Blueprint for Maryland's Future

Initial Phase One Implementation Plan

March 2023






Career and Technical Education (CTE) Committee

Governor's Workforce Development Board | Maryland Department of Labor

Career and Technical Education (CTE) Committee Initial Phase One CTE Implementation Plan

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Maryland Department of Labor
Governor's Workforce Development Board
CTE Committee
Baltimore, Maryland

March 2023

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Table of Contents

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Maryland Department of Labor
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March 2023

The Honorable Isaiah Legget
Chair of the Accountability and Implementation Board

Dear Chair Leggett and Members of the Accountability and Implementation Board:

On behalf of the Maryland Career and Technical Education (CTE) Committee, I am pleased to submit this initial Phase One implementation plan for CTE under the Blueprint for Maryland's Future. The Committee adopted this plan in its public meeting on Tuesday, March 14, 2023, and submitted it to the Accountability and Implementation Board (AIB) on Wednesday, March 15, 2023, as required by Maryland Education Statute §21-209.

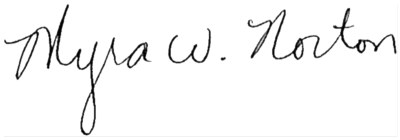
The development of this initial Phase One implementation plan was a months-long effort involving extensive research, analysis, interviews, outreach, and drafting. This plan addresses the initial Phase One period of FY 22-24, as indicated in the AIB Initial Implementation Plan, elements of which will be expanded upon in an updated Phase One plan due to the AIB in FY 24 and a Phase Two plan due to the AIB in FY 27. Throughout the process, over 50 stakeholders were interviewed, including experts from a wide array of industries such as career counseling, workforce development, roofing, solar, agriculture, hospitality, culinary, cyber and technology, HVAC, community colleges, military, health care, cosmetology, interactive media production, engineering, education, and trade unions. Students, families, educators, and CTE directors were interviewed from 18 Local Education Agencies (LEAs) across Maryland. The Committee updated the public on its progress at five public meetings live streamed on YouTube, featuring deep dives into specific policy areas of CTE implementation from guest experts in apprenticeship, college and career readiness, local workforce development, and more.

The initial Phase One implementation plan of the CTE Committee is organized primarily by the tasks under the purview of the Committee as outlined by the AIB under Pillar 3 of the Blueprint: AIB Task 1 (3.4.1) addresses career counseling; AIB Task 2 (3.4.2) explores the ambitious 45% goal in the Blueprint; AIB Task 3 (3.4.3) focuses on CTE Expert Review Teams (ERT); and AIB Task 4 (3.4.4) dives into the duties of the CTE Committee and the development of Skills Standards. These tasks and corresponding subtasks detail the actions the Committee has taken thus far and will be taking through FY 24. Each task also includes considerations for future phases of implementation as the Committee develops its long-range plan for CTE implementation.

The Committee understands that this document is not only a plan for the AIB and State agencies, but also an opportunity to engage stakeholders and establish common language and a foundation of shared understanding as we embark on this first phase of implementation. As such, this plan also includes background on the vision

of the Kirwan Commission, the passage of the Blueprint for Maryland's Future, the formation of the CTE Committee, historical context and lessons from around the world, and details on the development of this plan. The plan concludes with supporting documents, hyperlinked source material which is referenced throughout this document, a guide to the acronyms used in the plan, and a glossary of terms. An informed public is an empowered public, and the Committee intends for this and future documents to grant stakeholders access to the knowledge necessary for the effort the people of Maryland will collectively undertake as the promise of the Blueprint is realized in communities across the state.

As stated in the Blueprint, the CTE Committee's purpose is to build an integrated, globally competitive framework for providing CTE to Maryland students in public schools, institutions of postsecondary education, and the workforce. This vision integrates academic knowledge and occupational competencies that enable students to develop the critical thinking, problem solving, employability, and technical skills required to meet the workforce and economic development needs of the 21st century. In the final report of the Kirwan Commission in 2020, Chair Dr. William "Brit" Kirwan stated "the status quo should be acceptable to no one." The Blueprint for Maryland's Future is a once in a generation opportunity to reimagine education in our state, with its innovative and truly visionary approach to CTE, career readiness, and partnerships between education and the workforce. Maryland is in a unique position to emerge as a national leader in CTE programming if only we embrace this opportunity together. The Committee extends our immense gratitude to all of the individuals, organizations, agencies, and leaders who contributed their time and expertise to shape this plan. We are proud to be your partner in this work.



Myra W. Norton
Chair
CTE Committee

Background, History, and Vision

Vision of the Kirwan Commission

The Commission on Innovation and Excellence in Education was established by the Governor and General Assembly in 2016 (Chapters 701 and 702). It came to be known as the Kirwan Commission, nicknamed after the Commission Chair Dr. William "Brit" Kirwan. The Commission was charged with conducting an analysis of Maryland's education system, identifying funding and achievement gaps in comparison to high performing systems around the world. From this research, the Commission was tasked with making policy and funding recommendations to elevate Maryland's education system to a world-class standard.

In the Commission's 2019 Interim Report, they detailed the troubling findings of their research, including a 2017 gap analysis by the National Center on Education and the Economy (NCEE). This study found that less than half (49.3%) of all students in Maryland Public Schools received a proficient score on the English 10 exam and even fewer (36.5%) scored as proficient on the Algebra 1 Partnership for Assessment of Readiness for College and Careers (PARCC) exam, indicators of college and career readiness. A further examination of these scores revealed significant disparities in college and career readiness indicating inequity. On the English 10 exam, only 29% of African American students and 34% of Hispanic students received proficient scores, compared to 67% of white students and 77% of Asian students. Only 28% of low-income students received proficient scores on the same exam, with similar achievement gaps observed among English language learners and special education students. These gaps are even more pronounced in the proficiency scores of the Algebra 1 PARCC exam.

In his opening remarks in the Final Report of the Kirwan Commission, published in 2020, Commission Chair Dr. Kirwan stated that "Only about 40% of Maryland public high school graduates meet the State's college and career readiness standards. Based on this statistic, the Commission members were left to wonder what becomes of the 60% who leave school with inadequate skills to pursue college or a meaningful career. And, what are the implications of these abysmal numbers for Maryland's economy in the decades ahead as the population becomes even more diverse and there is an ever-growing need for a well-trained, highly educated workforce?"

The Commission, in partnership with the Maryland Department of Legislative Services and stakeholders statewide, shaped their recommendations to reimagine the way in which Maryland educates its students, stating in their 2019 Interim Report that "Every student in Maryland should have access to educational experiences and opportunities that enable them to reach their full potential and be ready for success in college and a rewarding career by the end of high school." Their recommendations included Career and Technical Education (CTE) pathways inclusive of workforce training leading to industry-recognized credentials, a CTE system fully aligned with the State's economic and workforce priorities, innovative career counseling and occupational exploration, and the integration of employability skills needed not only in the workplace but as an engaged and informed citizen.

In order to shape an innovative and globally competitive system of CTE, Maryland must broaden its perspective on what is possible. In their 2019 Interim Report, the Commission detailed its vision for Maryland's potential as a leader in CTE programming. "Far from being a refuge for the academically challenged, the CTE route will be chosen by many academically strong students who prefer a hands-on approach to their education and can see that CTE is as good a route to the board room or corner office as the university. It is where you go for compelling, absorbing, and exciting education and training that leads to limitless possibilities. It is where

you go to master complex technical skills in an economy that provides rich rewards for people with such skills but also where you go for an education broad and deep enough to enable you to turn your career around on a dime, as well as an education for citizenship."

Blueprint for Maryland's Future

The recommendations made by the Kirwan Commission served as the foundation for the Blueprint for Maryland's Future (House Bill 1300 of the 2020 Maryland legislative session). The law passed during the 2020 legislative session just before the Maryland General Assembly adjourned early due to the emerging COVID-19 pandemic. The Blueprint was vetoed by then Governor Larry Hogan, leading to a veto override vote in the House and Senate during the 2021 legislative session. The Blueprint for Maryland's Future became law on February 12, 2021.

The Blueprint, like the Commission's recommendations, was organized into five policy pillars: (1) early childhood education, (2) high quality and diverse teachers and school leaders, (3) college and career readiness, (4) more resources for all students to succeed, and (5) accountability and governance. It is within Pillar 3 that the CTE Committee is formed, tasked with establishing an integrated system of Career and Technical Education throughout Maryland.

The Accountability and Implementation Board (AIB), established under Pillar 5 of the Blueprint, designated four main tasks for the college and career readiness pillar of the Blueprint in its Initial Comprehensive Implementation Plan, released in December 2022. These tasks address (1) career counseling, (2) industry-recognized credentials, (3) CTE Expert Review Teams, and (4) the CTE Committee and Skills Standards Advisory Committee. In accordance with the AIB's Initial Implementation Plan, this CTE Implementation Plan is organized by task.

Formation of the CTE Committee

The Blueprint established the CTE Committee as a unit within the Governor's Workforce Development Board (GWDB). The GWDB is the governor's chief policy-making body for workforce development. The GWDB is a board of 59 members, a majority of whom represent the business community, as mandated by the Workforce Innovation and Opportunity Act (WIOA). Other members include the Governor, cabinet secretaries, college presidents, the state superintendent of schools, elected officials, labor, and representatives of nonprofit organizations. The GWDB is responsible for developing policies and strategies to form a variety of education, employment, and training programs. It brings together and focuses various workforce development partners and stakeholders on two key outcomes - a properly prepared workforce that meets the current and future demands of Maryland employers, and opportunities for all Marylanders to succeed in the 21st century workforce.

Under the Blueprint, the CTE Committee's purpose is to build an integrated, globally competitive framework for providing CTE to Maryland students in public schools, institutions of postsecondary education, and the workforce. The CTE Committee's vision is to integrate academic knowledge and occupational competencies that enable students to develop the critical thinking, problem solving, employability, and technical skills required to meet the workforce and economic development needs of the 21st century.

