations;

- offering additional bridge programs and summer camps to increase awareness and registrations in CTE Programs of Study, as well as encourage students to remain in programs and become completers;
- partnering with offices of School Counseling, English Language Learners, and Special Education to share information of CTE programs, discuss barriers for special populations to participate in CTE, and subsequently improve access for all students to CTE;
- increasing professional learning opportunities for administrators, school counselors, and CTE teachers;
- and increasing the utilization of social media to celebrate CTE programs, teachers, and students.

c. Strategy for Joint Planning, Alignment, Coordination, and Leveraging of Funds

State CTE Programs of Study and the State's Workforce Development System

The InterAgency Workforce Committee of the Governor's Workforce Development Board meets on a bi-monthly basis. This Committee oversees Maryland's strategy for joint planning, alignment, coordination, and leveraging of funds between the CTE system and workforce development in order to achieve the strategic vision and goals of the state. The Committee members include senior officials from the Governor's Workforce Development Board partner agencies. The purpose of the Committee is to coordinate workforce development programs and policies to meet the demands of Maryland's businesses and industries. In these meetings, workforce partners share the initiatives they are working on and enlist the assistance from other workforce agencies with similar goals.

Perkins V and other Federal Programs

The MSDE holds monthly Federal Grants Collaboration Meetings. The purpose of these meetings is for all Directors of federal grants to engage in joint planning, alignment, coordination, and leveraging of federal funds. The outcomes of these meetings have resulted in alignment of needs assessments and other federally required documents for funding; coordination of supports to school systems and community colleges; and consistent messaging to school systems and community colleges regarding use of federal funds.

Maryland Higher Education

Postsecondary CTE is a required partner under WIOA. Some community colleges provide in-kind contributions to workforce initiatives in their particular region while others provide monetary support. Linking community colleges' CTE and the workforce and economic development initiatives under WIOA enhances the partnerships that support Maryland's priorities for a future workforce and growth of high-skill, high-wage, in-demand current and emerging career fields.

Maryland statute (Annotated Code of Maryland, Education Article 21, Section 101 [§21-101]) requires that local recipients have a Local Advisory Council. School systems and community colleges that receive Perkins funding and are located in the same county or city (Maryland's school systems are each located in a county and the city) must form a joint LAC according to Maryland statute. Many are doing this by using the Local Workforce Development Board that serve the same jurisdiction as the local school system and community college as the Local Advisory Council. The joint Local Advisory Council assists in assuring alignment between the learning levels including opportunities for early college credit through dual enrollment, and articulated/transcripted credit.

In addition to the overarching Local Advisory Council, CTE programs are guided by industry experts who are members of the Program Advisory Committee. Each local school system and community college is required to have a Program Advisor Committee for every program of study being offered, comprised of local business and industry representatives. Program Advisory Committees perform a similar, but much more focused and occupation-specific function as the Local Advisory Council and are much more involved with the programs and students. Many local school systems and community colleges that have joint Local Advisory Councils also have joint Program Advisory Committees which provides a seamless link between the learning levels.

Joint planning of CTE programs at the secondary and postsecondary levels provides students with an opportunity for a seamless transition from one learning level to the other. In addition, it helps to ensure that members of special populations are afforded the same opportunities as all students who wish to enroll in CTE programs.

The monitoring process, which is described in depth later in this document, is conducted jointly with local school systems and community colleges within the same jurisdiction. The monitoring team consists of agency workforce partners and representatives from both local school systems and community colleges. This allows for more opportunities to link CTE programs between the learning levels

Core CTE Programs – Science, Technology, Engineering, Mathematics, and Computer Science
[Maryland WIOA State Plan](#) identified several occupational needs connected to science, technology, engineering, mathematics, and computer science fields. As a result, the MSDE will have a focus on CTE programs of study in the Health and Bioscience, Information Technology, and Manufacturing, Engineering and Technology career clusters. With over 11,000 students enrolled, the CTE Engineering program has one of the highest participation rates. Program enrollment increased exponentially since its initial implementation in 2004 with only 144 students.

The MSDE recently added new pathways in cybersecurity and cyber operations to the Information Technology Networking Academy-Cisco CTE program. The MSDE will also develop new programs of study in artificial intelligence and cloud computing. The MSDE will allocate reserve fund grant dollars to continue to expand CTE programs of study in Health and Bioscience, Information Technology, and Manufacturing, Engineering and Technology career clusters.

Given Maryland's strong technology-based economy, local school systems and community colleges will continue to partner with key stakeholders, State workforce and economic development agencies, and others as appropriate to develop and implement CTE programs that meet high-skill, high-wage, and in-demand careers. Examples of this include programs to be included in the CTE Reserve Fund Grants, the CTE Innovation Programs grants, making STEM CTE programs a priority, as well as the Apprenticeship Maryland program focused on STEM careers

Local school systems and community colleges will continue to partner with key stakeholders, state workforce and economic development agencies, and others as appropriate to develop and implement CTE programs that meet high-skill, high-wage, and in-demand careers.

CTE Innovation Programs

In 2018 and 2019, state funds were allocated for CTE Innovative Programs. A competitive grant process was opened to both local school systems and community colleges. The law governing this funding required at a minimum, a partnership among a local school system, a community college and an industry partner to develop or expand CTE Innovative Programs, which must lead to the achievement of a technical skill assessment which is an industry-recognized credential or postsecondary credits. There must be credible labor market documentation and a business plan for sustainability beyond the grant period. Maryland received applications from school systems and community colleges for more than the two million dollars that was available. Reviewers from across state workforce and economic development agencies, as well as the Governor’s Workforce Development Board and representation from the Maryland’s Apprenticeship Programs scored the applications and then ranked them for funding. Only the most innovative programs were selected, resulting in 17 new CTE programs to be developed in the 2018 – 2019 academic year. Applications are currently being submitted and reviewed for 2019 funds.

d. Use of State Leadership Funds

State leadership funds will be used to:

- develop, revise, or procure CTE curricula that is aligned to industry and academic standards;
- provide professional learning experiences to CTE teachers, faculty, and administrators;
- review local CTE comprehensive needs assessments and applications;
- monitor CTE programs of study;
- recruit and prepare CTE teachers, faculty, specialized instructional support personnel or paraprofessionals;
- develop statewide articulation agreements;
- establish statewide industry or sector partnerships among local school systems, postsecondary institutions, and others;
- market CTE programs of study;
- develop and/or secure a CTE data system;
- provide support to eliminate inequities in student access to high-quality CTE programs of study and effective teachers, faculty, specialized instructional support personnel, and paraprofessionals;
- prepare students for non-traditional fields in current and emerging professions;
- develop strategies to improve success in CTE programs of study for members of special populations;
- provide career and academic guidance activities;
- provide funding to CTE programs that serve individuals in state institutions;
- deliver technical assistance for eligible recipients;
- support the integration of employability skills into CTE programs of study;
- support programs and activities that increase access, student engagement, and success in science, technology, engineering, mathematics, and computer science fields;
- support career and technical student organizations;
- support expansion of work-based learning experiences;

- evaluate the effectiveness of these activities to continuously improve CTE programs of study; and
- ensure equitable and positive return on investment of state leadership funds.

Leadership funds support Maryland's affiliates for CTE programs of study, which are colleges and universities, industry professional organizations, and non-profits. These entities support implementation of CTE in Maryland by providing curriculum development and revisions, professional learning and subject matter expertise, and support to improve CTE in Maryland. In addition, they convene state advisory groups to be sure that the state CTE programs of study are continually reviewed, data are evaluated, and needed upgrades are implemented. Specific activities and corresponding expenditures for each activity are delineated yearly in the annual plan of work.

2. Implementing Career and Technical Education Programs of Study

Statutory Requirements: Implementing Career and Technical Education Programs and Programs of Study

- a. Describe the career and technical education programs or programs of study that will be supported, developed, or improved at the State level, including descriptions of the programs of study to be developed at the State level and made available for adoption by eligible recipients. (Section 122(d)(4)(A) of Perkins V)
- b. Describe the process and criteria to be used for approving locally developed programs of study or career pathways (see Text Box 3 for the statutory definition of career pathways under section 3(8) of Perkins V), including how such programs address State workforce development and education needs and the criteria to assess the extent to which the local application under section 1328 will—
 - i. promote continuous improvement in academic achievement and technical skill attainment;
 - ii. expand access to career and technical education for special populations; and
 - iii. support the inclusion of employability skills in programs of study and career pathways. (Section 122(d)(4)(B) of Perkins V)
- c. Describe how the eligible agency will—
 - i. make information on approved programs of study and career pathways (including career exploration, work-based learning opportunities, early college high schools, and dual or concurrent enrollment program opportunities) and guidance and advisement resources, available to students (and parents, as appropriate), representatives of secondary and postsecondary education, and special populations, and to the extent practicable, provide that information and those resources in a language students, parents, and educators can understand;
 - ii. facilitate collaboration among eligible recipients in the development and coordination of career and technical education programs and programs of study and career pathways that include multiple entry and exit points;
 - iii. use State, regional, or local labor market data to determine alignment of eligible recipients' programs of study to the needs of the State, regional, or local economy, including in-demand industry sectors and occupations identified by the State board, and to align career and technical education with such needs, as appropriate;
 - iv. ensure equal access to approved career and technical education programs of study and activities assisted under this Act for special populations;
 - v. coordinate with the State board to support the local development of career pathways and articulate processes by which career pathways will be developed by local workforce development boards, as appropriate;
 - vi. support effective and meaningful collaboration between secondary schools, postsecondary institutions, and employers to provide students with experience in, and understanding of, all aspects of an industry, which may include work-based learning such as internships, mentorships, simulated work environments, and other hands-on or inquiry-based learning activities; and
 - vii. improve outcomes and reduce performance gaps for CTE concentrators, including those who are members of special populations. (Section 122(d)(4)(C) of Perkins V)

a. Career and Technical Education Programs or Programs of Study

There are currently ten career clusters in Maryland:

1. Arts, Media, and Communications
2. Business Management and Finance
3. Construction and Development
4. Consumer Services, Hospitality, and Tourism
5. Environmental, Agriculture, and Natural Resources
6. Health and Bioscience
7. Human Resource Services
8. Information Technology
9. Manufacturing, Engineering, and Technology
10. Transportation Technologies

Each [career cluster](#) aligns to identified workforce needs in Maryland as defined by occupational projections and informed by industry partners. Career clusters allow student to explore a wide range of career options while applying academic content and technical skills to a career area. Each cluster contains several CTE programs of study that align to specific careers within the career cluster. Each CTE program consists of a planned, sequential, and increasingly rigorous set of courses linking academic and technical content from secondary to postsecondary education. Programs are designed according to the [CTE Development Standards](#) that are required under the [Code of Maryland Regulations \(COMAR\) 13A.04.02](#).

The MSDE only implements CTE programs of study that:

1. align to high-skill, high-wage, or in-demand careers;
2. provide the opportunity for students to earn industry-recognized or postsecondary credentials; and
3. provide the opportunity to participate in work-based learning experiences.

CTE programs of study are regularly reviewed by Program Advisory Committees (described in [Table 2](#)) to ensure alignment to defined criteria.

MSDE currently has [55 CTE state programs of study](#). Statewide articulation agreements for each program of study (except for cosmetology) allow students from any local school system to earn credits at two or four year colleges or universities. Options for dual enrollment and earning transcribed credit are available for most CTE programs of study. Dual enrollment numbers for CTE in Maryland continue to grow. In the 2017-2018 school year, over 1000 students were dually enrolled in a CTE course ([Dual Enrollment in Maryland, 2019](#)). This represents a 50% increase from the previous school year. Options for CTE students to earn transcribed college credit continue to grow as well. For example, the Teacher Academy of Maryland has 10 statewide articulation agreements for three or more transcribed credits with both public and private colleges and universities in the state. Students who complete four courses in the Project Lead the Way (PLTW) Biomedical Science Program at a PLTW certified high school can earn up to eight transcribed credits from Stevenson University. MSDE also includes Advanced Placement (AP) courses as an integral part of CTE programs of study. AP courses also provide the opportunity for students to earn college credit. Programs at the community college level that are statewide-designated programs of study by the Maryland Higher Education Commission are also part of the statewide articulation agreements. This designation permits students to attend the

community college and be considered an in-county student, which eliminates the increased tuition costs if the student lives out of the county. Postsecondary CTE lower division certificate or associate's degree programs offer high school students a seamless pathway to the next learning level with college credits available to be earned while in high school.

New CTE Programs of Study

There are currently 55 state CTE programs of study. MSDE continues to explore the development and implementation of new CTE programs of study. The development of new programs of study is informed by occupational data and input from employers and industry sector representatives. Maryland looks to develop new and emerging CTE programs of study in artificial intelligence and cloud computing, biomedical science, cybersecurity, Junior Reserve Officers' Training Corps (JROTC) and apprenticeships. With Maryland's location in close proximity to Washington DC and to the number of military installations, as well as federal agencies in the intelligence fields, Maryland is encouraging the expansion of programs in emerging career areas in fields related to these high-skill, high-wage, in-demand occupations which provide career opportunities for advancement beyond entry level positions especially with advanced training and security clearances. The MSDE will also expand The Apprenticeship Maryland Program and Pathways in Technology Early College High (P-TECH) School Program.

Apprenticeship Maryland

The Apprenticeship Maryland Program was developed and coordinated through a partnership between the MSDE and the Maryland Department of Labor. The program is based on a partnership among employers and mentors, school systems, students, and parents. Eligible employers (approved by the Maryland Apprenticeship Training Council through the Department of Labor) hire high school juniors and seniors to work in eligible career pathway occupations. Most occupations are in manufacturing, science, technology, engineering, mathematics, and computer science industries. Students are provided compensation while apprenticing, thus creating an "earn and learn" opportunity. Students also receive training in employability, interpersonal, and social skills. Maryland will use Perkins funds to expand the apprenticeship program.

Pathways in Technology Early College High (P-TECH) School

P-TECH schools are innovative grade 9 to 14 public schools that create clear pathways from high school to college and career for young people from all academic backgrounds. In Maryland, each P-TECH student is required to complete a MSDE approved CTE program of study. In six years or less, students graduate with a high school diploma and a no-cost, two-year associate degree. Each P-TECH school works with industry partners and a local community college to ensure an up-to-date curriculum that is academically rigorous and economically relevant. The program also includes one-on-one mentoring, workplace visits and skills instruction, paid summer internships and first-in-line consideration for job openings with a school's partnering company. Currently, Maryland has P-TECH schools in six school systems. Maryland P-TECH students are enrolled in CTE programs of study and will earn associate's degrees in high-demand careers including Nursing, Respiratory Therapy, Physical Therapy Assistant and Health Information Management, Cyber Security, Computer Information Systems, Network Information Technology, and Engineering Technology. Maryland will use Perkins funds to expand the P-TECH program.

b. Process and Criteria to Approve Locally Developed Programs of Study or Career Pathways

The process and criteria to approve locally developed programs of study or career pathways is described in the [Policies and Procedures for the Development and Continuous Improvement of Career and Technical Education Programs of Study](#). These policies clearly describe the documentation needed to submit a locally developed CTE program of study for state approval. State approval allows for the program to use federal funds to support continuous improvement. The steps to develop a program of study and have it approved by the MSDE is outlined below:

1. Establish the program advisory committee and conduct labor market needs analysis.
2. Review cluster, pathways, technical skill standards, and academic state curriculum to identify the CTE program(s) to be developed. Describe the program based on desired student outcomes.
3. Describe each CTE complete course and identify end-of-course assessments.
4. Determine appropriate curriculum, end-of-program assessments, licenses, and certifications.
5. Specify the types of value-added options available to students. This includes credentials and/or postsecondary credit.
6. Identify the work-based learning experiences or industry-mentored projects provided to students.
7. Identify the career and technical student organization (CTSO) provided to students in the program.
8. Review overall Program Description to ensure accuracy with the course offerings, value-added options, work-based learning experiences, and CTSO identified for the program.
9. Identify sites and allocate resources.
10. Submit proposal to the MSDE.

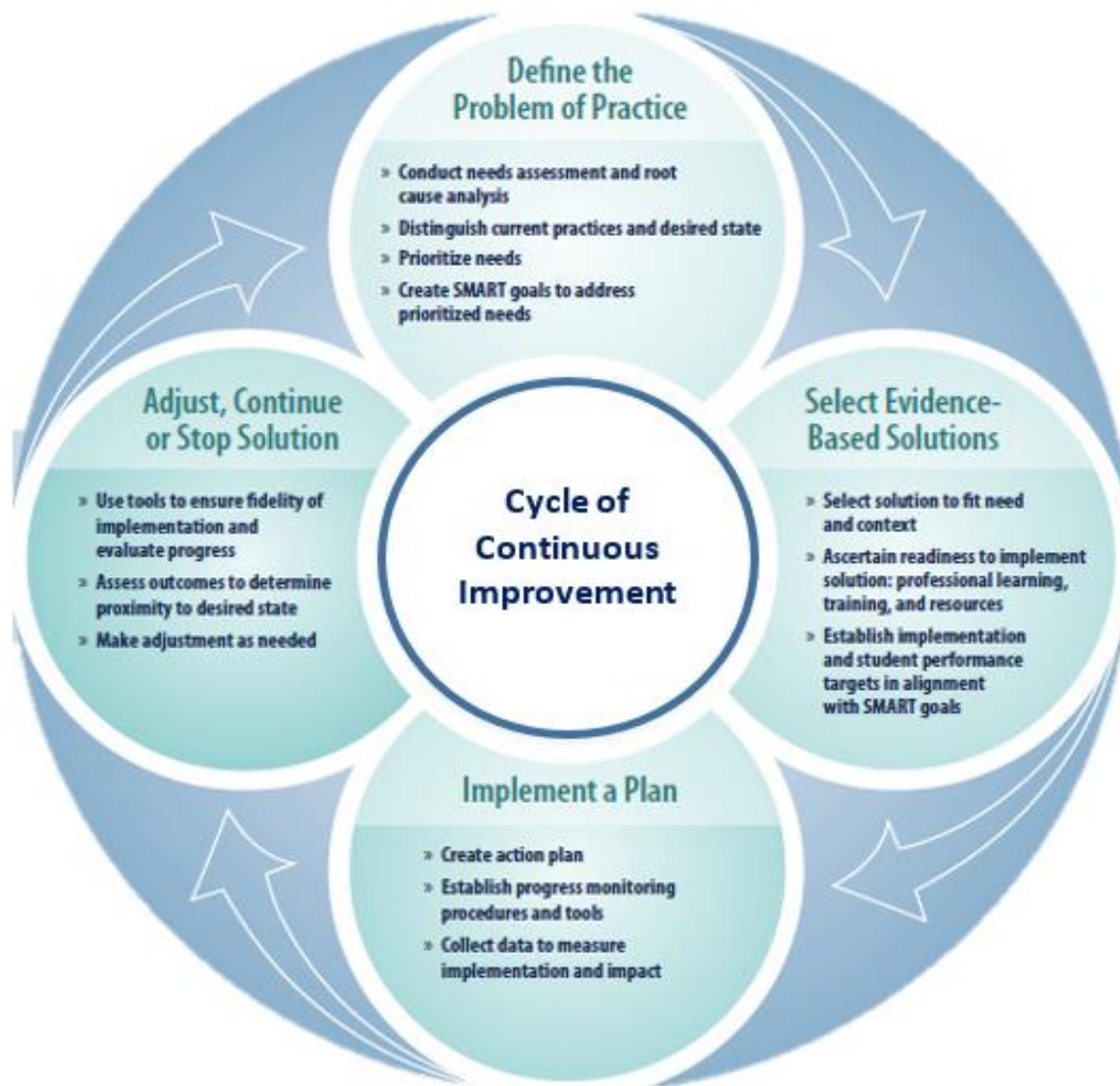
When a local CTE program of study at the secondary level is submitted to MSDE, it is reviewed by a panel of individuals representing the Maryland Higher Education Commission, Maryland Department of Commerce, the Maryland Department of Labor, the Governor's Workforce Development Board, and local CTE Directors to ensure that the proposed program meets Maryland workforce needs. Evidence of need in the career area must be provided through labor market data. The local school system or community college must demonstrate that the local [Program Advisory Committee](#) consisting of representatives from business, industry, and postsecondary institutions, informed the development of the CTE program of study. For each locally developed program of study, students must have options to earn industry-recognized credentials, if available and appropriate, college credit, and engage in work-based learning experiences as a component of the submission process. The development of the proposed CTE program of study must provide evidence of collaboration from its beginning stages to the submission of the proposed program.

i. [Promote continuous improvement in academic achievement and technical skill attainment](#)

It is a priority of the MSDE to support school systems and community colleges in engaging in a cycle of continuous improvement to raise student achievement and technical skill attainment. The continuous improvement process is grounded in data-informed decisions to improve the quality of CTE programs of study. Local school systems and community colleges are required to regularly analyze data to identify opportunities for growth and areas of promise. MSDE uses the cycle in [Figure 2](#) to support the continuous improvement process of CTE programs of study. The continuous improvement cycle is

embedded in the [CTE comprehensive local needs assessment](#), [application](#), and program monitoring process.

Figure 2: Cycle of Continuous Improvement



The continuous improvement process requires local school systems and community colleges to:

- review and analyze data with the [Local Advisory Council](#) and [Program Advisory Committees](#) to identify opportunities for growth and areas of promise within each program of study;
- assess program performance against established measures to ensure targets are met. If targets are not met, then local school systems and community colleges will engage in the root cause analysis process to address underlying causes of performance problems;
- analyze program data against local labor market data and occupational outlook projections to ensure the program meets the workforce needs in Maryland; and
- participate in on-site and desk monitoring visits by the MSDE.

The MSDE administers work-based learning surveys to both employers and students in work-based learning experiences. The survey is one data point that is used to inform the continuous improvement process for work-based learning experiences. Other data points used to inform continuous improvement include the outcomes of the Program Quality Index (PQI) and the Local Program Accountability Report (LPAAR). The data points included in these reports address performance of concentrators, completers, special populations, non-traditional programs and non-traditional students enrolled in and completing these programs, as well as the core indicators of performance and dual completion data for high school graduation information.

School systems and their corresponding community colleges undergo an on-site review through a formal monitoring visit. Due to the number of school systems and community colleges in the state, each receives the on-site visit every five years. Data is provided to MSDE prior to visits and reports are issued after the visits. Any findings are noted and must be included in the next submission of the local application. A unique feature of monitoring visits is that the local school system and its corresponding community college receive their monitoring visits together with representatives from both state and local workforce systems. This approach supports greater alignment of CTE programs of study to meet regional workforce needs. Local school systems and community colleges are required to submit mid-year and final programmatic reports as well as financial reports. Each request for funds against formula dollars is reviewed and payments are authorized when all reports are submitted. On-site and virtual monitoring is conducted by the MSDE. These processes are ongoing and contribute to the continuous improvement of CTE programs.

ii. [Expand access for special populations](#)

Equity in education is a priority of the MSDE. A [Network for Equity in Education](#) working group comprised of representatives of the MSDE and each of Maryland's 24 local school systems collaborate to support the development of regulations, resources, and professional learning experiences that support equitable practices in education. This includes equitable access to CTE programs of study for all students, including special population students. [Maryland's Guide to Equity and Excellence](#) identifies key strategies that can be implemented at the state, local school system, and school levels to ensure that all students have equitable access to CTE programs of study.

Examples of actions that will be taken to expand access for special populations include:

1. Analyzing data to ascertain and address root causes of enrollment, completion, and student performance issues. A plan of action will be developed, informed by data, to improve enrollment and completion of CTE programs of study for special population students.
2. Providing professional learning experiences for CTE teachers on how to diagnose and respond to student learning needs; differentiate instruction; and engage diverse learners.
3. Providing professional learning experiences for counselors and school leaders on how to recruit and retain special population students in CTE programs of study and how to remove barriers and provide opportunities for special population students to engage in CTE.
4. Establishing targeted recruitment strategies for special population students to prepare for CTE programs of study starting as early as grade five.

MSDE has also developed a Technical Assistance Bulletin, which was vetted through the Maryland Office of the Attorney General. This document provides guidance on providing equal access to CTE programs for members of special populations. Admission requirements for CTE programs must be

eliminated unless such entrance requirements are absolutely essential for student success in the program. In cases where admissions requirements have been determined to be necessary, they must fully comply with the guidance issued in the Technical Assistance Bulletin. Professional learning is provided to local school system and community college representatives on implementing equitable CTE practices. During monitoring visits, data is collected to ensure equity is at the forefront of CTE.

The MSDE will continue to partner with representatives of special population groups to identify and implement strategies that will expand access to CTE for all special population students.

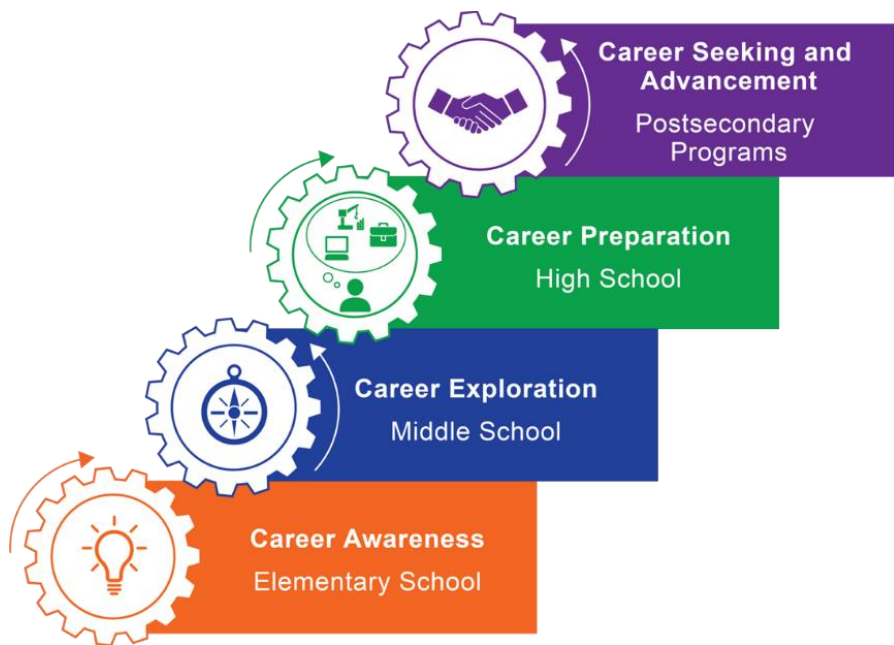
iii. Support Employability Skills

All programs of study are required to be informed by a [Program Advisory Committee](#). This committee is charged with ensuring that content in CTE programs are aligned with academic standards, industry standards, and employability skills. All CTE programs of study are required to provide the opportunity for students to engage in work-place learning experiences (apprenticeships, internships, etc.) and Career and Technical Student Organizations, which allows students to implement employability skills in work-place settings.

Maryland CTE programs of are guided by Maryland's [Policies and Procedures for the Development and Continuous Improvement of Career and Technical Education Programs of Study](#). This document describes the required content for programs of study, including skills that specify the knowledge and competencies required to perform successfully in the workplace. Standards are developed along a skill continuum ranging from general work readiness skills to specific skills required for an occupation.

The MSDE implements a continuum for work-based learning. Work-based learning is defined as sustained interactions with industry or community professionals in real workplace settings, to the extent practicable, or simulated environments at an educational institution that foster in-depth, firsthand engagement with the tasks required in a given career field, that are aligned to curriculum and instruction ([Strengthening Career and Technical Education for the 21st Century Act](#)).

Continuum for Work-based Learning



Perkins funds will be used to support work-based learning at all stages of the continuum in alignment with Perkins funding requirements and allowable expenditures. Business and industry professionals will be used for career counseling at all stages of the continuum through a partnership with the Maryland Business Roundtable for Education. The MSDE will continue to collaborate with representatives from business and industry to ensure that all CTE programs of study address employability skills and implement expectations identified in the work-based learning continuum.

c. Describe how the eligible agency will:

i. Make information on approved programs of study and career pathways available to students, representatives of secondary and postsecondary education, and special populations

The MSDE implements a comprehensive strategy to make information available to different stakeholder groups on approved programs of study, career pathways, career exploration, work-based learning opportunities, early college high schools, dual/concurrent enrollment program opportunities, and guidance and advisement resources. Highlighted below are some implemented strategies:

1. Websites – The MSDE publically posts information on [career clusters](#), approved [programs of study](#), and other CTE-related topics on the [MSDE webpage](#). Users of the MSDE website have the option to translate content to a variety of different languages. Workforce and labor market information is provided through [O*NET](#) and the [Maryland Workforce Exchange](#).
2. Videos – The MSDE developed a [video series](#) highlighting students engaged in different CTE programs of study and workplace learning experiences. Videos are available on the [MSDE webpage](#) and [MSDE TV YouTube channel](#).
3. Social Media – The MSDE has a dedicated twitter page for [@Maryland CTE](#). Information regarding programs of study and other CTE information can be accessed through the social media page. The MSDE developed a [social media guide](#) using grant funds from Advance CTE, sponsored by the Siemen’s Foundation. The social media guide provides step-by-step

instructions on using Facebook, Twitter, Instagram, Snap Chat, and YouTube to market CTE programs of study. Additionally, the guide provides campaign strategies as well as sample messages that can be tailored to the students, parents, and educators in the school system.

4. Community Meetings – The MSDE regularly participates in community meetings to discuss CTE program offerings and provide information to community members about opportunities for students in CTE.
5. Statewide Convenings – The MSDE regularly facilitates meetings with local directors of CTE, postsecondary Perkins coordinators, school counselors, principal supervisors, principals, and CTE teachers to share and discuss CTE-related information.

Information on state-approved CTE programs of study and pathways are also shared by secondary and postsecondary institutions through their websites, social media pages, course catalogs, advisement materials, degree publications, and other CTE awareness materials.

ii. Facilitate collaboration among eligible recipients in the development and coordination of career and technical education programs and programs of study and career pathways

Collaboration among stakeholders is essential and required among eligible recipients. Local school systems and community colleges are required to collaborate to complete the [CTE comprehensive local needs assessment](#) and [CTE local application](#). A joint [Local Advisory Council](#) between a local school system and community college is required if both are eligible for federal CTE funding. The Local Advisory Council must contain members of business and industry. The purpose of the collaboration among local school systems, community colleges, and business and industry is to ensure regional workforce needs are met and to identify opportunities to align and leverage resources.

The [Maryland CTE Advisory Committee](#) provides guidance and direction for the statewide system of CTE. The Committee will be led by the Maryland Business Roundtable for Education and include members from the Governor’s Workforce Development Board; Department of Labor, Chamber of Commerce, Economic Development; Local School Systems, Postsecondary Institutions; Maryland Higher Education Commission; Maryland Career and Technical Administrators Association; and representatives that serve special population students as defined in Perkins V.

State programs of study serve as a means of fostering long-lasting partnerships with two and four year colleges/universities, professional organizations, and non-profits. These partners, called Affiliates, work in tandem with MSDE staff to help keep programs current, convene Maryland CTE Advisory Committee, Local Advisory Councils, Program Advisory Committees, and assist in the professional learning of teachers, administrators, counselors, and postsecondary faculty. Maryland's CTE programs are offered in comprehensive high schools, technical high schools, CTE centers, and postsecondary institutions thus giving students multiple opportunities to enter and/or access programs. Programs are designed to include opportunities for students to earn industry-recognized credentials, postsecondary credit, and to participate in work-based learning experiences such as apprenticeships. These opportunities provide multiple options for students as they exit their CTE program helps ensure students' future success upon graduation from high school. All CTE programs of study include a work-based learning and capstone experiences. Many capstone experiences involve students working or being mentored by industry professionals to complete a project. Other collaboration efforts include employers who engage with students through Career and Technical Student Organizations (CTSOs). These organizations provide opportunities for CTE students to gain

leadership skills and further refine their technical skills through local, state, and national competitions. Employers serve as judges and advisors, and provide equipment, materials, and supplies for the competitions. Employers use their involvement in CTSOs to identify students for future employment and work-based learning opportunities.

iii. Use State, regional, or local labor market data to determine alignment of eligible recipients' programs of students to the needs of the State, regional, or local economy

Labor market data are used to inform the development of CTE pathway programs at both state and local levels. The first step in developing CTE programs is to conduct an analysis of labor market needs. Labor market data are considered and reviewed by [Program Advisory Committees](#) at local and state levels to determine whether there is a demand (or lack of demand) for employees in the industry. Program design also includes aligning secondary CTE programs to postsecondary CTE programs in order to provide secondary school students with the opportunity to link high school learning opportunities with opportunities for further education.

Labor market information is compiled from two sources for state, regional, and local purposes. Sources include the Maryland Department of Labor and employer feedback. The Department of Labor tailors state, regional, and county occupational projection data from the Bureau of Labor Statistics (BLS). The data are published on the [website for the Department of Labor](#). BLS provides state and county data. The Maryland Department of Labor compiles [occupational projection data](#) for each regional workforce development area. These data are used to target CTE programs of study to meet high-needs projections at the state, regional, or local level.

Occupational projections data must also include real-time employer needs; therefore, MSDE actively seeks employer feedback to inform state programs of study. Employer feedback occurs during [Maryland CTE Advisory Committee](#), [Local Advisory Council](#), and [Program Advisory Committee](#) meetings. Additionally, employer surveys are used to collect data on real-time employment needs, and provide valuable feedback on the quality of program graduates to help drive the continuous improvement of CTE programs.

iv. Ensure equal access to approved CTE programs of study and activities for special populations

There is a need to actively recruit, enroll, and retain special populations in all CTE programs of study. The MSDE recommends that local school systems and community colleges eliminate admission requirements for CTE programs, unless such entrance requirements are absolutely essential for student success in the program. In cases where admissions requirements have been determined to be necessary, the MSDE provides technical assistance to ensure equitable entrance requirements. The MSDE also recommends that local school systems and community colleges provide support for all students to succeed. Supports may include tutoring, evidence-based academic interventions, or a balanced-school calendar.

Maryland has demonstrated a long-standing commitment to equity and ensuring that members of special populations are provided equal access to programs. The MSDE Division of Career and College Readiness team collaborates with the Division of Early Intervention and Special Education Services to provide guidance to local school systems on ensuring equal access to approved CTE programs of study. Moreover, all local school systems and community colleges receiving federal funding from the

U.S. Department of Education and providing CTE programs of study are required to participate in the Methods of Administration (MOA) Office of Civil Rights (OCR) compliance reviews.