The CTE Committee operates under the oversight of the AIB and is composed of the following members of the GWDB:

- The State Superintendent of Schools;
- The Secretary of Higher Education;
- The Secretary of Labor;
- The Secretary of Commerce;
- The Chair of the CTE Skills Standards Advisory Committee; and
- The following six members, jointly selected by the Governor, the President of the Senate, and the Speaker of the House, who *collectively* represent:
    - Employers;
    - Industry or trade associations;
    - Labor organizations;
    - Community colleges;
    - The agricultural community; and
    - Experts in CTE programming.

The CTE Committee received funding to support its functions starting in FY 23. The 11 members of the CTE Committee were all officially appointed by August 25, 2022. In accordance with the Blueprint, the Governor, the President of the Senate, and the Speaker of the House jointly appointed Myra Norton as the chair to the CTE Committee. As of the submission of this plan, the CTE Committee is comprised of the following members (for the most current list of members, visit www.gwdb.maryland.gov/ctecomm):

Myra Norton, Chair	President & CEO, Arena
Kevin Anderson	Secretary, Maryland Department of Commerce
Brian Cavey	International Vice President, International Association of Heat and Frost Insulators & Allied Workers
Mohammed Choudhury	State Superintendent of Schools, Maryland State Department of Education
Judi Emmel	Consultant, Teach Cyber
Matthew Holloway	Farmer, Quantico Creek Sod Farms, Inc.
Deborea Montgomery, Ph.D.	Principal, Dogwood Elementary School
Michael Thomas	Vice President, Workforce Development & Continuing Education, Baltimore City Community College
Portia Wu	Secretary, Maryland Department of Labor
Charnetia Young	Director, Workforce Initiatives Business Development, National CVS Health
TBA	Secretary, Maryland Higher Education Commission

Historical Context of Apprenticeships, Lessons from Comparable Programs, & Opportunities for Maryland

Apprenticeships are a mode of learning that emphasizes learning by doing. Apprenticeships expand occupational horizons and capabilities through a structured combination of work-based and classroom learning and employment, all leading to high levels of occupational competence. A robust apprenticeship system for Maryland high school students can significantly increase their engagement in learning, enhance the quality of their careers, and improve the productivity and economic welfare of Maryland citizens.

Apprenticeship has a long and storied history dating back to the guilds of the Middle Ages. Until the advent of universal secondary education, apprenticeship became a primary source of learning for Americans. Famous apprentices included George Washington (surveyor), Benjamin Franklin (printer), and Paul Revere (silversmith). Regulation of the terms of apprenticeships began in 1911 with a Wisconsin law followed by similar laws in other states. In 1937, the federal government adopted a formal legal basis for apprenticeship but delegated the development of specific governing principles to the U.S. Department of Labor (USDOL). USDOL has occasionally issued regulations that specify what does and does not constitute a "registered apprenticeship." Despite occasional expressions of support from political leaders for U.S. apprenticeships, apprenticeships play a minor role in both the overall labor market (0.31% of the U.S. labor force) and in career preparation (new apprentices are about 8% of first-time enrollees in 2-year and 4-year universities). The presence of apprenticeships in the Maryland labor force is slightly higher, at 0.397%, than for the U.S. However, success in achieving the 45% Blueprint goal, as detailed in AIB Task 2 (3.4.2), would raise the apprenticeship share five-fold, to 1.9%, making Maryland a national leader in apprenticeship.

The inspiration for making apprenticeship a widely available route to careers comes from the effective apprenticeship systems in certain European countries, notably Austria, Denmark, Germany, and Switzerland. These countries demonstrate that advanced economies can hire, train, and retain young people so that they become highly skilled workers throughout their careers. The case of Switzerland is especially notable: 95% of Swiss 25-year-olds have either an apprenticeship or a Bachelor of Arts (BA) degree.

Apprenticeships in these countries are embedded in their education systems through Technical Vocational Education programs beginning in late high school. In Switzerland, 70% of each youth cohort undertakes apprenticeships, for careers in a range of occupations – high-tech, human services, health, business services as well as traditional trades and crafts – white-collar as well as blue-collar. As Nancy Hoffman, a noted author and U.S. expert on apprenticeship, points out, the Swiss apprenticeship system, "…enjoys very strong support from Swiss employers, who credit it with being a major contributor to the continuing vitality and strength of the Swiss economy."

In Germany, apprenticeship graduates account for a large part of the German labor force. As Langer and Weiderhold report, about 60% of German workers have completed apprenticeship training and 1.5 million apprentices were in vocational education in 2017, the last year of their observation window. Individuals typically start an apprenticeship after finishing secondary school when they are between 16 and 20 years old. Graduates from higher-track or lower-track secondary schools directly apply for an apprenticeship at a training firm. The average duration of a German apprenticeship is three years.

In the U.S., Wisconsin hosts by far the largest and most developed high school apprenticeship programs. It began in the early 1990s and has remained a popular program for 30 years. Today, nearly 7,950 Wisconsin high school students participate in a formal apprenticeship, though few are part of what would be defined as the federally recognized registered apprenticeship system. This figure represents more than a doubling from 3,428 apprentices in 2016-2017. However, these apprentices constitute a modest share (6.5%) of the combined enrollment of about 122,000 students in Wisconsin high schools. About 5,469 employers currently

train apprentices, implying that each program involves only one or two apprentices. The Wisconsin youth apprenticeships require students to engage either at least 450 or 900 hours of work-based learning in the occupation. Manufacturing, healthcare, and agriculture are the largest sector contributors, though there are other major groups such as marketing, which has nearly 1,000 apprentices.

In countries with the most extensive and high-quality apprenticeship systems, apprenticeships begin in late high school. Austria, Germany, and Switzerland attract 50-70% of 17- to 19-year-olds in productive apprenticeships that lead to productive careers. Starting registered apprenticeships in high school offers several advantages:

- The links between classroom learning and application improve academic achievement;
- Lost earnings during training are minimized compared to other training options because apprentices are employed and earn wages;
- Existing funding for related high school courses, especially CTE courses, reduce the costs to employers by providing much or all of the related technical instruction (RTI) required for an apprenticeship.

Since apprenticeships are jobs, they can provide young people with work experience and employability skills and offset the decline in youth employment. In 1988, over half of 16- to 17-year-olds worked at least part of the year; by 2021, only one quarter of 16- to 17-year-olds had any work experience. For 18- to 19-year-olds, 75% had work experience in 1988 but only 50% had worked at all in 2021. Thus, half of youth in their late teens are unlikely to experience the value of such employability skills as listening, teamwork, meeting deadlines, and responsibility. Evidence suggests that early work experience pays off in terms of higher lifetime income.

Equally important, participating in and completing apprenticeships allows young people to gain employability and occupational skills that have value in the labor market. Slow growth in earnings of the 60% of workers with less than a BA degree is an economic problem with serious social consequences. Apprenticeships provide opportunities for good jobs and rewarding careers whether a worker does or does not complete a BA. Moreover, these good-paying positions are the result of high skills and productivity and not subsidies or mandates.

Apprenticeships are distinctive in improving both the supply and demand sides of the labor market. On the supply side, not only do apprenticeships teach occupational and employability skills, but they also enhance academic skills by applying them to real-world settings and thereby increasing their retention. On the demand side, employers are more likely to create productive and well-paying jobs where they can rely on apprentices to master an array of relevant skills and to gain experience in using those skills. Apprenticeships reduce the frictions that arise with skill mismatches. Apprenticeships have also been shown to reduce turnover, improve company morale, and improve co-worker productivity, among other indirect benefits.

Given these advantages, apprenticeship came to play an important role in the Kirwan Commission proposals for the career readiness of Maryland youth. Specifically, the Blueprint set an ambitious goal that 45% of Maryland high school graduates complete the high school level of a registered apprenticeship or another industry-recognized credential. Achieving this goal would certainly enhance career opportunities, especially for previously underserved groups, and strengthen Maryland's economy by ensuring a highly skilled workforce well-prepared for the jobs for the future.

Development of the CTE Implementation Plan

CTE Committee Meetings

Shortly after the CTE Committee was established and under the leadership of CTE Committee Chair Myra Norton, the Committee held monthly public meetings in accordance with the Open Meetings Act. These meetings were posted on the CTE Committee website with agendas and meeting materials. Meetings were live streamed on the CTE Committee YouTube channel, where meeting recordings are available for public viewing.

CTE Committee meetings leading up to the adoption of the CTE Phase One Implementation Plan included updates on plan creation and presentations from experts and organizational partners to provide CTE Committee members and the public background on the state of CTE across Maryland. Stakeholders were encouraged to submit questions and comments to the Committee through the CTE Committee email address throughout the process. The meeting topics discussed are detailed in the table below. Click on the meeting date to access the meeting recording.

Date	Agenda
October 4, 2022	• CTE Committee Background - Senator Jim Rosapepe • CTE Committee and the Blueprint - Rachel Hise, Executive Director,AIB • CTE Committee Role & Responsibilities - Molly Mesnard, Deputy Director, CTE Committee • Open Meetings Act Designee - Myra Norton, Committee Chair
December 13, 2022	• Pillar 3 and the CTE Committee - Allie Carter, Program Manager, CTE Committee • Research, Data, and Plan Creation - Bob Lerman and Batia Katz, Urban Institute • Deep Dive | Apprenticeships - Jeffrey Smith, Maryland Department of Labor
January 26, 2023	• Research, Data, and Plan Creation - Bob Lerman and Batia Katz, Urban Institute • Deep Dive | CTE and CCR - Maryland State Department of Education
February 16, 2023	• CTE Implementation Plan Update - Bob Lerman and Batia Katz, Urban Institute • Deep Dive | Local Workforce Development Boards - Brandon Butler, Maryland Workforce Association (MWA) and Kirkland Murray, Anne Arundel Workforce Development Corporation
March 14, 2023	• CTE Phase One Implementation Plan Adoption

Phase One Implementation Plan Drafting

In order to support the CTE Committee in shaping a comprehensive CTE implementation plan, the Committee established a Memorandum of Understanding (MOU) with the University of Baltimore Jacob France Institute and the Urban Institute. This team of experts researched global best practices, lessons from comparable programs, labor market data, and conducted stakeholder interviews. They presented their findings to the Committee at public meetings and integrated their recommendations into this Phase One Implementation Plan. The Committee extends its gratitude to Bob Lerman and Batia Katz of the Urban Institute and Ting Zhang of the University of Baltimore for their contributions to this plan.

Stakeholder Interviews

In order to craft an effective and responsive Phase One Implementation Plan, the Committee and its partners at the Urban Institute determined that a robust stakeholder interview initiative was of critical importance. These targeted interviews allowed us to grow our understanding of the unique programming, triumphs, and challenges of the current structure of CTE programming across Maryland and how CTE manifests in local implementation.

The interviews began on January 5, 2023, and concluded on February 24, 2023. In all, 53 individuals were interviewed for a total of 25 hours. All members of the CTE Committee were interviewed by the Urban Institute team as well as key legislators in the Maryland House of Delegates and State Senate. The interview team expanded its reach by inviting CTE Directors from every Local Education Agency (LEA) across Maryland to participate in an interview, of which 20 interviews were conducted spanning 18 counties statewide. The final wave of interviews sought out input from students, families, educators, employers and apprenticeship sponsors who are directly engaged with CTE programming across Maryland. The interview team tapped into the expertise of a variety of industry experts, including career counseling, workforce development, roofing, solar, agriculture, hospitality, culinary, cyber and technology, HVAC, community colleges, military, health care, cosmetology, interactive media production, engineering, education, and trade unions.

The insight gained from these interviews is impossible to quantify. The ideas, examples, questions, and barriers shared in these interviews are incorporated throughout this Phase One Implementation Plan and will continue to impact the work of the Committee throughout implementation of the Blueprint. These discussions exemplify the strong partnerships the Committee is dedicated to forging with stakeholders and the community at large in this process. The Committee extends its gratitude to all interviewees for their contributions to this plan.

CTE Implementation Overview

Recognizing the delays that both the Governor's veto and the COVID-19 pandemic had in implementing the Blueprint, the Accountability and Implementation Board (AIB) adopted a phased timeline for the submission of State and local implementation plans. This phased submission approach also recognizes the sequencing embedded in Blueprint implementation, as a number of tasks that agencies are responsible for cannot be strategically planned for until other elements have been implemented. The timeline calls for State and local agencies to describe how they will implement the law over its 10-year implementation period in two phases:

1. **Phase One**: will cover Blueprint implementation tasks that have been or will be undertaken from FY 22-27, including planning for phase two. Phase One's plan will be submitted in two parts:
    a. Initial Implementation Plan: FY 22-24 (due March 2023)
    b. Updated Implementation Plan: FY 25-27 (due March 2024)

2. **Phase Two**: will cover Blueprint implementation tasks from FY 28-32.

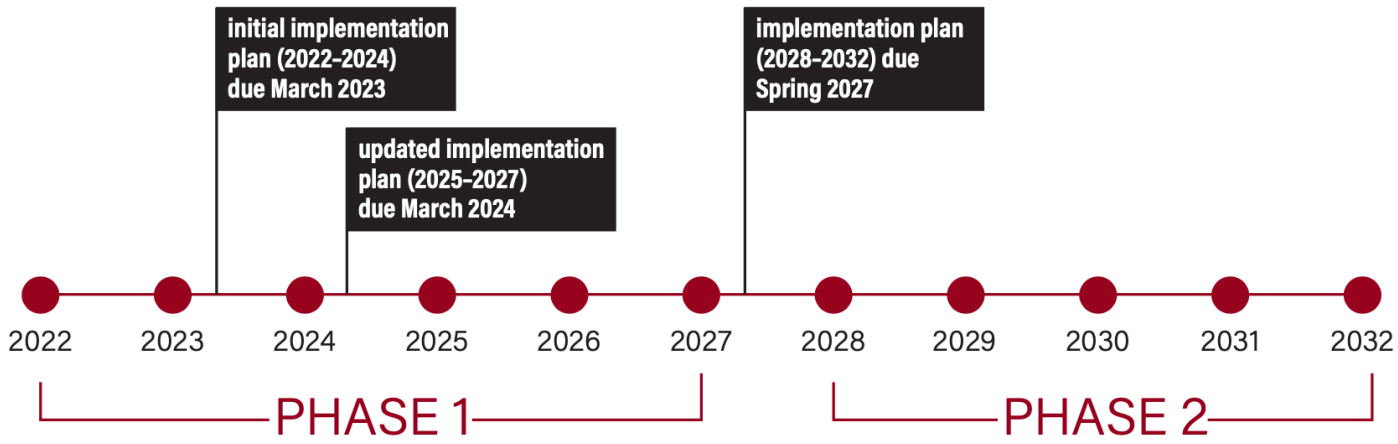


Figure 1: phased implementation plan graphic from the AIB's Initial Comprehensive Implementation Plan

The CTE Committee's Initial Implementation Plan will center on the period of Phase One from FY 22-24, with specific tasks and timelines detailed throughout. However, this plan will touch on considerations for FY 25-32 to elaborate on the findings of the research conducted in the process of preparing this plan and the impact of this information on long-term implementation, including historical contexts, lessons from comparable programs, and input from stakeholders.

The AIB organized its Initial Comprehensive Implementation Plan by pillar, objective, task and subtask based on the Blueprint, and when necessary for further clarification, the Kirwan Commission's report. As such, this plan will be organized to align with the AIB's listed task and corresponding subtasks.

Major Objectives

The CTE Committee is identified as a key actor in the following four objectives, which will further be explored and defined by tasks within this implementation plan:

- Middle and high school students access career counseling programs that provide them with individualized career counseling services starting in FY 24
- 45% of high school students shall complete the high school level of a registered apprenticeship or other industry-recognized credential by the 2030-2031 school year.
- CTE Committee annually submits deployment plan for CTE Expert Review Teams (ERTs) to the AIB and visits 10% of schools annually until all schools are visited at least once
- LEAs offer a robust set of CTE programs that allow students to earn an industry-recognized credential or postsecondary certificate, including completing the high school level of a registered apprenticeship program approved by the Division of Workforce Development and Adult Learning (DWDAL) within the Maryland Department of Labor

Key Actors

- Accountability and Implementation Board (AIB)
- Community Colleges
- CTE Committee
- CTE Expert Review Teams (ERTs)
- Local Education Agencies (LEAs)
- Local Workforce Development Boards (LWDBs)
- Maryland Department of Labor (MD Labor)
- Maryland Longitudinal Data System (MLDS) Center
- Maryland State Board of Education (MSBE)
- Maryland State Department of Education (MSDE)

Appendix A - CTE Implementation Timeline

Fiscal Year	Date Due	Frequency	Task	Action
FY 22	*-*	*Once*	*4*	*MSBE requests a waiver from the U.S. Department of Education to transfer responsibility for the Carl Perkins CTE Act to the CTE Committee*
FY 23	*-*	*Once*	*4*	*CTE Committee established and members appointed*
FY 23	*Dec. 31, 2022*	*Once*	*4*	*DWDAL develops a ten year plan to pursue federal grant money, submitted to the GWDB, AIB, Senate Budget and Taxation Committee, and House Committee on Ways and Means*
FY 23	July 1, 2023	Once	4	MOU established between MSDE & the CTE Committee regarding the administration of the Carl Perkins CTE Act
FY 23-31	July 1	Annually	3	CTE ERT deployment plan submitted to the AIB

Fiscal Year	Date Due	Frequency	Task	Action
FY 23	-	Once	4	Skills Standards Advisory Committee is established and members appointed
FY 23	-	Once	4	Skills Standards Advisory Committee makes recommendations to the CTE Committee on occupational standards
FY 23	-	Once	4	CTE Committee approves, rejects, and/or modifies initial proposal by the Skills Standards Advisory Committee
FY 23-31	-	Annually	4	CTE Committee adopts and, where appropriate, develops and regularly updates skills standards
FY 23-31	-	Ongoing	4	CTE Committee forms partnerships with the business community, nonprofits, and apprenticeship sponsors
FY 23-31	-	Ongoing	4	CTE Committee allocates roles and responsibilities to State agencies for the credentialing of students engaged in CTE programs
FY 23-31	-	Ongoing	4	CTE Committee addresses operational issues associated with delivering CTE programs to students, including transportation to and from job sites
FY 23-31	Dec. 1	Annually	4	CTE Committee reports on progress of CTE in the State to the AIB
FY 23-31	Dec. 1	Annually	4	CTE Committee submits a report to the Governor, MGA, and AIB with the status of programming, statutory, regulatory, budgetary, and structural changes needed to address the CTE system's evolving challenges
FY 23-31	Dec. 15	Annually	4	CTE Committee reviews agency budget proposals involving CTE and submits recommendations to the Governor and MGA
FY 24	-	Once	1	LEAs, LWDBs, and community colleges establish an MOU for local career counseling programs
FY 24	-	Once	3	CTE ERT members are selected
FY 24	-	Once	4	CTE programs in the State shall begin to be aligned with the requirements of the system implemented by the CTE Committee
FY 24	-	Once	4	CTE Committee sets content qualification and recruitment standards for CTE instructors
FY 24-26	-	Ongoing	1	Career counseling services are delivered to middle and high school students in accordance with local MOU agreements

Fiscal Year	Date Due	Frequency	Task	Action
FY 26	-	Once	1	CTE Committee conducts an evaluation of each local career counseling agreement for best practices
FY 24-31	-	Annually	3	CTE Committee submits an annual deployment plan for CTE ERTs to the AIB
FY 24-31	-	Annually	3	CTE ERTs visit 10% of schools annually until all schools are visited at least once
FY 24-31	-	Annually	3	CTE Committee delivers annual training to CTE ERTs on the Blueprint and review process
FY 24-31	-	Annually	3	CTE Committee submits annual report using CTE ERT data to identify students and demographically distinct student groups not making adequate progress
FY 24-31	-	Annually	4	CTE Committee determines programs approved for credit toward high school graduation, ensuring that the adoption of programs relating to CTE by County Boards, State Board, and Community Colleges is consistent with the system implemented by the CTE Committee

AIB Task 1 (3.4.1) - Career Counseling

Objectives

Middle and high school students access career counseling programs that provide them with individualized career counseling services starting in FY 24.