The major purpose of the MOA OCR Compliance Review is to ensure that community colleges and local school systems are providing equal access to education and promoting educational excellence through the enforcement of civil rights in compliance with the requirements of Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Vocational Rehabilitation Act of 1973, and Title II of The Americans with Disabilities Act. MSDE annually conducts a minimum of two local MOA OCR on-site compliance reviews and provides ongoing technical assistance to local school system and community college staffs on equal access.

The state assists local school systems and community colleges in setting forth programs of study aligned with industry standards, practices, and assessments to improve CTE for special populations. Leadership, coordination, and expertise are provided at the state level through career clusters, CTE programs of study, and professional learning to assist recipients in determining program effectiveness and student success. Data analysis is used to identify opportunities for growth and areas of promise for each CTE program of study. All local school systems and community colleges selected for MOA OCR review are required to submit a compliance plan based on any issues cited during their review process. In addition, the state requires that each local school system and community college receiving funding under Perkins V describe how they will continue to comply with the intent of the law in increasing access and success of special populations in their local plan.

Maryland has an Interagency Agreement among nine state agencies/entities to support interagency coordination for students with disabilities. The work described in the agreement is ongoing and a function of the Interagency Transition Council for Youth with Disabilities (IATC). An MSDE CTE staff member serves as a representative on the IATC.

The member list can be found at [Interagency Transition Council for Youth with Disabilities](#). The IATC is a partnership of State and local government agencies, educators, family members and advocates. The IATC's purpose is to help improve the policies and practices that affect Maryland students with disabilities preparing to transition from high school to adult services, college, employment, and independent living. They meet at least four times a year and regularly creates and reviews an Interagency State Plan for Transitioning Youth with Disabilities, as well as provides resources and best practices for individuals and their families through targeted workshops and statewide conferences.

To help ensure equal access for special populations, Maryland's local school systems and community colleges:

- Provide career information and related career development and advisement services in order to ensure the selection of appropriate career and technical education programs.
- Assess programs in terms of recruitment, retention, and success.
- Design and implement a comprehensive system of supportive services/intervention techniques for special populations.

- Develop focused needs assessments that target special needs students. Employers identify specific jobs available and essential duties required. Technology is utilized (i.e. simulated workplace).
- Braid funding streams where appropriate with other MSDE Divisions to support high school and postsecondary CTE students.
- Follow the Universal Design for Learning model/format and provide professional learning to high school and postsecondary faculty on Universal Design for Learning.
- Address barriers/challenges that may exist to enable students to participate in after school internships.
- Service childcare needs for single parents. Utilize “County Ride” service or other available resource within the school system or county.
- Educate teachers and faculty regarding availability of easily accessible resources.

v. [Coordinate with the State Board to support the local development of career pathways and articulate processes by which career pathways will be developed by local workforce development boards](#)

The Maryland State Board of Education retains the authority as the eligible agency under Perkins V. As such, the Board and State Superintendent of Schools have oversight over the entire CTE system in Maryland. The Board and State Superintendent of Schools establish annual goals for CTE and monitors them on a regular basis. The Assistant State Superintendent responsible for CTE provides ongoing updates and presentations to the State Board and Superintendent of Schools regarding the implementation of goals and actions taken to ensure the continuous improvement of the CTE system.

vi. [Support effective and meaningful collaboration between secondary schools, postsecondary institutions, and employers to provide students with experiences in and understanding of all aspects of an industry](#)

Maryland supports CTE collaboration among secondary schools, postsecondary institutions, and employers through a variety of means, beginning with state legislation. The Annotated Code of Maryland, Education Article, Title 21, Section 101 (§ 21-101), requires every county to have an advisory council on CTE. By law, the voting membership of the [Local Advisory Council](#) is drawn from business, industry, organized labor, members from each gender, diverse racial and ethnic populations, and members from the geographic regions of the county. Each Local Advisory Council is charged with advising the local county (includes Baltimore City) board of education and each community college that receives CTE federal funding support, on four areas:

1. distribution of career and technical education funds,
2. county career and technical education program accountability reports,
3. county job needs, and
4. the adequacy of career and technical education programs being offered.

This also occurs on a local programmatic level through [Program Advisory Committees](#). Each local school system and community college is required to have a Program Advisory Committee for every program of study being offered, comprised of local business and industry representatives. Program Advisory Committees perform a similar, but much more focused and occupation-specific function, as the Local Advisory Council. Program Advisory Committee members provide students with an

experience in and an understanding of all aspects of an industry through work-based learning experiences/activities; conducting mock interviews and classroom presentations; mentoring students; sponsoring field trips; and assisting with Career and Technical Student Organization competitions and preparation.

MSDE is an integral part in the development, oversight, guidance, and monitoring of Local Advisory Councils. State team members often attend Local Advisory Council meetings; advise CTE directors and community college CTE coordinators on promising practices for developing and holding impactful meetings; monitor progress through annual improvement plans; and conduct monitoring visits that involve stakeholders from secondary education, postsecondary education, and business and industry.

MSDE is collaborating with the Maryland Department of Commerce and Maryland Department of Labor to expand youth apprenticeship opportunities in the high schools through a statewide program called [Apprenticeship Maryland](#). The program, targeted to students ages 16 and higher, is designed to lead to sustainable employment and further education based on career pathways in manufacturing and science, technology, engineering, and mathematics (STEM) occupations. The program provides high school youth with academic and occupational skills leading to both a high school diploma and a State Skill Certificate issued by the Department of Labor noting participation in the program. Eligible employers hire high school juniors and seniors in eligible career track occupations and provide paid compensation, thus creating an “earn and learn” opportunity. Students also receive training in employability skills, interpersonal and social skills, and a general knowledge of all aspects of the industry/occupation.

vii. [Improve outcomes and reduce performance gaps for CTE concentrators, including those who are members of special population](#)

It is a priority of the MSDE to provide support aimed at reducing the performance gaps for CTE concentrators, including members of special populations. Disaggregated data analysis is ongoing and assists local school systems and community colleges in making data-informed decisions to improve student performance. Local schools systems and community colleges will be required to conduct a [root cause analysis](#) to uncover core causes of student performance problems. Local school systems and community colleges are required to implement strategies to address identified root causes in their [CTE local application](#). Targeted professional learning experiences will be provided to local schools systems and postsecondary institutions by MSDE focusing on effective strategies to improve student performance.

All local school systems have dedicated staff and services to support all students, including special population students. Community colleges have student support services centers and faculty and staff to assist and support students. The team members or individuals meet with students and teachers/faculty regularly to analyze needs and design specific support plans to ensure student success. Services might include academic tutoring, help with financial obligations, or social emotional support.

Every community college has an early alert program with the goal of creating a success plan for each student to overcome barriers to college success. The system allows faculty to be proactive, supportive, and involved in facilitating the academic components of student retention through early detection and intervention for students who are experiencing problems, or it allows students to seek out other college resources, e.g., tutoring, career advisement, and testing assistance.

d. Opportunities for secondary students to participate in dual *or concurrent enrollment* programs, early college high school, or competency-based education

The MSDE currently has [55 CTE state programs of study](#). Statewide articulation agreements for each program of study (except for cosmetology) allow students from any local school system to earn credits at two or four year colleges or universities. Options for dual enrollment and earning transcribed credit are available for most CTE programs of study. Dual enrollment numbers for CTE in Maryland continue to grow. In the 2017-2018 school year, over 1000 students were dually enrolled in a CTE course ([Dual Enrollment in Maryland, 2019](#)). This represents a 50% increase from the previous school year. Options for CTE students to earn transcribed college credit continue to grow as well. For example, the Teacher Academy of Maryland has 10 statewide articulation agreements for three or more transcribed credits with both public and private colleges and universities in the state. Students who complete four courses in the Project Lead the Way (PLTW) Biomedical Science Program at a PLTW certified high school can earn up to eight transcribed credits from Stevenson University. MSDE also includes Advanced Placement (AP) courses as an integral part of CTE programs of study. AP courses also provide the opportunity for students to earn college credit. Programs at the community college level that are statewide-designated programs of study by the Maryland Higher Education Commission are also part of the statewide articulation agreements. This designation permits students to attend the community college and be considered an in-county student, which eliminates the increased tuition costs if the student lives out of the county. Postsecondary CTE lower division certificate or associate's degree programs offer high school students a seamless pathway to the next learning level with college credits available to be earned while in high school.

Pathways in Technology Early College High Schools (P-TECH) are innovative early college programs that create clear pathways from high school to college and career for young people from all academic backgrounds. In six years or less, students graduate with a high school diploma and a no-cost associate's degree. Each P-TECH school works with industry partners and a local community college to ensure an up-to-date curriculum that is academically rigorous and economically relevant. P-TECH also includes one-on-one mentoring, workplace visits and instruction on the skills needed for the industry, paid internships, and first-in-line consideration for job openings with a school's partnering companies. P-TECH schools help students expand their understanding of potential careers and enable them to acquire the skills and experiences they will need to thrive in those careers. P-TECH students are matched with industry mentors and have opportunities to participate in workplace visits and internships. Every P-TECH student will complete a state-approved CTE program of study.

Many secondary CTE programs of study offer the opportunity to students for dual/concurrent enrollment in the postsecondary program. For example, MSDE works with Anne Arundel County Public Schools and Anne Arundel Community College to support their dual enrollment program in Transportation, Logistics and Cargo Security (TLCS). In this program, high school sophomores, juniors, and seniors take college-level courses in TLCS while also completing their normal high school curriculum. The inaugural cohort of ten students graduated with both their high school diplomas and a college-level lower division certificate.

The MSDE leverages Advanced Placement courses in CTE programs of study. Advanced Placement course options exist for CTE programs of study in Computer Science, Engineering, and Business Management and Finance. The College Board cited Maryland as an example on how the state is leveraging Advanced Placement in publication titled, "[Advanced Placement and Career and Technical Education: Working Together.](#)"

Other opportunities for students to earn early college credit occur where high school teachers are considered adjunct faculty members of the local community college and students are taught the postsecondary course in their high school. The credit counts not only toward the CTE program of study, but also for college credit on an official transcript. One community college offers students proficiency credit. This option provides the opportunity for students to take the college course exam in high school as the CTE program is being completed. If the exam is passed at the appropriate cut score level, high school students are awarded the college credit for that course.

- e. [Involvement of parents, academic and career CTE teachers, administrators, faculty, career guidance and academic counselors, local businesses, and others in planning, development, implementation, and evaluation of CTE](#)

Stakeholders representing parents, academic and career CTE teachers, administrators, faculty, career guidance and academic counselors, and local businesses are represented on [Program Advisory Committees](#), [Local Advisory Councils](#), [Maryland CTE Advisory Committee](#), and [Governor's Workforce Development Board](#). Each of these groups meet regularly to inform the planning, development, implementation, and evaluation of CTE at the state and local levels.

[Maryland Career and Technical Administrators](#) (MCTA) is the professional organization for CTE administrators in Maryland. Members include CTE directors, principals, assistant principals, and other leaders from local school systems. Meetings are regularly held with MCTA to inform the planning, development, implementation, and evaluation of CTE.

The MSDE holds a biennial Counselors Conference, where secondary and postsecondary counselors from around the state convene to learn effective practices and discuss CTE. Information from the Counselors Conference is used to inform the planning, development, implementation, and evaluation of CTE.

The MSDE regularly convene CTE teachers and faculty for professional learning experiences and to inform the direction of CTE. The MSDE will also meet with the Maryland Parent Teacher Association to inform the planning, development, and implementation of CTE.

- f. [CTE local application template](#)

Please refer to [Appendix C](#) for the Maryland CTE local application template.

- g. [CTE comprehensive local needs assessment template](#)

Please refer to [Appendix B](#) for the Maryland CTE comprehensive local needs assessment template.

- h. [Definition for size, scope, and quality](#)

Identified below are the Maryland definitions for [size](#), [scope](#), and [quality](#). The Division of Career and College Readiness at MSDE will conduct audits of all CTE programs of study at the secondary and postsecondary levels during monitoring visits to collect evidence demonstrating that all requirements for size, scope, and quality are met.

Size Definition

- The local school system or community college offers at least two state-approved CTE programs of study in recognized career clusters.
- Each CTE concentrator course in approved CTE programs of study must have a minimum enrollment of ten concentrators over a four year period. If this requirement is not met, the local school system or community college will provide evidence of continued progress toward increased class size to meet the minimum requirement.
- The local school system or community college have the required number of staff, availability of equipment, and access to facilities to meet requirements detailed by each program of study.

Scope Definition

- Curricula for each program of study is aligned to state-approved industry standards that lead to students earning recognized credentials, certifications, licenses, college credit, or degrees.
- Curricula for each program of study reflect a progression from secondary to postsecondary and community college to bachelor degree programs.
- Curricula for each program of study allow students to learn and demonstrate academic, technical, and employability skills.
- Curricula for each program of study demonstrate a continuum of learning that allows students to progress in a career field.
- Curricula for each program of study include differentiated supports and modifications to meet the needs of diverse learners.
- Each CTE student in each program of study has a written career and academic plan in place that includes:
 - the required courses to complete their CTE program of study;
 - the required courses to graduate or earn a recognized industry credential;
 - the required assessments to earn a certification, license, credential, or degree in the CTE program;
 - the required assessments to graduate or earn a recognized industry credential; and
 - the timeline to take courses, assessments, and complete work-based learning experiences.
- All students, regardless of race, color, national origin, sex, or disability, have equitable access to high-quality CTE programs as required by [Code of Maryland Regulation 13A.04.02.04](#).
- Approved programs of study are guided by Local Advisory Councils and Program Advisory Committees according to the [Career and Technical Education \(CTE\) Local Advisory Council \(LAC\) and Program Advisory Committee \(PAC\) Policies and Procedures COMAR EA Title 21.Sec.101](#).
- All CTE secondary programs of study adhere to [CTE Development Standards](#) which are required by [Code of Maryland Regulations 13A.04.02.01](#) (local school systems only).

Quality Definition

- The local school system or community college achieves or consistently makes progress towards local targets established for state and federal core indicators of performance.
- CTE programs of study are delivered by teachers who meet state requirements to teach their content at the secondary level (local school systems only).

- CTE programs of study are delivered by teachers who earned a minimum of effective on their teacher evaluation as defined by [Code of Maryland Regulation 13A.07.09](#) within three years (local school systems only).
- CTE programs of study are delivered by faculty who meet the requirements of the institution’s or programmatic accrediting body (if applicable), and the college accrediting body (community colleges only).
- Each CTE program of study meets all the requirements of the MSDE evaluation criteria found in the [Policies and Procedures for the Development and Continuous Improvement of CTE Programs of Study](#).
- For each CTE program of study, the local school system provides all students, including students in special populations, the opportunity to:
 - Participate in at least one work-based learning experience (internship, job shadow, apprenticeship, etc.);
 - Earn college credit and/or industry credentials; and
 - Participate in Career and Technical Student Organizations.
- Professional learning opportunities, informed by data, are provided for administrators, teachers, faculty, counselors and support personnel to improve student learning outcomes. All secondary professional learning must be guided by the Maryland-endorsed [National Learning Standards](#).
- The local school system or community college meets local and state annual data-reporting requirements and conducts reviews of all annual Program Quality Index reports to inform program improvement.
- Human resources is included in the recruitment process to ensure a diverse CTE teacher and faculty member candidate pool.
- Metrics are used to ensure that CTE teacher and faculty member recruitment strategies are successful.
- Teacher retention rates are reviewed annually, for the most recent 3 years, to understand the top three contributing factors to CTE teacher and faculty member turnover.

3. Meeting the Needs of Special Populations

Statutory Requirements: Meeting the Needs of Special Populations

- a. Describe the eligible agency’s program strategies for special populations, including a description of how individuals who are members of special populations—
- will be provided with equal access to activities assisted under this Act;
 - will not be discriminated against on the basis of status as a member of a special population;
 - will be provided with programs designed to enable individuals who are members of special populations to meet or exceed State determined levels of performance described in section 113, and prepare special populations for further learning and for high-skill, high-wage, or in-demand industry sectors or occupations;
 - will be provided with appropriate accommodations; and
 - will be provided instruction and work-based learning opportunities in integrated settings that support competitive, integrated employment. (Section 122(d)(9) of Perkins V)

- a. Describe the eligible agency’s program strategies for special populations, including a description of how individuals who are members of special populations:

- i. will be provided with equal access to activities assisted under this Act;

Maryland has demonstrated a long-standing commitment to equity and ensuring that members of special populations are provided equal access to programs. Each year the MSDE conducts a minimum of two Methods of Administration (MOA) Office of Civil Rights (OCR) compliance reviews. The purpose of the MOA OCR Compliance Review are to ensure that community colleges and local school systems are providing equal access to CTE through enforcement of civil rights in compliance with the requirements of Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Vocational Rehabilitation Act of 1973, and Title II of The Americans with Disabilities Act (ADA). In addition to conducting a minimum of two local MOA OCR On-Site Compliance Reviews each year, MSDE provides ongoing technical assistance to local school system and community college staff members on equitable practices.

Maryland has an Interagency Agreement among nine state agencies/entities to assure interagency coordination occurs for students with disabilities. The work described in the agreement is ongoing and a function of the Interagency Transition Council for Youth with Disabilities (IATC). A MSDE CTE staff member serves as a representative on the IATC. The member list can be found at <https://msa.maryland.gov/msa/mdmanual/26excom/html/12disco.html>. The IATC is a partnership of state and local government agencies, educators, family members and advocates. The IATC's purpose is to help improve the policies and practices that affect Maryland students with disabilities preparing to transition from high school to adult services, college, employment, and independent living. The group meets at least four times a year and regularly creates and reviews an Interagency State Plan for Transitioning Youth with Disabilities, as well as providing resources and best practices for individuals and their families through targeted workshops and statewide conferences.

MSDE CTE team members work closely with the Division of Early Intervention and Special Education Services to provide guidance to local school systems on ensuring equal access to approved CTE programs of study. A MSDE staff member serves on the State Agencies’ Transition Collaborative of Maryland (SATCM) leadership group. The overall goal of the Transition Collaborative of Maryland is to improve the state level coordination of transition services to increase outcomes for students and youth with disabilities in Maryland. Part of this partnership includes Maryland’s Transition Coordinator attending CTE Local Directors Meetings at least once a year, and a CTE representative attending regional Transition Advisors’ Meetings with the purpose of sharing updates, promising practices and ensuring that Transition Advisors have the information to assist with appropriate placements of students with disabilities in CTE. Topics focusing on access and equity are presented at quarterly CTE Local Directors Meetings, for example, in-depth sessions on equity were presented at all four meetings in 2018. Equity will continue to be a focus of professional development under Perkins V.

CTE team members collaborate with MSDE’s Specialist for English Learners (EL) to ensure that school systems receive effective, research-based professional learning on improving their CTE marketing, recruitment and retention strategies for EL students. CTE staff at local school systems collaborate with their respective EL specialists for additional activities to promote the academic achievement, skills attainment, and family involvement of EL students participating in CTE.

CTE staff also work with MSDE’s Pupil Personnel and School Social Worker Specialist to collaborate on strategies for better recruiting and supporting students who are homeless or are in, or about to age out of, the foster care system. Social Workers and Pupil Personnel Workers in the local school systems provide information and assistance to CTE directors to help the school systems better serve students who are members of these special populations.

In December 2018, Maryland joined the National Alliance for Partnerships in Equity (NAPE). NAPE’s mission is to build educators’ capacity to implement effective solutions for increasing student access, educational equity and workforce diversity. An orientation meeting was held in January 2019 that provided CTE staff with information on how to best utilize NAPE’s resources at state and local levels: Toolkits, Online Courses, Professional Development and Conferences. These resources will continue to be disseminated throughout the implementation of Perkins V through ongoing professional development and peer-to-peer sharing.

MSDE assists eligible recipients in developing programs of study aligned with industry standards, practices, and career development strategies to improve CTE for all students, including those who are members of special populations. Leadership, coordination, and expertise are provided at the state level through aligning career clusters with CTE programs of study, and providing ongoing statewide sustained professional development to assist recipients in using data to determine program effectiveness and student success. Disaggregated data analysis is used to identify successful secondary and postsecondary programs and programs requiring improvement in order to assure equal access and success for members of special populations in quality CTE programs. Data-driven decision-making guides program development and evaluation.

The workforce system has a strong, enduring relationship with its CTE schools and community colleges across the state. Many CTE administrators sit on local workforce development boards and are actively engaged with businesses and workforce providers to facilitate the improvement of high school programs in order to meet industry needs. Representatives from the Governor’s Workforce Development Board and the Department of Labor’s Division of Workforce Development and Adult Learning meet with MSDE and other key stakeholders to ensure ongoing alignment of Maryland’s CTE system with in-demand careers. The group is committed to promoting CTE programs of study as an avenue to college and career readiness for all students, including students who are members of special populations.

The implementation of [Workforce Innovation and Opportunity Act](#) (WIOA) increased the focus on outcomes of individuals involved in postsecondary education and expectations that workforce programs, including Vocational Rehabilitation, will utilize community colleges to prepare individuals for employment within the local labor market. Community colleges continue to remain a major component of Maryland’s workforce development system, as well as a primary training provider to Division of Rehabilitation Services’ clients for both credit and non-credit instruction leading to workforce certificate training. Maryland is committed to serving all populations as evidenced in [Maryland’s WIOA State Plan](#).

The MSDE supports local school systems and community colleges to:

1. Develop targeted information and recruitment plans for the special populations groups beginning in the fifth grade through postsecondary education for all CTE programs, including

those that lead to further learning and entrance into high-skill, high-wage, or in-demand industry sectors or occupations.

2. Inform students about CTE programs in the elementary school through open houses, tours, job shadowing, social media, and/or exploratory programs and experiences.
3. Provide professional development related to the needs of special populations to district personnel, administrative personnel, school counselors, teachers, social workers, pupil personnel workers and school psychologists in effective and promising practices for working with and supporting the unique needs of special populations.
4. Beginning in the fifth grade, inform parents and students about resources available in middle school, high school and college.
5. Work with other agencies and groups to provide support for students who are members of special populations.
6. Develop targeted information and recruitment plans for all special populations students enrolled in CTE programs to participate in student organizations including Future Business Leaders of America, FFA, SkillsUSA, or Educators Rising.
7. Identify and collaborate with other agencies and departments in order to leverage additional funding sources such as Title IV A to ensure students have equal access to all CTE activities within and outside of schools.

ii. will not be discriminated against on the basis of status as a member of a special population;

MSDE provides guidance to local school systems and community college to ensure that members of special populations are not discriminated against. Guidance includes strategies on how to:

1. Eliminate barriers to enrollment in CTE programs. MSDE's Technical Assistance Bulletin provides guidance on acceptable recruitment practices and oversubscription enrollment policies to ensure the policies are non-discriminatory and consistent with applicable federal laws that guarantee civil rights, including obligations imposed under the Individuals with Disabilities Act (IDEA) or section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794). In cases where admissions requirements have been determined to be essential for student success in specific programs of study, they fully comply with the guidance found in the Maryland Technical Assistance Bulletin.
2. Develop recruitment and enrollment methods that provide information and access to all students, including special populations. A *Request for Enrollment* template was created to ensure school systems are compliant with the guidance provided in the Technical Assistance Bulletin.
3. Use state level tools, such as MSDE's *Social Media- How To Guide*, to help identify, recruit, and retain non-traditional students in CTE programs.
4. Develop, identify, and implement models of effective collaborative relationships among schools, colleges, parents and other stakeholders for the development, implementation and evaluation of CTE programs.
5. Disaggregate and analyze data to ensure that students who are members of special populations have equitable access and success in all CTE programs.

iii. will be provided with programs designed to enable individuals who are members of special populations to meet or exceed State determined levels of performance and prepare special populations for further learning and for high-skill, high-wage, and in-demand careers;

Under Perkins V, Maryland's local school systems and community colleges will continue to:

1. Actively recruit, enroll, and retain special populations in CTE programs of study.
2. Provide targeted professional learning, including topics such as Universal Design for Learning, to CTE teachers, school counseling staff, and administrative personnel in effective practices for working with and supporting special populations.
3. Provide special population students enrolled in CTE programs with all appropriate learning supports to enable them to maximize their learning and achievement. All school systems comply with the Individuals with Disabilities Education Act (IDEA), the federal law that requires schools to serve the educational needs of eligible students with disabilities with a free appropriate public education (FAPE). All community colleges comply with the Americans with Disabilities Act (ADA), the federal law that requires public and private colleges to provide equal access to postsecondary education for students with disabilities.
4. Ensure that special population students are provided with the testing accommodations that they require and for which they qualify. MSDE created the publication [*Tool Kit to Determine Students' College and Career Ready Design under the College and Career Readiness and Completion Act of 2013*](#) that identifies accommodations for CTE assessments.
5. Inform postsecondary special populations of the vital importance of self-reporting their special needs to the appropriate office/division of their college. This information must be provided to all new students as part of the admissions/orientation process to ensure that allowable services are available.
6. Provide special population students with personalized and supportive placement/transition services as they exit CTE in high school and transition to further education and/or a career.

iv. will be provided with appropriate accommodations; and

Maryland local school systems and community colleges will continue to:

1. Ensure that parents of all middle school students with an Individualized Education Program (IEP) or a 504 Plan transitioning to high school are prepared to request that middle schools provide the IEP or 504 information to receiving high schools well in advance of the start of the ninth grade.
2. Provide special population students enrolled in CTE programs with all appropriate accommodations/learning supports under their IEP/504 Plans to enable them to maximize their learning and achievement in the least restrictive and most integrated setting possible.
3. Ensure that all CTE instructors have access to students' IEP/504 Plans and other accommodation information that will assist them as they teach students who are members of special populations.
4. Ensure and verify that accommodations extend to technical skill assessments as well as the work-based learning component of students' CTE programs.
5. Clearly inform postsecondary special populations of the importance of self-reporting their special needs to the appropriate office/division of their college. This information should initially be provided to all new students as part of the admissions/orientation process.

v. will be provided instruction and work-based learning opportunities in integrated settings that support competitive, integrated employment.

Maryland defines work-based learning as sustained interactions with industry or community professionals in real workplace settings, to the extent practicable, or simulated environments at an educational institution that foster in-depth, firsthand engagement with the tasks required in a given career field, that are aligned to curriculum and instruction. Local school systems and postsecondary institutions are required to provide support for students classified as special populations to successfully engage in all stages of the [Maryland work-based learning continuum](#). Professional learning is provided by the MSDE and affiliates on how to support special population students in engaging in the work-based learning continuum. School systems and community colleges are held accountability through monitoring visits. Outcomes of monitoring visits and work-based learning surveys administered to both employers and students inform continuous improvement and support provided by MSDE to improve work-based learning experiences for special population students.

Maryland's local school systems and community colleges will continue to:

1. Ensure that special population CTE students are integrated into the general CTE student population.
2. Ensure that CTE academic and learning requirements and expectations are applied equally to all students, including special populations. The appropriate learning supports and accommodations must be provided for those who qualify.
3. Ensure that the expectations and requirements for work-based learning opportunities remain the same for all secondary and postsecondary students. Work-based learning coordinators, along with other school system/college staff responsible for the oversight and coordination of work-based learning, shall monitor and verify the rigor and expectations of all placements. Students participating in work-based learning opportunities must also meet the technical, performance, academic, and competency standards as prescribed by their program.

4. Preparing Teachers and Faculty

Statutory Requirements: Preparing Teachers and Faculty

a. Describe how the eligible agency will support the recruitment and preparation of teachers, including special education teachers, faculty, school principals, administrators, specialized instructional support personnel, and paraprofessionals to provide career and technical education instruction, leadership, and support, including professional development that provides the knowledge and skills needed to work with and improve instruction for special populations. (Section 122(d)(6) of Perkins V) Describe how the State plan was developed in consultation with the stakeholders and in accordance with the procedures in section 122(c)(2) of Perkins V. See Text Box 1 for the statutory requirements for State plan consultation under section 122(c)(1) of Perkins V.

The MSDE implements a comprehensive strategy to recruit and prepare CTE educators and leaders.

Recruitment of CTE Educators

Recruitment of CTE teachers begins in high school through the Teacher Academy of Maryland CTE program of study. The Teacher Academy of Maryland program prepares high school students for the teaching profession with a focus on filling critical teacher shortage areas such as CTE. Students in the Teacher Academy of Maryland have the opportunity to earn scholarships to pursue an education degree at a Maryland University and signing bonuses for teaching in Maryland schools. To encourage and support Teacher Academy students, Maryland is in the process of adding [Educators Rising](#) as a

new Career and Technical Student Organization, which will provide additional resources and opportunities to both students and teachers.

The MSDE provides several options to support career changers to enter the teaching field, especially to fill critical shortage areas such as CTE. Examples include:

- Troops to Teachers - Assists military personnel in making successful transitions to new careers in teaching.
- Resident Teacher Program - Recruits recent college graduates and career changers who possess academic content backgrounds into the teaching field.
- Scholarships Programs – Provides financial support to assist individuals interested in becoming teachers in specific areas of shortage. Scholarships are available through the Maryland Higher Education Commission.

The MSDE has revised teaching certification requirements to attract individuals with highly specialized skill sets to enter the teacher field and to minimize the barriers to earning a certificate to teach. A Professional and Technical Education certification was developed to support career changers to become CTE teachers. An adjunct certification was developed for individuals with highly specialized content expertise (engineers, physicists, medical providers, etc.) interested in teaching on a part-time basis in the classroom. The revised certification requirements will allow for additional CTE teachers to facilitate instruction in Maryland’s public schools.

The MSDE will partner with local school systems on recruiting efforts and launch a campaign to encourage pursuing a career as a CTE teacher.

The MSDE will partner with postsecondary institutions to support the recruitment of CTE faculty. Postsecondary faculty will be encouraged to function as adjunct instructors for CTE programs at the secondary level to foster a seamless transition between secondary and postsecondary CTE content.

The MSDE is collaborating with the Maryland Business Roundtable for Education to recruit and prepare industry and business professionals to function as career counselors at the secondary and postsecondary levels. For over 20 years, the Maryland Business Roundtable for Education has prepared business professionals to enter the classroom and support students in career decisions through the [Maryland Scholars Speakers Bureau](#) and [STEM Specialists in the Classroom](#) Programs. The MSDE will leverage these resources to build and implement a model for student career counseling with business professionals.

Preparation of CTE Educators

[Code of Maryland 13A.07.01](#) requires all teachers new to the profession to participate in induction activities until they receive tenure. First-year teachers must be provided a reduction in the teaching schedule and responsibilities for involvement in non-instructional activities other than induction support. Local school systems are also required to assign a mentor to new teachers. The MSDE will support the preparation of CTE teachers through the induction program and targeted professional learning experiences for CTE teachers and faculty. Professional learning experiences will focus on:

1. diagnosing and responding to student learning needs;
2. differentiating instruction;
3. engaging diverse learners;

4. using data to inform instruction;
5. implementing effective [formative assessments](#) to monitor student learning; and
6. implementing CTE curricula with fidelity.

Outcomes of the [CTE Comprehensive Needs Assessment](#) will be used to inform additional professional learning experiences for teachers and faculty. The MSDE will collaborate with the Maryland Higher Education Commission to identify and develop additional supports for CTE faculty at postsecondary institutions based on outcomes of the [CTE Comprehensive Needs Assessment](#).

Targeted professional learning experiences will be provided to current and future school leaders on how to support CTE teachers. The MSDE implements statewide leadership training through the [Promising Principals' Academy](#) and [Leading for School Improvement Institute](#). The leadership trainings are yearlong professional learning experiences supported with on-site coaching and in-person convenings designed to build the capacity of school leaders. Specific training sessions for the CTE leader will be incorporated into statewide trainings.

All professional learning experiences for teachers, school leaders, and postsecondary faculty will be done in collaboration with the [Office of Professional Learning](#) and [Office of Leadership Development and School Improvement](#) at MSDE who oversees Title II funding. This will allow the state to align and leverage funding and resources to maximize support to local school systems and postsecondary institutions. All professional learning experiences will have a focus on addressing the needs of special population students. As a result, the [Division of Early Intervention and Special Education Services](#) will participate in the planning of professional learning experiences. To ensure that professional learning is of the highest quality, all professional learning experiences will align with adopted professional learning standards from Learning Forward. [The Standards for Professional Learning](#) developed by Learning Forward outlines the characteristics of professional learning that lead to effective teaching practices, supportive leadership, and improved student results.

The MSDE holds a biennial Counselors Conference, where counselors from local school systems and postsecondary institutions from around the state convene to learn effective practices to recruit and retain students, with a focus on special population students, in CTE programs of study. The Counselors Conference is collaboratively planned with representatives from local school systems, community colleges, and the [Office of Student Services and School Counseling](#) at MSDE.

C. Fiscal Responsibility

Statutory Requirement: Fiscal Responsibility

1. Describe the criteria and process for how the eligible agency will approve eligible recipients for funds under this Act, including how—
 - a. each eligible recipient will promote academic achievement;
 - b. each eligible recipient will promote skill attainment, including skill attainment that leads to a recognized postsecondary credential; and
 - c. each eligible recipient will ensure the local needs assessment under section 134 takes into consideration local economic and education needs, including, where appropriate, in-demand industry sectors and occupations. (Section 122(d)(5) of Perkins V)

2. Describe how funds received by the eligible agency through the allotment made under section 111 of the Act will be distributed—
 - a. among career and technical education at the secondary level, or career and technical education at the postsecondary and adult level, or both, including how such distribution will most effectively provide students with the skills needed to succeed in the workplace; and
 - b. among any consortia that may be formed among secondary schools and eligible institutions, and how funds will be distributed among the members of the consortia, including the rationale for such distribution and how it will most effectively provide students with the skills needed to succeed in the workplace. (Section 122(d)(8) of Perkins V)
3. For the upcoming program year, provide the specific dollar allocations made available by the eligible agency for career and technical education programs and programs of study under section 131(a)-(e) of the Act and describe how these allocations are distributed to local educational agencies, areas career and technical education schools and educational service agencies within the State. (Section 131(g) of Perkins V)
4. For the upcoming program year, provide the specific dollar allocations made available by the eligible agency for career and technical education programs and programs of study under section 132(a) of the Act and describe how these allocations are distributed to eligible institutions and consortia of eligible institutions within the State.
5. Describe how the eligible agency will adjust the data used to make the allocations to reflect any changes in school district boundaries that may have occurred since the population and/or enrollment data was collected, and include local education agencies without geographical boundaries, such as charter schools and secondary schools funded by the Bureau of Indian Education. (Section 131(a)(3) of Perkins V)
6. If the eligible agency will submit an application for a waiver to the secondary allocation formula described in section 131(a)—
 - a. include a proposal for such an alternative formula; and
 - b. describe how the waiver demonstrates that a proposed alternative formula more effectively targets funds on the basis of poverty (as defined by the Office of Management and Budget and revised annually in accordance with section 673(2) of the Community Services Block Grant Act (42 U.S.C. 9902(2)) to local educational agencies with the State. (Section 131(b) of Perkins V)

Also indicate if this is a waiver request for which you received approval under the prior Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV).