Key Actors

- Accountability and Implementation Board (AIB)
- Community Colleges
- CTE Committee
- Local Education Agencies (LEAs)
- Local Workforce Development Boards (LWDBs)

Timeline

Fiscal Year	Date Due	Frequency	Action
FY 24	-	Once	LEAs, LWDBs, and community colleges establish an MOU for local career counseling programs
FY 24-26	-	Ongoing	Career counseling services are delivered to middle and high school students in accordance with local MOU agreements
FY 24-26	-	Annually	Each LWDB, in collaboration with the LEA and other relevant State and local agencies, shall submit a report to AIB on the use of funds and their impact on providing career counseling
FY 26	-	Once	CTE Committee conducts an evaluation of each local career counseling agreement for best practices

Subtasks

***3.4.1(d)** - CTE Committee shall conduct an evaluation in FY 26 of each local career counseling agreement for best practices and disseminate its findings to the AIB, MSDE, LEAs, LWDBs, community colleges, and, if appropriate, State American Job Centers.*

Although this subtask states that the Committee will evaluate each local counseling “agreement,” the Committee has interpreted the intent of this is rather to evaluate the career counseling programs and not just the Memorandum of Understandings (MOUs) established between the LWDBs, LEAS, and community colleges.

The evaluation of local career counseling programs will require diligent collection of data from LEAs, LWDBs and community colleges. This data will be inclusive of information already submitted annually pursuant to subtask 3.4.1(c) as well as annual data submitted by LEAs to the AIB to monitor implementation. Additional longitudinal data may be necessary, including employment and postsecondary enrollment data following high school graduation in order to determine long-term impacts, which will need to be coordinated with MLDS. The CTE Committee will work with the AIB Outcome Measures Workgroup on the specific metrics and measures that will be required to report for career counseling. The CTE Committee will review these recommendations and develop a full list of data necessary for this evaluation, which can be expected in detail in the updated Phase One Implementation Plan due to the AIB in FY 24.

However, a comprehensive assessment of the impact of such programs will be a challenging task with only three years of data and implementation to consider. Programs will be navigating the logistical elements of launching career counseling, including funding disbursement and scheduling. Additionally, the final local report pursuant to subtask 3.4.1(c) will be due to the AIB in FY 26, at which time the Committee is expected to have submitted their evaluation pursuant to this subtask. In order to have three years of data and reporting on hand to conduct their evaluation, the Committee recommends that this report be due in FY 27. However, if the intent of this evaluation is to provide insight on whether to continue funding LWDBs to provide career counseling beyond FY 26, the CTE Committee recognizes that a report will need to be submitted in FY 26 and will utilize the information available to evaluate and share best practices.

The CTE Committee has and will continue to disseminate information on resources and best practices from other programs as they become available. Over FY 23, the CTE Committee and the AIB provided information on the following career counseling resources: Junior Achievement; virtual reality career exploration through such programs as Transfr; and models of other local or state workforce entities conducting career counseling for youth, such as in Texas.

Considerations for the Next Phases of Implementation

Career counseling is a cornerstone aspect of CTE programming in comparable, globally-competitive programs nationally and internationally. In Switzerland, each canton (the Swiss equivalent of a state) operates a network of community-based career centers specially organized and staffed to help young people in the transition from grade 9 to whatever comes next. They often use “job shadowing” to give young students an idea of how the occupation operates. The centers are organized outside the education system and offer interest inventories, help with resume-writing and portfolio development, and assistance in lining up opportunities or short pre-apprenticeships to sample prospective apprenticeship sites.

German employment agencies offer various forms of career guidance. They work with professional bodies and businesses to give young people an insight into working life, for example by offering work placements for students in years 9 and 10. The federal states (Länder) ensure that programs offering career guidance are well-coordinated. Young people can also visit the job information center or use an online chat service. The centers offer personal counseling for youth 24 and under.

Wisconsin includes orientation sessions in 10th grade, usually in a decentralized manner provided by consortia that oversee the youth apprenticeship program or by teacher coordinators in high schools. Because of the long duration of youth apprenticeship and sizable participation, some career information is likely to flow to young students by word of mouth of former apprentices.

In Maryland, Junior Achievement (which has locations covering Central Maryland, the Eastern Shore, and Greater Washington) programming for grades 6-8 includes information about jobs, including job shadowing. Later programs include discussions about career pathways, interest inventories, work on employability skills, and the potential to earn badges that document certain competencies.

Other states are innovating in the career counseling arena, including virtual reality career exploration through such programs as Transfr and models of other local or state workforce entities conducting career counseling for youth, such as in Texas and Chicago.

The CTE Committee recognizes that the career counseling of middle and high school students is a cornerstone to students choosing a post-CCR pathway inclusive of CTE and apprenticeship that best fits their skills and interests. The CTE Committee will continue to examine global best practices in order to support and enhance the career counseling of Maryland students.

AIB Task 2 (3.4.2) - Apprenticeships & Industry-Recognized Credentials

Objectives

45% of high school students shall complete the high school level of a registered apprenticeship or other industry-recognized credential by the 2030-2031 school year.

Key Actors

- Accountability and Implementation Board (AIB)
- Apprenticeship Intermediaries
- Apprenticeship Sponsors and Employers
- Community Colleges
- CTE Committee
- CTE Skills Standard Advisory Committee
- Division of Workforce Development and Adult Learning (DWDAL)
- Governor's Workforce Development Board (GWDB)
- Local Education Agencies (LEAs)
- Local Workforce Development Boards (LWDBs)
- Maryland Apprenticeship and Training Council (MATC)
- Maryland State Department of Education (MSDE)

Timeline

Fiscal Year	Date Due	Frequency	Action
FY 23	Dec. 1, 2022	Once	CTE Committee develops inclusive, statewide goals to reach 45% by the 2030-2031 school year
FY 24	*Dec. 1, 2023*	*Once*	*Recommended date for the CTE Committee to develop statewide goals to reach 45% by the 2030-2031 school year*
FY 24-31	Dec.1, 2023	Annually	CTE Committee annually reports to the Governor, General Assembly, and AIB on the progress toward attaining annual goals toward reaching 45% of high school students earning an industry-recognized credential, including completing the high school level of a registered apprenticeship.
FY 24	March 15, 2024	Once	Updated Phase One Implementation Plan submitted to the AIB
FY 24	-	Once	CTE Committee approves definition, criteria, and systems related to high school level of registered apprenticeships
FY 25		Ongoing	Transition period begins to implementation of the high school level of a registered apprenticeship

Fiscal Year	Date Due	Frequency	Action
FY 25	-	Once	CTE Committee and the AIB establish LEA-specific incremental goals toward the 45% goal in alignment with the transition plan

Subtasks

3.4.2(a) *- By 12/1/22, the CTE Committee shall establish for each school year between 2023-24 and the 2030-2031 school years, inclusive, statewide goals that reach 45% by the 2030-2031 school year for the percentage of high school students who, prior to graduation, complete the high school level of a registered apprenticeship or another industry-recognized occupational credential.*

Due to delays in its funding and formation, the CTE Committee was not able to produce this analysis by December 1, 2022, and as such, recommends changing this due date to a year later (i.e. December 1, 2023). Before inclusive statewide goals can be established as this subtask directs, the Committee must first contextualize this ambitious goal using student data and then determine what qualifies toward the 45% goal.

This subtask is perhaps the most complex and ambitious element of the work of the CTE Committee throughout implementation as it entails clearly defining what counts towards the 45% goal and setting up processes to report this data. Since its inception, the Committee has spent a considerable amount of time examining existing systems and structures related to this objective, analyzing comparable programs nationally and globally, and conversing with Maryland leaders in education, CTE, and workforce development.

In its analysis of the Maryland education system, the Kirwan Commission detailed in their 2019 Interim Report concerning findings regarding the lack of college and career readiness (CCR) throughout the state. The Commission's rationale for the shortfall in college and career readiness comes from data on academic achievement and post-secondary completion. The final report of the Commission points out that 60% of Maryland public high school graduates fail to meet the State's career readiness standards. Disaggregation of this data revealed alarming inequities; the report cites data indicating that 76% of African American and Hispanic students do not meet proficiency standards in English Language Arts by the time they graduate. Moreover, 10-11% of high school students do not graduate high school. The lack of work experience is another indicator, especially for obtaining employability skills that are important for careers. In a typical week during the school year, only about 30% of 17- to 18-year-old students were employed.

In light of this, Pillar 3 of the Blueprint centers around College and Career Readiness (CCR). Its broad objective states: "*Students must graduate from high school with the knowledge and skills required to be successful as they enter college or begin their career."* Within this Pillar 3, the CTE Committee's goal is for 45% of high school students to complete the high school level of a registered apprenticeship or an industry-recognized occupation credential prior to graduation by the 2030-2031 school year. The Blueprint further clarifies that to the extent possible, the CTE Committee shall ensure that the largest

number of students achieve this requirement by completing a high school level of a registered apprenticeship program approved by the Division of Workforce Development and Adult Learning (DWDAL) within the Maryland Department of Labor. The Kirwan Commission's interim report noted that once their recommendations are implemented and the CTE system is fully operational, all programs leading to credentials needed for rewarding mid-level skill jobs will include major work-based learning and apprenticeship components, offered either at the high school, community college, or, preferably, at the registered and/or youth apprenticeship employer's work site.