7. If the eligible agency will submit an application for a waiver to the postsecondary allocation formula described in section 132(a)—
 - c. include a proposal for such an alternative formula; and
 - d. describe how the formula does not result in a distribution of funds to the eligible institutions or consortia with the State that have the highest numbers of economically disadvantaged individuals and that an alternative formula will result in such a distribution. (Section 132(b) of Perkins V)

Also indicate if this is a waiver request for which you received approval under the prior Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV).

8. Provide the State's fiscal effort per student, or aggregate expenditures for the State, that will establish the baseline for the Secretary's annual determination on whether the State has maintained its fiscal

effort, and indicate whether the baseline is a continuing level or new level. If the baseline is new, please provide the fiscal effort per student, or aggregate expenditures for the State, for the preceding fiscal year. (Section 211(b)(1)(D) of Perkins V)

1. Criteria and process for approval of eligible recipient's funds

Local school systems and community colleges must complete the [CTE Comprehensive Needs Assessment](#) and [Local Application](#). The local application must address needs identified in the needs assessment. Funds are released after the MSDE reviews and approves local applications. The MSDE provides guidance through regional technical assistance and one-on-one meetings to support the completion and submission of approvable applications. Technical assistance is provided to support local recipients in understanding the content that must be included in the application and the level to which questions, data, and other criteria must be addressed in order to receive approval.

Maryland's process for local application approval begins with CTE Regional Technical Assistance meetings. The meetings are held in various parts of the state. At these meetings, local recipients are provided with Program Quality Index and Local Program Accountability Report data for their specific school system or community college. Information is shared regarding Perkins V and the local application is reviewed section by section providing local recipients with the specific information that is needed to respond to each question. All local applications must include an analysis of Program Quality Index, Local Program Accountability Report data, and local data. Local recipients must address any Core Indicators of Performance not meeting the 90% threshold and prepare an improvement plan. After the CTE Regional Meetings, the CTE Career Programs and Grants Specialists provide intense one-on-one technical assistance to local recipients regarding any clarifications or questions they may have about the local application.

Local applications and improvement plans (if required) must be received by the due date determined by MSDE. All local applications are read by a team of reviewers. Feedback is provided to local recipients and a time frame is given for making any requested changes or edits that are needed in order to make the local application approvable. Typically, the due date is mid-May with all feedback being provided to local recipients by the end of June. All revisions/edits must be submitted by July 31st in order for spending authority to be granted as of July 1.

a. Describe the criteria and process for how the eligible agency will approve eligible recipients for funds including how each eligible recipient will promote academic achievement

At the secondary level, the MSDE will use the State's academic standards to determine proficiency for CTE concentrators. At the postsecondary level, the percentage of CTE concentrators who have earned

a recognized postsecondary credentials will be used to determine proficiency. Local school systems and community colleges will be allowed to use funds to provide targeted academic support to CTE students. A clear description and evidence of effectiveness of identified support will be required in the local application.

b. Describe the criteria and process for how the eligible agency will approve eligible recipients for funds including how each eligible recipient promote skill attainment, including recognized postsecondary credentials

Local school systems and community colleges can use Perkins funds to promote skill attainment, including recognized postsecondary credentials. This includes covering the costs for tutoring, assessment fees, and other supports needed to earn credentials. CTE students must be provided equal access to take advantage of opportunities provided through Perkins funds. However, if funds are not sufficient for all students to participate, local recipients may elect to provide monetary support to cover the cost of industry-recognized credentials only to members of special populations.

c. Describe the criteria and process for how the eligible agency will approve eligible recipients for funds including how each eligible recipient will ensure local needs assessment take into consideration local economic and education needs and where appropriate, in-demand industry sectors and occupations

The MSDE developed, in collaboration with stakeholders, a [CTE Comprehensive Local Needs Assessments](#). The needs assessments requires local school systems and community colleges review the local economic, education, and occupational needs of their entity and region. Local school systems and community colleges must address identified needs in the [local application](#) for Perkins funding.

2. Describe how funds received by the eligible agency will be distributed

a. Among career and technical education at the secondary level, or career and technical education at the postsecondary and adult level, or both, including how such distribution will most effectively provide students with the skills needed to succeed in the workplace

The amount and uses of funds for CTE was informed by participants from workgroups, statewide meetings, and public comments. Items discussed in workgroups and statewide meetings included percentage of the CTE reserve fund, allocation of funds between secondary and postsecondary recipients, and whether to expand CTE programs eligible for Perkins funding. Based on public input and review of data, it was decided that funding for CTE will be allocated as follows:

- 15% of Perkins funds are retained by the MSDE for state administration and leadership.
- 85% of Perkins funds are awarded for CTE at the postsecondary and secondary levels.
 - 5% of funds are awarded through competitive reserve fund grants to support CTE at postsecondary or secondary levels.
 - 65% of the remaining amount is allocated to secondary CTE.
 - 35% of the remaining amount is allocated to postsecondary CTE.

The formula dollars in Maryland go to eligible secondary school systems and eligible community colleges. Maryland is not a state that has consortia or area technical schools that cross school district lines. Adult education is not funded under CTE in Maryland.

Postsecondary and secondary institutions are required to spend Perkins funds to address needs identified in the [Maryland CTE Comprehensive Local Needs Assessment](#). CTE reserve funds are used

to support state CTE priorities in alignment with the vision and goals for CTE and innovative CTE programs. Reserve fund grants are awarded through a competitive grant process. In addition to reserve fund grants, the state allocates funds annually in competitive grants to local school systems and community colleges for the implementation of innovative CTE programs and practices ([House Bill 1415](#)). As a result, the MSDE uses only 5% of the 85% pass through funds for the CTE reserve fund.

The MSDE and the Maryland Higher Education Commission are the sole agencies for approval over CTE programs of study at the secondary and postsecondary levels. The MSDE approves the use of funds at the secondary level. The MSDE works collaboratively with the Maryland Higher Education Commission approves the use of funds at the postsecondary level.

The MSDE will continue to comply with the required percentages identified in Perkins V to allocate funding. Consultation will continue to occur between the Maryland Higher Education Commission and the MSDE in making the decision about the allocation of funds to community colleges and school systems. Currently, Maryland does not allocate funds for Adult Education through Perkins; however, the representative from the Department of Labor, where Maryland's Adult Education programs are housed, was involved in the development of the Maryland CTE Four-Year State Plan.

The formula funds will be allocated according to the requirements of the Perkins V Act. The following will be used to determine formula allocations for secondary local recipients and postsecondary local recipients.

Secondary recipients shall receive an allocation as follows:

- *Thirty percent* shall be allocated to local school systems in proportion to the number of individuals aged 5 through 17, inclusive, who reside in the school district served by local school system for the preceding fiscal year compared to the total number of individuals who reside in the school districts served by all local education agencies in the state for such preceding fiscal year, as determined on the basis of the most recent satisfactory –(A) data provided to the Secretary by the Bureau of the Census for the purpose of determining eligibility under title I of the Elementary and Secondary Education Act of 1965; or (B) student membership data collected by the National Center for Education Statistics through the Common Core of Data survey system.
- *Seventy percent* shall be allocated to such local school systems in proportion to the number of individuals aged 5 through 17, inclusive who reside in the school district served by local school system and are from families below the poverty level for the preceding fiscal year, as determined on the basis of the most recent satisfactory data used under section 1124(c)(1)(A) of the Elementary and Secondary Education Act of 1965, compared to the total number of individuals who reside in the school districts served by all the local education agencies in the state for such preceding fiscal year.

Adjustments – Maryland, in making the allocations as previously stated, shall adjust the data used to make the allocations to (A) reflect any change in local school system boundaries that may have occurred since the data were collected; and (B) include local education agencies without geographical boundaries, such as charter schools and secondary schools funded by the Bureau of Indian Education. NOTE: Maryland's charter schools, under state statute are considered part of a local school system

and not a separate entity. Maryland does not have any secondary schools funded by the Bureau of Indian Education. Nor does Maryland have any Area Career and Technical Education Schools.

Maryland will not request, nor is currently under a waiver for, a more equitable distribution for secondary recipients. No local school system shall receive an allocation of formula funds unless the amount to the local school system is greater than \$15,000. Local school systems may enter into a consortium with other local school systems for purposes of meeting the minimum allocation, any amounts that are not allocated by this reason shall be redistributed to local school systems that meet the requirements in accordance with the provisions outlined in the Perkins V Act as referenced in Section 131.

Maryland will provide a waiver to local school systems not meeting the \$15,000 minimum amount if the local school system is located in a rural, sparsely populated area as defined by the Maryland Office of Planning and in accordance with Section 131(c)(2)(A)(i).

Postsecondary recipients, or consortium of eligible institutions, shall receive funding allocation based upon the formula of the number of audited Federal Pell Grant recipients and recipients of assistance from the Bureau of Indian Affairs enrolled in programs meeting the requirements of section 135 offered by the postsecondary institution or consortium of eligible institutions in the preceding fiscal year to the sum of the number of such audited Federal Pell Grant recipients and recipients of assistance from the Bureau of Indian Affairs enrolled in such programs within the state for such year.

Maryland will not request, nor is currently under a waiver for, a more equitable distribution for postsecondary recipients. No postsecondary institution or consortium of eligible institutions shall receive an allocation of formula funds unless the amount to such postsecondary institution or consortium of eligible institutions is \$50,000 or more; funds awarded to consortia must follow the provisions explained in Section 132(a)(3) of the Perkins V Act; any amounts that are not distributed by this reason shall be redistributed to postsecondary institutions or consortium of eligible institutions in accordance with the provisions outlined in the Perkins V Act as referenced in Section 132.

These funds will provide students the opportunity to gain skills needed to succeed in the workplace. The use of funds will be informed by analysis of state and local data, state and local needs, and input from Local Advisory Councils and Program Advisory Committees to:

- improve CTE programs of study.
- develop state CTE programs that meet current and emerging career fields based upon labor market data (current careers) and labor market projections (emerging careers) including statewide articulation agreements for such programs.
- equip classrooms and CTE laboratories with industry standard equipment and updated technology modeling the workplace.
- provide professional learning for CTE instructors and faculty.
- assist in marketing to recruit members of special populations to enroll, concentrate and complete CTE programs, especially in career fields non-traditional for their gender, assist with the recruitment of CTE teachers.
- cover the assessment fees for industry-recognized credentials for students, including members of special populations.
- provide tutoring and other supports for members of special populations.

- support individuals in state institutions in CTE programs at both state correctional institutions as well as juvenile justice facilities.
- provide technical assistance to local recipients, and other activities that are deemed beneficial to assist students with skill development for success in careers and further learning.

b. Among any consortia that may be formed among secondary schools and eligible institutions, and how funds will be distributed among the members of the consortia, including the rationale for such distribution and how it will most effectively provide students with the skills needed to succeed in the workplace

Local school systems in Maryland have never formed a consortium, either among school systems, between school systems and eligible postsecondary institutions, or among community colleges. The rationale behind this has been that all local school systems meet the minimum grant award amount. Among the 16 community colleges in Maryland, two are not eligible for formula dollars. One college has a limited number of CTE programs of study, being mostly a transfer college. The other college is a very small community college with limited Federal Pell recipients. It is unlikely that these two community colleges will form a consortium as they are not located in close proximity to each other. One is in a rural area and the other in an urban area with several hours of travel between them. If a consortium is formed, Maryland will amend its state plan to include how funds would be distributed among members of the consortia, including the rationale for such distribution and how it will most effectively provide students access to CTE programs leading to the skills needed to succeed in the workplace.

3. Provide the specific dollar allocations and how these allocations are distributed to eligible secondary recipients

The following distribution will be made to secondary recipients. In Maryland, all 24 school systems meet the requirements in the Act to be eligible to receive the federal funds.

Maryland allocates the 85% formula dollars as follows:

- 5% of the 85% are targeted for the competitive CTE Reserve Fund.
- Of the remaining balance of formula dollars, 65% is distributed to secondary eligible recipients and 35% to eligible postsecondary recipients.

The allocation is listed below:

Local School System	Allocation
Allegany County Public Schools	\$124,789
Anne Arundel County Public Schools	\$759,682
Baltimore City Public Schools	\$1,616,225
Baltimore County Public Schools	\$1,383,734
Calvert County Public Schools	\$106,638
Caroline County Public Schools	\$81,412
Carroll County Public Schools	\$172,637
Cecil County Public Schools	\$159,249
Charles County Public Schools	\$236,592
Dorchester County Public Schools	\$88,266
Frederick County Public Schools	\$315,612
Garrett County Public Schools	\$52,958
Harford County Public Schools	\$338,475
Howard County Public Schools	\$379,686
Kent County Public Schools	\$30,108
Montgomery County Public Schools	\$1,407,436
Prince George's County Public Schools	\$1,325,326
Queen Anne's County Public Schools	\$62,835
Somerset County Public Schools	\$66,062
St. Mary's County Public Schools	\$178,874
Talbot County Public Schools	\$53,316
Washington County Public Schools	\$286,882
Wicomico County Public Schools	\$250,901
Worcester County Public Schools	\$87,422

4. Provide the specific dollar allocations and how these allocations are distributed to eligible postsecondary recipients

The following distribution will be made to postsecondary recipients. In Maryland, 13 of 16 community colleges meet the requirements in the Act to be eligible to receive the federal funds. For the three that are not eligible because they do not meet the minimum threshold amount, they will be provided the opportunity to form a consortium. If a consortium is not formed by the due date for the local application, then funds will be redistributed to eligible community college recipients within the fiscal year.

Maryland allocates the 85% formula dollars as follows:

- 5% of the 85% are targeted for the competitive CTE Reserve Fund.
- Of the remaining balance of formula dollars, 35% is distributed to postsecondary eligible recipients and 65% to eligible secondary recipients.

Community College	Allocation
Allegheny College of Maryland	\$221,446
Anne Arundel Community College	\$367,540
Baltimore City Community College	\$287,039
Community College of Baltimore County	\$1,253,052
Carroll Community College	\$39,031*
Cecil Community College	\$39,031*
Chesapeake College	\$124,411
College of Southern Maryland	\$149,347
Frederick Community College	\$72,912
Garrett College	\$20,871*
Hagerstown Community College	\$217,109
Harford Community College	\$198,407
Howard Community College	\$523,663
Montgomery College	\$417,413
Prince George's Community College	\$886,054
Wor-Wic Community College	\$334,201

***Figures in red indicate minimum allocation required in the Perkins V was not met. No Perkins formula funds can be awarded.**

5. Describe how any adjustments to the data used for allocations will reflect any changes to reflect changes in school district boundaries

If local school system boundaries are changed in Maryland, adjustments will be made. This is highly unlikely because in Maryland, local school systems are determined for every county and Baltimore City, resulting in 24 secondary entities. There are no schools that are regional or shared with any other school system. All schools reside within their own school system.

6. If the eligible agency submits an application for a waiver to the secondary allocation formula include a proposal for such an alternative formula and describe how the waiver demonstrates that the proposed alternative formula more effectively targets funds on the basis of poverty

Also indicate if this is a waiver request for which you received approval under the prior Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV)

Maryland is not submitting an application for a waiver to the secondary allocation formula nor does it currently have a waiver request from any of its eligible agencies.

7. If the eligible agency will submit an application for a waiver to the postsecondary allocation formula include a proposal for such an alternative formula and describe how the formula does not result in a distribution of funds to the to the highest numbers of economically disadvantaged individuals and that an alternative formula will result in such a distribution.

Also indicate if this is a waiver request for which you received approval under the prior Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV)

Maryland is not submitting an application for a waiver to the postsecondary allocation formula nor does it currently have a waiver request from any of its eligible agencies.

8. If the eligible agency will award reserve funds to eligible recipients under section 112(c) of Perkins V, describe the process and criteria for awarding those funds.

Reserve Fund Grants are awarded on a competitive basis to school systems and community colleges meeting at least one eligibility requirement, which are:

- is located in a rural area;
- has a high percentage of career and technical education completers; or
- has a high number of career and technical education students.

Reserve fund grants are used support the implementation or enhancement of CTE programs of study, prepare students for careers, improve career and technical student organizations, or provide professional learning experiences to CTE educators, administrators, counselors, or faculty.

9. Provide the State's fiscal effort per student, or aggregate expenditures for the State, that will establish the baseline for the Secretary's annual determination on whether the State has maintained its fiscal effort, and indicate whether the baseline is a continuing level or new level. If the baseline is new, please provide the fiscal effort per student, or aggregate expenditures for the State, for the preceding fiscal year.

Maryland requested to establish a new baseline for the state's maintenance of effort in its Transition Year State Plan. Maryland's current maintenance of effort is based on aggregate expenditures. In the State Combined Annual Report (CAR), which was submitted in December 2019, the maintenance of effort listed for the state under non-federal share of expenditures (Column H) will be 95% of the previous fiscal year effort. Under Perkins V, states can request to readjust the current maintenance of effort to 95%. Maryland will readjust its maintenance of effort to 95% of the current fiscal year effort stated in the December 2019 CAR.

D. Accountability for Results

Statutory Requirements: Accountability for Results

1. Identify and include at least one (1) of the following indicators of career and technical education program quality—
 - a. the percentage of CTE concentrators (see Text Box 6 for the statutory definition of a CTE concentrator under section 3(12) of Perkins V) graduating from high school having attained a recognized postsecondary credential;
 - b. the percentage of CTE concentrators graduating high school having attained postsecondary credits in relevant career and technical education programs and programs of study earned through a dual or concurrent enrollment program or another credit transfer agreement; and/or
 - c. the percentage of CTE concentrators graduating from high school having participated in work-based learning. (Section 113(b)(2)(A)(iv)(I) of Perkins V)

Include any other measure(s) of student success in career and technical education that are statewide, valid, and reliable, and comparable across the State. (Section 113(b)(2)(A)(iv)(II) of Perkins V) Please note that inclusion of “other” program quality measure(s) is optional for States.

Provide the eligible agency’s measurement definition with a numerator and denominator for each of the quality indicator(s) the eligible agency selects to use.

2. Provide on the form in Section V.B, for each year covered by the State plan beginning in FY 2020, State determined performance levels or each of the secondary and postsecondary core indicators, with the levels of performance being the same for all CTE concentrators in the State. (Section 113(b)(3)(A)(i)(I) of Perkins V)
3. Describe the procedure the eligible agency adopted for determining State determined levels of performance described in section 113 of Perkins V, which at a minimum shall include—
 - a. description of the process for public comment under section 113(b)(3)(B) of Perkins V as part of the development of the State determined levels of performance (see Text Box 7 for the statutory requirements for consultation on State determined performance levels under section 113(b)(3)(B) of Perkins V);
 - b. explanation for the State determined levels of performance that meet each of the statutory requirements in Text Box 8; and
 - c. description of how the State determined levels of performance set by the eligible agency align with the levels, goals and objectives other Federal and State laws, (Section 122(d)(10) of Perkins V).

As part of the procedures for determining State determined levels of performance, describe the process that will be used to establish a baseline for those levels.

4. Provide a written response to the comments regarding State determined performance levels received during the public comment period pursuant to section 113(b)(3)(B) of Perkins V. (Section 113(b)(3)(B)(iii) of Perkins V).

As part of the written response, include a description of any the changes made to the State determined performance levels as a result of stakeholder feedback.

5. Describe how the eligible agency will address disparities or gaps in performance as described in section 113(b)(3)(C)(ii)(II) of Perkins V in each of the plan years, and if no meaningful progress has been achieved prior to the third program year, a description of the additional actions the eligible agency will take to eliminate these disparities or gaps. (Section 122(d)(11) of Perkins V)

As part of the written response, and pursuant to the Report of the Senate Committee on Health, Education, Labor, and Pensions (HELP),⁸ the eligible agency could indicate that it will analyze data on the core indicators of performance to identify gaps in performance, explain how they will use evidence-

based research to develop a plan to provide support and technical assistance to eligible recipients to address and close such gaps, and how they will implement this plan. The eligible agency is not required to submit a new State plan prior to the third program year in order to address this requirement.

1. Identify and include at least one (1) of the following indicators of career and technical education program quality:

- a. the percentage of CTE concentrators graduating from high school having attained a recognized postsecondary credential
- b. the percentage of CTE concentrators graduating high school having attained postsecondary credits in relevant career and technical education programs and programs of study earned through a dual or concurrent enrollment program or another credit transfer agreement; and/or
- c. the percentage of CTE concentrators graduating from high school having participated in work-based learning

Maryland is selecting 1.a. and an additional measure for program quality called Technical Skill Attainment.

Core Indicator of Performance 5S1: Program Quality – Attained Recognized Postsecondary Credential

The percentage of CTE concentrators graduating from high school having attained a recognized postsecondary credential.

Numerator: Number of CTE concentrators who met or exceeded proficiency on industry standards to attain a recognized postsecondary credential (approved for a specific CTE program) and who, in the reporting year, exited from secondary education.

Denominator: Number of CTE concentrators who took an assessment aligned to industry-standards leading to attainment of a recognized postsecondary credential and who, in the reporting year, exited from secondary education.

Include any other measure of student success in career and technical education that is statewide, valid, and reliable, and comparable across the State.

Provide the State’s measurement definition with a numerator and denominator for each of the quality indicator(s) the State selects to use.

Core Indicator of Performance 5S4: Program Quality – Technical Skill Attainment

The percentage of CTE concentrators who have met state-recognized CTE standards in the program, including assessments aligned to industry standards, if available and appropriate.

Numerator: Number of CTE concentrators who met state-recognized CTE standards, including assessments aligned to industry standards and who, in the reporting year, left secondary education.

Denominator: Number of CTE concentrators who took an assessment aligned to state-recognized CTE standards and industry standards, and who, in the reporting year, left secondary education.

2. Provide on the form in Section V.B, for each year covered by the State plan beginning in FY 2020, State determined performance levels or each of the secondary and postsecondary core indicators, with the levels of performance being the same for all CTE concentrators in the State. (Section 113(b)(3)(A)(i)(I) of Perkins V)

Refer to [Appendix E](#) for each year covered by the state plan beginning in FY 2020, state determined levels of performance for each of the secondary and postsecondary core indicators, with the levels of performance being the same for all CTE concentrators in the State.

3. Describe the procedure the eligible agency adopted for determining State determined levels of performance described in section 113 of Perkins V, which at a minimum shall include—

a. description of the process for public comment under section 113(b)(3)(B) of Perkins V as part of the development of the State determined levels of performance (see Text Box 7 for the statutory requirements for consultation on State determined performance levels under section 113(b)(3)(B) of Perkins V);

The procedures employed to include input from eligible recipients in establishing the state determined level of performance for each of the core indicators of performance consisted of a series of meetings with the Accountability and Performance Targets Workgroup. This workgroup met three times over a two-month period. A statewide meeting to discuss accountability and performance targets was held on August 1, 2019. At this meeting, stakeholders representing business, industry, local school systems, postsecondary institutions, representatives of special groups, and others met to provide input on the accountability system. A 60-day public comment period on the CTE accountability system was held from August 5 to October 5, 2019. No public comments were received during that time period.

b. explanation for the State determined levels of performance that meet each of the statutory requirements

The State Accountability and Performance Targets Workgroup developed recommendations for Perkins performance measures; numerator and denominator definitions; and the levels of performance for each measure at the secondary and postsecondary level. These measures and levels of performance were reviewed by a variety of stakeholders including: directors of CTE for each local school system; community college Perkins Plan contacts, instructional, occupational and career program deans from each community college; and all state workgroup participants. Recommendations for performance measures and levels of performance on which consensus was reached were then submitted for public comment through the *Maryland Register*. All participants

were made aware that additional indicators of performance, with corresponding measures and levels of performance, could also be developed if needed.

c. description of how the State determined levels of performance set by the eligible agency align with the levels, goals and objectives other Federal and State laws, (Section 122(d)(10) of Perkins V).

Maryland designed a coherent state system of accountability by aligning Perkins V performance measures with priority measures embedded in the Maryland Every Student Succeeds Act Consolidated State Plan and the College and Career Readiness and College Completion Act of 2013. These performance measures and performance levels spanning across these state and Federal laws present a clear and consistent message to stakeholders about what outcomes are valued in increasing the career and college readiness for all students.

As part of the procedures for determining State determined levels of performance, describe the process that will be used to establish a baseline for those levels.

The approach used to establish state determined levels of performance for each of the Perkins performance measures is consistent with the state accountability approach using a growth model. Each recipient is expected to demonstrate progress (growth) on each measure, relative to their previous performance. Performance level baselines for indicators 1S1, 2S1, 2S2, 2S3 were established using the state's baselines and projections approved by the US Department of Education in the Maryland Every Student Succeeds Act Consolidated State Plan approved in January 2017. Performance level baselines for indicators 3S1, 4S1, 5S1, 5S4, 1P1, 2P1, 3P1 were established using the lower of either a three-year average (including SY2017-2018) of performance for CTE students in Maryland or the performance target previously set for the reporting year 2018-2019.

4. Provide a written response to the comments provided during the public comment period.

The MSDE provided several opportunities prior to public comment and public hearing periods for all stakeholders to provide input on the plan. An accountability and performance target workgroup was convened to review and revise as necessary performance measures and targets. The accountability section was also reviewed during breakout sessions at statewide meetings. A 60-day public comment period on the accountability section of the state plan was held from August-October. Four public hearing were also held around the state. All public hearings and comments were announced through social media, statewide meetings, e-mail, MSDE's website, and Dropbox. No comments were submitted about the accountability section during public hearings and public comment periods.

5. Describe how the eligible agency will address disparities or gaps in performance as described in section 113(b)(3)(C)(ii)(II) of Perkins V in each of the plan years, and if no meaningful progress has been achieved prior to the third program year, a description of the additional actions the eligible agency will take to eliminate these disparities or gaps

Each secondary school system and postsecondary institution will receive an annual Local Program Accountability Report and a state performance report Program Quality Index for each of the Performance Measures for the Core Indicators of Performance. These reports include trend data, state comparison points, and local performance targets given their own baseline data for use in the analysis of CTE performance and annual planning. Each recipient will be required to provide an analysis of CTE student performance and target improvement efforts in their annual application.

Appendix A: Stakeholders that Informed Plan Development

Maryland Public Meetings/Stakeholder Meetings – Registrants/Participants

Last Name	First Name	Organization Name
Akins	Carrie	Calvert County Public Schools
Alban	Theresa	Frederick County Public Schools
Alston	Trushay	Chesapeake College
Alvarez	Jaime	Community College of Baltimore County
Anderson	Angela	Prince George's Community College
Anderson	Janet	Johns Hopkins School of Medicine
Armstrong	Sandra	Community College of Baltimore County
Ashby	Bryan	Wicomico County Public Schools
Ashby	Jean	Community College of Baltimore County
Aydukovic	Robert	Maryland Center for Construction Education & Innovation
Balinski	Dawn	Maryland Association of Boards of Education
Balinski	Dawn	Calvert County Board of Education
Bannerman	Quiana	Prince George's County Public Schools
Barber	John	Keystone Mountain Lakes Carpenters
Barnes	Johari	Community College of Baltimore County
Barron	Tamara	Maryland Department of Labor
Barth	Heidi	Community College of Baltimore County
Beck	Michael	Maryland State Department of Education
Beckford	Carla	Johns Hopkins Bayview Medical Center
Belcher	Natalie	Howard County Public Schools
Bell	Jaime	Community College of Baltimore County
Belton	Nicassia	Maryland State Department of Education
Berhane	Yonas	Howard Community College
Blaylock	Arlene	Montgomery College
Blum	Judy	Community College of Baltimore County
Booker-Dwyer	Tiara	Maryland State Department of Education
Bouis	Jay	Community College of Baltimore County
Boyle	Michael	St. Mary's County Public Schools
Brace	Todd	Anne Arundel Medical Center
Breiterman	Regina	Montgomery County Public Schools
Brereton	Chelsea	Hagerstown Community College
Brice	Keith	Prince George's County Public Schools
Brown	Christine	Harford Community College
Brown	Clary	Montgomery College
Brown	Erin	Maryland Business Roundtable for Education

Last Name	First Name	Organization Name
Buckel	Mark	Kent County Public School
Butt	Michelle	Associated Builders & Contractors, Inc.
Cadet	Jean-Paul	Prince George's County Public Schools
Cahlink-Seidler	Nancy	Maryland State Department of Education
Cambra	Alexandra	Maryland State Department of Education
Campbell	Katie	Harford County Public Schools
Canan	Candy	Allegany County Public Schools
Carnaggio	Denise	Harford Community College
Carr	Dwight	Johns Hopkins University Applied Physics Laboratory
Carroll	Nona	Maryland Business Roundtable for Education
Carter	Stephen	Mid-Atlantic Center for Emergency Management
Chappelear	Traci	Charles County Public Schools
Cherry	Emilie	Community College of Baltimore County
Clinedinst	Allen	Plumbers and Steamfitters Local 486
Collins	Joseph	Harford County Public Schools
Corona	Tara	Maryland State Department of Education
Cousins	Steve	Home Builders Institute
Cyran	Victor	Harford Community College
Davenport	Michael	Baltimore Gas and Electric (BGE)
Davis	Renee	Frederick Community College
De Marco	Donna	Building Congress & Exchange of Metropolitan Baltimore
Dean	Miles	Cecil College
Dennis	Scott	Maryland State Department of Education – Division of Rehabilitation Services
DeStefano	Christine	Community College of Baltimore County
Devlin Hackett	Elizabeth	Chesapeake College
Dewling	Anita	Anne Arundel Economic Development Corporation
DiGiacomo	Michael	Governor's Workforce Development Board
Donlick	Jeanne	Harford County Public Schools
Dow	Emily	Maryland Higher Education Commission
Drury	Mark	Shapiro & Duncan, Inc.
Dryer	Christy	Cecil College
Dulay	Brian	Maryland Business Roundtable for Education
Durant	Lateefah	Prince George's County Public Schools
Eckles	William	Carroll County Public Schools
Edge III	Arthur	Glaxo Smith Kline
Edwards	Paul	Garrett County Public Schools
Eger	Sara	Anne Arundel Community College
Elliott	Don	Community College of Baltimore County

Last Name	First Name	Organization Name
Ellis	Tom	Chesapeake College
Emmel	Judi	National Security Agency
Eppig	Peggy	Maryland Agriculture Education Foundation
Ewing	Sara	Anne Arundel County Public Schools
Eyer	Brian	Maryland State Department of Education
Farmer	Stephanie	Maryland Association of Secondary School Principals
Flewelling	Colleen	Cecil College
Floyd	Genevieve	Montgomery County Public Schools
Francis	Kathy	Mid-Atlantic Center for Emergency Management
Friday	Linda	Queen Anne's County Chamber of Commerce
Friday	Marquita	Maryland State Department of Education
Gale	Melodie	Howard Community College
Gallagher	Susan	Anne Arundel Community College
Garland	Steven	Washington County Public School
Geness	Simone	Montgomery County Public Schools
Gilli	Lynne	Maryland State Department of Education
Gillmeister	Kristina	Anne Arundel County Public Schools
Gingerich	Jade	Maryland Department of Disabilities
Gowe	Elena	Chesapeake College
Grayson	Candice	Community College of Baltimore County
Greene	Debra	Howard Community College
Gress	Kathy	Associated Builders & Contractors, Inc.
Grier-McGinnis	Gia	University of Baltimore Cure Scholars
Griffin	Jennifer	Maryland State Department of Education
Grimm	Lynn	Allegany College of Maryland
Gross	Don	GROCO, Inc
Gross-Sutton	Robin	Baltimore City Public Schools
Grubbs	Michael	Baltimore County Public Schools
Gumaer	Amy	Montgomery College
Hackett	Elizabeth	Chesapeake College
Hall	Carl	Prince George's County Public Schools
Hammond	Anita	Baltimore Alliance for Careers in Health Care
Handy	Douglas	Baltimore County Public Schools
Harvey	Tricia	Jesco Inc
Hauswald	Nancy	Maryland State Department of Education
Hawkins	Eileen	Baltimore City Community College
Hess	Robert	Community College of Baltimore County
Hill	Miranda	Maryland State Department of Education

Last Name	First Name	Organization Name
Hines	Kermit	Dorchester County Public Schools
Hodges	Gregory	STEM Equity Initiative, Inc.
Hohrein	Jean	Dorchester County Public Schools
Holly	Jeanne-Marie	Maryland State Department of Education
Howell	Keena	Maryland Association of Pupil Personnel
Howie	Anna	Talbot County Public Schools
Hutson	Kathy	National Security Agency
Jackson	Denisha	National Security Agency
Jackson	Kirsten	Montgomery County Public Schools
Jeffery	Scott	Community College of Baltimore County
Jester	Richard	Harford County Public Schools
Johnson-Bey	Charles	Lockheed Martin
Jones	Trevor	Wor-Wic Community College
Judkins	Jennifer	Maryland State Department of Education
Jurch	Steve	Community College of Baltimore County
Kahler	Jason	Maryland State Department of Education
Kallis	Jody	Maryland Association of Community Colleges
Kane	Andrea	Queen Anne's County Board of Education
Keckley	Joseph	Anne Arundel County Public Schools
Kelleher	Patrick	Community College of Baltimore County
Kendall	Dean	Maryland State Department of Education
Kendzierski	Douglas	Community College of Baltimore County
Kilbourne	Jennifer	Community College of Baltimore County
Kiphart	Michael	Maryland Higher Education Commission
Koermer	Kelly	Harford Community College
Koontz	Julie	Carroll County Public Schools
Kramer	Sharon	Howard County Public School System
Kremer	Deborah	Anne Arundel County Public Schools
Lang, III	John	Council of Educational, Administrative & Supervisory Organizations of Maryland
Langer	Debbie	Maryland State Department of Education
Lanham Tarason	Felicia	Maryland State Department of Education
Leach	Marci	Chesapeake College
Lee	Walter "Skip"	Anne Arundel County Public Schools
Levy	Mitchell	College of Southern Maryland
Liccione	Laura	Maryland State Department of Education
Lichter	Debra	Maryland State Department of Education
Limpert	Robert	Harford County Public Schools
Lindsay	Dawn	Anne Arundel Community College

Last Name	First Name	Organization Name
Link	Dina	Montgomery County Public Schools
Lohnes	Marjorie	Maryland Career and Technology Association
London	Rachel	Maryland Developmental Disabilities Council
Longest	Jon	Chesapeake College
Loveland	Thomas	University of Maryland Eastern Shore
Magloire	Nancy	Prince George's County Public Schools
Makinen	Carla	Wor-Wic Community College
Manigault	Mike	Home Builders Institute
Mandl	Donna	Community College of Baltimore County
Marks	Janice	Howard Community College
Mayo	George	Maryland Agricultural Education Foundation
McCauslin	Angela	Carroll County Public Schools
McCulloch	Champe C.	Associated General Contractors of America-MD Chapter
McFadden	Ebony	Baltimore City Community College
McGaughey	Norm	Frederick County Public Schools
McGuirk	Jeanne	Northrop Grumman
McLaughlin	Jack	Community College of Baltimore County
McNett	Edward	Carroll County Public Schools
McRoberts	Christopher	Community College of Baltimore County
Meadows	Kelly	Maryland State Department of Education
Mesnard	Molly	Governor's Workforce Development Board
Meyer	Patricia	Frederick Community College
Michel	Joan	Profile Partners
Miller	David	Maryland Agriculture Education Foundation
Miller	Erik	Community College of Baltimore County
Minor	Rebecca	Community College of Baltimore County
Minter	Mary	Maryland State Department of Education
Mitzel	Ed	Maryland State Department of Education
Moore	Melody	Carroll Community College
Moore	Wendy	Washington County Public Schools
Moreno	Rhonda	Montgomery County Public Schools
Morgan	Kathy	Carroll County Public Schools
Morrell	Claudia	STEM Equity Initiative, Inc.
Moylan	Susan	Community College of Baltimore County
Muller	Lynne	Maryland State Department of Education – Student Services
Murphy	Maureen	College of Southern Maryland
Naughton	Brandy	Harford Community College
Navarro	Kristin	Howard Community College

Last Name	First Name	Organization Name
Nichols	Scott	Maryland State Department of Education
O'Connor	Mary	Maryland State Department of Education
O'Neal	Keith	Somerset County Public Schools
Oshitoye	Osh	Maryland State Department of Education
Paparounis	Tom	Alban CAT
Parr	Nicole	Cecil County Public Schools
Payne	George	Montgomery College
Pearl	Kristine	Frederick County Public Schools
Pearson	Rebecca	Charles County Public Schools
Peisach	Betsy	Maryland Public Television
Pfeifer	Rachel	Baltimore City Public Schools
Pfundstein	Thomas	Finishing Trades Institute International
Phillips	Brian	Worcester County Public Schools
Pierce	Jill	Maryland State Department of Education
Pine	Cody	Washington County Public School
Place	Candace	Anne Arundel Community College
Powell	Ruth	Maryland State Department of Education
Prouty	Douglas	MD State Education Association
Pugh	Peggy	Washington County Public Schools
Ringgold	Tonja	Baltimore City Community College
Roa	Nina	Maryland State Department of Education
Rocks	William	Allegany College of Maryland
Ross	Christine	Maryland Chamber of Commerce
Sawyers	AnaLysa	Maryland Business Roundtable for Education
Schmickley	Sharon	Howard Community College
Schoenberg	Corrie	Fund for Educational Excellence
Schulman	Roger	Fund for Educational Excellence
Scott	Carolynnette	Maryland Department of Labor, Licensing and Regulation
Scurry	Ebony	Eidolon Career Solutions
Selby	Tricia	Anne Arundel Community College
Shank	Teresa	Maryland Agriculture Education Foundation
Shell	Nickisha	Prince George's County Public Schools
Shoemaker	Korbin	Frederick County Public Schools
Silberquit	Paul	Wor-Wic Community College
Simmons	Greg	University of Maryland Baltimore County
Smith	Gene	Caroline County Public Schools
Smith	Jeffrey	Maryland Department of Labor
Smith	Joyce	Maryland Business Roundtable for Education

Last Name	First Name	Organization Name
Smith	Nancy	Community College of Baltimore County
Snowden	Daphne	Baltimore City Community College
Snowden	Yvette	Maryland Community College Association for Continuing Education and Training
Solembrino	Karie	Wor-Wic Community College
Somerville	Shawn	Maryland Association of Secondary School Principals
Spain	Kathleen	Anne Arundel Community College
Sprague	Christina	Charles County Public Schools
Spross	Sarah	Maryland State Department of Education
Spruill	Regina	Prince George's County Public Schools
Staton	Danielle	Fund for Educational Excellence
Stewart	Latellya	Chesapeake College
Stulz	Diane	Worcester County Public Schools
Summers	Leah	Alban CAT
Tara Scurry	Ebony	Maryland Career Development Association
Tarasuk	Maria	Montgomery County Public Schools
Taylor	Jazmone	The Parents' Place of Maryland
Taylor	LiLi	Maryland Department of Labor
Thomas	Michael	Baltimore City Community College
Thompson	Morrall	Maryland State Department of Education
Thorn	Christopher	Maryland Business Roundtable for Education
Tolley	Adam	Queen Anne's County Public Schools
Trexler	Mark	Johns Hopkins School of Education
Turner	Patti	Howard Community College
Turner	Paula	Dorchester County Board of Education
Venters	Ricky	Johns Hopkins University
Verzi	Traci	Maryland State Department of Education
Vitalo	Alex	Maryland Public Television
Wallace	Charles	Maryland State Department of Education
Wang	Li	Maryland State Department of Education
Warren	Lisa	College of Southern Maryland
Washington	Adrienne	Prince George's Community College
Wilding	Mark	Calvert County Public Schools
Wildy	Denise	Maryland State Department of Education
Williams	Natalie	Maryland Business Roundtable for Education
Wolfe	Stanley	Baltimore City Public Schools
Woo	Minah	Howard Community College
Wyatt	Jeffrey	Maryland State Department of Education, Early Intervention and Special Education Services

Last Name	First Name	Organization Name
Yoder	Julie	Garrett College
Young	Ken	Maryland State Department of Education
Zhang	Lili	Community College of Baltimore County
Ziegler	Tonia	Prince George's County Public Schools
Ziobro	Marie	Mercy Medical Center

Appendix B: CTE Comprehensive Local Needs Assessment

Stakeholders Required to Participate in the Development of the CTE Comprehensive Local Needs Assessment and Application

The CTE comprehensive local needs assessment and application are designed to be completed by a team and informed by data. Perkins V requires the follow stakeholder groups to participate in the development of the needs assessment and application.

- Representatives from CTE programs of study at the secondary and postsecondary levels. This includes principals, administrators, faculty, teachers, professional career and academic counselors, instructional support personnel, and paraprofessionals.
- Representatives from state or local workforce development boards.
- Representatives from local businesses and industries that align with CTE programs of study.
- Representatives from parent and student groups.
- Representatives from agencies serving at-risk, homeless, and out-of-school youth.
- Representatives of [special populations](#)¹.

The stakeholder team will:

1. Analyze all data and information pre-populated by the state and gathered locally to identify areas of promise and opportunities for growth within CTE programs of study.
2. Prioritize needs based on data to inform the use of Perkins V funds.
3. Support the development of the local application to address prioritized needs.
4. Engage in on-going consultation to inform improvements to CTE programs of study. Evidence of on-going consultation will be collected during monitoring visits.

In addition to the core stakeholder team, local school systems and community colleges are required to assess regional needs for CTE. Each individual school system and community college will complete components one-four of their CTE local comprehensive needs assessment with their stakeholder teams. Each region will then bring their needs assessment to the Regional Joint Assessment of Needs Team to analyze the collective needs of the region based on the outcomes of each individual school system and community college needs assessment. The Regional Joint Assessment of Needs Team will collectively respond to questions in component five of the CTE comprehensive needs assessment. Assignment of regions is found in the [Regional Joint Assessment of Needs Team table](#).

¹According to Perkins V, special population means:

- a. individuals with disabilities;
- b. individuals from economically-disadvantaged families, including low-income youths and adults;
- c. individuals preparing for non-traditional fields;
- d. single parents, including single pregnant women;
- e. out-of-workforce individuals;
- f. English learners;
- g. homeless individuals as described in the McKinney Vento Act;
- h. youth who are in, or have aged out of, the foster cares system; and
- i. youth with a parent who
 - i. is a member of the armed forces; and
 - ii. is on active duty.

Regional Joint Assessment of Needs Team Assignments

School System	Community College
Allegany Public Schools	Allegany College
Anne Arundel Public Schools	Anne Arundel Community College
Baltimore City Public Schools	Baltimore City Community College
Baltimore County Public School	Community College of Baltimore County
Calvert County Public Schools Charles County Public Schools St. Mary's County Public Schools	College of Southern Maryland
Carroll County Public Schools	Carroll Community College
Cecil County Public Schools	Cecil College
Frederick County Public Schools	Frederick Community College
Garret County Public Schools	Garret Community College
Harford County Public Schools	Harford Community College
Howard County Public Schools	Howard Community College
Montgomery County Public Schools	Montgomery College
Prince George's County Public Schools	Prince George's Community College
Dorchester County Public School Kent County Public Schools Queen Anne's Public Schools Caroline County Public Schools Talbot County Public Schools	Chesapeake College
Worcester County Public Schools Somerset County Public Schools Wicomico County Public Schools	Wor-Wic Community College
Washington County Public Schools	Hagerstown Community College

Complete the [stakeholder table](#) to identify individuals that will support the completion of the CTE comprehensive local needs assessment and application. Also, identify individuals that will participate on the regional Joint Assessment of Needs Team. One stakeholder cannot represent more than two groups. One representative from postsecondary and secondary should serve as coordinators for the Joint Assessment of Needs Team. The coordinators will be charged with organizing and facilitating collaborative meetings.

Stakeholder Table: Identify stakeholders that will support the development of the CTE comprehensive local needs assessment and application. Identify if an individual also served on the Regional Joint Assessment of Needs Team. Additional rows can be added to the table as needed.

Stakeholder Group	First and Last Name	Organization	Title	Email	Select the team(s) in which the stakeholder participated
Postsecondary Coordinator					Needs Assessment <input type="checkbox"/> Joint Assessment of Needs <input type="checkbox"/> Local Application <input type="checkbox"/>
Secondary Coordinator					Needs Assessment <input type="checkbox"/> Joint Assessment of Needs <input type="checkbox"/> Local Application <input type="checkbox"/>
Postsecondary Level Administration (Perkins Coordinator, Chair, Dean, etc.)					Needs Assessment <input type="checkbox"/> Joint Assessment of Needs <input type="checkbox"/> Local Application <input type="checkbox"/>
Secondary School-Level Administration (Principal, Assistant Principal, etc.)					Needs Assessment <input type="checkbox"/> Joint Assessment of Needs <input type="checkbox"/> Local Application <input type="checkbox"/>
Postsecondary Faculty					Needs Assessment <input type="checkbox"/> Joint Assessment of Needs <input type="checkbox"/> Local Application <input type="checkbox"/>
Secondary Teacher(s)					Needs Assessment <input type="checkbox"/> Joint Assessment of Needs <input type="checkbox"/> Local Application <input type="checkbox"/>
Professional Career Counselor(s)					Needs Assessment <input type="checkbox"/> Joint Assessment of Needs <input type="checkbox"/> Local Application <input type="checkbox"/>
Professional Academic Counselor(s)					Needs Assessment <input type="checkbox"/> Joint Assessment of Needs <input type="checkbox"/> Local Application <input type="checkbox"/>
Instructional Support Personnel					Needs Assessment <input type="checkbox"/> Joint Assessment of Needs <input type="checkbox"/> Local Application <input type="checkbox"/>
Paraprofessional(s)					Needs Assessment <input type="checkbox"/> Joint Assessment of Needs <input type="checkbox"/> Local Application <input type="checkbox"/>

Special Populations Representative(s)					Needs Assessment <input type="checkbox"/> Joint Assessment of Needs <input type="checkbox"/> Local Application <input type="checkbox"/>
Parent(s)					Needs Assessment <input type="checkbox"/> Joint Assessment of Needs <input type="checkbox"/> Local Application <input type="checkbox"/>
Student(s)					Needs Assessment <input type="checkbox"/> Joint Assessment of Needs <input type="checkbox"/> Local Application <input type="checkbox"/>
Agency(ies) Serving At-risk, Homeless, and Out-of-school Youth					Needs Assessment <input type="checkbox"/> Joint Assessment of Needs <input type="checkbox"/> Local Application <input type="checkbox"/>
State or Local Workforce Development Board					Needs Assessment <input type="checkbox"/> Joint Assessment of Needs <input type="checkbox"/> Local Application <input type="checkbox"/>
Local Business or Industry that Align with CTE Programs of Study					Needs Assessment <input type="checkbox"/> Joint Assessment of Needs <input type="checkbox"/> Local Application <input type="checkbox"/>
Data Analyst					Needs Assessment <input type="checkbox"/> Joint Assessment of Needs <input type="checkbox"/> Local Application <input type="checkbox"/>

Career and Technical Education Local Application 2020-2021

Please complete the information below. The local application must be submitted to the Division of Career and College Readiness by **May 1, 2020**.

Date Submitted:

Local School System:

Community College:

Purpose of the CTE Comprehensive Local Needs Assessment

The needs assessment is designed to support local school systems and community colleges in identifying areas of promise and opportunities for growth within CTE programs of study. It is highly recommended that the needs assessment is done with a [root cause analysis](#) to address underlying performance problems. The ultimate goal is to engage in a [continuous improvement cycle](#) that will support student success in postsecondary study and careers.

The needs assessment is required as part of the [Strengthening Career and Technical Education for the 21st Century Act](#) (Perkins V). Local school systems and community colleges are required to submit a needs assessment once every two years.

Steps to Complete the CTE Comprehensive Local Needs Assessment

There are eight steps to the process for assessing and evaluating the CTE Comprehensive Local Needs Assessment. Data for the needs assessment for all school systems and community colleges is found in the [CTE Trend Analysis](#) and [Labor Market Data Dashboards](#).

1. Review and evaluate MSDE-provided CTE [dashboard trend data](#) on access and equity; identify areas of promise and areas needing improvement.
2. Review and evaluate MSDE-provided CTE dashboard trend data on student/program performance; identify areas of promise and areas needing improvement.
3. Evaluate each CTE program of study against the [size](#) criteria; identify programs not meeting criteria and the specific criterion in the program not being met.
4. Evaluate each CTE program of study against the [scope](#) criteria; identify programs not meeting criteria and the specific criterion in the program not being met.
5. Evaluate each CTE program of study against the [quality](#) criteria; identify programs not meeting criteria and the specific criterion in the program not being met.
6. Review MSDE-provided [high-skill](#), [high-wage](#), and/or [in-demand](#) occupation-to-program alignments; identify programs not meeting at least one criterion.
7. Identify cooperative actions that emerged from the [Joint Assessment of Needs Team](#).
8. From steps one-through-seven, compile and prioritize a list of needs/gaps based on items identified in each step as areas of promise and areas needing improvement. Use this prioritized list for developing [Plans of Action](#) for Perkins funding.

Point of Contact for the CTE Comprehensive Local Needs Assessment

Questions about the needs assessment may be directed to:

Dr. Nicassia Belton

Director of Data and Accountability for Career Programs

Nicassia.Belton@Maryland.gov

410-767-0186

Review and Analyze the Pre-Populated State-Collected CTE Participant Enrollment and Concentrator Performance Data

The CTE comprehensive local needs assessment [dashboard](#) identifies the percentage of students who participated in CTE programs of study by student groups. It also identifies student outcomes on core performance indicators of CTE concentrators who have exited by student group and cluster as defined in Perkins V and the [Every Student Succeeds Act](#) (ESSA). It is recommended that [Equity and Excellence, A Guide to Educational Equity in Maryland](#) be used as a guide to inform access and equity priorities.

Secondary Core Performance Indicators:

- 1S1: Four-Year Graduation Rate
- 2S1: Academic Proficiency in Reading/Language Arts
- 2S2: Academic Proficiency in Mathematics
- 2S3: Academic Proficiency in Science
- 3S1: Postsecondary Placement
- 4S1: Non-traditional Concentrator Enrollment
- 5S1: Recognized Postsecondary Credential Attainment
- 5S4: Technical Skill Attainment

Postsecondary Core Performance Indicators:

- 1P1: Postsecondary Retention and Placement
- 2P1: Credential, Certificate or Degree
- 3P1: Non-traditional Concentrator Enrollment

Concentrators at the secondary level are defined as students who completed two courses in a single CTE program of study and have enrolled in the third sequential course in a single CTE program of study. Concentrators at the postsecondary level are defined as students who have earned at least 12 credits in a CTE program of study or completed such a program if the program encompasses fewer than 12 credits or the equivalent in total. Required student groups are identified by gender, race and ethnicity, and special populations².

The Division of Career and College Readiness has provided a [public dashboard](#) showing seven data sets:

1. CTE Enrollment by Race
2. CTE Enrollment by Gender
3. CTE Enrollment by Special Population
4. CTE Access and Equity Trends by Special Population
5. CTE Performance by Race
6. CTE Performance by Gender and Special Population
7. CTE Program Alignment to Labor Market

CTE Enrollment by Race

² Due to limited data at this time, some special population student group data are not available for use with the FY 2021 Perkins Application. These groups include single parents, out-of-workforce individuals, homeless individuals, foster care individuals, and youth with an active-duty parent.

An example of CTE participant percentage enrollment by race, disaggregated by student group and career cluster, is provided in [Table 1](#). Using percentages rather than numbers allows this data to be publically displayed. Local school systems and community colleges provide the Division of Career and College Readiness with the raw numbers for this data, each school system and college can refer to its own enrollment reports if more detailed data on specific schools, programs, or numbers are needed.

In [Table 1](#), the first column for each fiscal year displays the percentage of the student group in the identified cluster only (the individual cluster’s student group enrollment divided by total individual cluster’s enrollment). The second column for each fiscal year displays the percentage of the student group enrollment across all CTE clusters (the total student group in all clusters divided by total CTE enrollment). The third column for each fiscal year calculates the difference between the first two columns (student group race enrollment solely within the cluster compared to student group race enrollment across all CTE clusters). The third column provides the statistical disparity between an individual cluster versus all clusters to show how each cluster compares to all CTE enrollment in the local school system or community college. Blank fields indicate that no data was provided. The complete set of data for each school system and community college can be found on the CTE comprehensive local needs assessment [dashboard](#).

Table 1: CTE Enrollment by Race *Example*

Career Cluster / Student Group	2017			2018			2019		
	% of Student Group in Identified Career Cluster	% of Student Group in all Career Clusters	% Equity	% of Student Group in Identified Career Cluster	% of Student Group in all Career Clusters	% Equity	% of Student Group in Identified Career Cluster	% of Student Group in all Career Clusters	% Equity
Construction & Development									
American Indian	0.2	0.3	0.2	0.1	0.3	0.2	0.4	0.4	0.0
Asian	3.5	7.4	3.9	3.7	8.0	4.2	3.0	7.3	4.3
Black	36.5	43.4	6.9	35.9	41.7	5.8	34.9	42.4	7.4
Hispanic	10.9	6.8	4.0	14.1	8.8	5.3	11.2	10.2	1.0
Multi Race	2.6	3.2	0.6	3.7	3.8	0.0	4.0	3.9	0.1
White	46.4	38.7	7.7	42.4	37.3	5.1	46.5	35.8	10.7

Table 1A provides a graphic representation³ of equity disparities (gaps) identified in Table 1.

Green indicates that the disparity is less than 5%,

Yellow indicates that the disparity is from 5%-to-10%, and

Purple indicates that the disparity is more than 10%.

Table 1A: Access and Equity Trends for Students of Different Races *Example*

Cluster	2017	2018	2019
Construction and Development			
American Indian	●	●	●
Asian	●	●	●
Black	●	●	●
Hispanic	●	●	●
Multi Race	●	●	●
White	●	●	●

³ Graphic representations are only intended as statistical indicators of possible equity disparities. Local school systems and community colleges should research the “purple” (and possibly “yellow”) disparities using program quality index and local data to determine whether the identified data-driven “gaps” are high priorities that could be addressed in at least one Plan of Action using Perkins V funds.

CTE Enrollment by Gender

An example of CTE participant enrollment by gender, also disaggregated by student group and career cluster, is provided in [Table 2](#). Similar to [Table 1](#), the first column for each fiscal year exhibits the percentage of the student group only in the identified cluster. The second column for each fiscal year exhibits the percentage of the student group across all CTE clusters. The third column for each fiscal year calculates the difference between the first two columns to obtain an indicator of statistical disparity. These data are solely based on gender enrollment comparisons and should not be confused with data on nontraditional students that only takes into account programs in nontraditional occupations. Enrollment by Gender provides data for all programs in all clusters regardless of nontraditional status. The complete set of data for each school system and community college can be found on the CTE comprehensive local needs assessment [dashboard](#).







Table 2: CTE Enrollment by Gender *Example*

Career Cluster / Student Group	2017			2018			2019		
	% of Student Group in Identified Career Cluster	% of Student Group in all Career Clusters	% Equity	% of Student Group in Identified Career Cluster	% of Student Group in all Career Clusters	% Equity	% of Student Group in Identified Career Cluster	% of Student Group in all Career Clusters	% Equity
Information Technology (IT)									
F (female)	8.33	48.0	39.6	15.0	55.4	21.2	50.0	49.1	0.9
M (male)	91.67	52.0	39.6	85.0	44.6	21.2	50.0	50.9	0.9

[Table 2A](#) provides a graphic representation of equity disparities (gaps).

- Green** indicates that the disparity is less than 10%,
- Yellow** indicates that the disparity is from 10% -to- 20%, and
- Purple** indicates that the disparity is more than 20%.

Table 2A: CTE Access and Equity Trends for Students of Different Genders *Example*

Cluster	2017	2018	2019
<input type="checkbox"/> Information Technology			
F			
M			

CTE Enrollment by Special Population

Secondary and Postsecondary Enrollment by Special Population has three student groups: Economically Disadvantaged, English Learners, and Students with Disabilities. Due to limited data at this time, some special population student group data are not available for use with the fiscal year 2021 Perkins application. Three-year trend data is displayed in a similar manner as data in Tables [1](#) and [2](#). The complete set of data for each school system and community college can be found on the CTE comprehensive local needs assessment [dashboard](#).

Table 3: Economically Disadvantaged (ED) Students *Example*

Career Cluster	2017			2018			2019		
	% of Student Group in Identified Career Cluster	% of Student Group in all Career Clusters	% Equity	% of Student Group in Identified Career Cluster	% of Student Group in all Career Clusters	% Equity	% of Student Group in Identified Career Cluster	% of Student Group in all Career Clusters	% Equity
Consumer Services Hospitality & Tourism	36.0	22.0	14.0	36.9	22.6	14.3	24.5	24.2	0.3
Environmental Agriculture & Natural Resources	25.4	22.0	3.5	24.1	22.6	1.5	23.7	24.2	0.4
Health & Bioscience	27.7	22.0	5.8	24.9	22.6	2.3	27.3	24.2	3.2

[Table 3A](#) provides graphic representations of equity disparities (gaps) for Economically Disadvantaged students. **Green** indicates that the disparity is less than 5%, **Yellow** indicates that the disparity is from 5% -to- 10%, and **Purple** indicates that the disparity is more than 10%.

Table 3A CTE Access and Equity Trends for Economically Disadvantaged Students *Example*










ClusterName	2017	2018	2019
⊕ Consumer Services, Hospitality and Tourism			
⊕ Environmental, Agricultural and Natural Resources			
⊕ Health and Biosciences			

Table 4: English Learners (EL) Students *Example*

Career Cluster	2017			2018			2019		
	% of Student Group in Identified Career Cluster	% of Student Group in all Career Clusters	% Equity	% of Student Group in Identified Career Cluster	% of Student Group in all Career Clusters	% Equity	% of Student Group in Identified Career Cluster	% of Student Group in all Career Clusters	% Equity
Construction & Development	0.2	1.3	1.2	1.1	3.3	2.3	1.8	3.8	2.0
Consumer Services Hospitality & Tourism	3.2	1.3	1.8	7.5	3.3	4.1	2.0	3.8	1.8
Environmental Agriculture & Natural Resources	1.6	1.3	0.3	1.5	3.3	1.8	1.1	3.8	2.8

[Table 4A](#) provide graphic representations of equity disparities (gaps) for English Learners.

Green indicates that the disparity is less than 2.5%,

Yellow indicates that the disparity is from 2.5% -to- 5%, and

Purple indicates that the disparity is more than 5%.

Table 4A CTE Access and Equity Trends for English Learner Students *Example*










ClusterName	2017	2018	2019
Construction and Development			
Consumer Services, Hospitality and Tourism			
Environmental, Agricultural and Natural Resources			

Table 5: Students with Disabilities (SWD) *Example*

Career Cluster	2017			2018			2019		
	% of Student Group in Identified Career Cluster	% of Student Group in all Career Clusters	% Equity	% of Student Group in Identified Career Cluster	% of Student Group in all Career Clusters	% Equity	% of Student Group in Identified Career Cluster	% of Student Group in all Career Clusters	% Equity
Construction & Development	20.4	12.0	8.4	21.7	11.6	10.1	17.1	12.0	5.1
Consumer Services Hospitality & Tourism	12.2	12.0	0.1	14.4	11.6	2.8	11.2	12.0	0.8
Environmental Agriculture & Natural Resources	21.6	12.0	9.5	20.0	11.6	8.4	16.0	12.0	4.0










[Table 5A](#) provide graphic representations of equity disparities (gaps) for Students with Disabilities.

Green indicates that the disparity is less than 2.5%,

Yellow indicates that the disparity is from 2.5% -to- 5%, and

Purple indicates that the disparity is more than 5%.

Table 5A CTE Access and Equity Trends for Students with Disabilities *Example*

ClusterName	2017	2018	2019
Construction and Development			
Consumer Services, Hospitality and Tourism			
Environmental, Agricultural and Natural Resources			

CTE Performance by Race

Performance by Race provides three-year trend Performance Quality Index (PQI) data by cluster, disaggregated by race. It compares each cluster to the local school system’s or community college’s locally agreed upon target performance percentage for each indicator for each year. Percentages that are below 90% of the year’s target are displayed in red. [Table 6](#) shows the data for Performance Indicator 5S4 (Technical Skill Attainment) for nine clusters. *Only two trend years are displayed in this example because of space limitations.* The complete set of data for each school system and community college can be found on the CTE comprehensive local needs assessment [dashboard](#).

Table 6: CTE Secondary Performance by Race *Example*

Year	2017									2018										
	Cluster	Amer Ind	Asian	Black	Hispanic	Pacific Is	White	Multi-racial	LSS Average	Target	Amer Ind	Asian	Black	Hispanic	Pacific Is	White	Multi-racial	LSS Average	Target	
AMC		58.33	39.29				77.08		64.52	82.19		73.33	74.07					82.61	78.99	83.08
BMF									85.71	82.19								76.92	77.78	83.08
CD			72.73				82.35		78.57	82.19								86.67	88.00	83.08
CRD																			100.00	83.08
CSHT			89.29				92.86		88.64	82.19		84.78			96.00			88.46	88.46	83.08
EANR							100.00		100.00	82.19										
HB			100.00						100.00	82.19		96.43	95.74		90.00			93.55	93.55	83.08
HRS									100.00	82.19					100.00			100.00	100.00	83.08
IT			0.00						7.69	82.19									25.00	83.08

[Table 6A](#) provides a graphic representation of trend disparities (gaps).

- A **green** flag indicates that the student group met the target percentage all three years.
- A **yellow** flag indicates that the student group met the target percentage two of the three years.
- A **red** flag indicates that the student group met the target percentage one or none of the three years.
- Blank cells indicate numbers for students were less than 10.

Table 6A: Target Trend Performance for Secondary by Race *Example*

Cluster	Amer Ind	Asian	Black	Hispanic	Pacific Is	White	Multiracial	LSS Avg
AMC		Red	Red			Green		Yellow
BMF			Red			Yellow		Green
CD			Red			Yellow		Yellow
CRD								Red
CSHT			Green			Green		Green
EANR						Red		Red
HB		Yellow	Green	Red		Yellow		Green
HRS			Red			Yellow		Green
IT			Red					Red
MET			Red			Red		Red
TT			Red			Red		Red

CTE Performance by Gender and Special Population

Performance by Gender and Special Population is displayed in the same manner as [Table 6: Performance by Race](#). The table provides three-year trend Performance Quality Index (PQI) data by cluster, disaggregated by gender and special population. It compares each cluster to the local school system’s target performance percentage for each indicator for each year. Percentages that are below 90% of the year’s target are displayed in red. Table 7 shows the data for Performance Indicator 2P1 (Credential, Certificate, or Degree) for nine clusters. *Only two trend years are displayed in this example because of space limitations.* The complete set of data for each school system and community college can be found on the CTE comprehensive local needs assessment [dashboard](#).

Table 7: CTE Performance by Gender and Special Population *Example*

Report Year	2017							2018							
	Cluster	Male	Female	ED	SWD	EL	CC Avg	Target	Male	Female	ED	SWD	EL	CC Avg	Target
	AMC	36.67	42.22	42.55			40.00	64.71	44.12	33.33	42.00	40.00		38.81	64.71
	BMF	37.44	50.74	46.73	63.64	53.85	45.74	64.71	42.18	53.80	50.38	63.64	60.00	49.15	64.71
	CD	36.67	53.85	40.54			44.64	64.71	54.55	30.00	38.64			42.86	64.71
	CSHT	77.78	91.89	88.10			87.27	64.71	57.69	71.43	63.64			66.67	64.71
	EANR						80.00	64.71		84.62	83.33			80.95	64.71
	HB	68.85	84.52	80.37	60.87		81.33	64.71	52.11	60.85	60.67	62.07		59.09	64.71
	HRS	50.00	46.96	46.75			48.28	64.71	44.16	53.76	53.12	50.00		49.41	64.71
	IT	53.59	56.98	55.39	56.25		54.68	64.71	68.79	62.30	70.07			66.83	64.71

[Table 7A](#) provides a graphic representation of trend disparities (gaps).

- A **green** flag indicates that the student group met the target percentage all three years;
 - A **yellow** flag indicates that the student group met the target percentage two of the three years; and
 - A **red** flag indicates that the student group met the target percentage one or none of the three years.
- Blank cells indicate numbers for students were less than 10.

Table 7A: Target Trend Performance for by Gender and Special Population *Example*

Cluster	Male	Female	ED	SWD	EL	CC Avg
AMC	Red	Red	Red	Red		Red
BMF	Red	Red	Red	Yellow	Red	Red
CD	Red	Red	Red			Red
CSHT	Yellow	Green	Green			Green
EANR		Yellow	Yellow			Green
HB	Yellow	Green	Green	Green		Green
HRS	Red	Red	Red	Red		Red
IT	Yellow	Yellow	Yellow	Red		Yellow

CTE Career and Technical Education Program Alignment to Labor Market

CTE programs of study must meet the Perkins V criteria of being high-skill, high-wage, and/or in-demand. The Division of Career and College Readiness has evaluated all secondary and postsecondary state approved programs of study against high-skill, high-wage, and in-demand occupation criteria. The results are displayed within the [dashboard for CTE Career and Technical Education Program Alignment to Labor Market](#). [Table 8](#) displays an example of some of the secondary dashboard. The complete set of data for each school system and community college can be found on the CTE comprehensive local needs assessment [dashboard](#).

The graphic representation in the final column displays a green check if the program meets any of the three criteria. A red “x” occurs when none of the three criteria are met.

Table 8: Career and Technical Education Program Alignment to Labor Market *Example*

Maryland Approved Secondary CTE Programs	High Skill	High Wage	In Demand	CTE Program Alignment to Labor Market
110952 - IT Networking Academy (CISCO) - CCNA Cybersecurity	X	X	X	✓
110953 - IT Networking Academy (CISCO) - CCNA Cybercesurity Operations	X	X	X	✓
110960 - P-TECH: Cybersecurity	X	X	X	✓
110970 - P-TECH: Pathways in Network and Information Technology	X	X	X	✓
110980 - P-TECH: Cybersecurity Assurance and Cimputer Information Systems	X	X	X	✓
120402 - Barbering	X			✓
120410 - Nail Specialist and Manicurist			X	✓
120450 - Careers in Cosmetology	X		X	✓
120504 - Restaurant, Culinary, and Catering Management	X	X	X	✓
120550 - Culinary Arts (ACF)	X		X	✓
120555 - Baking and Pastry Arts (ACF)	X		X	✓
130150 - Teacher Academy of Maryland	X	X	X	✓
131209 - Early Childhood Education Child Development Associate - Preschool	X	X	X	✓
131210 - Early Childhood Education Child Development Associate - Infants/Toddlers	X	X	X	✓
150000 - Engineering Technology	X	X		✓
150060 - P-TECH: Engineering Technology	X	X		✓
150613 - Manufacturing Engineering Technology (MSSC)	X	X		✓
150650 - Manufacturing Engineering Technology (NIMS) - Machining Operations	X	X		✓
150651 - Manufacturing Engineering Technology (NIMS) - CNC Programming and Operations	X	X		✓
150652 - Manufacturing Engineering Technology (NIMS) - Machining/CNC Programming and Operations	X	X		✓
151350 - Construction Design and Management	X	X	X	✓
151390 - Drafting and Design Technology	X	X		✓
155000 - Pre-Engineering (PTLW)	X	X		✓
200201 - Early Childhood Education/Child Care				✗
200301 - Textile and Fashion Design, Merchandising and Management				✗
261201 - Biotechnology	X	X	X	✓
430190 - Criminal Justice, Law and Society	X	X	X	✓
430250 - Fire Emergency Medical Training/ High School Cadet (MFRI)	X		X	✓

CTE Local Needs Assessment Workbook

According to the Strengthening Career and Technical Education for the 21st Century Act, Perkins V funds may only be used to address gaps identified from the CTE Comprehensive Local Needs Assessment. The results of the needs assessment informs the content in the application submitted by local school systems and community colleges for Perkins funding. Local school systems, community colleges, business partners, and other stakeholders must collaborate to address identified needs in order to determine funding priorities.