According to the Census Bureau data and MSDE, nearly 60,000 students graduate from Maryland public schools every year. Currently, if 45% of those students are to complete the high school level of a registered apprenticeship or another industry-recognized credential, each senior class would require 27,000 students to have successfully completed an apprenticeship or credential to reach this goal. By the 2030-2031 school year, these numbers will likely be higher, as enrollment in public schools is projected to grow in Maryland between 2020-2030. To project forward who will be graduating in the school year 2030-2031, note that the 2020 Census records 70,564 public school students in second grade. MSDE thus projects 66,840 students in the 12th grade in public schools in 2030. Thus, by 2030, the target number of seniors completing one of the qualifications would reach about 30,000.

As of 2021, only 6.81% of Maryland students have completed a youth apprenticeship or earned an industry-recognized credential, totaling approximately 4,086 graduates. Specifically, 6.53%, or 3,918 graduates, earned an industry credential, while 0.28%, or 168 graduates, completed a youth apprenticeship. These numbers vary widely by Local Education Agency (LEA), with some counties reporting higher numbers of industry credential completion, including Worcester with 32%, Kent with 26%, Somerset with 25%, and Harford with 21%, while others report at or near 0%. However, the apprenticeship completion rate by LEA is low overall, with the highest percentage being 0.69% in Kent in 2021.

Appendix B - Maryland Industry Credential and Youth Apprenticeship Completion Rates by LEA in 2021

LEA	Attained Industry Credential	Youth Apprenticeship Completers	Total	% Away from 45% Goal
Allegany	5.07%	0.00%	5.07%	39.93%
Anne Arundel	3.78%	0.00%	3.78%	41.22%
Baltimore City	2.63%	0.00%	2.63%	42.37%
Baltimore County	2.04%	0.00%	2.04%	42.96%
Calvert	6.77%	0.00%	6.77%	38.23%
Caroline	18.98%	0.00%	18.98%	26.02%
Carroll	9.30%	0.00%	9.30%	35.70%
Cecil	13.21%	0.00%	13.21%	31.79%
Charles	6.88%	0.23%	7.11%	37.89%
Dorchester	22.39%	0.00%	22.39%	22.61%
Frederick	14.52%	0.10%	14.62%	30.38%
Garrett	0.00%	0.00%	0.00%	45.00%
Harford	21.61%	0.00%	21.61%	23.39%
Howard	2.30%	0.46%	2.76%	42.24%
Kent	26.39%	0.69%	27.08%	17.92%
Montgomery	6.60%	0.00%	6.60%	38.40%
Prince George's	3.29%	0.00%	3.29%	41.71%
Queen Anne's	7.50%	0.00%	7.50%	37.50%
Somerset	25.81%	0.00%	25.81%	19.19%
St. Mary's	0.50%	0.00%	0.50%	44.50%
Talbot	13.61%	0.30%	13.91%	31.09%
Washington	11.11%	0.59%	11.70%	33.30%
Wicomico	8.37%	0.00%	8.37%	36.63%
Worcester	32.09%	0.00%	32.09%	12.91%
Statewide	**6.53%**	**0.28%**	**6.81%**	**38.19%**

Source: MSDE, 2021

With this data in mind, whether it is inclusive of youth apprenticeship completers or not, the Committee calculated that Maryland is, on average, 38% away from our goal of 45%. This is a significant, though not insurmountable, gap between where we are and where the Blueprint intends for us to be. The

Committee spent a large part of FY 23 investigating the challenges and barriers currently present that resulted in these numbers, many of which are addressed under Task 4 (3.4.4). The Committee recognized that before inclusive, statewide goals to reach 45% by the 2030-2031 school year could be developed, and certainly before the Committee and the AIB break those goals down by LEA, the Committee must dedicate the duration of this initial Phase One implementation plan to addressing the systemic barriers preventing achievement of this goal as well as defining what qualifies toward the 45% as the Committee develops a full transition plan in the updated Phase One implementation plan due to the AIB in FY 24. Details on what qualifies toward the 45% goal is detailed in 3.4.2(b) as well as considerations for the next phases of implementation.

***3.4.2(b)** - CTE Committee shall report to the Governor, General Assembly, and AIB on the progress toward attaining annual goals toward reaching 45% of high school students earning an industry-recognized credential, including completing the high school level of a registered apprenticeship, by 12/1 each year.*

In order for the Committee to provide this annual report, the Committee has utilized multiple resources during the development of this initial Phase One implementation researching and evaluating what currently qualifies and what could define an industry-recognized credential and the high school level of a registered apprenticeship.

The More Jobs for Marylanders 45% goal required that by 2025, 45% of high school students complete a CTE program of study, earn industry-recognized credentials, or complete a registered youth or other apprenticeship. Available MSDE data documents these pieces, but not whether these or other credentials lead to well-paid, long-term, or rewarding careers. By setting the Blueprint goal to purposefully exclude CTE completers, the inferred intent of the legislation is that industry-recognized credentials and the high school level of a registered apprenticeship more adequately prepare students for the workforce and the skills they will need for a career. As of 2021, MSDE reports 30,747 CTE concentrators (those that complete two and enroll in a third CTE course) and about 14,000 students (24%) completing their concentration. CTE completer goals were also supported by federal Perkins funding allocated to states for CTE programming. These programs are distinct from apprenticeship, and only sometimes result in an industry-recognized credential. CTE participation and completion vary widely by county and by 11 career clusters. CTE completion as a share of high school graduates ranges from 80% in Garrett County and 71% in Kent County to 12% in Prince George's County and 10% in Montgomery County. CTE completion also varies significantly by career cluster: in 2021, 2,274 completers took courses in the Health and Biosciences field, but only 529 in the Environmental, Agricultural, and Natural Resources field.

As part of the CTE programming, students may receive work-based learning, but it is important to understand whether related instruction in schools is preparing students well for work-based learning. In MSDE survey responses in 2020, the majority of both students and employers ranked the students as being very prepared for the work-based learning. Additionally, the vast majority of students rated the work-based learning experience as either excellent or good, and the employers were overwhelmingly very interested in doing additional work-based learning, either with the same student or a different student. However, some employers we interviewed indicated that students were lacking critical skills, particularly in math, needed for work-based learning in specific fields.

Appendix C - CTE Completion by Career Cluster - 2021

Career Cluster	Number of Completers
Arts, Media, and Communication	725
Business Management and Finance	1,040
Career Research and Development	1,340
Construction and Development	1,321
Customer Services, Hospitality, and Tourism	1,427
Environmental, Agricultural, and Natural Resources	529
Health and Biosciences	2,274
Human Resources Services	2,204
Information Technology	1,037
Manufacturing, Engineering, and Technology	1,424
Transportation Technologies	725
Other	29
Total	**14,075**

Source: MSDE, 2021

Students also may pass a Technical Skills Assessment (TSA), which are locally developed end-of-course assessments that lead to college credit or third-party assessments that could include an industry-recognized credential. The most common TSAs attained in 2021 were in Health and Biosciences and Manufacturing, Engineering, and Technology. But only about half the TSAs materialize into industry-recognized credentials.

According to 2021 MSDE data, only 6.8% of Maryland graduates earned industry-recognized credentials (6.5%) or completed an apprenticeship (0.3%). Given this low starting point, it will take 6.5 times current levels to reach the 45% Blueprint target. With Maryland graduating seniors expected to reach nearly 67,000 by 2030, reaching the 45% goal of the Blueprint would require about 30,000 seniors to complete the high school level of a registered apprenticeship. Assuming that these apprenticeships last at least two years, with most starting in 11th grade, the Blueprint's expansion would raise the total number of Maryland apprenticeships by at least 60,000.

Industry-Recognized Credentials

According to the AIB Initial Implementation Plan, an industry-recognized credential verifies an individual's qualification or competence in a specific occupation or industry. Credentials are authorized by a third party and recognized in the labor market. Formal industry-recognized credentials are ubiquitous. The nonprofit Credential Engine cites over 1 million of all types, though few are recognized as important in qualifying for a skilled career. Currently, MSDE specifies what counts as industry-recognized credentials in the context of CTE programs. In recognizing that not all industry-recognized credentials are equally effective at achieving high levels of career success and recognizing that engagement with employers, workforce, and industry experts is necessary to

determining what is valuable in the labor market, the AIB calls for the CTE committee in collaboration with the AIB to determine which credentials count toward meeting the 45% goal.

Moreover, ensuring that the industry-recognized credentials currently approved are enough or appropriate for success in the workplace is unclear. Currently, there are 543 industry-recognized credentials approved by MSDE. Some are elaborate, such as a firefighter certification and private pilot; others involve licenses, such as the pharmacy tech license, radiation therapist license, and cosmetology license; still others include skill components in an occupation, such as various NIMS manufacturing certifications and ASE - Inspection Maintenance & Minor Repair certification. Some are likely to provide only modest help toward a rewarding career, such as individual courses or learning Microsoft Office products.

MSDE credential determinations are important because only approved credentials can count towards Perkins V funding allocations. Several local CTE directors interviewed expressed confusion about how the determinations were made. Currently, MSDE decides whether to approve an industry credential TSA based on 5 key components:

1. Whether the credential demonstrates labor market value and educational rigor;
2. Whether the assessment is aligned with the program content and instruction;
3. Whether the assessment is appropriate for the level of instruction;
4. Whether all students have an equal opportunity to access and demonstrate attainment of the credential; and
5. Whether the assessment offers stackable credentials opportunities.