Step 1: Access and Equity: Review, Evaluate, and Identify

Under Perkins V, local school systems and community colleges are required to provide support for special populations. Resources or supports must be directed toward the removal of barriers to student success.

Review and evaluate the three-year access and equity *enrollment trend data* to identify areas of promise and opportunities for growth and then list them in the FY 2021 Needs Assessment Collection Excel Workbook. Look for equities and inequities among student groups. Green indicators suggest an equitable alignment between enrollment in the cluster versus enrollment across all CTE clusters and purple indicators suggest inequitable alignment between enrollment in the cluster versus enrollment across all CTE clusters. Use this list to help determine Perkins V funding needs for Plans of Action. The examples that follow identify areas of promise as well as opportunities for growth.

Areas of Promise	Area of Promise Supporting Evidence
<i>Example</i> In the Health & Bioscience cluster, Hispanic student enrollment has increased and the cluster percentage is close to reflecting the same enrollment percentage in all CTE clusters.	In the Health & Bioscience Cluster, Hispanic enrollment increased from 2.7% in 2016, to 5.6% in 2018; overall enrollment in CTE for this population is 5.9% (2018).

Opportunities for Growth	Opportunity for Growth Supporting Evidence
<i>Example</i> Nontraditional enrollment in the Construction & Development cluster has decreased over the past three years.	The three-year trend data for female students in the Construction cluster has steadily decreased from 8.2% in 2016, to 3.1% in 2018.

Step 2: Program Performance: Review, Evaluate, and Identify

Under Perkins V, local school systems and community colleges are required to provide support for special populations. Resources or supports must be directed toward the reduction of performance gaps that may impact student success.

Review and evaluate the three-year access and equity *performance trend data* to identify areas of promise and opportunities for growth, and then list them in the FY 2021 Needs Assessment Collection Excel Workbook. Look for equities and inequities among student groups. Green indicators suggest an equitable alignment between enrollment in the cluster versus enrollment across all CTE clusters and purple indicators suggest inequitable alignment between enrollment in the cluster versus enrollment across all CTE clusters. Use this list to help determine Perkins V funding needs for Plans of Action. The examples that follow identify areas of promise as well as opportunities for growth.

Areas of Promise	Area of Promise Supporting Evidence
<i>Example</i> Black and white student graduation rates have increased (1S1 – Four-year Graduation Rate)	Black and white student groups surpassed local growth target for graduation rate over the last three years by 12%.

Opportunities for Growth	Opportunity for Growth Supporting Evidence
<i>Example</i> American Indian student groups did not meet 2P1 Credential, Certificate, or Degree rate targets over the last three years.	On average, only 24% of American Indian students are receiving a credential, certificate, or degree by the end of their postsecondary program.

Step 3: Program Size: Evaluate and Identify

All CTE programs of study must be sufficient in size, scope, and quality to meet the needs of all students served by local school systems and community colleges. Programs of study that do not meet size, scope and quality criteria may not be eligible for Perkins V funding.

The following size criteria table shows the required data collection that local school systems and community colleges will be providing in the FY 2021 Needs Assessment Collection Excel Workbook.

Evaluate whether all CTE programs of study meet the required size criteria below. In the FY 2021 Needs Assessment Collection Excel Workbook, list any program that does not meet all of the size criteria and identify which size criterion the program does not meet. The Plans of Action must address the manner in which the program will be revised to meet the identified criteria. In the local application, local school systems and community colleges must address programs that do not meet size criteria.

Criteria for Size			
Criteria	Evaluation Results		Programs that Do Not Meet Requirements
The local school system or community college offer at least two state-approved CTE programs of study in recognized career clusters.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	The Division of Career and College Readiness will pre-populate this box to determine if the local school system or community college meets this requirement.
Each CTE concentrator course in approved CTE programs of study must have a minimum enrollment of ten concentrators over a four year period. If this requirement is not met, the local school system or community college will provide evidence of continued progress toward increased class size to meet the minimum requirement.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
The local school system or community college have the required number of staff, availability of equipment, and access to facilities to meet requirements detailed by each program of study.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

Step 4: Program Scope: Evaluate and Identify

All CTE programs of study must be sufficient in size, scope, and quality to meet the needs of all students served by local school systems and community colleges. Programs of study that do not meet size, scope and quality criteria may not be eligible for Perkins V funding.

The following scope criteria table shows the required data collection that local school systems and community colleges will be providing in the FY 2021 Needs Assessment Collection Excel Workbook.

Evaluate whether all CTE programs of study meet the required scope criteria below. In the FY 2021 Needs Assessment Collection Excel Workbook. List any program that does not meet all of the scope criteria and identify which scope criterion the program does not meet. The Plans of Action must address the manner in which the program will be revised to meet the identified criteria. In the local application, local school systems and community colleges must address programs that do not meet scope criteria.

Criteria for Scope			
Criteria	Evaluation Results		Programs that Do Not Meet Requirements
Curricula for each program of study is aligned to state-approved industry standards that lead to students earning recognized credentials, certifications, licenses, college credit, or degrees.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Curricula for each program of study reflect a progression from secondary to postsecondary and community college to bachelor degree programs.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Curricula for each program of study allow students to learn and demonstrate academic, technical, and employability skills.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Curricula for each program of study demonstrate a continuum of learning that allows students to progress in a career field.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Curricula for each program of study include differentiated supports and modifications to meet the needs of diverse learners.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Each CTE student in each program of study has a written career and academic plan in place that includes: <ul style="list-style-type: none"> • the required courses to complete their CTE program of study; • the required courses to graduate or earn an industry credential; • the required assessments to earn a certification, license, credential, or degree in the CTE program; • the required academic or industry assessments to graduate or earn an industry credential; and • the timeline to take courses, assessments, and complete work-based learning experiences. 	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
All students, regardless of race, color, national origin, sex, or disability, have equitable access to high-quality CTE programs as required by Code of Maryland Regulation 13A.04.02.04 .	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Approved programs of study are guided by Local Advisory Councils and Program Advisory Committees according to the Career and Technical Education (CTE) Local Advisory Council (LAC) and Program Advisory Committee (PAC) Policies and Procedures COMAR EA Title 21.Sec.101 .	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

Criteria for Scope			
Criteria	Evaluation Results		Programs that Do Not Meet Requirements
<p>Local School System Only All CTE secondary programs of study adhere to CTE Development Standards which are required by Code of Maryland Regulations 13A.04.02.01</p>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

Step 5: Program Quality: Evaluate and Identify

All CTE programs of study must be sufficient in size, scope, and quality to meet the needs of all students served by local school systems and community colleges. Programs of study that do not meet size, scope and quality criteria may not be eligible for Perkins V funding.

The quality criteria table shows the required data collection that local school systems and community colleges will be providing in the FY 2021 Needs Assessment Collection Excel Workbook.

Evaluate whether all CTE programs of study meet the required quality criteria below. In the FY 2021 Needs Assessment Collection Excel Workbook, list any program that does not meet all of the quality criteria and identify which quality criterion the program does not meet. The Plans of Action must address the manner in which the program will be revised to meet the identified criteria. In the local application, local school systems and community colleges must address programs that do not meet quality criteria.

Criteria for Quality			
Criteria	Evaluation Results		Programs that Do Not Meet Requirements
The local school system or community college achieves or consistently makes progress towards local targets established for state and federal core indicators of performance.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Local School System Only CTE programs of study are delivered by teachers who meet state requirements to teach their content at the secondary level.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Local School System Only CTE programs of study are delivered by teachers who earned a minimum of effective on their teacher evaluation as defined by Code of Maryland Regulation 13A.07.09 within three years.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Community College Only CTE programs of study are delivered by faculty who meet the requirements of the institution's or programmatic accrediting body (if applicable), and the college accrediting body.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Each CTE program of study meets all the requirements of the MSDE evaluation criteria found in the Policies and Procedures for the Development and Continuous Improvement of CTE Programs of Study .	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Local School System Only For each CTE program of study, the local school system provides all students, including students in special populations, the opportunity to: <ul style="list-style-type: none"> • Participate in at least one work-based learning experience (internship, job shadow, apprenticeship, etc.); • Earn college credit and/or industry credentials; and 	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

Criteria for Quality			
Criteria	Evaluation Results		Programs that Do Not Meet Requirements
<ul style="list-style-type: none"> Participate in Career and Technical Student Organizations. 			
<p>Community College Only For each CTE program of study, the community college provides all students, including special populations, the opportunity to:</p> <ul style="list-style-type: none"> Participate in work-based learning experiences (internship, apprenticeship, etc.); and Earn college credit and/or industry credentials. 	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Professional learning opportunities, informed by data, are provided for administrators, teachers, faculty, counselors and support personnel to improve student learning outcomes. All secondary professional learning must be guided by the Maryland-endorsed National Learning Standards .	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
The local school system or community college meets local and state annual data-reporting requirements and conducts reviews of all annual Program Quality Index reports to inform program improvement.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Human resources is included in the recruitment process to ensure a diverse CTE teacher and faculty member candidate pool.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Metrics are used to ensure that CTE teacher and faculty member recruitment strategies are successful.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Teacher and faculty retention rates are reviewed annually, for the most recent 3 years, to understand the top three contributing factors to CTE teacher and faculty member turnover.	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

In the Local Application [systemic narrative](#) section, local school systems and community colleges will identify strategies to address the size, scope and quality criteria.

The Division of Career and College Readiness will conduct an audit of all CTE programs of study at the secondary and postsecondary levels during monitoring visits to collect evidence demonstrating that all requirements for size, scope and quality are being met.

Step 6: Local Workforce Needs and CTE Program Alignment

CTE programs of study must lead to careers that are high-skill, high-wage, and/or in-demand. CTE programs of study that do not lead to high-skill, high-wage, and/or in-demand careers are, according to the Perkins V Act, ineligible for funding.

Definition of High-Skill Careers

CTE programs of study that demonstrate high-skill lead to careers that:

1. Require previous work-related skills, knowledge, or experience of one or more years;
2. Have a [Specific Vocational Preparation \(SVP\)](#) rating of at least six as defined by [O*Net](#);
3. Require state or federal licensing or industry-recognized certification; or
4. Require a recognized postsecondary credential or degree.

Definition of High-Wage Careers

CTE programs of study that demonstrate high-wage are those that lead to careers that exceed the state average annual wage. The 2018 average annual wage in Maryland was \$58,770.

Definition of In-Demand Careers

CTE programs of study that demonstrate in-demand are those that lead to careers with a growth rate over ten years of at least 7% or a two-year occupational projected growth of 2.5%.

The Division of Career and College Readiness evaluated all state approved programs of study according to the high-skill, high-wage, or in-demand labor market occupation criterion. [A Labor Market Data Dashboard](#) was developed to identify CTE programs that align to the definition of high-skill, high-wage, or in-demand. A sample of dashboard is found in [Table 8](#).

Any CTE program of study that a school system or community college would like to implement that does not have state data to support the high-skill, high-wage, or in-demand occupation criteria, then the local school system or community college must provide evidence of meeting criteria. Evidence only needs to be provided for one category to be in compliance with Perkins V.

Table 9: Evidence that Locally-Developed CTE Program(s) of Study Meet High-Skill, High-Wage, or In-Demand Criteria

Program of Study	Career(s) Connected to the Program of Study	Evidence that the Program of Study Leads to a High-Skill Career(s)	Evidence that the Program of Study Leads to a High-Wage Career(s)	Evidence that the Program of Study Leads to an In-Demand Career(s)

Step 7: Joint Assessments: Collaborate and Compile

Local school systems and community colleges must collaborate on their [Joint Assessment of Needs](#) to analyze and address collective CTE needs of the region. In the FY 2021 Needs Assessment Collection Excel Workbook identify and prioritize (list) areas and opportunities that emerged from the Joint Assessment of Needs Team meeting(s) that might be jointly considered for Perkins V funding within Plans of Action. The Plans of Action may address opportunities for growth or improve upon areas of promise.

Appendix C: CTE Local Application



Division of Career and College Readiness

Career and Technical Education Local Application 2020-2021

Please complete the information below. The local application must be submitted to the Division of Career and College Readiness by **May 1, 2020**.

Date Submitted:

Local School System:

Community College:

Purpose of the CTE Local Application

The local application details how Perkins funds will be used to support CTE as informed by the needs assessment. The local application, which includes a plan of action, must be developed with a team of stakeholders and submitted annually. Approved applications will receive Perkins funding.

Components of the CTE Local Application

The CTE local application consists of four basic steps:

1. Local Vision, Mission, and Goals for CTE
2. Plans of Action
 - a. Identify Prioritized Needs and Root Causes
 - b. Develop SMART Goals and Identify Benchmarks
 - c. Describe each Plan of Action and address each SMART Goal
 - d. Complete Financial Compliance form
3. Systemic Narratives
 - a. Access and Equity
 - b. Student Performance
 - c. Size, Scope, and Quality and
 - d. Program of Study Implementation Improvement
4. Related Forms
 - a. Five-Year Plan
 - b. Budget
 - c. List of Local Advisory Council members
 - d. Financial Compliance Worksheet
 - e. Signature Pages
 - 1) Cover
 - 2) Assurances
 - 3) Certificate of Compliance
 - 4) Certification Regarding Debarment, etc.
 - 5) FY 2021 CTE Grant Information Survey

Points of Contact for the CTE Local Application

Nina Roa

Director of Finance and Legislation for Career Programs

Nina.Roa@maryland.gov

410-767-1904

Dean Kendall

Career Programs and Grants
Specialist- Region I

Dean.Kendall1@maryland.gov

410-767-0164

Nancy Hauswald

Career Programs and Grants
Specialist- Region II

Nancy.Hauswald@maryland.gov

410-767-0175

Traci Verzi

Career Programs and Grants
Specialist- Region III

Traci.Verzi@maryland.gov

410-767-0165

Section 1: Local Vision, Mission, and Goals for CTE

Identify the local school system or community college vision, mission, and goals for CTE. Priorities identified in the local application must align with the locally developed vision, mission, and goals for CTE.

Vision	
Mission	
Goals	

Section 2: Plans of Action

Each Plan of Action details the activities that will be completed to address specific needs identified in the [CTE comprehensive local needs assessment](#). Plans of action are to be completed with input from the local application stakeholder group, specifically considering the region’s collective needs based on the Regional Joint Assessment of Needs discussions.

Part 1: Identify Prioritized Needs and Root Causes

Compile, from each section of the FY 2021 Needs Assessment Collection Workbook, a prioritized list of needs that will be addressed in the local application Plans of Action. The needs must be informed by outcomes of the CTE comprehensive local needs assessment or verifiable local/third party data. For each prioritized need, a [root cause analysis](#) must be conducted to inform funding priorities.

Prioritized Needs What are the prioritized needs for CTE?	Justification from Data What data or findings from the needs assessment led the team to identify this prioritized need?	Root Causes Why does this problem exist?
Example: The percentage of CTE concentrators who have met state-recognized CTE standards in the Information Technology Career Cluster have decreased over the last three years.	Example: The needs assessment revealed that only 20% of CTE concentrators in the Information Technology Career Cluster graduate from high school having attained a recognized postsecondary or industry credential.	Example: There is a lack of access to needed equipment to prepare students for success on certification and/or licensure exams.

Part 2: Develop SMART Goals and Identify Benchmarks

Based on the prioritized needs and root causes, local school systems and community colleges will develop SMART goals. A goal must be developed for each identified need. Goals must be specific, measurable, achievable, realistic, and time-bound (SMART).

- **Specific:** Is the goal clearly defined?
- **Measurable:** Are concrete criteria identified for measuring progress toward attainment of the goal?
- **Achievable:** Does the goal stretch the local school system or community college while still being attainable?
- **Realistic:** Does the goal relate to CTE? Is it data-based?
- **Time-bound:** Is the timeframe appropriate for accomplishment of the goal?

Example

Cluster Names: IT	Program Names and CIPs: IT Networking Academy (CISCO/110950)
Schools Approved to Offer the Identified Program (secondary only): Blue High School; Green Career Center; and Purple Academy of Arts and Science	
Prioritized Need: The percentage of CTE concentrators who have met state-recognized CTE standards in the Information Technology Career Cluster have decreased over the last three years.	
SMART Goal: By June of 2021, the percentage of CTE concentrators who have met state-recognized CTE standards in the Information Technology Career Cluster will increase from 20% to 23%.	
Benchmarks What data will be used to measure progress?	Core Indicator Which CTE accountability indicator will be used as annual measure of progress?
Student performance on course assessments (formative and summative).	5S4: Program Quality – Technical Skill Attainment

Part 3: Describe the Plan of Action to Address Each SMART Goal

For each SMART goal, local school systems and community colleges must develop a plan of action that identifies what actions will be taken, the timeframe for the action, and the projected *itemized* costs.

Example

What will Happen?	When will it Happen? Month/Year
Purchase update equipment for IT Networking Academy; Provide training to teachers on use of the new equipment in instruction.	August 2020; September-October 2020

Part 4: Itemize the Budget Requests for the Plan of Action

When all Plans of Action have been completed, grant applicants will compile budget request summaries in the FY 2021 Excel Budget Narrative Summaries Workbook.

Example

Description of Non-equipment Item to be Purchased	Cost per Non-equipment Item	Number of Non-equipment items	Description of Equipment Item to be Purchased	Cost Per Equipment item	Number of Equipment Items
Dell XXXX laptops	\$840.00	25	Dell Server XXXX	\$ 5,819.00	1
IT Teacher stipends for PL	\$120.00	5			

In each Plan of Action, local school systems and community colleges must identify or include the following information:

- The Career Cluster(s) for each program of study that will receive Perkins V funds being requested. The following career cluster abbreviations may be used:
 - AMC (Arts, Media, and Communication)
 - BMF (Business Management and Finance)
 - CRD (Career Research and Development)
 - CD (Construction and Development)
 - CSHT (Consumer Services, Hospitality and Tourism)
 - EANR (Environmental, Agricultural and Natural Resources)
 - HB (Health and Biosciences)
 - HRS (Human Resource Services)
 - IT (Information Technology)
 - MET (Manufacturing, Engineering and Technology)
 - TT (Transportation Technologies)
- Program Name and CIP
- School Sites (Secondary only; use the six-digit school ID)
- Prioritized Need Addressed
- SMART Goal
- Benchmarks
- Perkins V Core Indicator(s) impacted by the planned action
- What will Happen?
- When will it Happen?
- Item identification and breakdowns (budget narratives) for all requested items to be purchased to support the planned action. Categories include:
 - Description of Non-equipment Item to be Purchased
 - Cost per Non-Equipment Item
 - Number of Non-equipment Items
 - Description of Equipment Item to be Purchased
 - Cost per Equipment Item
 - Number of Equipment Items

- Line Cost Non-equipment (self-calculating)
- Line Cost Equipment (self-calculating)

Following are screenshots of a blank Plan of Action in the FY 2021 Local Application Collection Workbook showing all of the required fields.

Plan of Action 3

Institution:		Test Institution		Total Cost ALL	Equipment
				Items	Only
				\$ -	\$ -
Cluster(s)		Program(s)/CIP(s)			
School Sites (secondary only)					
Prioritized Need Addressed					
SMART Goal:					
Benchmarks		Core Indicator(s)			
What will Happen?		When will it Happen?			

Part 5: Complete Financial Compliance Forms

Local school systems and community colleges must complete financial compliance worksheets/forms. These forms cannot be completed until all Plans of Action are complete. The Division of Career and College Readiness will provide local school systems and community colleges with the required financial compliance forms and provide technical assistance to complete them.

Postsecondary Financial Compliance Worksheet

	A	B	C
1	Total Grant Award		\$
2	Total Perkins Proposed Budget From Plans of Action		\$
3	Equipment Purchases Broken Out	\$	
4	Administrative Cost Taken (cannot exceed 5% of Total Grant Award)		\$
5	Total Budget Amount (Rows 2+4 must equal row 1 amount)		\$
6			
7	Maintenance of Effort Local/State		
8	FY2019 Reported Expenditures	\$	
9	FY2021 Estimated Expenditures	\$	

Secondary Financial Compliance Worksheet Template

	A	B	C	D
1	Administrative (Indirect and Direct) Cost The total amount for Administrative Cost (Indirect and Direct) may not exceed 5% of the total Grant Award. The total amount of equipment purchased must be subtracted from the total grant in order to determine the maximum amount allowable from which to calculate indirect cost.			
2	Total Grant Award			\$
3	Total Perkins Proposed Budget From Plans of Action	\$		
4	Allowable Indirect Cost Calculation			
5	Subtract Action Plans Equipment Purchases from Row 3	(-)		\$
6	Subtotal	(=)		\$
7	Multiply by Local Indirect Cost Rate Factor	(x)	\$	
8	Subtotal	(=)	\$	
9	Divide by Indirect Cost Adjustment	/(1+Rate)	\$	
10	Allowable Indirect Cost Amount	(=)	\$	
11	Administrative Cost Calculation			
12	Actual Indirect Cost Amount Taken (cannot exceed row 10)		\$	
13	Administrative (Direct) Cost Taken	(+)	\$	
14	Total (Indirect/Direct) Administrative Cost Taken	(=)		\$
15	Total Budget Amount (Rows 5+6+14 must equal row 2 amount)			\$
16				
17	Maintenance of Effort Local/State			
18	FY2019 Reported Expenditures		\$	
19	FY2021 Estimated Expenditures		\$	

Section 3: Systemic Narratives

Part 1: Access and Equity

Local school systems and community colleges are required to provide equitable opportunities for all students, including special populations, to experience success in CTE programs of study. Review the data and root cause analyses of the access and equity needs assessment section used to develop Plans of Action, then answer the following systemic questions.

- a. How does the local school system or community college provide equitable access for special populations to CTE courses and programs of study? Identify processes in place for special populations to learn about programs of study; enroll in programs of study; participate in work-based learning experiences; and complete programs of study.
- b. How does the school system or community college ensure that members of special populations will not be discriminated against on the basis of their status as special population students?
- c. How will student recruitment strategies be designed to improve diversity in CTE programs of study?
- d. What supports will be implemented to retain students classified as special populations in CTE programs of study?
- e. How are special population student groups being prepared to successfully transition to the workplace after completion of CTE programs of study?

Part 2: Student Performance

Local schools systems and community colleges are required to analyze student performance to identify areas of promise and opportunities for growth. Review the data and root cause analyses of the Student Performance needs assessment section used to develop Plans of Action, then answer the following systemic questions.

- a. What strategies will be used to improve CTE student performance? How can other funding sources, such as Title I, Title III, and IDEA, be used to support the academic improvement of CTE students?
- b. What strategies will be used to improve student completion of CTE programs of study?
- c. What strategies will be used to support students earning credentials, degrees, certifications, license, etc. in CTE programs of study?
- d. What strategies will be used to support recruitment of diverse students into CTE programs of study?

Part 3: Size, Scope, and Quality

Local school systems and community colleges are required to implement CTE programs of study that meet size, scope, and quality requirements. Review the data and root cause analyses of the Size, Scope, and Quality section used to develop Plans of Action, then answer the following systemic questions.

- a. How are teachers and faculty trained to meet the needs of diverse learners?
- b. How are teacher and faculty trained on standards and program curricula?
- c. For each program of study that did not meet all size, scope, and quality criteria, what are the plans that will be implemented to address the criteria not being met?

What process exists or will be implemented to ensure that approved curricula is implemented with fidelity?

- d. What supports are provided to professional counselors to advise students and families on CTE programs of study?
- e. How are CTE administrators supported in the implementation of CTE programs? This includes but is not limited to master scheduling, evaluation of CTE teachers and faculty, and inclusion of CTE in school improvement planning?
- f. How are faculty and staff supported by the local school system or community college to meet instructional or programmatic certification/licensure requirements?
- g. What opportunities are in place for students to explore and experience careers?
- h. How are students advised prior to enrolling in a CTE program of study? What processes are in place to ensure that CTE students continuously receive career and academic counseling?

Part 4: Program of Study Implementation Improvement

Local school systems and community colleges are required to analyze programs of study and determine areas of improvement. Review the needs assessment data, root cause analyses, and programs of study implementation improvement sections used to develop Plans of Action, then answer the following systemic questions.

- a. How was data used to determine current and anticipate future local employment needs?
- b. How will locally developed CTE programs of study at the school system or community level be revised to meet high-skill, high-wage, or in-demand career requirements, or how will program(s) of study be phased out?
- c. What new CTE programs of study are being developed for approval in the grant application year? How does the CTE local comprehensive needs assessment support the implementation of new programs?
- d. What is the process to determine which business and industry stakeholders are invited to participate on new Program Advisory Committees?
- e. How will the school system or community college work with employers to expand work-based learning opportunities?
- f. How will the school system or community college provide opportunities for CTE students to earn postsecondary articulated, transcribed, or proficiency credit while still attending high school?
- g. How will local school systems and community colleges work to support the recruitment, on-boarding/preparation, retention, and training/professional learning of CTE teachers, faculty, administrators, and specialized instructional support personnel?

Section 4: Appendices

Once all appendix forms are completed and all signatures have been **signed in blue ink**, scan them all together **in color** in the following order to create **one** PDF for upload to [DocuShare](#) (Perkins > Local Application > FY 2021).

1. Signature Pages
2. Grant Information Survey
3. Financial Compliance Worksheet
4. Budget
5. Five-year Planned Program Improvement Chart
6. Local Advisory Council (LAC) list

Signature Pages

Cover

Complete the local school system or community college code number and name. To find the code number, access the MDCTEdata.org CTE Performance [website](#) and click on the first dropdown menu. The code is the number that immediately precedes the school system or college name. Have this cover page **signed** and dated.

Assurances

This is an annually signed agreement affirming that the grantee will abide by the listed terms and conditions for receiving Perkins Funds. These conditions are extremely important, so please read and understand them before signing. Conditions include, but are not limited to, reporting requirements, conditions for submitting a budget amendment, and fiscal responsibilities. It must be signed and dated.

Certificate of Compliance

Endorsing this Certificate of Compliance satisfies some required application/plan elements of the Act, including but not limited to adhering to program size, scope and quality requirements; nondiscrimination; meeting needs of special populations; and collaboration between secondary and postsecondary partners. It must be signed and dated.

Debarment Form

Item #3 on the Assurances form requires that a certification regarding debarment, suspension, ineligibility and voluntary exclusion be on file with the MSDE Project Monitor. This signed form is required each year a grant is received involving Perkins funds. It must be signed and dated.

CTE Grant Information Survey

This page provides MSDE with a variety of annually updated contact information that are essential to the State's administration of grants.

Financial Compliance Worksheet

Budget

Complete **and sign the** appropriate budget forms as required for secondary or postsecondary institutions. These forms are available for download from the MSDE Blackboard CTE Leaders site.

Five-Year Planned Program Improvement Chart

Five-year plans begin with this Plan’s fiscal year and then project the next four fiscal years. The chart, which must be based on the information from the CTE Comprehensive Local Needs Assessment, is to be revised on an annual basis with a five-year goal in mind as to how improvements will be made to CTE programs over the next five years. Examples of “Major Initiatives Impacting the Program” are upgraded curriculum, new partnerships, new teachers, new program adoption, and articulation agreements. The column “Fiscal Year of Planned Action or Review” should have actions spread out over five fiscal years, and identified by the year in which the initiatives are planned to be implemented.

Local Advisory Council List

Provide a current list of Joint Local Advisory Council members. The council Chair should be the first person on the list and so identified. For each member, include the name of the business, education, or government entity they represent. Be sure that the Local Advisory Council meets [Maryland requirements](#).

Plan Approval Process

Needs assessments and applications will be reviewed by a team that is led by the Division of Career and College Readiness. Review team members may include representatives from business, industry, postsecondary institutions, professional organizations, local school systems, state agencies, and other Divisions at the Maryland State Department of Education. Feedback and technical assistance will be provided to local school systems and community colleges to get needs assessments and applications in an approvable state. Points of contact for the [needs assessment](#) and [application](#) are available at any time to provide support.

Improvement Plan *(due by 6/30/2020)*

This five-question document is required for any local school system or community college that did not meet the 90% threshold for any of the most recent Performance Indicators on the Program Quality Index (PQI). It can be downloaded from the [MSDE Blackboard](#) CTE Leaders site. After downloading, respond to all of the questions as appropriate, save, and then upload the completed document to [DocuShare](#).

1. Identify the Core Indicator(s) of Performance that did not meet the 90% threshold.
2. Analyze why the indicator was not met, including any disparities or gaps in performance between any category of students and performance of all students.
3. Indicate the section/subsection in this CTE Local Plan for Program Improvement where the improvement plan/strategy is described.
4. For each Core Indicator of Performance that was not met, describe how the Improvement Plan is being monitored to ensure progress toward meeting the 90% threshold.
5. If this is the third consecutive year that the same Core Indicator of Performance did not meet the 90% threshold, describe what new actions and strategies are being implemented to ensure progress toward meeting the 90% threshold.

Appendix D: Public Comments on the Maryland Career and Technical Education Four-Year State Plan

The MSDE regularly engaged stakeholders throughout the development of the four-year state plan through statewide meetings and workgroup sessions (refer to [Table 1](#)). As result of continued stakeholder engagement, there was only testimony provided during the public hearings. A total of nine observers attended the public hearings. By the time the Plan was published for public comment, all concerns, other than those raised in the one public testimony, had been addressed through the vetting process for Accountability, the Local Comprehensive Needs Assessment, the Local Application, and the overall CTE Four-Year State Plan. The sole testimony focused on Agriculture Education in Maryland with the state responding that, although an important focused issue, the Plan addressed all concerns on a general state level. Most of the comments are more appropriately addressed on a program-specific and local level rather than in the overarching CTE Four-Year State Plan. The testimony content follows.

**MD Career and Technical Education Four Year State Plan
Comments by David A. Miller
Director, High School and Post-secondary Education
Maryland Agricultural Education Foundation
At MSDE Public Hearing in Frederick, MD Nov. 18, 2019**

Introduce Self

Thank you for this opportunity to comment on the MSDE CTE Four Year State Plan.

The Plan appears to be very comprehensive and general in nature- not program specific, so some of my comments may well be addressed under one or more of the sections in the Plan. I read some sections more than others but not every word on every page. Eight areas of interest/concern I would briefly like to address are:

1. State and Local Advisory Councils and Committees

Previously there had been a MD CTE Advisory Council that was a great advocate for CTE programs including working with the MD legislature to secure state funding for CTE. When the Council was dissolved and folded into the MD Workforce Development Board, we lost that support. If it exists today, we are not aware of its goals and support for CTE or if they even exist. This area needs to be addressed. Also, to my knowledge there is no MD Program Advisory Committee for the curricular area of agriculture and natural resources education. The MD Council for Agricultural Education (MCAE) has offered to serve in a dual role as the AGNR (Agriculture and Natural Resources) Program Advisory Committee (PAC) but there has been no action taken by MSDE. It would appear that if local school systems are required to have LACs and PACs, the state would benefit from having both also, especially since MSDE staff continues to be reduced. Gathering input from stakeholders is important with any product or service.

2. CTE Student Organizations (CTSO)

The "soft skills" taught to students in FFA and other like CTE student organizations are extremely important to employers. Technical skills changes as business and industry and society changes but these "soft skills" serve individuals for a life time. As far as I know, program proposals submitted to MSDE require a student organization component. MSDE needs to monitor locals to assure this component of the program is in place and provide resources to help ensure such. Employers tell me they value leadership and other skills learned in FFA and will even hire people with FFA experience before they hire those who do not.

3. State-wide Support for Ag Teacher Staff Development

In Ag Education across MD most programs are one and two teacher departments and in many school systems they are the only ag teachers. Locals provide staff development for teachers but generally in broad areas such as working with special needs populations. All teachers need curriculum specific in- service on a regular basis. Thus, it is essential that ag teachers have state wide in-service through conferences, workshops, etc. and that MSDE provide resources and support for such.

4. CTE Programs for Middle and High School Students

CTE programs in MD have moved more toward serving only 10-12 grade students and in some cases only 11-12. Industry leaders continually tell us that we need to interest student in careers earlier in their schooling. Thus, the development of CTE programs at the middle school level with strong support from MSDE is badly needed. Also, at the high school level, enrolling in grade 9 is very valuable toward student development and achievement and in many cases determines whether or not they even stay in school. Grade 9 is a critical year in a student's development and education. Plus, ag education and FFA nationally strongly supports the four year model in order to strengthen student development.

5. Local Program Development

In Ag Education at the state level, I believe there are only two programs recognized by MSDE- namely CASE (with 4 options) and CPH. Agriculture, unlike automotive technology and information technology is very diversified in MD and across the country and around the world. I believe there should be more encouragement and support from MSDE for locally developed agriculture and natural resources education programs in order to serve local industry needs. All programs should however contain the three- circle national model, namely- classroom instruction, leadership development (FFA) and supervised agricultural experience (SAE) and that all three components be supported by MSDE.

6. Program Completers and Others

I advocate for students to take 1 to 4 or even more ag courses while in middle and/or high school. Each course adds to the development of the individual. I can name many students who were motivated to go into a life- long career in agriculture and natural resources because they took only 1or 2 courses in ag. All students should be provided an opportunity to take some ag courses and/or be a program completer.

7. Program Certifications

While program certifications sound like a great idea, industry in general has not placed much value on them. Since ag is such a broad field, numerous specific certifications should be encouraged and accepted by MSDE. Students can gain certification in numerous areas which will give added value to courses taken and possibly toward their employment. One general certification in agriculture would be a challenge for anyone to achieve, if it in fact could even exist. If industry certifications are a priority for MSDE, then more attention needs to be given to specific certifications. Numerous ones would add up to be of value to the student. In addition, attention needs to be given to providing creative ways for locals and students to pay for the cost of taking these tests.

8. Counselor Training on the Value of CTE Programs for All Students

The area of counselor knowledge and appreciation of the value of CTE programs to all students has been a problem for many years and continues to be. I recommend CTE work closely with MSDE staff, and they with local school system staff, which have responsibility for guidance and provide staff development and measurable outcomes, etc. to assure that all students have been provided the opportunity to enroll and be successful in CTE programs.