Although the data indicates that the proportion of students currently receiving industry credentials is around 6.5%, interviews with CTE directors across the state painted a more positive picture. Public schools are offering industry credentials, students are very interested, and demand is high. While not all counties are offering robust work-based learning, those that do, such as Frederick County, provide strong examples. Part of the issue, educators explain, is that it is difficult to follow up on the outcomes of students after they graduate. Anecdotally, they know that many students go into the workforce and use their industry credentials, but they do not have the data to show it. The Committee has begun work with the University of Baltimore Jacob France Institute to develop systems to follow the career and educational trajectories of Maryland students after graduation to support the analysis of long-term impact of CTE programming, and the Committee will provide this detailed analysis in the updated Phase One implementation plan due in FY 24.

High School Level of a Registered Apprenticeship

Completing a registered apprenticeship certainly meets the criteria for a valued industry-recognized credential. A registered apprenticeship is a paid job that incorporates work-based learning and academic instruction, leading to full competence in an occupation. Apprenticeship programs are highly structured, generally must last at least a year, and result in certifications that employers recognize as valuable. Registered apprenticeships are called “registered” because they must be approved by either a state or federal labor department to ensure quality. To register an apprenticeship program in Maryland, it must be approved by the Division of Workforce Development and Adult Learning (DWDAL) within the Maryland Department of Labor.

Most registered apprenticeship programs across the U.S. begin after high school. A registered apprenticeship generally requires a minimum of 2,000 hours of work-based learning and a recommended 144 of theory or related technical instruction. The majority of registered apprenticeship programs are open to applicants beginning at age 18. According to DWDAL, 21% of the registered apprenticeship completers in Maryland were aged 25 or younger. This indicates that most apprentices started at ages 19 to 21 since the majority of apprenticeships are four to five years long. As of March 14, 2023, DWDAL reports that 35% of Maryland registered apprentices are aged 17 to 24. Apprenticeships that start in high school generally include extensive coordination with the public school system, to ensure that students are able to participate. Across the U.S. there are also unregistered youth apprenticeship programs, which vary significantly in their length, requirements, and quality.

Completing the high school level of a registered apprenticeship may look different in different states, school districts, or apprenticeship programs. One possibility, completion of a registered apprenticeship, is the most straightforward but also the most ambitious option; another is completion of components of a registered apprenticeship prior to graduation; and a third is a youth apprenticeship program begun in high school, such as the Maryland or Wisconsin youth apprentice program. Because registered apprenticeships generally require a minimum of 2,000 hours of work-based learning and a recommended 144 of theory or related technical instruction, full-time high school students are unlikely to be able to complete such apprenticeships during high school. However, students could certainly complete part of an apprenticeship within high school.

Currently, three apprenticeship pathways exist in Maryland: School-To-Apprenticeship (STA), Youth Apprenticeship, and Registered Apprenticeship.

Appendix D - Maryland Apprenticeship Pathways

	School-To-Apprenticeship (STA)	Youth Apprenticeship	Registered Apprenticeship
Definition	A method of registration to enter a Registered Apprenticeship program. The STA is designed to allow high school youth ages 16-17 to directly enter a Registered Apprenticeship while still in high school and continue after graduation with full credit given for the high school portion. (State and Federal definition)	An "earn and learn" work model, based on the principles of Registered Apprenticeship, available through the local school systems that prepares students for the workforce while earning them credits towards High School graduation. (State definition - no Federal definition)	Jobs where workers earn and learn. While working on the job, employees receive one-on-one full-time training from a skilled craftsperson as well as related classroom instruction. An apprentice is "sponsored" by an employer or association and is paid according to a progressive pay scale. (State and Federal definition)
Age Groups	High school students enrolled in secondary school who meet the minimum legal age of 16	11th and 12th grade	Varies by occupation & sponsor
Industry Focus	The student/apprentice is directly registered with an	"High growth, high-demand industries"	"Industry-driven" with occupations approved at the

	approved Registered Apprenticeship Sponsor through MD Labor's DWDAL.		federal and state level.
On-the-Job Training (OJT)	Beginning at age 16 and is a Registered Apprentice with the MD Labor's DWDAL.	With a mentor in a specific in-demand occupation with a DWDAL/MATC-approved employer.	Full time paid work progresses through skills and knowledge that the apprentice must learn to become fully proficient at the job under the direction of a highly skilled worker at the work site.
Related Technical Instruction (RTI)	Coursework is approved by an RA program in addition to their required high school coursework. These courses may or may not count toward high school graduation. The Registered Apprenticeship Sponsor agrees to accept either the High School curriculum or the apprentice can attend courses through the Sponsor.	Coursework (RTI) is approved by the school and employer, then by DWDAL/MATC and counts towards the high school curriculum.	Classroom-style training to complement the OJT to refine technical and academic skills that apply to the job. May be provided by a community college, technical school/college, apprenticeship training school, nonprofit, community-based organization, industry organization, labor organization, business association, or by the business itself.
Required Hours	Hours are the same as for an adult Registered Apprentice in order to complete; however, an STA would likely need more time to complete the hours of OJT as they are unlikely to complete the hour requirement in high school.	OJT - 450 hours (state mandated) RTI - at least one year of classroom instruction that is related to the career track of the student	OJT - 2,000 hours or a minimum of 12 months registered in a competency based program (federally mandated) RTI - 144 hours per year
Guiding Principles	Framework Principles: 1. Ages 16+ 2. OJT and RTI while enrolled in high school 3. Aligns academic and technical standards with the Registered Apprenticeship Sponsor 4. Stackable credentials of value for multiple pathways 5. Sponsor/Employer involvement	Five Principles: 1. Career Oriented 2. Equitable 3. Portable 4. Adaptable 5. Accountable	Five Core Components: 1. Business Involvement 2. On-the-Job Learning 3. Related Instruction 4. Rewards for Skill Gains 5. National Occupational Credential

Apprentice Pay	Paid with salary enhancements as skill and knowledge progress over time.	At least MD minimum wage (state mandated)	Full time pay with salary enhancements as skill and knowledge progress over time.
Culminating Credential Options	Opportunity to earn industry-recognized credentials, certifications and licenses. Upon completion of the full registered apprenticeship program, every graduate receives a nationally recognized credential, referred to as a Certificate of Completion, which is portable nationwide. Additionally, some programs offer interim credentials as apprentices demonstrate mastery of specific skills during their apprenticeship.	Industry-recognized credentials, post-secondary credentials, and/or industry-recognized experience that will lead to an industry-recognized credential	Every graduate receives a nationally recognized credential, referred to as a Certificate of Completion, which is portable nationwide. Some programs offer interim credentials as apprentices demonstrate mastery of specific skills during their apprenticeship.

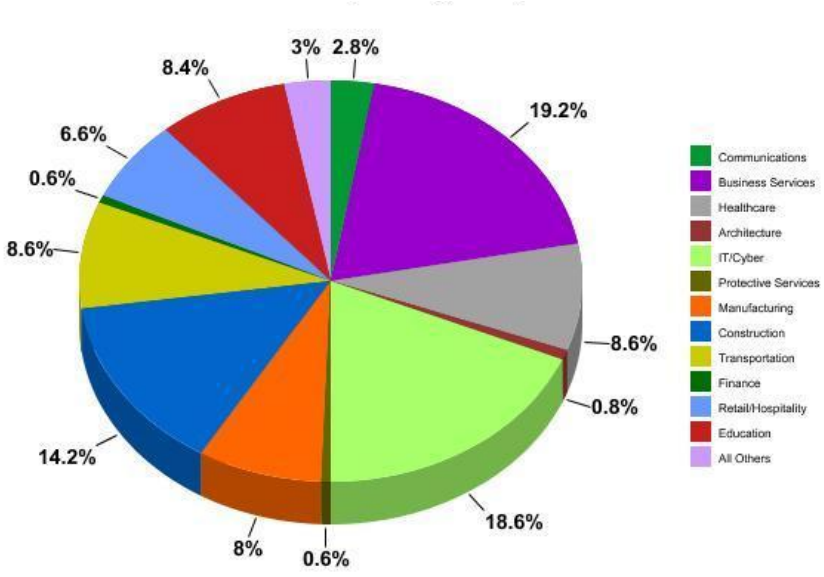
The majority of Maryland high school students participating in some form of an apprenticeship do so through the Youth Apprenticeship pathway. According to DWDAL, as of March 7, 2023, there were 500 youth apprenticeship participants for the current 2022-2023 school year. Within these participants, 13 high school students are also registered through the STA pathway. Overall, the Apprenticeship Maryland Program (AMP), which started in 2016-2017, has grown from 11 youth apprentices and two school districts, to 500 youth apprentices and 22 participating school districts. Additionally, the number of participating businesses as sponsors has grown from 14 to 400. Youth apprentices receive supervised, structured on-the-job learning from a mentor in a specific in-demand occupation, with a focus on Maryland's CTE industry/occupation clusters. With respect to the industries youth apprentices are employed in, the tables below break down the participants in two formats: **Appendix E**: youth apprentices by the industry sector that their employer is in, and **Appendix F**: the pie chart categorizes the youth apprentices by the representative industry sector for their specific occupation. These are broken down into two formats in order to better understand the actual occupations and therefore skills needed for certain youth apprenticeships. For instance, a plumbing youth apprentice for facilities maintenance (occupation = construction) could be working for a local school system (employer = education).

Appendix E - Industry Representation for Current Youth Apprentices

Industry Sector	# of Youth Apprentices	% of Total
Aeronautics	0	0.0%
Agriculture	2	0.4%
Animal Care	2	0.4%
Architecture	1	0.2%
Association Management	1	0.2%
Automotive	28	5.6%
Business	15	3.0%
Communications	1	0.2%
Construction	66	13.2%
Education	80	16.0%
Engineering	0	0.0%
Finance, Banking and Real Estate	1	0.2%
Furniture Repair	0	0.0%
Government	166	33.2%
Retail	1	0.2%
Healthcare	51	10.2%
Hospitality and Tourism	30	6.0%
Information Technology	8	1.6%
Manufacturing	45	9.0%
Maritime	2	0.4%
Transportation and Logistics	0	0.0%
Total	**500**	**100.0%**

Source: DWDAL, as of 3/7/2023

Appendix F - Occupation Representation for Current Youth Apprentices



Source: DWDAL, as of 3/7/2023

Maryland registered its first School-to-Apprenticeship (STA) in 1994 and has maintained at least one STA every year since. The U.S Department of Labor does not have specific regulations that define an STA and instead rely on the definitions found within federal labor standards for registered apprenticeship. In Maryland, an STA is registered while in high school and takes their first year, and sometimes second year, of related technical instruction (RTI) while in high school. The student is hired and registered as an apprentice and begins to accumulate their on-the-job training (OJT) hours while working part-time and attending both high school and their apprenticeship school. In STA, an apprentice has completed year one of their registered apprenticeship if the entire year's RTI (144 hours of school) has been completed. Although this will vary by district, generally 144 hours of RTI equates to two semesters per year of curriculum. The OJT hours that are worked are credited towards the total number needed, but the fact that all 2,000 hours were not reached does not mean the year was not completed and does not stop the apprentice from advancing to year two. According to DWDAL, Maryland currently has 90 STA participants, 13 of which are still in high school, as the majority of current STA's have already graduated high school and are somewhere between years two and five of their full registered apprenticeship.

Maryland high school students currently participating in the three apprenticeship pathways covers less than 1% of graduates; however, interviews with CTE directors indicate their interest in expanding the youth apprenticeship program substantially. Overall, CTE directors spoke highly of the quality of youth apprenticeships, but a general misgiving as to their school districts capacity to increase participation and employer engagement to the level of the Blueprint's 45% goal.

45% Goal Qualifications for FY 22-24

The Kirwan Commission's proposal contemplates a CTE system in which classroom education and training is combined with learning in a workplace. As such, the Commission encouraged the continued development of comprehensive CTE high schools. The report notes that "students in Comprehensive CTE high schools will be able to take community college certificate programs in their high schools, so they can do college-level CTE work while remaining involved in high school courses and extracurricular activities while they earn both a high school diploma and a credential leading toward a rewarding career. These programs will include both youth and registered apprenticeship programs of the kinds already offered in Maryland. The Commission recognizes that the CTE system it proposes will take years to implement fully."

Although the Blueprint law often states the 45% goal in terms of "students," the law seems to refer to high school students by the time they graduate. Interviews with Maryland legislators confirmed that the appropriate goal is 45% of graduates and *not* 45% of all students at any given time.

With these pieces in mind, the Committee considers this first phase of implementation, spanning FY 22-24, a period of transition for existing programs and systems as the Committee recommends enhancements and scales up the opportunities offered to students, employers, and school communities. For the purposes of establishing a foundation of data toward the 45% goal and supporting the expansion of existing apprenticeship programs, **the Committee will count student participation in the School-to-Apprenticeship, Youth Apprenticeship, and Registered Apprenticeship models toward the Blueprint goal through at least 2024** as covered by this initial Phase One plan. In the next iteration of this plan, due to the AIB in FY 24, the Committee will provide a **detailed transition**

plan for the development and expansion of high school level of registered apprenticeships. Approaches under consideration by the Committee are detailed later in this section.
The CTE Committee should also note what does *not* count in meeting the 45% goal. While job shadowing, internships, and other work-based learning opportunities are valuable experiences for students, it is clear that the intent of the Kirwan Commission and legislators in drafting the Blueprint do not consider these to count towards the 45% goal. Internships in particular vary greatly in skills, expectations, and pay, with some even being unpaid and therefore, from an equity standpoint, not accessible to all students.

Additionally, the Committee makes the following recommendations to build on existing Maryland youth apprenticeships for the first two years of implementation. The focus would be twofold: first, to continue recruiting employers to start programs; and second, to work with current youth apprenticeship employers on extending their apprenticeships beyond high school into a full registered apprenticeship. Allowing school districts to continue existing efforts for a temporary period will offer a degree of continuity. While the current apprenticeship pathways continue for this period, the process for generating sufficient numbers of high school level of registered apprenticeships can begin with three early steps:

1. Build full registered apprenticeships for positions in state and local governments. Plausible targets have been identified in task force reports on health, transportation, and public safety positions. Teacher apprenticeships offer additional opportunities.
2. Encourage and help existing registered apprenticeship programs begin at the high school level. This task will involve partnering with relevant school districts to ensure full cooperation with school scheduling and access to students.
3. Budget for a "pay per apprentice" model to give financial incentives to intermediaries to stimulate new registered apprenticeships starting in high school. The first two years of this model could involve budgeting for about 6,000-8,000 apprenticeship slots per year. At $4,000 per apprentice, the cost would be $24-$32 million.

Similarly, the process for approving and implementing industry-recognized credentials is in a period of transition during this initial Phase One plan. The AIB Initial Implementation Plan notes that the CTE Committee and AIB will determine collaboratively which credentials will count toward the 45% goal. As such, the Committee is diligently examining the existing processes for submission and approval of new credentials, inclusion of credentials in current CTE programs, and studying credentials not yet offered to Maryland students which are both industry recognized and reflective of Maryland workforce trends. According to MSDE's current definition, an industry-recognized occupational or skill credential is a verification of an individual's qualification and competence in a specific career area. Credentials are typically issued by a qualified third-party such as a vendor, industry association, or governing board after an individual has completed an assessment demonstrating proficiency for a specific skill set. Only state-approved industry credentials aligned with a MSDE-approved CTE program of study are identified for reporting in Maryland's data collections. For the period of this initial Phase One plan, **the Committee will accept industry-recognized credentials currently approved by MSDE through at least FY 24**, at which time the Committee will detail a transition and implementation plan for credentials under the Blueprint in the updated plan due to the AIB in FY 24.

As the report detailed in this subtask is due annually on or before December 1 on data for the prior school year, the CTE Committee's report due on December 1, 2023, will report on those completing an MSDE-recognized industry credential, school-to-apprenticeship, registered apprenticeship, and youth

apprenticeship in the 2022-2023 school year. Similarly, the report due December 1, 2024, will recognize the same qualifications for the 2023-2024 school year. As detailed above, the qualifications for the data to be reported in the December 1, 2025, report will be more fully identified in the updated Phase One plan.

Considerations for the Next Phases of Implementation

The effort to generate highly valuable career pathways for Maryland young people requires an incremental strategy that retains the Blueprint vision but works gradually toward achieving this. To achieve full implementation of the vision, Maryland must develop and sustain a well-functioning career counseling system, stimulate an annual flow of 30,000 apprenticeship slots offered by employers, increase the readiness of high school students so a large number of students qualify for enrolling in an apprenticeship, streamline the process, ensure that non-apprenticeship industry-recognized credentials have significant value, have expert review teams in place, and enable the CTE Skill Standards Advisory Committee to build and otherwise compile sets of high-quality and well-vetted occupational competencies and certifications. While these efforts will take several years, the CTE Committee, Local Workforce Development Boards (LWDBs), Maryland's apprenticeship office, and school systems can begin activities that make incremental contributions to the Blueprint vision.

The term **High School Level of a Registered Apprenticeship (HSLRA)** was introduced in the Blueprint and indicated as a priority credential by the Blueprint and the AIB. The CTE Committee took into consideration various federal and state definitions, the Kirwan Commission reports, existing Maryland programs, lessons from comparable programs globally, and input from stakeholders when considering defining this term. As such, the Committee has established the following considerations for implementation of this concept, which will be further developed throughout FY 24 and outlined in detail in the updated Phase One implementation plan due to the AIB in FY 24, including a period of transition to bring this program to scale.

Per the Blueprint, the High School Level of a Registered Apprenticeship will be an apprenticeship approved by the Division of Workforce Development and Adult Learning (DWDAL) in the Maryland Department of Labor. Presently, DWDAL and the Maryland Apprenticeship and Training Council (MATC) approve applications for the school-to-apprenticeship, youth apprenticeship, and registered apprenticeship programs. In addition to the initial approval by DWDAL/MATC, the Committee envisions that the high school level of a registered apprenticeship will require the completion of required on-the-job training and related instruction hours as well as demonstrated competency in occupational skills standards in order for it to more closely align with registered apprenticeship standards. The Committee is considering recommending the following enhanced programming to qualify as a high school level registered apprenticeship in future phases of implementation:

On The Job Training (OJT) - A student apprentice would be required to complete a set number of hours of paid work-based learning with a sponsoring employer which may be earned during school hours in partnership with the Local Education Agency (LEA).

The Committee is taking into consideration existing structures in Maryland as well as comparable programs in other states and countries. Currently, the Maryland Youth Apprenticeship model requires a minimum of 450 hours of OJT. Comparable programming in Wisconsin implements a two-level model in which each level requires 450 OJT hours per year. Students who complete two levels, or two years, of the program will have completed a total of 900 OJT hours upon High School graduation, but students have the option to enter as a senior and only complete level one.

If students are to complete a program, they need to be given the flexibility of scheduling to spend enough time at work sites. This can often conflict with typical high school schedules and graduation requirements, which keep students in class during typical business hours throughout the week, and in essence, prioritizing college preparedness over career training. Many interviewees cited these types of scheduling issues as a major barrier to scaling apprenticeship. Curriculum design will need to be flexible and creative in order to circumvent this problem.

Related Technical Instruction (RTI) - The related instruction components may be completed in an LEA CTE program and/or taught by the apprenticeship sponsor. This would require communication and collaboration between the LEA, sponsor, and student in order to ensure the criteria for related instruction are met.