Thank you for your time and this opportunity to share my thoughts with you.

David A. Miller

Director, High School and Post-secondary Education

Maryland Agricultural Education Foundation dmiller@maefonline.com or 301-788-7774

Appendix E: State Determined Performance Levels

Secondary Level		
Indicator Descriptions	Indicator Codes	Indicator Names
The percentage of CTE concentrators who graduate high school, as measured by the four-year adjusted cohort graduation rate (defined in section 8101 of the Elementary and Secondary Education Act of 1965).	1S1	Four-Year Graduation Rate
(At the State’s discretion) The percentage of CTE concentrators who graduate high school, as measured by extended-year adjusted cohort graduation rate defined in such section 8101.	1S2	Extended Graduation Rate
CTE concentrator proficiency in the challenging State academic standards adopted by the State under section 1111(b)(1) of the Elementary and Secondary Education Act of 1965, as measured by the academic assessments in reading/language arts as described in section 1111(b)(2) of such Act.	2S1	Academic Proficiency in Reading/Language Arts
CTE concentrator proficiency in the challenging State academic standards adopted by the State under section 1111(b)(1) of the Elementary and Secondary Education Act of 1965, as measured by the academic assessments in mathematics as described in section 1111(b)(2) of such Act.	2S2	Academic Proficiency in Mathematics
CTE concentrator proficiency in the challenging State academic standards adopted by the State under section 1111(b)(1) of the Elementary and Secondary Education Act of 1965, as measured by the academic assessments in science as described in section 1111(b)(2) of such Act.	2S3	Academic Proficiency in Science
The percentage of CTE concentrators who, in the second quarter after exiting from secondary education, are in postsecondary education or advanced training, military service or a service program that receives assistance under title I of the National and Community Service Act of 1990 (42 U.S.C. 12511 et seq.), are volunteers as described in section 5(a) of the Peace Corps Act (22 U.S.C. 2504(a)), or are employed.	3S1	Postsecondary Placement
The percentage of CTE concentrators in career and technical education programs and programs of study that lead to non-traditional fields.	4S1	Non-traditional Program Enrollment

Secondary Level		
Indicator Descriptions	Indicator Codes	Indicator Names
The eligible agency must include at least one program quality indicator—5S1, 5S2, or 5S3—and may include any other quality measure that is statewide, valid, reliable, and comparable across the State, 5S4.		
The percentage of CTE concentrators graduating from high school having attained a recognized postsecondary credential.	5S1	Program Quality – Attained Recognized Postsecondary Credential
The percentage of CTE concentrators graduating from high school having attained postsecondary credits in the relevant career and technical education program or program of study earned through a dual or concurrent enrollment or another credit transfer agreement	5S2	Program Quality – Attained Postsecondary Credits
The percentage of CTE concentrators graduating from high school having participated in work-based learning.	5S3	Program Quality – Participated in Work-Based Learning
The percentage of CTE concentrators achieving on any other measure of student success in career and technical education that is statewide, valid, and reliable, and comparable across the State. Please identify.	5S4	Program Quality – Other

Indicator Descriptions	Indicator Codes	Indicator Names
Postsecondary Level		
The percentage of CTE concentrators who, during the second quarter after program completion, remain enrolled in postsecondary education, are in advanced training, military service, or a service program that receives assistance under title I of the National and Community Service Act of 1990 (42 U.S.C. 12511 et seq.), are volunteers as described in section 5(a) of the Peace Corps Act (22 U.S.C. 2504(a)), or are placed or retained in employment.	1P1	Postsecondary Retention and Placement
The percentage of CTE concentrators who receive a recognized postsecondary credential during participation in or within 1 year of program completion.*	2P1	Earned Recognized Postsecondary Credential
The percentage of CTE concentrators in career and technical education programs and programs of study that lead to non-traditional fields.	3P1	Non-traditional Program Enrollment

*This means that a student is counted under this indicator whether the student obtains the credential during participation or within one year of completion. The Department interprets “within one year of completion” to have the plain meaning of those words: that the student would be counted if the student obtains the credential in the one year following that student’s completion of the program.

State Determined Performance Levels (SDPL) Form

State Name: Maryland

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Indicators	Baseline Level	Performance Levels			
		FY 2020	FY 2021	FY 2022	FY 2023
Secondary Indicators					
1S1: Four-Year Graduation Rate	87.76	88.49	89.22	89.97	90.71
1S2: Extended Graduation Rate	N/A*	N/A*	N/A*	N/A*	N/A*
2S1: Academic Proficiency in Reading Language Arts	45.8	48.0	50.2	52.3	54.5
2S2: Academic Proficiency in Mathematics	40.9	43.2	45.6	48.0	50.3
2S3: Academic Proficiency in Science	2018-2019 baseline data and performance levels will be included once they have been established by the state.				
3S1: Postsecondary Placement	75.60	75.90	76.20	76.50	76.80
4S1: Non-traditional Program Enrollment	28.10	28.30	28.51	28.72	28.92
5S1: Program Quality – Attained Recognized Postsecondary Credential	77.50	77.80	78.11	78.41	78.71
5S2: Program Quality – Attained Postsecondary Credits	N/A*	N/A*	N/A*	N/A*	N/A*
5S3: Program Quality – Participated in Work-Based Learning	N/A*	N/A*	N/A*	N/A*	N/A*
5S4: Program Quality – Other (TSA Attainment)	77.50	77.80	78.11	78.41	78.71

*Maryland opted not to use this performance indicator therefore, no performance levels are provided.

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Indicators	Baseline Level	Performance Levels			
		FY 2020	FY 2021	FY 2022	FY 2023
Postsecondary Indicators					
1P1: Postsecondary Retention and Placement	70.80	70.98	71.15	71.33	71.51
2P1: Earned Recognized Postsecondary Credential	44.10	44.20	44.30	44.40	44.50
3P1: Nontraditional Program Enrollment	24.41	24.53	24.65	24.85	24.97



Maryland Methods of Administration Plan



*Ensuring Equitable Access to High-Quality
Career and Technical Education
for All Students*



Division of Career and College Readiness

July 2020

Maryland State Board of Education

Brigadier General Warner I. Sumpter, USA Ret.

President

A full list of Maryland State Board of Education Members can be found on the [Maryland State Department of Education's website](#).

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Karen B. Salmon, Ph.D.

State Superintendent of Schools

Carol A. Williamson, Ed.D.

Deputy State Superintendent of Teaching and Learning

Division of Career and College Readiness

Tiara Booker-Dwyer

Assistant State Superintendent

Nicassia Belton, Ed.D.

Director of Data and Accountability for Career Programs and
Methods of Administration Coordinator

Marquita Friday

Director of Career Programs

Nina Roa

Director of Finance and Legislation for Career Programs

A full Division staff list is in [Appendix C](#).

Larry Hogan

Governor

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Equity Assurance & Compliance Office

Office of the Deputy State Superintendent for Finance and Administration

Maryland State Department of Education

200 West Baltimore Street, Baltimore, MD 21201-2595

410-767-0426 - Voice, 410-767-0431 – Fax, 410-333-6442 - TTY/TDD

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Introduction

The Methods of Administration (MOA) program aims to ensure that all students have equal access to high-quality career and technical education (CTE) programs. MOA is facilitated through the United States Department of Education Office of Civil Rights. The Maryland State Department of Education (MSDE) is the lead agency responsible for administration of MOA requirements across the state of Maryland. The Maryland MOA plan describes how the MSDE will implement federal MOA requirements to support equitable student access to CTE programs of study. The Maryland MOA plan is purposefully aligned to the [Maryland CTE Four-Year State Plan](#), which was approved by the United States Department of Education in May 2020, to ensure a consistent approach to CTE statewide.

CTE programs of study are implemented in 24 local school systems, 15 community colleges, and 22 state-operated programs (e.g. Juvenile Services Education and Adult Correctional Facilities). Each entity that implements a CTE program of study and receives federal funds (referred to as “recipients” throughout this document) is required to adhere to MOA and [Perkins V](#) requirements. The Division of Career and College Readiness at the MSDE is responsible for facilitating the compliance review process to ensure that all recipients adhere to federal requirements established by MOA and Perkins V. Traditionally, MOA and Perkins compliance reviews were completed in isolation of each other. Beginning in the 2020-2021 school year, MOA and Perkins compliance reviews will be consolidated to one comprehensive review process for CTE. Consolidated reviews support a holistic approach to monitor compliance with MOA and Perkins V requirements, review implementation, assess outputs, and measure effectiveness of CTE statewide. The Division of Career and College Readiness will use outcomes from compliance reviews to inform technical assistance, professional learning experiences, and resources provided by the state to recipients to support implementation of practices that support equity in CTE programs statewide.

MOA Plan Development

Educational equity is a priority for the MSDE. In October 2019, the Maryland State Board of Education established educational equity as a matter of policy and priority in Maryland public schools. Code of Maryland Regulation [13A.01.06](#) require the following:

- Each Maryland public school will provide every student equitable access to the educational rigor, resources, and support that are designed to maximize the student’s academic success and social/emotional well-being;
- Each local school system’s procedures and practices provide for educational equity and ensure that there are no obstacles to accessing educational opportunities for any student; and
- Achievement will improve for all Maryland students and achievement gaps will be eliminated.

Equity is also the cornerstone of the Maryland CTE Four-Year State Plan and [Maryland State Plan for Postsecondary Education](#), which informed MOA plan development.

Over the course of the last year, the Division of Career and College Readiness collaborated with over 300 stakeholders to revise the vision and direction for CTE in Maryland to ensure that all students have equitable access to high-quality CTE programs of study. The revised vision ([Figure 1](#)) and direction for CTE is defined in [the Maryland Career and Technical Education Four-Year State Plan](#). The Maryland MOA Plan aligns to the revised vision and direction for CTE.



Figure 1: Vision for CTE

The Maryland MOA Plan is

- ✓ **grounded** in the state’s vision and mission for CTE and the Maryland CTE Four-Year State Plan;
- ✓ **guided** by requirements of the federal
 - [Strengthening Career and Technical Education for the 21st Century Act \(Perkins V\)](#),
 - [Guidelines for the Eliminating Discrimination and Denial of Services on the Basis of Race, Color, National Origin, Sex and Handicap in Vocational Education Programs \(MOA Guidelines\) \(34 C.F.R. Part 100, Appendix B\)](#),
 - [Title VI of the Civil Rights Act of 1964 \(34 C.F.R. Part 100\)](#),
 - [Title IX of the Education Amendments of 1972 \(34 C.F.R. Part 106\)](#),
 - [Section 504 of the Rehabilitation Act of 1973 \(34 C.F.R. Part 104\)](#),
 - [Title II of the Americans with Disabilities Act of 1990 \(28 C.F.R. Part 35\)](#); and
- ✓ **informed** by the [Maryland Workforce Innovation and Opportunity Act \(WIOA\) State Plan](#), [Maryland State Plan for Postsecondary Education](#), and the [Maryland Commission on Innovation and Excellence in Education](#).

Input from stakeholders informed the development of the Maryland MOA plan. Invitations to participate in MOA Stakeholder Virtual Meetings were sent to individuals representing industry, business, higher education, local school systems, professional organizations, state agencies, and [special populations](#) groups. Stakeholders groups met virtually on June 24, 2020 and June 25, 2020 to review and provide feedback on the draft Maryland MOA plan. The Division of Career and College Readiness led all meetings.

Meetings began with a general session that provided an overview of MOA requirements and the impact of MOA on CTE. After the general session, two breakout sessions were facilitated. One session provided the opportunity for participants to provide feedback on the selection criteria and ranking procedures used to identify recipients for MOA compliance reviews. The second session provided the opportunity for participants to provide feedback on MOA review criteria and process. After breakout sessions, meeting participants reconvened to review content discussed in breakout sessions, provide input on the technical assistance section of the MOA plan, and discuss next steps. All meeting were recorded and posted publically on the [Methods of Administration](#) webpage. [Table 1](#) identifies meeting dates, participants, and outcomes.

Feedback from virtual meetings included:

- revise language in review criteria to reflect both secondary and postsecondary environments;
- include measures that account for smaller school systems in the analysis of data as smaller sampler sizes may provide less meaningful information on student group representation from year to year;
- incorporate corrective actions in Perkins Local Applications;
- expand technical assistance prior to identification and throughout the review process;
- communicate MOA requirements with executive leadership at school systems, community colleges, and state-operate programs;
- identify staff who would serve on a MOA review coordination group for a local school system or community college; and
- provide monitored systems with sample documents of typical findings, violations, and remedies.

Feedback provided was used to revise the MOA plan and supporting technical assistance documents.

The Maryland MOA Plan was posted publically on the [Methods of Administration](#) webpage on the MSDE website along with a [link](#) to provide feedback. The announcement to provide feedback was shared via social media and through emails to stakeholder groups. Only two comments were received online and both comments were in support of the MOA plan.

Overall, the majority of stakeholders agreed with the outlined MOA selection criteria, ranking process, review criteria, monitoring process, timetable, and MOA plan.

Maryland Methods of Administration (MOA) Plan

Table 1: Opportunities to Provide Input on the Maryland MOA Plan

Meeting or Public Comment Date	Participants	Outcomes
June 13, 2020 – June 24, 2020	14 Day Public Comment Period on Method of Administration Plan	The public had the opportunity to provide input in writing on the entire Methods of Administration plan.
June 24, 2020	<p style="text-align: center;"><u>MOA Stakeholder Meeting</u></p> <p>45 participants representing the following organizations:</p> <ol style="list-style-type: none"> 1. Allegany College 2. Charles County Public Schools 3. Frederick County Public Schools 4. Governor’s Workforce Development Board 5. Howard County Public Schools 6. Juvenile Services Education Agency 7. Maryland Agriculture Education Foundation 8. Maryland Business Roundtable for Education 9. Maryland Commission on Civil Rights 10. Maryland Department of Disabilities 11. Maryland Department of Labor - Division of Workforce Development and Adult Learning/Correctional Education 12. Maryland Department of Rehabilitation Services 13. Maryland Higher Education Commission 14. Maryland State Department of Education of Education - Network for Equity and Excellence in Education 15. Maryland State Department of Education - Office of Equity Assurance and Compliance 16. Montgomery College 17. Queen Anne’s County Public Schools 	MOA Stakeholder Meeting participants reviewed and provided feedback on the selection criteria, ranking process, review criteria, monitoring process, procedures, and timetable sections of the plan.
June 25, 2020	<p style="text-align: center;"><u>CTE Directors’ Meeting</u></p> <p>32 participants representing the following organizations:</p> <ol style="list-style-type: none"> 1. Allegany County Public Schools 2. Anne Arundel County Public Schools 3. Baltimore City Public Schools 4. Baltimore County Public Schools 5. Calvert County Public Schools 6. Caroline County Public Schools 7. Carroll County Public Schools 8. Cecil County Public Schools 9. Charles County Public Schools 10. Dorchester County Public Schools 	CTE Directors’ Meeting participants provided input on the selection criteria, ranking process, review criteria, monitoring process, timetable, and technical assistance sections of the MOA plan.

Maryland Methods of Administration (MOA) Plan

Meeting or Public Comment Date	Participants	Outcomes
	<ol style="list-style-type: none"> 11. Frederick County Public Schools 12. Garrett County Public Schools 13. Harford County Public Schools 14. Howard County Public Schools 15. Maryland Agricultural Education Foundation 16. Maryland Department of Labor - Division of Workforce Development and Adult Learning/Correctional Education 17. Montgomery County Public Schools 18. Prince George’s County Public Schools 19. Queen Anne’s County Public Schools 20. St. Mary’s County Public Schools 21. Talbot County Public Schools 22. University of Maryland Eastern Shore 23. Wicomico County Public Schools 24. Worcester County Public Schools 	
<p>June 25, 2020</p>	<p align="center"><u>Community College Meeting</u></p> <p>20 participants representing the following organizations:</p> <ol style="list-style-type: none"> 1. Allegany College of Maryland 2. Anne Arundel Community College 3. Baltimore City Community College 4. Chesapeake College 5. College of Southern Maryland 6. Community College of Baltimore County 7. Frederick Community College 8. Garrett Community College 9. Hagerstown Community College 10. Harford Community College 11. Howard Community College 12. Maryland Agricultural Education Foundation 13. Montgomery Community College 14. Prince George’s Community College 15. Wor-Wic Community College 	<p>Community college meeting participants provided input on the selection criteria, ranking process, review criteria, monitoring process, timetable, and technical assistance sections of the MOA plan.</p>

Approval of the Maryland MOA Plan

The MSDE is the sole agency responsible for approval of the Maryland MOA Plan. The final plan was presented to the Assistant State Superintendent of the Division of Career and College Readiness, the Deputy Superintendent of Teaching of Learning, and the State Superintendent of Schools for approval. Refer to [Appendix A](#) for approval signatures.

After final approval was received, the Maryland MOA Plan was submitted to the United States Department of Education, Office of Career Technical and Adult Education by the July 2020 deadline.

Plan for Performing Oversight Responsibilities

The Maryland MOA Plan for Performing Oversight Responsibilities identifies Maryland's compliance plan to prevent, identify, and remedy discrimination based on race, color, national origin, sex, and disability in CTE programs of study. It also outlines the plan to analyze civil rights data and information; analyze Perkins V data and requirements; conduct periodic compliance reviews both in-person and virtually; notify recipients of illegal discrimination to remedy; and address corrective actions.

Recipient Universe

Recipients are each entity that implements a CTE program of study and receives federal funds. All recipients are required to adhere to MOA and [Perkins V](#) requirements. Maryland recipients include 24 local school systems, 15 community colleges, and 22 state-operated programs. The five largest school systems in the state, those enrolling 75,000 or more students, are subdivided into regions. MOA compliance reviews occur at the school level. Regionalizing larger school systems ensures that the state can facilitate a review process that accurately reflects equitable practices across the entire school system. The school systems that are subdivided include:

- Anne Arundel County - 2 regions,
- Baltimore City - 4 regions,
- Baltimore County - 5 regions,
- Montgomery County - 6 regions, and
- Prince George's County - 5 regions.

Community colleges with multiple campuses are represented as single sites for the purpose of compliance reviews. As a result, Maryland includes a total of 78 recipients including:

- 41 Local school system regions,
- 15 Community colleges, and
- 22 State-operated programs.

Local School Systems: There are 24 local school systems in Maryland. Large school systems are subdivided into smaller regions. [Table 2](#) list local school systems and the year(s) they have participated in on-site MOA and Perkins reviews.

Maryland Methods of Administration (MOA) Plan

Table 2: List of the local school system recipients and onsite compliance review years

	Local School Systems	MOA Review Years	Perkins Review Years
1	Allegany County	1991	2017
2	Anne Arundel County, North	1991, 2000, 2009	2018
3	Anne Arundel County, South	1991, 2000	
4	Baltimore City, North East	1991, 2019	2015
5	Baltimore City, North West	1991, 2015	
6	Baltimore City, South East	1991	
7	Baltimore City, South West	1991	
8	Baltimore County, Central	1995	2016
9	Baltimore County, North East	1995	
10	Baltimore County, North West	1995	
11	Baltimore County, South East	1995, 2004	
12	Baltimore County, South West	1995	
13	Calvert County	1995, 2012	2018
14	Caroline County	1996, 2015	2014
15	Carroll County	1992, 2011	2018
16	Cecil County	1993	2019
17	Charles County	1990, 1999, 2018	2017
18	Dorchester County	1991, 2008	2014
19	Frederick County	1990, 2008	2016
20	Garrett County	1993	2015
21	Harford County	1992, 2004	2019
22	Howard County	1995, 2016	2017
23	Kent County	1998, 2005	2014
24	Montgomery County, Cluster 1	1993, 2006	2015
25	Montgomery County, Cluster 2	1993	
26	Montgomery County, Cluster 3	1993, 2011	
27	Montgomery County, Cluster 4	1993	
28	Montgomery County, Cluster 5	1993	
29	Montgomery County, Cluster 6	1993	
30	Prince George's County, Region I	1992	2015
31	Prince George's County, Region II	1992, 2014	
32	Prince George's County, Region III	1992	
33	Prince George's County, Region IV	1992	
34	Prince George's County, Region V	1992, 2016	
35	Queen Anne's County	1993, 2018	2016
36	St. Mary's County	1996	2017
37	Somerset County	1990, 2009	2015
38	Talbot County	1990, 2017	2015

Maryland Methods of Administration (MOA) Plan

	Local School Systems	MOA Review Years	Perkins Review Years
39	Washington County	1989, 2009	2018
40	Wicomico County	1993, 2013	2017
41	Worcester County	1997, 2013	2017

Community Colleges: There are 15 community colleges that participant in MOA compliance reviews. Colleges with multiple campuses provide a single set of data to the Division of Career and College Readiness. As a result, they are not subdivided for compliance review. [Table 3](#) list community colleges and the year(s) they have participated in MOA and Perkins reviews.

Table 3: List of community college recipients and on-site compliance review years.

	Community Colleges	MOA Review Years	Perkins Review Years
1	Allegany College	1990, 2003, 2019	2017
2	Anne Arundel Community College	1997, 2008	2018
3	Baltimore City Community College – Harbor, Liberty Heights	1982, 2006	2015
4	Cecil Community College	1993	2019
5	College of Southern Maryland (formerly named Charles County Community College)	1985, 2000	2017
6	Chesapeake College – Cambridge Center, Wye Mills	1999	2015
7	Community Colleges of Baltimore County – Catonsville, Dundalk, Essex	1995, 2005	2016
8	Frederick Community College	1992, 2015	2016
9	Garrett Community College	1988, 2010	2015
10	Hagerstown Community College	1998	2018
11	Harford Community College	1996, 2017	2019
12	Howard Community College	1991, 2004	2017
13	Montgomery College – Germantown, Rockville, Takoma Park	1991, 2008	2015
14	Prince George’s Community College	1986, 2016	2015
15	Wor-Wic Community College	1987, 2012	2015

State-Operated Programs: There are 22 state-operated programs that provide approved occupational programs. State-operated programs are offered in adult correctional facilities and juvenile residential facilities. Traditionally, state-operated programs did not participate in the Perkins review process. Moving forward, all state-operated programs will be required to participate in compliance reviews for MOA and Perkins. All state-operated programs are open-entry/open-exit with participation based on those meeting institutional criteria. [Table 4](#) list state-operated programs and the year they participated in an MOA review.

Table 4: List of state-operated programs recipients and on-site MOA compliance review year.

	State-Operated Programs	MOA Review Year
Adult Facilities		
1	Eastern Correctional Institution- East	No record of compliance review
2	Eastern Correctional Institution – West	No record of compliance review
3	Maryland Correctional Institution-Jessup	No record of compliance review
4	Maryland Correctional Institution – Hagerstown	No record of compliance review
5	Maryland Correctional Institution - Women	2002
6	Maryland Correctional Training Center	2002
7	Occupational Skills Training Center	2002
8	Patuxent Institution	No record of compliance review
9	Roxbury Correctional Institution	2002
10	Western Correctional Institution	No record of compliance review
Juvenile Facilities		
11	Baltimore City Juvenile Justice Center	No record of compliance review
12	Garrett Children’s Center	No record of compliance review
13	Cheltenham Youth Detention Center	No record of compliance review
14	Green Ridge Youth Center	No record of compliance review
15	Charles H. Hickey Detention Center	No record of compliance review
16	Lower Eastern Shore Children's Center	No record of compliance review
17	Mountainview	No record of compliance review
18	Alfred D. Noyes Center	No record of compliance review
19	Savage Mountain Youth Center	No record of compliance review
20	Victor Cullen Center	No record of compliance review
21	Thomas J.S. Waxter Children's Center	No record of compliance review
22	Western Maryland Children's Center	No record of compliance review

Processes and Procedures to Conduct Compliance Reviews

Compliance reviews will be facilitated on-site or virtually by a team led by the Division of Career and College Readiness. [Appendix B](#) identifies team leads for compliance reviews. The team aims to conduct a total of ten compliance reviews per year. The bulleted list identifies the projected number of reviews that will occur per year for secondary, postsecondary, and state-operated institutions, which include a minimum of two secondary reviews and one postsecondary review.

- Secondary – 5 reviews
- Postsecondary – 3 reviews
- State-Operated Programs – 2 reviews

Reviews will either be on-site or virtual. Both type of compliance reviews will require interviews and submission of evidence by the recipient to the Division of Career and College Readiness demonstrating that all criteria have been met.

Selection Plan

The Selection Plan, referred to as the Targeting Plan in the Federal Memorandum of Procedures, outlines how recipients will be identified for compliance reviews and the type of review (on-site or virtual) that will be facilitated. The Selection Plan has been developed to:

1. include criteria that focus on maintaining equal access to all CTE programs of study regardless of gender, race, and special population student groups;
2. support and encourage advancement in achieving equitable education opportunities and attainment of performance targets for students in protected classes; and
3. focus on the quality and effectiveness of CTE programs of study.

Selection Criteria

Recipients will be selected for compliance review based on established criteria and benchmarks used to

- measure the level of CTE access by demographics,
- identify performance inequities among various student groups in meeting Perkins performance targets, and
- direct attention to recipients who may require support in maintaining and growing the quality and effectiveness of their programs of study.

Disparity percentage benchmarks were developed in alignment with Maryland's [CTE Local Needs Assessment](#) evaluation benchmarks and analysis of student group population distributions.

Local School Systems and Community Colleges: Maryland's Selection Plan includes twelve criteria used in ranking and selecting local school systems and community colleges. Points are awarded for access, equity, and quality. Cluster datasets less than ten are excluded from analysis to ensure meaningful and reliable analysis of student group disproportionality from year to year. [Table 5](#) identifies how points are awarded for each criterion.

Table 5: Selection criteria for local school system and community colleges

ACCESS	I	CTE Disproportionate Gender Enrollment	
		Enrollment percentage of students based on gender compared to recipient’s total enrollment percentage (+/-20% or greater).	+2 points assigned to each CTE cluster that is disproportionate by gender.
	II	CTE Disproportionate Disability Enrollment	
		Enrollment percentage of students with disabilities in CTE programs compared to the recipient’s total enrollment percentage of students with disabilities (+/-5% or greater).	+2 points assigned to each CTE cluster having a disproportionate enrollment of students with disabilities.
	III	CTE Disproportionate Minority Enrollment	
		Enrollment percentage of students with minority status* in CTE programs compared to recipient’s total enrollment percentage of students with minority status (+/-10% or greater).	+2 points assigned to each CTE cluster having a disproportionate minority student enrollment.
EQUITY	IV	CTE Disproportionate Economically Disadvantaged Enrollment	
		Enrollment percentage of economically disadvantaged students compared to recipient’s total enrollment percentage of economically disadvantaged students (+/-10% or greater).	+2 points assigned to each CTE cluster having a disproportionate enrollment of students from economically disadvantaged backgrounds.
	V	CTE Disproportionate English Learner Enrollment	
		Enrollment percentage of English Learner students compared to recipient’s total enrollment percentage of English Learner students (+/-5% or greater).	+2 points assigned to each CTE cluster having a disproportionate English Learner student enrollment.
	VI	CTE Disproportionate Performance for Gender	
		For each CTE cluster, the gender student group not meeting target for each performance indicator once target was met in the cluster.	+1 point assigned for each CTE cluster where a gender student group did not meet performance target for each performance indicator. (Non-traditional concentrator enrollment indicator excluded)
	VII	CTE Disproportionate Performance for Race	
	For each CTE cluster, the racial student group not meeting target for each performance indicator once target was met in the cluster.	+1 point assigned for each CTE cluster where a racial student group did not meet performance target for each performance indicator.	
	VIII	CTE Disproportionate Performance for Economically Disadvantaged	
	For each CTE cluster, the economically disadvantaged student group not meeting performance target for each performance indicator once target was met in the cluster.	+1 point assigned for each CTE cluster where the economically disadvantaged student group did not meet performance target for each performance indicator.	

EQUITY	IX	CTE Disproportionate Performance for Students with Disabilities	
		For each CTE cluster, students with disabilities not meeting target for each performance indicator once target was met in the cluster.	+1 point assigned for each CTE cluster where students with disabilities did not meet performance target for each performance indicator.
	X	CTE Disproportionate Performance for English Learner Students	
		For each CTE cluster, English Learner students not meeting target for each performance indicator once target was met in the cluster.	+1 point assigned for each CTE cluster where English Learner students did not meet performance target for each performance indicator.
QUALITY	XI	CTE Program Performance	
		For each CTE program of study, students not meeting performance target within 90%.	+1 point assigned for each CTE program of study for every year target is not met in a three-year span for each performance indicator.
	XII	Time Since Last Review	
	The number of years since the recipient’s last on-site MOA review.	+1 Index Point assigned for each year. Recipient history is calculated directly into the Index Score	

*Minority status percentage metric is defined as the combined percentages of African-American, Pacific Islander, Native American/Alaskan and Hispanic students enrolled in a sub-region.

State Operated Programs: For state operated programs, two adult facilities or juvenile facilities or a combination of the two will be selected for review each year. First priority will be given to facilities with an unknown date of last review and second priority will be given to facilities with a date of last review that occurred ten years ago or more.

Ranking Process

Specific selection data will be compiled utilizing the selection criteria as described previously and by the ranking system as described below.

Local School Systems: All local school systems will be listed based on final point assignment in order of points awarded from lowest to highest. The five local school systems with the most points will participate in compliance review each year. The local school system with the most points in a given year will participate in an on-site review the remaining four school systems will participate in virtual reviews. School systems also have the option to submit a written request for an on-site compliance review.

Exclusions: Recipients will be excluded from further monitoring reviews for the period of two years to allow for any corrective actions or actions plans to be implemented.

Tie-breakers: In the event the rankings lead to a tie, the deciding factor will be the date of last review. This would mean that the recipient with the longest time since last review will be selected over the recipient with the more recent review date.

Exceptions: (1) In a case where more than two regions of a single local school system are listed with the most points, only one of the regions in that local school system will be chosen and the next highest ranking recipient from a differing local school system will be chosen.

(2) In the event a recipient cannot be visited due to some unforeseen circumstance, then the next ranked recipient will be selected.

Community College: All community colleges will be listed based on final point assignment in the order of rank from lowest to highest. The three community colleges with the most points will participate in compliance review during the reporting cycle. The community college with the most points will participate in an on-site review and the remaining colleges will participate in a virtual review. Community colleges also have the option to submit a written request for an on-site compliance review.

Exclusions: Recipients will be excluded from further monitoring reviews for the period of two years to allow for any corrective actions/actions plans to be implemented.

Exceptions: (1) In a case where the community college selected maintains more than one campus site listed as a recipient, the recipient (campus site) with the longest time since last review will be selected over the recipient (campus site) with the more recent review date.

(2) In the event a recipient cannot be visited due to some unforeseen circumstance, the next ranking recipient will be selected.

State Operated Programs: State operated programs will not be ranked. Instead, two adult facilities or juvenile facilities will be selected for on-site reviews during the two-year reporting cycle. Priority will be given to facilities with an unknown date of last review and second priority will be given to facilities with a date of last review that occurred ten years ago or more.

Exclusions: Recipients will be excluded from further monitoring reviews for the period of two years to allow for any corrective actions/actions plans to be implemented.

Compliance Review

Recipients identified through the selection plan must demonstrate compliance with MOA criteria. Evidence for all criteria will be collected prior to facilitation of virtual or on-site reviews.

Each year, the Division of Career and College Readiness will release the list of recipients identified through the selection plan for on-site and virtual reviews. Compliance review notifications will be sent to the Superintendent, College President, or State-Operated Program Executive Administrator at least ninety days prior to review date. Recipients will be required to submit MOA Review documentation to the Division of Career and College, for a desk audit at least thirty days prior to their review date for either the virtual or the on-site review.

Recipients will be required to compile, at minimum, specific documented items and submit electronically to the Division of Career and College Readiness. The twelve MOA-specific monitoring review criteria and the aligned requested evidence are outlined in the tables on the following pages.

Administrative Criteria
Compliance Review Criteria #1

Recipient has:

- taken continuing steps to notify students, applicants, parents, employees, and unions or professional organizations that its policies do not discriminate based on race, color, national origin, sex or disability.
- provided an annual public notice of nondiscrimination prior to the beginning of each school year that advises students, parents, employees, and the general public that all CTE program opportunities will be offered to all students regardless of race, color, national origin, sex or disability or age.
- designated at least one qualified employee to coordinate efforts to comply with Section 504, Title II, Title VI, and Title IX. The recipient must notify students, staff, and the public of the name and/or title, address and phone number of designated employee(s).
- adopted and published grievance procedure for prompt and equitable resolution of complaints alleging discrimination based on sex, race, color, national origin, or disability.

Requested Evidence

- A copy of the recipient’s continuous nondiscrimination notice.
- Copies of a variety of the recipient’s publications that notify applicants, students, employees, and parents that it does not discriminate on the basis of race, color, national origin, sex, or disability.
Can include the following:

o Brochures on programs, activities	o Job announcements
o Student application	o Posters advertising various programs
o Job application	o Recruitment materials
o Catalog	o Website
o Student handbook	o School newspaper
o Staff handbook	
- Copies of the annual public notice of nondiscrimination as published in local newspapers, recipient’s newsletters, radio/TV, etc.
- Description of plans for providing annual public notice to visually impaired and national origin minority persons.
- Document(s) which designate the Title IX and Section 504 Coordinator(s) that includes name (or position), business address, and phone number.
- Copies of the recipient’s publications that notify applicants, students, employees, and parents of the names or titles, addresses, and phone numbers of the Title IX and Section 504 Coordinator(s) in the notice of nondiscrimination
- The job description for the Title IX and Section 504 Coordinator(s) which outlines the duties and responsibilities of the position(s).
- Description of the training the Title IX and Section 504 Coordinator(s) have received.
- A copy of the recipient’s grievance procedure for persons who feel like they have been discriminated against based on sex or disability.
- Copies of publications/list of locations where the recipient’s grievance procedure can be accessed by students, employees, parents, and patrons.

Recruitment Criteria Compliance Review Criteria #2
<p>Recipient has established and implemented a process to ensure that:</p> <ul style="list-style-type: none"> recruitment activities do not exclude or limit opportunities based on sex, race, color, national origin, or disability. recruitment materials do not contain biased or stereotypical contents. recruitment teams represent diverse populations. counselors can communicate with limited English proficiency populations and persons with sensory impairments. recruitment materials are available to communities of minority-language speakers in their native languages.
Requested Evidence
<ul style="list-style-type: none"> Copy of CTE recruitment plans. Description of CTE recruitment activities. Copies of CTE recruitment materials, including brochures, flyers, newspaper ads, course catalogs, etc. Copy of CTE course catalog / course descriptions. Written plan for recruiting individuals with English as a second language. Written plan for recruiting individuals with hearing impairments. Samples of recruiting materials in alternative languages/formats (as applicable).

Admissions Criteria Compliance Review Criteria #3
<p>Recipient has established and implemented a process to ensure that:</p> <ul style="list-style-type: none"> student admission eligibility criteria does not discriminate on the basis of race, color, national origin, sex, disability, or English proficiency. candidates for admission to CTE programs of study are not assessed based on race, color, national origin, sex, or disability. there are no preadmission inquiries about marital, parental, pregnancy, or disability status. access is not denied to any CTE program of study to students with a disability. policies and procedures are in place for identifying and serving limited English proficient students and students with disabilities.
Requested Evidence
<ul style="list-style-type: none"> Admissions policy for CTE and description of admissions process. Procedures and criteria for selective admissions to CTE programs where there are more applicants than can be accommodated. Demographics of rejected candidates by selection criteria. Procedure for Limited English Proficiency/English Learner identification and placement.

Counseling Criteria Compliance Review Criteria #4
<p>Recipient has established and implemented a process to ensure that:</p> <ul style="list-style-type: none"> • counseling materials do not discriminate against individuals based on race, color, national origin, sex, or disability. • counselors do not direct students into programs nor measure their prospect for success based on race, color, national origin, sex, or disability. • counselors do not direct students with disabilities toward more restrictive career objectives. • disproportionate enrollments do not result from unlawful discrimination.
Requested Evidence
<ul style="list-style-type: none"> • Copy of the recipient’s written guidance plan. • Copy of the recipient’s assessment plan. • Calendar of counseling and pre-CTE activities. • Copy of enrollment forms. • Description of the process to identify and address disproportionate enrollment in CTE programs.

Site Location and Student Eligibility Criteria Compliance Review Criteria #5
<p>Recipient has established and implemented a process to ensure that:</p> <ul style="list-style-type: none"> • CTE facilities, renovations, and building sites are accessible and do not result in disproportionately excluding students of certain race, color, national origin, sex, or disability. • geographic boundaries do not unlawfully exclude students on the basis of race, color, national origin, sex, or disability.
Requested Evidence
<ul style="list-style-type: none"> • Copy of policies for student admission criteria. • Copy of student enrollment demographics by program. • Population demographics of recipient’s attendance area or local community.

Services for Students with Disabilities Criteria Compliance Review Criteria #6
Recipient has established and implemented a process to ensure that: <ul style="list-style-type: none"> • related aids or adaptations are available as necessary. • educational settings accommodate the needs of all learners. • students with disabilities are placed according to the provisions of Section 504. • tests of academic achievement measure abilities and achievement.
Requested Evidence
<ul style="list-style-type: none"> • Description of how the recipient provides access to all programs, courses, services, and activities offered to students with disabilities. • Description of how equipment and/or facilities have been adapted to accommodate students with disabilities. • Policy(ies) for providing aids and services to students. • Provide aids and services available to students with disabilities. • Provide a copy of policies governing use of service animals, tape recorders, note takers, etc. • Provide a copy of recipient’s Free and Public Education (FAPE) policy and procedures. • Description of how staff familiar with CTE programs participate in FAPE and/or Section 504 placement decisions for students with disabilities. • Policies for testing modification for students with disabilities. • Provide a list of testing modifications that have been used by the recipient for persons with disabilities.

Accessibility of Facilities Criteria Compliance Review Criteria #7
<p>Recipient has established and implemented a process to ensure that:</p> <ul style="list-style-type: none"> • each facility or part of a facility, constructed under standards for construction initiated on or after January 27, 1992 (ADA or UFAS) by, on behalf of, or for the use of a recipient, is readily accessible and usable by persons with disabilities. • each facility or part of a facility constructed under standards for construction initiated or altered on or after January 18, 1991 (UFAS) by, on behalf of, or for the use of a recipient, is readily accessible and usable by persons with disabilities. • existing facilities whose construction or alteration initiated before June 4, 1977 (ANSI) when viewed in entirety, are readily accessible to disabled persons, programs or activities, or when each part is viewed in its entirety, are readily accessible to disabled persons. • each facility or part of a facility, constructed under standards for construction initiated or altered between June 4, 1977 and January 18, 1991 (ANSI) by, on behalf of, or for the use of a recipient, is readily accessible and usable by persons with disabilities.
Requested Evidence
<ul style="list-style-type: none"> • Copy of the Americans with Disability Act (ADA) accessibility self-study. • Copy of the ADA transition plan. • Listing or description of facility modifications with dates made to assure accessibility compliance. • Copy of a notice of facility accessibility for activities/patron request for special requirements.

Comparable Facilities Criteria Compliance Review Criteria #8
<p>Recipient has established and implemented a process to ensure that:</p> <ul style="list-style-type: none"> • separate programs or facilities for students with disabilities are comparable to those of students without disabilities. • changing rooms, showers, and other facilities and equipment for students of one sex or students with disabilities are comparable to those of the other sex and to students without disabilities.
Requested Evidence
<ul style="list-style-type: none"> • Listing of separate programs, services, and/or facilities for students with disabilities. • Listing of separate programs, services, and/or facilities for male and female students. • Listing of separate programs, services, and/or facilities for English Learner students. • Description of action taken to ensure no disparities exist in programs, services, and/or facilities for students with disabilities, male/female students, or English Learner students.

Financial Assistance Criteria Compliance Review Criteria #9
<p>Recipient has established and implemented a process to ensure that:</p> <ul style="list-style-type: none"> • financial assistance in the form of loans, grants, scholarships, special funds, subsidies, compensation for work or prizes to CTE students is not provided on the basis of race, color, national origin, sex or disability, except to overcome the effects of past discrimination. • sex restricted financial assistance is administered only where the assistance and restriction are established by will, trust, bequest, or any other restricted legal instrument and the overall effect of all financial assistance awarded does not discriminate on the basis of sex. • materials and information used to notify students of opportunities for financial assistance do not contain language or examples that would lead applicants to believe the assistance is provided on a discriminatory basis. If the recipient’s service area contains a community of national origin minority persons with limited English language skills, such information must be disseminated to that community in their language.
Requested Documentation
<ul style="list-style-type: none"> • Copy of policies or description of process for making all students aware of financial assistance opportunities.

Housing in Postsecondary Institutions (Postsecondary ONLY) Compliance Review Criteria #10
<ul style="list-style-type: none"> • Community College has ensured that housing opportunities have been extended without discrimination based on race, color, national origin, sex, or disability. • Community College provides at the same cost and under the same conditions, comparable, convenient and accessible housing to students with disabilities as on-campus or off-campus housing provided to student population.
Requested Evidence
<ul style="list-style-type: none"> • Copy of policies or description of process for making all students aware of housing opportunities. • Copy of housing application.

Work-Based Learning Criteria Compliance Review Criteria #11
<p>Recipient has established and implemented a process to ensure that:</p> <ul style="list-style-type: none"> • opportunities in work-based learning programs are made available to all students, regardless of race, color, national origin, sex, or disability. • prospective employers do not discriminate based on race, color, national origin, sex, or disability. • agreements for any work-based learning/training opportunities with any entity does not discriminate based on race, color, national origin, sex, disability. • written agreements include assurances of non-discrimination.
Requested Evidence
<ul style="list-style-type: none"> • Copy of apprenticeship, workplace, job-shadowing, and/or cooperative education agreements.

Employment of Faculty & Staff Criteria Compliance Review Criteria #12
<p>Recipient has established and implemented a process to ensure that:</p> <ul style="list-style-type: none"> • employment practices do not result in segregation, exclusion, or other discrimination against faculty and/or staff. • there are no pre-employment inquiries concerning disability, marital, or parental status. • all staff are notified of non-discrimination policies. • salary schedules reflect conditions and responsibilities of employment. • all positions are open to qualified candidates with reasonable accommodations provided. • demographics of the recipient’s employees reflect the demographics of the community.
Requested Evidence
<ul style="list-style-type: none"> • Copy of employee handbooks. • Example job announcement. • Employee recruitment policies. • Copy of employment applications. • Salary schedule. • Promotion or tenure policy.

The review team led by the Division of Career and College Readiness will carefully review all of the evidence compiled to determine if there are any areas in which the recipient was non-compliant with federal civil rights laws and/or regulations. A Letter of Findings will be issued to the Superintendent, Chief Executive Office, College President, or State-Operated Program Executive Administrator within thirty days of the completion of the virtual or on-site visit. The Letter of Findings will describe in detail any areas of non-compliance that were found, specify the necessary corrective actions to be taken by the recipient, or confirm that all areas reviewed were compliant.

If areas of non-compliance are found, the recipient will have sixty days from the date of the Letter of Findings to submit to the Division of Career and College Readiness a MOA and Perkins Compliance Plan using an MSDE template. The MOA and Perkins Compliance Plan will be required to address each finding of non-compliance with a corrective action plan, which includes a specific date by which each finding will be fully addressed and resolved.

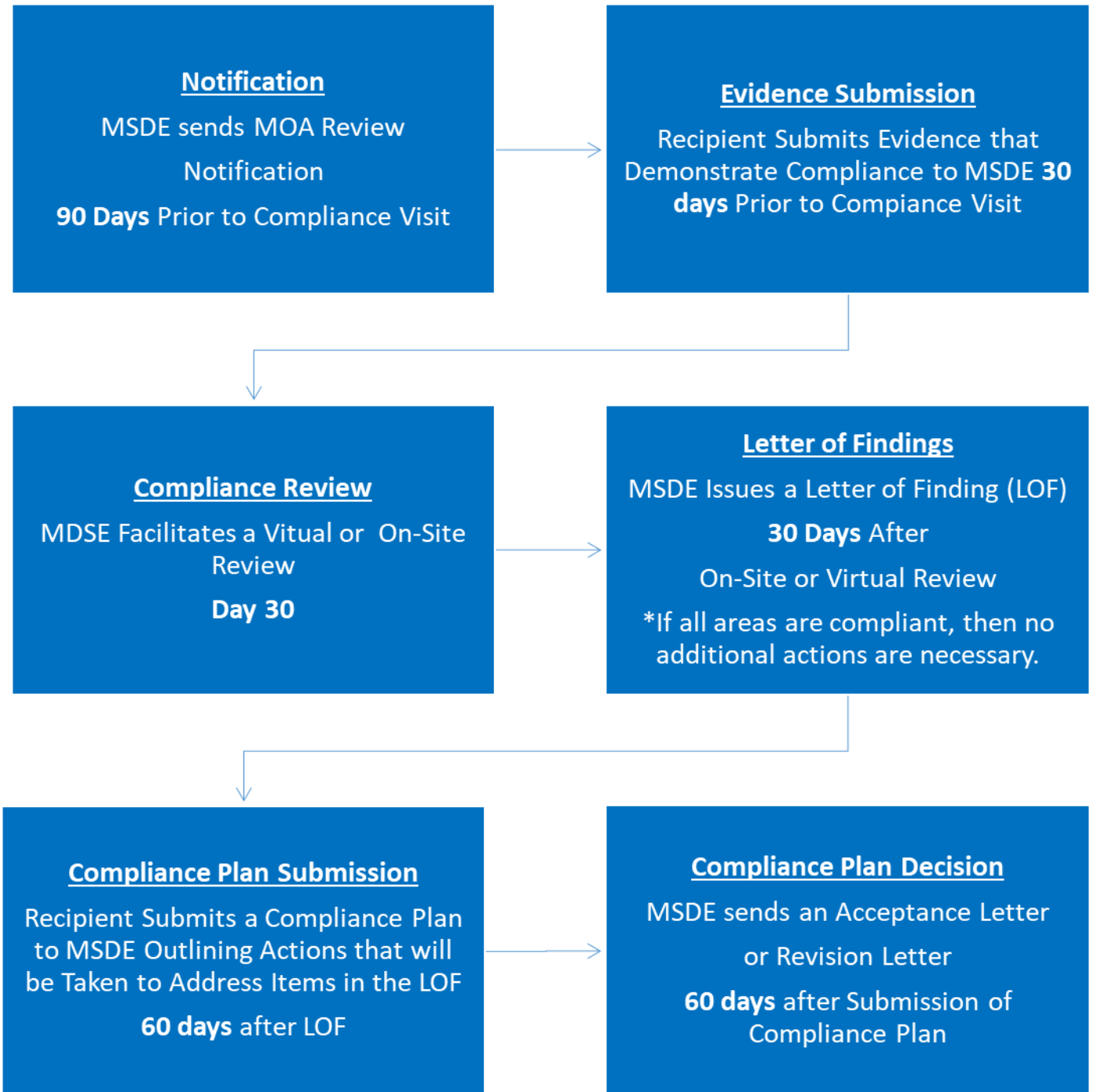
The review team will analyze materials submitted by the recipient. If submitted materials appropriately address the findings in the Letter of Findings then an Acceptance Letter will be issued by the Division of Career and College Readiness to the Superintendent, Chief Executive Office, College President, or State-Operated Program Executive Administrator. If the submitted material is found to be incomplete or insufficient then a follow-up letter will be sent by the Division of Career and College Readiness specifying the revisions that need to be made.

Once all of the necessary corrective actions have been fully addressed and completed, the recipient will be required to submit verifiable evidence for each finding to the Division of Career and College Readiness. This may include copies of completed work orders, revised documents, photos, etc. If the documentation is determined to be sufficient, a letter of Final Acceptance and Closure will be issued to the Superintendent, Chief Executive Office, College President, or State-Operated Program Executive Administrator. The Division of Career and College Readiness will follow up with quarterly updates with all reviewed recipients until MOA Compliance plans have been completed.

Timeline for MOA and Perkins Process and Procedures

[Figure 2](#) provides a summary of the timeline for implementation of processes and procedures for MOA and Perkins compliance reviews.

Figure 2: Timetable



Technical Assistance

The Division of Career and College Readiness is committed to supporting recipients in achieving equitable outcomes for their students. Technical assistance is provided to help recipients prevent, identify, and remedy unlawful discrimination and meet federal requirements established by MOA and Perkins.

Statewide technical assistance is provided to all recipients. MOA and Perkins [data](#) is used to inform content for statewide technical assistance. Statewide technical assistance is facilitated through webinars, in-person convenings, resource development, and professional learning experiences. Quarterly meetings are held with CTE Directors of local school systems, Perkins Points of contact from community colleges, and representatives of state-operated programs. Technical assistance for MOA and Perkins are provided at quarterly meetings. There is a [CTE Blackboard](#) site for recipients where technical assistance resources (memos, presentations, bulletins, etc.) are posted. Recipients are notified when new resources are posted and when statewide meetings will be facilitated. The Division of Career and College Readiness works as a team to develop resources and facilitate statewide convenings. The list of the Division of Career and College Readiness team can be found in [Appendix C](#).

The Division of Career and College Readiness also provides case-specific technical assistance to individual recipients before or after a compliance review. Recipients can contact the Equity and Civil Rights Compliance Specialist or their assigned Career Programs and Grant Specialist with specific technical assistance request. Refer to [Appendix B](#) for the list of specialists and their assigned regions.

Recently, the [Consolidated Perkins and MOA Monitoring Program website](#) was launched. The website builds awareness of MOA and Perkins, describes MOA policies and procedures, and shares essential information about MOA and Perkins. Examples of items on the website include:

- ✓ MOA and Perkins Monitoring and Selection Plan
- ✓ MOA and Perkins Evaluation Criteria List
- ✓ MOA and Perkins Document Checklist and Review Form
- ✓ Frequently Asked Questions
- ✓ Monitoring Review Process Webinars, Presentations, and Trainings
- ✓ Staff Contact Information

A comprehensive MOA Technical Assistance Manual is also available to recipients to support implementation of requirements identified in MOA.

The Division of Career and College Readiness will continue to work with stakeholders in the development and implementation of resources that support recipients in meeting MOA requirements to ensure that all students have equitable access to high-quality CTE programs of study.

Appendix A: Approval of the Maryland Methods of Administration Plan

The Maryland Methods of Administration Plan has been reviewed and approved by:



7/1/2020

Karen B. Salmon, Ph.D.
State Superintendent of Schools

Date



6/26/2020

Carol A. Williamson, Ed.D.
Deputy Superintendent of Teaching and Learning

Date



6/26/2020

Tiara Booker-Dwyer
Assistant State Superintendent for the
Division of Career and College Readiness and
Office of Leadership Development and School Improvement

Date

Appendix B: Personnel Responsible for Facilitating MOA and Perkins Compliance Reviews

All MOA and Perkins compliance reviews will be led by the Division of Career and College Readiness and include a team of internal and external stakeholders.

Compliance Review Lead Personnel:

- Nicassia Belton, Ed.D – Director of Data and Accountability and MOA Coordinator
- Nina Roa – Director of Finance and Legislation for Career Programs
- China Wilson, Ph.D. – Equity and Civil Rights Compliance Specialist

The review of state-operated programs will be led by Dr. China Wilson. [Table 6](#) identifies personnel that will provide technical assistance and facilitate compliance reviews in school system and community college.

Table 6: MOA and Perkins Compliance Review by School System and Community College.

Dean Kendall <i>Career Programs and Grants Specialist - Region I</i>	
Baltimore City Community College Baltimore City Public Schools Baltimore County Public Schools Carroll Community College Carroll County Public Schools Cecil College	Cecil County Public Schools Community College of Baltimore County Harford Community College Harford County Public Schools Howard Community College Howard County Public Schools
Nancy Hauswald <i>Career Programs and Grants Specialist - Region II</i>	
Allegany County Public Schools Allegany College of Maryland Anne Arundel Community College Anne Arundel County Public Schools Caroline County Public Schools Chesapeake College Dorchester County Public Schools Garrett College Garrett County Public Schools	Hagerstown Community College Kent County Public Schools Queen Anne’s County Public Schools Somerset County Public Schools Talbot County Public Schools Washington County Public Schools Wicomico County Public Schools Worcester County Public Schools Wor-Wic Community College
Traci Verzi <i>Interim Coordinator of Finance and Legislation for Career Programs</i> <i>Career Programs and Grants Specialist - Region III</i>	
Calvert County Public Schools Charles County Public Schools College of Southern Maryland Frederick Community College Frederick County Public Schools	Montgomery College Montgomery County Public Schools Prince George’s Community College Prince George’s County Public Schools St. Mary’s County Public Schools

Appendix C: Division of Career and College Readiness and Office of Leadership Development and School Improvement Team Members

All members of the Division of Career and College Readiness Team, which includes the Office of Leadership Development and School Improvement, will support compliance reviews and technical assistance to recipients.

Tiara Booker-Dwyer, Assistant State Superintendent
Miranda Hill, Administrator to the Assistant State Superintendent

Nicassia Belton, Ed.D., Director of Data and Accountability for Career Programs and MOA Coordinator

China Wilson, Ph.D., Equity and Civil Rights Compliance Specialist
Osh Oshitoye, Ph.D., Coordinator of Data and Accountability for Career Programs

Marquita Friday, Director of Career Programs
Charles (Scott) Nichols, Interim Coordinator Career Programs, STEM, and Computer Science
Charles (Chuck) Wallace, Coordinator of Career Programs and Student Organizations

Michelle Brownson, Management Associate
Jennifer Griffin, Career Programs and Apprenticeship Specialist
Elissa Hozore, Computer Science Specialist
Kent Seuferer, Career Programs and Student Organization

Nina Roa, Director of Finance and Legislation for Career Programs
Traci Verzi, Interim Coordinator of Finance and Legislation for Career Programs
Hazel Hamond-Terry, Administrative Officer III
Nancy Hauswald, Career Programs and Grants Specialist, Region II
Dean Kendall, Career Programs and Grants Specialist, Region I

Office of Leadership Development and School Improvement

Ed Mitzel, Executive Director of Leadership Development and School Improvement
Laura Liccione, Coordinator of Academic Improvement
Morrall Thompson, Coordinator of Systematic Improvement
Anders Alicea, Instructional Transformation Specialist
Tara Corona, Continuous Improvement Specialist
Lori Ellis, Ed.D, Leadership Development Specialist
Katherine Key, Data Analyst
Felicia Lanham Tarason, Ed.D., School Leadership Support Specialist
Mary Minter, Ed.D., School Leadership Support Specialist

Career and Technical Education Programs of Study

A comprehensive review of standards, credits, and credentials for each program of study.



Division of Career and College Readiness

September 2020

Maryland Career and Technical Education (CTE) Programs of Study

Maryland State Department of Education

Karen B. Salmon, Ph.D.

State Superintendent of Schools

Clarence C. Crawford

President, Maryland State Board of Education

Carol A. Williamson, Ed.D.

Deputy State Superintendent of Teaching and Learning

Larry Hogan

Governor

Division of Career and College Readiness

Tiara Booker-Dwyer

Assistant State Superintendent

Ed Mitzel

Executive Director of Leadership Development and School Improvement

Nicassia Belton, Ed.D.

Director of Data and Accountability for Career Programs and Methods of Administration Coordinator

Marquita Friday

Director of Career Programs

Nina Roa

Director of Finance and Legislation for Career Programs

A full Division team list is in Appendix B

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Maryland Career and Technical Education (CTE) Programs of Study

Introduction

The Maryland State Department of Education's (MSDE) Division of Career and College Readiness in collaboration with stakeholders revised the vision and direction for CTE in Maryland. The vision for CTE is for each student to have access and opportunity to engage in career programs of study that:

- ✓ align to high-skill, high-wage, and/or in-demand careers;
- ✓ lead to earning industry-recognized and/or postsecondary credentials that will allow entrance and/or advancement in a specific career cluster; and
- ✓ provide career-based learning experiences that require the application of academic and technical knowledge and skills in a work setting.

The Division of Career and College Readiness is in the process of engaging in a comprehensive review of each state CTE program of study. CTE programs of study that do not align to the vision of CTE will be revised or phased-out.

This document provides an overview of all state CTE programs of study within each of Maryland's [career clusters](#). CTE programs developed by individual school systems are not included in this document. CTE programs of study contain content aligned to academic standards, industry standards, and employability skills. CTE programs of study provide the opportunity for students to engage in workplace learning experiences and earn postsecondary and/or industry-recognized credentials.

Each career cluster in this document contains a table that outlines:

1. **Name of CTE Program of Study**
2. **Required Courses.** This document only identifies required courses in each program of study. CTE programs of study contain additional courses that students have the option to take. Required courses have been identified by industry representatives as the minimum required content necessary for entry into a career field. In order for students to graduate as a CTE completer, they must complete all required courses.
3. **Minimum Number of Credits.** CTE programs of study range from three to nine or more credits to complete. On average, most programs of study are four credit programs.
4. **Standards Used in Courses.** This section identifies the industry standard(s) used in each program of study.
5. **Industry Certifications that Students May Earn.** This section identifies industry credentials that student may earn upon completion of required courses and passing technical skill assessments associated with industry credentials. Each program of

Maryland Career and Technical Education (CTE) Programs of Study

study provides the opportunity for students to earn a [State Skill Certificate](#) issued by the Maryland Department of Labor if they complete a [Youth Apprenticeship Program](#) for their work-based learning experience.

6. **Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements.** This section identifies the number of postsecondary credits that student can earn as part of statewide agreements with postsecondary institutions. Students must complete all requirements identified in that agreement in order to earn postsecondary credits. Local school systems may have additional agreements with postsecondary institutions that are not identified in this document.
7. **Career and Technical Student Organizations that Aligns to Program of Study.** Each program of study provides the opportunity for students to participate in Career and Technical Student Organizations (CTSOs). CTSOs are co-curricular learning experiences that extend course instructional content by engaging students in hands-on learning experience connected to CTE programs of study.

Some columns have not applicable (N/A) written in them for specific programs of study. All programs of study do not have a statewide articulation agreement for students to earn postsecondary credits. Programs without a statewide articulation agreement have N/A written in the column.

All CTE programs of study must provide the opportunity for students to engage in work-based learning experiences. Work-based learning experiences must be coordinated with industry representatives from the identified career cluster. Work-based learning experiences include but are not limited to:

- ✓ Apprenticeships
- ✓ Internships
- ✓ School-based Enterprises
- ✓ Simulated Work Experiences
- ✓ Capstone Projects

This document does not identify the specific type of work-based learning experience offered to students enrolled in each program of study as it can vary by school system.

The ultimate goal of this document is to increase transparency and provide a foundation that informs the continuous improvement process for CTE. This document allows for identification of areas of promise and opportunities for growth as the Division of Career and College Readiness collaborates with stakeholders to implement requirements identified in the [Maryland CTE Four-Year State Plan](#) and recommendations identified in the Blueprint for Maryland's Future.

Maryland Career and Technical Education (CTE) Programs of Study

Arts, Media, and Communication

Maryland offers great opportunities for careers in the Arts, Media and Communication Career Cluster. Students interested in this cluster combine creative abilities with technical skills and knowledge that prepare them for careers in: Digital Media Production, Graphic Communications, Web Design, Interactive Media and Game Design. Maryland CTE programs include a focus on communication, graphic communication and multimedia production. Working with employers helps ensure that these programs keep pace with the industry. Students can earn industry certifications and college credit toward advanced study in their career field of interest.

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Graphic Communications (PrintED)	<ul style="list-style-type: none"> • Introduction to Graphic Communications and • Advanced Graphic Communications (AGC). The AGC course has five accreditation areas to choose from which are as follows: <ul style="list-style-type: none"> ○ Digital File Preparation and Output ○ Offset Press Operations/ Binding and Finishing ○ Digital Production Printing ○ Graphic Design 	3	Printing & Graphics Association, MidAtlantic (PGAMA).	PrintED National Industry Recognized Certifications & Equivalent of six months on-the-job experience	N/A	SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
	<ul style="list-style-type: none"> ○ Screen Printing. 					
Interactive Media Production	<ul style="list-style-type: none"> ● Principles of Art, Media & Communications ● Interactive Media Design I ● Interactive Media Design II ● Interactive Media Portfolio Capstone 	4	National Arts, A/V Technology and Communications Career Cluster	Adobe Creative Suite <ul style="list-style-type: none"> ● Dreamweaver ● Illustrate ● InDesign ● Photoshop ● Premiere Pro 	N/A	SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

Business Management and Finance

Maryland CTE programs include a focus on financial services, accounting and finance, marketing, business management and business administrative support. These programs include options for students to earn industry certifications and college credit in a business-related career field. Students have the opportunity to take the College-Level Examination Program (CLEP) test in the areas of Financial Accounting, Principles of Management and principles of Marketing. The Advanced Placement (AP) Economics course is encouraged as a part of each program.

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Business Management	<ul style="list-style-type: none"> • Principles of Business (Management) and Entrepreneurship • Principles of Accounting and Finance • Advanced Business Management 	3	<p style="text-align: center;">MBA Research and Curriculum Center</p> <p style="text-align: center;">College Board</p>	<ul style="list-style-type: none"> • Entrepreneurship/Management A*S*K Certification • Fundamental Business Concepts A*S*K Certification • State Skill Certificate 	University of Maryland Eastern Shore - 6 credits	Future Business Leaders of America
Accounting and Finance	<ul style="list-style-type: none"> • Principles of Business (Management) and Entrepreneurship • Principles of Accounting and Finance 	3	<p style="text-align: center;">MBA Research and Curriculum Center</p> <p style="text-align: center;">College Board</p>	<ul style="list-style-type: none"> • Finance A*S*K Certification • Fundamental Business Concepts A*S*K Certification • State Skill Certificate 	University of Maryland Eastern Shore - 9 credits	Future Business Leaders of America

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
	<ul style="list-style-type: none"> • Advanced Accounting 					
Academy of Finance (NAF)	<ul style="list-style-type: none"> • Principles of Finance • Principles of Accounting – OR – CTE- Managerial Accounting • Applied Finance • Business Economics – OR – CTE- Entrepreneurship 	4	NAF	<ul style="list-style-type: none"> • NAF-Track Certification 	University of Maryland Eastern Shore - 6 credits	Future Business Leaders of America
Marketing	<ul style="list-style-type: none"> • Principles of Business (Management) and Entrepreneurship • Principles of Accounting and Finance • Introduction to Marketing 	3	MBA Research and Curriculum Center College Board	<ul style="list-style-type: none"> • Fundamental Marketing Concepts A*S*K Certification • Fundamental Business Concepts A*S*K Certification 	University of Maryland Eastern Shore - 6 credits	Future Business Leaders of America

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Business Administrative Services	<ul style="list-style-type: none"> • CTE- Principles of Business (Management) and Entrepreneurship • CTE- Principles of Accounting and Finance • CTE- Office Systems Management I/ MOS Certification • CTE - Office Systems Management II/ MOS Certification 	4	MBA Research and Curriculum Center Microsoft	<ul style="list-style-type: none"> • Fundamental Business Concepts A*S*K Certification • Microsoft Office Specialist Certification 	University of Maryland Eastern Shore - 9 credits	Future Business Leaders of America
Management Information Systems	<ul style="list-style-type: none"> • Principles of Business (Management) and Entrepreneurship 	3	MBA Research and Curriculum Center NAF	<ul style="list-style-type: none"> • Microsoft Office Specialist Certification 	N/A	Future Business Leaders of America

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
	<ul style="list-style-type: none"> • Principles of Accounting and Finance • Introduction to programming and applications 		College Board Microsoft			
Textile and Fashion Design, Merchandising and Management	<ul style="list-style-type: none"> • CTE - Textiles & Fashions Careers I • CTE - Textiles & Fashions Careers II • CTE - Textiles & Fashions Careers Capstone 	3	Standards in Review by MSDE	State Skill Certificate	N/A	Future Business Leaders of America

Maryland Career and Technical Education (CTE) Programs of Study

Construction and Development

Advances in science and technology will continue to drive innovation in the design, construction and maintenance of buildings. These advances will also impact infrastructure systems, including new design concepts, construction materials and methods and the application of information technology. Maryland high school construction-related programs allow students to advance their knowledge in design, construction management or construction trades professions.

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Construction Design and Management	<ul style="list-style-type: none"> • Introduction To Construction Design and Management • Principles of Construction Design • Advanced Design and 3D Modeling • Advanced Construction Management 	4	Standards in Review by MSDE	<ul style="list-style-type: none"> • Autodesk AutoCAD Certified User • Autodesk Revit Certified User 	<ul style="list-style-type: none"> • Morgan State University - 3 credits • University of Maryland Eastern Shore - 3 credits 	SkillsUSA
Construction Trades Professions: Masonry	<ul style="list-style-type: none"> • Construction Core • Masonry Course 1 • Masonry Course 2 • Masonry Capstone 	4	National Center for Construction Education and Research (NCCER)	<ul style="list-style-type: none"> • NCCER Construction Core • NCCER Masonry Level 1 	N/A	SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Construction Trades Professions: Carpentry	<ul style="list-style-type: none"> • Construction Core • Carpentry Course 1 • Carpentry Course 2 • Carpentry Capstone 	4	National Center for Construction Education and Research (NCCER)	<ul style="list-style-type: none"> • NCCER Construction Core • NCCER Carpentry Level 1 	N/A	SkillsUSA
Construction Trades Professions: Electrical	<ul style="list-style-type: none"> • Construction Core • Electrical Course 1 • Electrical Course 2 • Electrical Capstone 	4	National Center for Construction Education and Research (NCCER)	<ul style="list-style-type: none"> • NCCER Construction Core • NCCER Electrical Level 1 	N/A	SkillsUSA
Construction Trades Professions: Plumbing	<ul style="list-style-type: none"> • Construction Core • Plumbing Course 1 • Plumbing Course 2 • Plumbing Capstone 	4	National Center for Construction Education and Research (NCCER)	<ul style="list-style-type: none"> • NCCER Construction Core • NCCER Plumbing Level 1 	N/A	SkillsUSA
Construction Maintenance Professions: Industrial Maintenance	<ul style="list-style-type: none"> • Construction Core • Industrial Maintenance Course 1 • Industrial Maintenance Course 2 	4	National Center for Construction Education and Research (NCCER)	<ul style="list-style-type: none"> • NCCER Construction Core • NCCER Industrial Maintenance Level 1 	N/A	SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Construction Maintenance Professions: Heating, Ventilation, and Air Conditioning (HVAC)	<ul style="list-style-type: none"> • Construction Core • HVAC Course 1 • HVAC Course 2 • HVAC Capstone 	4	National Center for Construction Education and Research (NCCER)	<ul style="list-style-type: none"> • NCCER Construction Core • NCCER HVAC Level 1 	N/A	SkillsUSA
Construction Maintenance Professions: Welding	<ul style="list-style-type: none"> • Construction Core • Welding Course 1 • Welding Course 2 • Welding Capstone 	4	National Center for Construction Education and Research (NCCER)	<ul style="list-style-type: none"> • NCCER Construction Core • NCCER Welding Level 1 	NA	SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

Consumer Services, Hospitality, and Tourism

Programs in consumer services, hospitality and tourism prepare students for a variety of career options and further education. Each program includes options for students to earn industry certifications and/or college credit in a career field of interest. Students who pursue programs in culinary arts, restaurant management, lodging management or cosmetology engage in real-world experiences through internships and mentoring opportunities. These options allow students to apply their classroom instruction in meaningful ways and they give them (through licensure or certification) a jump start into the profession.

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Careers in Cosmetology	<ul style="list-style-type: none"> • Principles and Practice of Cosmetology • Advanced Cosmetology: Theory and Application • Mastery of Cosmetology 	9	Code of Maryland Regulation 13A.04.19.02	<ul style="list-style-type: none"> • Cosmetology License • State Skill Certificate 	N/A	SkillsUSA
Barbering	<ul style="list-style-type: none"> • Principles and Practice of Barbering • Advanced Barbering and Application • Mastery of Barbering 	6	Code of Maryland Regulation 13a.04.20.02	<ul style="list-style-type: none"> • Barber License • State Skill Certificate 	N/A	N/A

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Nail Specialist and Manicurist	<ul style="list-style-type: none"> • Principles and Practice of Nail Services • Advanced Nail Services and Applications • Mastery of Nail Services 	6	Code of Maryland Regulation 13a.04.19.03	<ul style="list-style-type: none"> • Nail Technician Certification • State Skill Certificate 	N/A	N/A
Culinary Arts (American Culinary Federation)	<ul style="list-style-type: none"> • Basic Cooking Principles • Introduction to Professional Cooking • Professional Cooking 	4	American Culinary Federation	<ul style="list-style-type: none"> • Certified Fundamentals Cook (CFC) 	N/A	SkillsUSA
Baking and Pastry Arts (American Culinary Federation)	<ul style="list-style-type: none"> • Basic Cooking Principles • Introduction to Professional Cooking • Professional Baking and Pastry 	4	American Culinary Federation	<ul style="list-style-type: none"> • Certified Fundamentals Pastry Cook (CFPC) 	N/A	SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Food and Beverage Management (ProStart)	<ul style="list-style-type: none"> • Becoming a Food Service Professional (Level 1) • Becoming a Food Service Professional (Level 2) • Practical Experience as a Food Service Professional 	4	ProStart National Restaurant Association Educational Foundation	<ul style="list-style-type: none"> • National ProStart Certificate of Achievement 	N/A	<ul style="list-style-type: none"> • SkillsUSA • Future Business Leaders of America
Hospitality and Tourism Management	<ul style="list-style-type: none"> • Principles of Hospitality and Tourism • Hospitality and Tourism Management • Hospitality and Tourism Work-Based Learning Experience 	3	American Hotel & Lodging Educational Institute	<ul style="list-style-type: none"> • Certified Hospitality Tourism Management Professional (CHTMP) 	N/A	<ul style="list-style-type: none"> • SkillsUSA • Future Business Leaders of America

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Restaurant, Culinary, and Catering Management	<ul style="list-style-type: none"> • Introduction to food services • Introduction to Consumer Services, Hospitality and Tourism Management • Foundation topics in Restaurant, Culinary, and Catering Specialization • Advanced topics in Restaurant, Culinary, and Catering Specialization 	4	ProStart National Restaurant Association Educational Foundation	<ul style="list-style-type: none"> • National ProStart Certificate of Achievement • State Skill Certificate 	N/A	N/A

Maryland Career and Technical Education (CTE) Programs of Study

Environmental, Agricultural, and Natural Resources

The agricultural sector is a highly competitive industry creating new challenges in identifying global and domestic markets; improving business planning, financing, risk management, and productivity; and reducing costs. Advances in science and technology, in particular biotechnology, will continue to drive innovation and growth in this Career Cluster. Growing public concerns over natural resources, environmental quality and public health will continue to expand the role and scope of the natural resource management and environmental services sectors.

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Curriculum for Agricultural Sciences Education	1. Agriculture, Food, and Natural Resources 2. Principles Options: a. Principles of Agricultural Science - Animal Systems b. Principles of Agricultural Science - Plant Systems c. Principles of Agricultural Science - Natural Resources and Ecology d. Principles of Agricultural Science - Agricultural Power and Technology	4	National Quality Program Standards National AFNR Career Cluster Content Standards	State Skill Certification <i>Currently researching program-specific certifications such as iCEV, Nutrient Management & Fertilizer Application, Pesticide Application.</i>	Institute of Applied Agriculture at the University of Maryland - 3 credits <i>Currently working on additional agreements.</i>	FFA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
	3.Specializations Options (concentrator courses): a. Animal and Plant Biotechnology b. Food Science and Safety c. Environmental Science Issues d. Mechanical Systems in Agriculture 4. Agriculture, Research, and Development (Capstone)					
Horticultural Services	<ul style="list-style-type: none"> • Foundations of Horticulture • Plant Production • Landscape Design and Management • Horticultural Services Capstone Experience 	4	Maryland Nursery Landscape Association (MNLA) Skill Standards	<ul style="list-style-type: none"> • Certified Professional Horticulturist (CPH) • State Skill Certification 	<i>Currently working on statewide articulation agreements.</i>	FFA
Environmental Studies/ Natural Resources	<ul style="list-style-type: none"> • Human Ecology and Environmental Problem Solving 	4	Next Generation Science Standards, Common Core	State Skill Certification	N/A	FFA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
	<ul style="list-style-type: none"> • Natural Resource Management • Environmental Technologies and Techniques • Environmental and Natural Resource Research and Ethics 		Mathematics Standards , and the Maryland Environmental Literacy Standards			
Agricultural Sciences and Operations	<ul style="list-style-type: none"> • Introduction to agriculture • Foundation topics in agricultural services and operations specializations • Advanced topics in agricultural services and operations specializations 	3	Standards in Review by MSDE	<ul style="list-style-type: none"> • Certified Professional Horticulturalist (CPH) certification • State Skill Certification • Geographic Information System (GIS) certification • ESRI ArcGIS Desktop certification 	Varies by local school system	FFA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Natural Resources and Conservation	<ul style="list-style-type: none"> • Introduction to Agriculture • Foundation Topics in Natural Resources and Conservation • Advanced Topics in Natural Resources and Conservation 	3	Standards in Review by MSDE	State Skill Certification	Varies by local school system	FFA

Maryland Career and Technical Education (CTE) Programs of Study

Health and Biosciences

CTE programs in the Health and Biosciences Cluster focus on preparing dedicated professionals with the knowledge and skills necessary to pursue challenging and rewarding careers and further education. Health and bioscience careers are among the fastest growing and highest in demand in the country as the population ages and health care needs continue to increase. CTE programs in this career cluster prepare students for positions in direct patient care settings and research and laboratory facilities, as well as for opportunities in business and management related to health care.

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Academy of Health Professions - Certified Nursing Assistant (CNA)	<ul style="list-style-type: none"> • Foundations of Medicine and Health Science • Structure and Functions of the human body • Medical Specialty – Certified Nursing Assistant • Clinical Internship 	4	Maryland Board of Nursing - CNA	Certified Nursing Assistant	Stevenson University – 4 credits	SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Academy of Health Professions - Pharmacy Technician	<ul style="list-style-type: none"> • Foundations of Medicine and Health • Structure and Functions of the human body • Medical Specialty – Pharmacy • Internship • College Course for Dual Enrollment 	4	National Healthcareer Association	<ul style="list-style-type: none"> • Certified Pharmacy Technician (CPhT) • State Skill Certification 	Stevenson University – 4 credits	SkillsUSA
Academy of Health Professions - Dental Assisting	<ul style="list-style-type: none"> • Foundations of Medicine and Health • Structure and Functions of the human body • Medical Specialty – Dental • Internship • College Course for Dual Enrollment 	4	Dental Assistant National Board	<ul style="list-style-type: none"> • Certified Dental Assistant (CDA) • State Skill Certification 	N/A	SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Academy of Health Professions - Clinical Medical Assistant	<ul style="list-style-type: none"> • Foundations of Medicine and Health • Structure and Functions of the human body • Medical Specialty – Certified Clinical Medical Assistant • Internship • College Course for Dual Enrollment 	4	National Healthcareer Association	<ul style="list-style-type: none"> • Certified Clinical Medical Assistant (CCMA) • State Skill Certification 	Stevenson University – 4 credits	SkillsUSA
Academy of Health Professions - Physical Rehabilitation	<ul style="list-style-type: none"> • Foundations of Medicine and Health • Structure and Functions of the human body • Medical Specialty – Physical Rehabilitation • Internship • College Course for Dual Enrollment 	4	National Strength Professionals Association	<ul style="list-style-type: none"> • Personal Trainer Certification • Conditional Specialist Certification • State Skill Certification 	Stevenson University – 4 credits	SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Academy of Health Professions - Allied Health Other Specialty	<ul style="list-style-type: none"> • Foundations of Medicine and Health • Structure and Functions of the human body • Medical Specialty – Other • Internship • College Course for Dual Enrollment 	4	Standards in Review by MSDE	State Skill Certification	Stevenson University – 4 credits	SkillsUSA
Academy of Health Professions - Allied Health Intern	<ul style="list-style-type: none"> • Foundations of Medicine and Health • Structure and Functions of the human body • Allied Health Internship 	4	Standards in Review by MSDE	State Skill Certification	Stevenson University – 4 credits	SkillsUSA
Academy of Health Professions - Dual Enrollment	<ul style="list-style-type: none"> • Foundations of Medicine and Health • Structure and Functions of the human body 	4	Standards in Review by MSDE	N/A	Stevenson University – 4 credits	SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
	<ul style="list-style-type: none"> • Allied Health College Course for Dual Enrollment 					
Biomedical Science (PLTW)	<ul style="list-style-type: none"> • PLTW Principles of Biomedical Science • PLTW Principles Human Body Systems • PLTW Medical Interventions • PLTW Biomedical Innovation 	4	National Standards for Science, Mathematics, and English Language Arts, and the Accountability Criteria for National Health Care Cluster Foundation Standards	<ul style="list-style-type: none"> • Biotechnician Assistant • State Skill Certification 	Stevenson University – Students scoring 7 or higher on each examination may earn transcribed credits	N/A
Health Professions/ Allied Health Professions and Related Sciences	<ul style="list-style-type: none"> • Introduction to Health • Foundation Topics in Health / Allied Health Specializations • Advanced Topics in Health / Allied Health Specializations 	4	Standards in Review by MSDE	<ul style="list-style-type: none"> • Certified Pharmacy Technician (CPhT) • Certified Dental Assistant (CDA) • Certified Clinical Medical Assistant (CCMA) • State Skill Certification 	N/A	N/A

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Biotechnology	<ul style="list-style-type: none"> • Molecular Biotechnology 1 • Molecular Biotechnology 2 • Special topics in Biotechnology 	4	Standards in Review by MSDE	<ul style="list-style-type: none"> • Biotechnician Assistant • State Skill Certification 	N/A	N/A

Maryland Career and Technical Education (CTE) Programs of Study

Human Resource Services

Advances in scientific knowledge and increased public awareness of social problems and issues are contributing to a demand for high-quality social services. Public concerns over crime and the increased demand for legal intervention in businesses and communities will continue to drive the growth of law enforcement, emergency services and legal services. The continuous need for professionals in education fields, especially in the critical shortage areas, offers creative ways to engage young people early on in the teaching profession

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Fire, and Emergency Medical Training/ High School Cadet (MFRI)	<ul style="list-style-type: none"> • Fire Emergency Training/High School Cadet Level I • Fire Emergency Training/High School Cadet Level II • Fire Emergency Training/High School Cadet Level III 	4	Maryland Fire and Rescue Institute, National Fire Protection Association Professional Qualifications Standards and U.S. Department of Transportation	<ul style="list-style-type: none"> • Emergency Medical Technician (EMT-B) • Emergency Medical Responder Certification • Fire Fighter I Certification • Fire Fighter II Certification • Truck Company Fireground Operations Certification • Hazardous Materials Operations Certification 	Anne Arundel Community College – Up to 10 articulated credits Cecil College – Up to 32 credits f College of Southern Maryland – Up to 20 credits Frederick Community College – Up to 15 credits Prince George’s Community College – Up to 18 credits University of Maryland Global Campus – Varies dependent on major	Skills USA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
				<ul style="list-style-type: none"> • Rescue Technician, Site Operations Certification • Rescue Technician, Vehicle & Machine Extrication Certification 		
Teacher Academy of Maryland	<ul style="list-style-type: none"> • Human Growth and Development through Adolescence • Teaching as a Profession • Foundations of Curriculum and Instruction • Education Academy Internship 	4	Interstate Teacher Assessment and Support Consortium (InTASC) and the National Council for the Accreditation for Teacher Education (NCATE) standards.	<ul style="list-style-type: none"> • ParaPro • PraxisCORE 	<ul style="list-style-type: none"> • Bowie State University – 3 credits • Coppin State University – 3 credits • Frostburg State University – 6 credits • Hood College – 3 • Morgan State University – 3 credits • Notre Dame of Maryland University – 9 credits • St. Mary’s College of Maryland – 4 credits • Salisbury University – 3 credits 	<ul style="list-style-type: none"> • SkillsUSA • Educators Rising

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
					<ul style="list-style-type: none"> • Stevenson University – 6 credits • Towson University – 3 credits 	
Homeland Security & Emergency Preparedness – Information/Communications Technology	<ul style="list-style-type: none"> • Foundations of Homeland Security and Emergency Preparedness • Introduction to Geographic Information Systems and Remote Sensing • Advanced Geographic Information Systems and Remote Sensing • Internship, Capstone or Dual Enrollment 	4	Standards in Review by MSDE	Geographic Information Systems (GIS) Certification	<ul style="list-style-type: none"> • University of Maryland Global Campus – 3 credits • Frederick Community College – 6 credits 	N/A
Homeland Security & Emergency Preparedness - Homeland Security Sciences	<ul style="list-style-type: none"> • Foundations of Homeland Security and Emergency Preparedness • Homeland Security Science 	4	Standards in Review by MSDE	N/A	<ul style="list-style-type: none"> • University of Maryland Global Campus– 3 credits • Frederick Community College – 6 credits 	N/A

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
	<ul style="list-style-type: none"> • Homeland Security Science Research Methods and Applications • Internship, Capstone or Dual Enrollment 					
Homeland Security & Emergency Preparedness - Criminal Justice/Law Enforcement Pathway	<ul style="list-style-type: none"> • Foundations of Homeland Security and Emergency Preparedness • Administration of Justice I • Administration of Justice II • Internship, Capstone or Dual Enrollment 	4	Standards in Review by MSDE	N/A	<ul style="list-style-type: none"> • Harford Community College – 3 credits • Frederick Community College – 3 credits 	N/A

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Criminal Justice, Law and Society	<ul style="list-style-type: none"> • Introduction to Law OR Introduction to Criminal Justice • Advanced Topics in Law OR Advanced Topics in Criminal Justice • Contemporary Issues in Criminal Justice, Law and Society • Apprenticeship, Work-Based Learning, Capstone, Dual Enrolment OR Certification Exam Prep 	4	Standards in Review by MSDE	NA	Varies based on school system	SkillsUSA
Early Childhood Education, Infants/Toddler Child Development Associate (CDA)	<ul style="list-style-type: none"> • Child Growth & Development (Birth – Adolescence) • Learning Environments for Infants & Toddlers • Establishing a Purposeful 	4	<ul style="list-style-type: none"> • Child Development Associate (CDA) • Interstate Teacher Assessment and Support 	Child Development Associate (CDA) Infant/Toddler	Anne Arundel Community College – 6 credits	SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
	Program for Infants and Toddlers <ul style="list-style-type: none"> • Child Development Associate Portfolio and Internship (Infants/Toddlers) 		Consortium (InTASC) <ul style="list-style-type: none"> • Danielson Framework • AAS.EDU.ECD Early Childhood Development • Associate of Applied Science Degree • AAT.EDU.ECE Associate of Arts in Teaching • National Association for the Education of Young Children (NAEYC) 			
Early Childhood Education, Preschool Child Development Associate (CDA)	<ul style="list-style-type: none"> • Child Growth and Development (Birth – Adolescence) 	4	<ul style="list-style-type: none"> • Child Development Associate (CDA) 	Child Development Associate (CDA) Preschool	Anne Arundel Community College – 6 credits	SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
	<ul style="list-style-type: none"> • Learning Environments for Preschoolers • Establishing a Purposeful Program for Preschoolers • Child Development Associate Portfolio and Internship (Preschoolers) 		<ul style="list-style-type: none"> • Interstate Teacher Assessment and Support Consortium (InTASC) • Danielson Framework • AAS.EDU.ECD Early Childhood Development Associate of Applied Science Degree • AAT.EDU.ECE Associate of Arts in Teaching • National Association for the Education of Young Children (NAEYC) 			

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Early Childhood Education and Child Care	<ul style="list-style-type: none"> • Early Childhood Education, Child Care I OR Human Growth and Development through Adolescence • Early Childhood Education, Child Care II OR Curriculum Development for Young Children • Early Childhood Education, Child Care Internship Practicum • Capstone, Dual Enrollment or Exam Prep4 	4	Standards in Review by MSDE	90-Hour Certificate	Varies with each school system and local community college	SkillsUSA
Junior Reserve Officers' Corps (JROTC) Navy	<ul style="list-style-type: none"> • Naval Science 1 • Naval Science 2 • Naval Science 3 	3	JROTC curriculum is based on the principles of performance-based, learner-centered education, and is	N/A	In Progress- Local School Systems have various existing articulation agreements with local community colleges	SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
			linked to the McREL (instructional leadership resource) national standards.			
JROTC Army	<ul style="list-style-type: none"> • Leadership Education and Training 1 (LET1) • Leadership Education and Training 2 (LET2) • Leadership Education and Training 3 (LET3) 	3	U.S. Army JROTC program has been accredited by the national accrediting agency, AdvancED	N/A	In Progress- Local School Systems have various existing articulation agreements with local community colleges	SkillsUSA
JROTC Marines	<ul style="list-style-type: none"> • Leadership Education 1 (LE-I) • Leadership Education 2 (LE-II) • Leadership Education 3 (LE-III) 	3	Nationally accredited under CITA/SACS and is directly linked to National Standards		In Progress- Local School Systems have various existing articulation agreements with local community colleges	SkillsUSA
JROTC Air Force	<ul style="list-style-type: none"> • Aerospace Science and Leadership 100 	3	Accredited by the national		In Progress- Local School Systems have various existing articulation	SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
	<ul style="list-style-type: none"> • Aerospace Science and Leadership 200 • Aerospace Science and Leadership 300 		accrediting agency, AdvancED		agreements with local community colleges	

Maryland Career and Technical Education (CTE) Programs of Study

Information Technology

Information Technology (IT) professionals have the skills to determine customer and business needs and requirements, manage complex projects, and integrate software and hardware solutions. Maryland CTE programs include opportunities for students to focus on software development, programming, IT hardware and networking technologies. Cyber Security is an increasingly important part of IT programs and represents expanding opportunities for employment and advanced education and training in Maryland.

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Database Academy (Oracle) - Java Programming	<ul style="list-style-type: none"> • Java Fundamentals • Java Foundations • Java Programming 	3	<ul style="list-style-type: none"> • Computer Science Teacher Association K-12 Computer Science Standards • International Society for Technology in Education (ISTE) 	<ul style="list-style-type: none"> • Java SE 7 Fundamentals Certification Exam • Java SE 8 Programmer I 1Z0-803 	N/A	SkillsUSA
Database Academy (Oracle) - Database Management	<ul style="list-style-type: none"> • Database Foundations • Database Design & Programming with SQL • Database Programming with PL/SQL 	3	<ul style="list-style-type: none"> • CSTA K-12 Computer Science Standards • International Society for Technology in Education (ISTE) 	<ul style="list-style-type: none"> • Oracle Database 11g: SQL Fundamentals I Certification Exam 1Z0-051 • Program With PL/SQL Certification Exam 1Z0-144 	N/A	SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Project Lead the Way (PLTW) Computer Science	<ul style="list-style-type: none"> • PLTW Computer Science Essentials • PLTW Computer Science Principles • PLTW Computer Science A (Java) • PLTW Cybersecurity 	4	Computer Science Teachers Association (CSTA) Standards	N/A	Students can earn Advanced Placement (AP) credits through successful completion of the AP Computer Science Principles and/or AP Computer Science A examinations	Future Business Leaders of America
Apple Swift	<ul style="list-style-type: none"> • App Development with Swift, Level 1 • App Development with Swift, Level 2 • Entrepreneurship and Innovation 	3	CSTA Standards	Apple App Development with Swift Coding 1	N/A	Future Business Leaders of America
IT Networking Academy CISCO - CCNA Routing and Switching	<ul style="list-style-type: none"> • Intro to Networks • Routing & Switching Essentials • Scaling Networks • Connecting Networks 	4	National Institute for Standards and Technology	<ul style="list-style-type: none"> • Cisco Certified Technician, • or CompTIA Network+ • CCNA Routing & Switching 	N/A	SkillsUSA
IT Networking Academy CISCO - CCNA Security	<ul style="list-style-type: none"> • Intro to Networks • Routing & Switching Essentials • Cybersecurity Essentials • CCNA Security 	4	National Institute for Standards and Technology	<ul style="list-style-type: none"> • Cisco Certified Technician, • CompTIA Network+, 	N/A	SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
				<ul style="list-style-type: none"> • CCNA Security or CompTIA Security+ 		
IT Networking Academy CISCO - CCNA Cyber Ops	<ul style="list-style-type: none"> • IT Essentials or Cybersecurity Essentials • Cybersecurity Essentials or NDG Linux Essentials • Network Essentials • Cyber Ops 	4	National Institute for Standards and Technology	<ul style="list-style-type: none"> • IT Fundamentals, • CompTIA A+ • LPI Linux Essentials, • CCNA Cyber Ops, or • CompTIA PenTest+ 		SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

Manufacturing, Engineering, and Technology

Programs in the Manufacturing, Engineering, and Technology Cluster prepare students for a variety of career areas, including opportunities to become engineers, engineering technologists or technicians. Students engage in real-world projects that strengthen their understanding of science, technology, engineering, and mathematics (STEM). By completing challenging projects related to design, manufacturing process applications and quality improvements, they are being educated for the high-performance workplace using advanced technologies. To remain internationally competitive, employers need employees who can develop and use new technologies that will continuously improve the quality of life for Marylanders.

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Project Lead the Way (PLTW) Pre- Engineering	<ul style="list-style-type: none"> • PLTW Introduction to Engineering Design • PLTW Principles of Engineering • PLTW Digital Electronics • PLTW Specialization Course (Aerospace Engineering; Civil Engineering and Architecture; Computer Integrated Manufacturing, Computer Science Principles; or Environmental Sustainability) 	5	International Technology and Engineering Educators Association (ITEEA) Standards for Technological Literacy Computer Science Teachers Association (CSTA) Standards	Autodesk Certified User	University of Maryland Baltimore County (UMBC) – 3 credits Most articulation agreements reside at the district level	Skills USA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
	<ul style="list-style-type: none"> • PLTW Engineering Design and Development 					
Manufacturing Engineering Technology (NIMS) - Machining Operations	<ul style="list-style-type: none"> • Measurement, Materials, and Safety; • Job Planning, Benchwork, and Layout; and <p>Two of the following:</p> <ul style="list-style-type: none"> • Manual Milling, • Turning Operations Between Centers, • Turning with Chucking, • Grinding, and • Drilling Operations 	4	National Institute of Metalworking Skills (NIMS) Credentials	Machining Level I: <ul style="list-style-type: none"> • Measurement, Materials, and Safety; • Job Planning, Benchwork, and Layout; • Milling I; Turning I (Between Centers); Turning I (Chucking); Grinding I; and Drill Press I 		SkillsUSA
Manufacturing Engineering Technology (NIMS) - CNC Programming and Operations	<ul style="list-style-type: none"> • Measurement, Materials, and Safety; • Job Planning, Benchwork, and Layout; and <p>Two of the following:</p>	4	National Institute of Metalworking Skills (NIMS) Credentials	Machining Level I: <ul style="list-style-type: none"> • Measurement, Materials, and Safety; • Job Planning, Benchwork, and Layout; 		SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
	<ul style="list-style-type: none"> • CNC Lathe Operations • CNC Lathe Programming Set-up & Operations, • CNC Milling Operations, and • CNC Milling: Programming Set-up & Operations 			<ul style="list-style-type: none"> • CNC Lathe Operations • CNC Lathe Programming Set-up & Operations, • CNC Milling Operations, and • CNC Milling: Programming Set-up & Operations 		
Manufacturing Engineering Technology (NIMS) – Machining/CNC Programming and Operations	<ul style="list-style-type: none"> • Measurement, Materials, and Safety; • Job Planning, Benchwork, and Layout; and <p>One of the following:</p> <ul style="list-style-type: none"> • Manual Milling, • Turning Operations Between Centers, • Turning with Chucking, • Grinding, or 	4	National Institute of Metalworking Skills (NIMS) Credentials	Machining Level I: <ul style="list-style-type: none"> • Measurement, Materials, and Safety; • Job Planning, Benchwork, and Layout; • Milling I; • Turning I (Between Centers); • Turning I (Chucking); • Grinding I; and • Drill Press I 		SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
	<ul style="list-style-type: none"> • Drilling Operations and One of the following: • CNC Lathe Operations • CNC Lathe Programming Set-up & Operations, • CNC Milling Operations, and • CNC Milling: Programming Set-up & Operations 			<ul style="list-style-type: none"> • CNC Lathe Operations • CNC Lathe Programming Set-up & Operations, • CNC Milling Operations, and • CNC Milling: Programming Set-up & Operations 		

Maryland Career and Technical Education (CTE) Programs of Study

Transportation Technologies

Advances in science and engineering are producing major innovations in transportation technology, resulting in faster movement of people and goods at lower costs and with less environmental and safety risks. These innovations require additional skills to manage and maintain transportation equipment. CTE programs provide opportunities for students to prepare for careers in the automotive industry.

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Automotive Technology Maintenance and Light Repair- Plus (ASE)	<ul style="list-style-type: none"> • Electrical/Electronic Systems and HVAC • Suspension and Steering and Brakes • Maintenance Light Repair Powertrain and Engine Repair/ Performance 	4	National Institute for Automotive Service Excellence (ASE)	Entry Level ASE -- Certification for: Maintenance Light Repair (MLR) Optional: Brakes, Electrical/ Electronic Systems, and/or Suspension & Steering	Community College of Baltimore County: Catonsville - 5 credits Pennsylvania College of Technology - up to 15 credits	SkillsUSA
Autobody/ Collision Repair Technician	<ul style="list-style-type: none"> • Non-Structural Analysis and Damage Repair • Principles of Painting and Refinishing • Advanced Painting and Refinishing 	6	Standards from the National Institute for Automotive Service Excellence (ASE) Standard from the Inter-Industry Conference on	Entry Level ASE certification for: <ul style="list-style-type: none"> • Non-structural Analysis and Damage Repair • Painting and Refinishing 	Pennsylvania College of Technology - 10 -16 Credits	SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
			Auto Collision Repair I-CAR	<ul style="list-style-type: none"> • Structural Analysis and Damage Repair I-CAR-Platinum ProLevel 1 Credentials for the <ul style="list-style-type: none"> • Refinish Technician and/or • Non-Structural Technician • Steel GMA Welding 		
Medium/Heavy Truck Technician-Diesel (NATEF)	<ul style="list-style-type: none"> • Medium/Heavy Truck: Suspension, Steering and Brakes • Medium/Heavy Truck: Electrical/Electronic Systems • Medium/Heavy Truck: Diesel and 	5	Standards from the National Institute for Automotive Service Excellence (ASE)	Entry Level ASE certification for: <ul style="list-style-type: none"> • Inspection Maintenance & Minor Repair and/or • Brakes • Electrical/Electronic Systems 	Pennsylvania College of Technology - 4 credits	SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
	Preventative Maintenance			<ul style="list-style-type: none"> Suspension & Steering 		
Marine Maintenance and Repair Technologies	<ul style="list-style-type: none"> Introduction to marine transportation technologies Foundation topics in marine maintenance and repair Advanced topics in marine maintenance and repair 	4	The American Boat and Yacht Council (ABYC)	ABYC Certifications	N/A	SkillsUSA
Transportation Logistics and Management	<ul style="list-style-type: none"> TLC Explorations Intro Transportation & Logistics Intro Air/Seaport Ops Supply Chain Management 	4	Association for Supply Chain Management	N/A	Dual Enrolled Credit with Anne Arundel Community College up to 18 credits, results in a Lower Division Certificate	Future Business Leaders of America
Automotive Maintenance and Repair Technologies	<ul style="list-style-type: none"> Introduction to Automotive Transportation Technologies Foundation Topics in Automotive 	4	Standards from the National Institute for Automotive Service Excellence (ASE)	Entry Level ASE Certification for: Maintenance Light Repair Optional:	Varies from school system to school system. Each system has to enter into its own articulation agreements with colleges and trade schools.	SkillsUSA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
	Transportation Technologies • Advanced Topics in Automotive Transportation Technologies			Brakes, Electrical, and or Suspension & Steering.		

Maryland Career and Technical Education (CTE) Programs of Study

Work-based Learning

Supervised work-based learning allow high school students on-the-job experiences related to their career choice. Students may also elect to complete work-based learning through participation in a CTE program, Career Research and Development (CRD), or through the Apprenticeship Maryland (AMP) program. The programs are designed to link instruction with specific work experiences. These linked learning experiences are organized around a plan that is cooperatively developed by the student, a work-based learning coordinator, and employer to add value to and extend a student’s career preparation. Students in CRD or AMP can be placed in positions related to any of Maryland’s 10 Career Clusters.

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
Career and Research Development	<ul style="list-style-type: none"> • Career Research and Development • Career Development, Preparation and Transition • Work-Based Learning Experience 	3	National Career Development Guidelines, Maryland’s Career Development Framework, and 21 st Century Skills	N/A	N/A	<ul style="list-style-type: none"> • SkillsUSA • Future Business Leaders of America • FFA
Apprenticeship	<ul style="list-style-type: none"> • Apprenticeship Related Instruction • Apprenticeship Work-Based Learning Experience 1 • Apprenticeship Work-Based Learning Experience 2 	4	Program designed by MSDE and Maryland Department of Labor. Apprenticeship Approved by Maryland Apprenticeship	Depends on the Apprenticeship experience. An industry-recognized credential if available and appropriate to the apprenticeship experience	Depends on the Apprenticeship experience. Some apprenticeships include opportunities to earn college credit	<ul style="list-style-type: none"> • SkillsUSA • Future Business Leaders of America • FFA

Maryland Career and Technical Education (CTE) Programs of Study

CTE Program of Study	Required Courses	Minimum Number of Credits	Standards Used in Courses	Industry Certifications that Students May Earn	Postsecondary Credentials that Students May Earn Based on Statewide Articulation Agreements	Career and Technical Student Organization (CTSO) that Aligns to Program of Study
	<ul style="list-style-type: none"> • Apprenticeship Work-Based Learning Experience 3 		and Training Council			

Appendix A: Career Cluster Points of Contact

Each career cluster is led by staff in the Division of Career and College Readiness. Questions about programs of study within a career cluster may be directed to the appropriate cluster lead(s).

1. Art, Media, and Communication

- Marquita Friday, Director of Career Programs
Marquita.Friday@Maryland.gov
- Jennifer Griffin, Career Programs and Apprenticeship Specialist
Jennifer.Griffin@Maryland.gov

2. Business Management and Finances

- Nicassia Belton, Ed.D., Director of Data and Accountability
Nicassia.Belton@Maryland.gov
- Kent Seuferer, Career Programs and Student Organization Specialist
Kent.Seuferer@Maryland.gov

3. Consumer Service, Hospitality, and Tourism

- Marquita Friday, Director of Career Programs
Marquita.Friday@Maryland.gov
- Nina Roa, Director of Finance and Legislation for Career Programs
Nina.Roa@Maryland.gov

4. Construction and Development

- Charles (Chuck) Wallace, Coordinator of Career Programs and Student Organizations
Charles.Wallace@Maryland.gov

5. Environmental, Agriculture, and Natural Resources

- Dean Kendall, Career Programs and Grants Specialist – Region I
Dean.Kendall@Maryland.gov

Maryland Career and Technical Education (CTE) Programs of Study

6. Health and Bioscience

- Nina Roa, Director of Finance and Legislation for Career Programs
Nina.Roa@Maryland.gov
- Charles (Scott) Nichols
Charles.Nichols@Maryland.gov

7. Human Resource Services

- Traci Verzi, Acting Coordinator of Finance and Legislation for Career Programs
Traci.Verzi@Maryland.gov

8. Information Technology

- Marquita Friday, Director of Career Programs
Marquita.Friday@Maryland.gov
- Charles (Scott) Nichols, Acting Coordinator of Career Programs, STEM, and Computer Science
Charles.Nichols@Maryland.gov

9. Manufacturing, Engineering, and Technology

- Marquita Friday, Director of Career Programs
Marquita.Friday@Maryland.gov
- Charles (Scott) Nichols, Acting Coordinator of Career Programs, STEM, and Computer Science
Charles.Nichols@Maryland.gov

10. Transportation Technologies

- Nancy Hauswald
Nancy.Hauswald@Maryland.gov

Work-based Learning

All CTE programs of study must provide the opportunity for students to engage in work-based learning experiences. The point of contact for work-based is:

Jennifer Griffin
Jennifer.Griffin@Maryland.gov

Maryland Career and Technical Education (CTE) Programs of Study

Appendix B: Division of Career and College Readiness Team

Tiara Booker-Dwyer, Assistant State Superintendent
Miranda Hill, Administrator to the Assistant State Superintendent

Nicassia Belton, Ed.D., Director of Data and Accountability for Career Programs and MOA Coordinator
Osh Oshitoye, Ph.D., Coordinator of Data and Accountability for Career Programs
China Wilson, Ph.D., Equity and Civil Rights Compliance Specialist

Marquita Friday, Director of Career Programs
Michelle Brownson, Management Associate
Charles (Scott) Nichols, Acting Coordinator Career Programs, STEM, and Computer Science
Charles (Chuck) Wallace, Coordinator of Career Programs and Student Organizations
Jennifer Griffin, Career Programs and Apprenticeship Specialist
Elissa Hozore, Computer Science Specialist
Kent Seufferer, Career Programs and Student Organization Specialist

Nina Roa, Director of Finance and Legislation for Career Programs
Hazel Hamond-Terry, Administrative Officer III
Traci Verzi, Acting Coordinator of Finance and Legislation for Career Programs
Dean Kendall, Career Programs and Grants Specialist, Region I
Nancy Hauswald, Career Programs and Grants Specialist, Region II

Ed Mitzel, Executive Director of Leadership Development and School Improvement
Laura Liccione, Coordinator of Academic Improvement
Morrall Thompson, Coordinator of Systematic Improvement
Lori Ellis, Ed.D, Coordinator of Leadership Development
Anders Alicea, Instructional Transformation Specialist
Tara Corona, Continuous Improvement Specialist
Katherine Key, Data Analyst
Felicia Lanham Tarason, Ed.D., School Leadership Support Specialist
Mary Minter, Ed.D., School Leadership Support Specialist

Maryland Career and Technical Education (CTE) Programs of Study

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Equity Assurance & Compliance Office
Office of the Deputy State Superintendent for Finance and Administration

Maryland State Department of Education
200 West Baltimore Street, Baltimore, MD 21201-2595
410-767-0426 - Voice, 410-767-0431 – Fax, 410-333-6442 - TTY/TDD

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