Many Maryland public schools already have robust CTE programming partially as a result of the earlier More Jobs for Marylanders 45% goal. Many of these CTE programs could be restructured to provide excellent related instruction for an apprenticeship program. Most traditional registered apprenticeships only require about 144 hours of related classroom instruction. Many schools may choose to provide more, given that public school students are often in classroom learning for significantly longer than that. Meeting 144 hours will vary among LEAs, but generally speaking this could be accomplished through two semesters per year of curriculum.

Maryland CTE curricula must be refined to support related instruction for apprenticeships. AIB subtask 3.4.4(c) calls for "developing a fully aligned instructional system including curriculum frameworks, syllabi, assessments, clear examples of standard-setting work, and formative assessments to keep students on track." We can learn from the Swiss in terms of curriculum design and structuring for the related instruction. In the Swiss system, employer associations collaborate to develop the curricula for apprenticeship programs, including the related instruction. This takes the burden off schools, and allows employers to design a curriculum that really fits the industry. Additionally, employers working together like this ensures that the training is relevant across the industry, rather than a niche to a given employer. There are some examples of this already in Maryland. For example, the Maryland Agricultural Education Foundation (MAEF), which includes educators and industry experts, is taking on more of a role in curriculum support for agricultural CTE. The state should build on these existing examples as they look to scale curriculum development to support the Blueprint goal. Centralized curriculum design and promotion can also help with some of the confusion school districts are currently feeling. For example, in Wisconsin, all career pathways programs and apprenticeship curricula are listed and published online, making them accessible to all stakeholders.

Curriculum challenges are one reason for Maryland to move toward standardized occupational standards for apprenticeships. Were the specific occupation-based apprenticeships designed to operate throughout the state, schools would have an easier time adapting their curriculum to provide at least some of the RTI component of the apprenticeship. Otherwise, schools and apprenticeship sponsors will have to collaborate to agree on curricula that meets each apprentice programs' RTI.

Skills Standards - Students would be required to demonstrate competency in the occupational skills standards developed by the CTE Skills Standards Advisory Committee. These competencies may be achieved with the sponsor and/or in an LEA CTE program and must be accomplished in their entirety by the conclusion of the required hours of on the job training. Details on the development of these skills standards can be found in subtask 3.4.4(d) of this document.

The Committee envisions that upon completion of these requirements, documentation could be submitted to DWDAL/MATC for review and approval. The student would receive a Certificate of Completion verifying that they have met the expectations for on-the-job training, related instruction, and skills standards. This certificate could qualify as an industry-recognized credential and would be issued by DWDAL/MATC. This process would then provide the CTE Committee with the mechanism necessary to quantify and track those meeting the 45% goal.

The Committee also recognizes that the development of high school level of registered apprenticeships opens doors of opportunity to students after graduation through coordination between education and the workforce with the purposeful communication of the options available to HSLRA completers. In partnership with DWDAL, MATC, MSDE, LWDBs, and other related agencies, the Committee will strongly encourage that employers sponsoring HSLRA offer to students the option to continue with the employer as a full Registered Apprentice or, if applicable, full-time employment with the business. The HSLRA certificate could be honored by the employer as OJT hours, RTI, and skill competencies credited toward the full Registered Apprenticeship, allowing the student a head start in the program upon graduation. If an employer is not able to sponsor a full Registered Apprenticeship, particularly when considering the more limited resources of small businesses, the student could be provided options with other businesses in Maryland at which they could continue to a full Registered Apprenticeship with their HSLRA completion credited. Additionally, the Committee will look at models where continued education after high school can be done in tandem with the full Registered Apprenticeship. Looking at recent guidance issued jointly by the Maryland Department of Labor and the Maryland Higher Education Commission (MHEC), there is precedent that apprenticeship does not have to replace the possibility of taking college credits, which is sometimes expressed as a concern from educators and parents. The Committee believes by communicating post-graduation opportunities to students upon completion of HSLRA, students will be better informed as they shape their professional path, benefitting Maryland businesses as enrollment in full RA's increases as a result.

However, the credential obtained at the conclusion of a HSLRA is only as valuable as employers and full Registered Apprenticeship sponsors understand it to be. In the development of the updated Phase One implementation plan due in FY 24, the Committee will consider the ways in which this program may be marketed as a brand so as to promote program enrollment as well as uplift the HSLRA credential to a sought-after qualification by apprenticeship sponsors and employers across Maryland. Political officials, business leaders, and the media should highlight apprenticeship as a high-quality career option in all types of occupational areas. Videos of successful employers and apprentices should be widely featured. Examples can come from a variety of apprenticeships used by various government employers to demonstrate credibility. One CTE educator suggested that the students in their Interactive Media Production program could support, if not lead, the development of marketing materials for this purpose, serving as a practical skill application for students which they could see used across the state while saving on the cost of brand development.

The Committee is also considering recommendations with respect to the process and enhancement of what is considered an **industry-recognized credential**. Although indicated in the Blueprint as less preferable to apprenticeship, non-apprenticeship industry-recognized credentials can contribute to meeting the quality career pathway goals of reaching 45% of high school seniors. The CTE Skills Standards Advisory Committee could provide the CTE Committee guidance on which existing and new standards meet the Blueprint goals.

Having the CTE Skills Standards Advisory Committee build well-developed and industry-recognized credentials would be very time-consuming and costly. While the CTE Skills Standards Advisory Committee may decide on creating a few credentials itself, a more cost-effective and timely strategy would involve drawing on existing standards for credentials available from other sources. However, industry certifications and

credentials have proliferated to reach over 1 million credentials and almost 60,000 credential providers. One difficulty that arises in selecting the industry-recognized credentials that should count toward the Blueprint goal is that many occupations span a variety of industries. Thus, in seeking comment from industry groups, the CTE Skills Standards Advisory Committee often must account for a range of industries that employ workers with specific occupational competencies. For this reason, the Committee could publish a Request for Information to all state industry associations and other employer groups to specify which occupational credentials are valuable to their employers.

Existing occupational definitions and competencies are available from multiple resources, including: MSDE's list of industry-recognized credentials, O'NET, Credential Engine, Urban Institute's competency-based occupational frameworks, England's Institute for Apprenticeship and Technical Education, Wisconsin youth apprenticeship program, U.S. Office of Apprenticeship, and licensing requirements in Maryland and in the U.S. The National Governors Association Center for Best Practices provided the Committee with information on what other states are undertaking with regard to skill standards and designating industry-recognized credentials. Alabama in particular is a state model that may translate well to the Blueprint framework. As part of Governor Kay Ivey's Success Plus credential attainment initiative, the Alabama Educational Attainment Committee, a subcommittee of the state workforce board, was charged with creating a definition, goal, and strategic plan for statewide credential attainment. As a component of this strategic plan, the Committee on Credentialing and Career Pathways (ACCCP), another subcommittee of the state workforce board, is responsible for creating a list of in-demand occupations and developing an annual compendium of valuable credentials.

Interviews with some CTE directors and teachers indicated that several CTE programs train high school students to test for and otherwise gain qualification for occupational licenses. Certainly, since licenses are required for some occupations, they would qualify as non-apprenticeship industry-recognized credentials. Among the fields highlighted are cosmetologists and barbers; heating, ventilation, air conditioning and refrigeration (HVACR); and various levels of nursing. Some of the CTE programs in these and other licensed fields could become full Registered Apprenticeship programs. However, in some cases, rules regarding licensing age requirements can interfere with the use of high school apprenticeships to train workers to become fully qualified in the field. The Independent Electrical Contractors Chesapeake (IEC) has been approved to move the starting age for their apprenticeship program into high school; by the end of this four year electrical apprenticeship, apprentices will receive an Electrical Journeyworkers License from the Maryland Department of Labor's Division of Occupational and Professional Licensing.

Designating which non-apprenticeship industry-recognized credentials should count toward the Blueprint goals will take time. The CTE Skills Standards Advisory Committee can embark on short-term and long-term strategies for selecting the valuable credentials. A good first step is to ask the CTE directors and CTE teachers for their nominations of credentials that they believe are highly respected by employers for entry into good careers. A second involves examining closely the existing credentials specified by MSDE. A third is to begin compiling standards based on the sources and organizations already undertaking these tasks. A fourth but longer-term approach involves tracking the career trajectories of high school students who obtain a particular non-apprentice industry credential.

The final piece of consideration for measuring this goal is the actual mechanisms that can be implemented in order to capture the data necessary to show the percentage of high school students who, prior to graduation, complete the high school level of a registered apprenticeship or another industry-recognized occupational credential. Currently, LEAs/MSDE track credentials earned and youth apprenticeship completers. When considering what counts as the "high school level of a registered apprenticeship" the Committee will have to

consider a specific metric that can measure when a high school student “completes” the qualifications in order to be counted prior to their graduation. Some considerations may include a specific number of OJT hours instead of the entire set of OJT hours normally required for a full Registered Apprenticeship, specific RTI, and/or competencies met. If the Committee recommends a form of HSLRA that recognizes that completion of the high school portion does not require the full Registered Apprenticeship completion, but does require the completion of certain components and the continuation of the apprenticeship post graduation, the pathway to 45% becomes much more attainable. The Committee will be working with various state agencies and partners in order to put processes in place to ensure mechanisms are in place to collect this program completion data, without duplication and disaggregated by race, ethnicity, gender, family income level, linguistic, and disability status.

AIB Task 3 (3.4.3) - Expert Review Teams

Objectives

CTE Committee annually submits deployment plan for CTE Expert Review Teams (ERTs) to AIB and visits 10% of schools annually until all schools are visited at least once.

Key Actors

- Accountability and Implementation Board (AIB)
- CTE Committee
- CTE Expert Review Teams (ERTs)
- Local Education Agencies (LEAs)
- Maryland Department of Labor (MD Labor)
- Maryland Longitudinal Data System (MLDS) Center
- Maryland State Department of Education (MSDE)

Timeline

Fiscal Year	Date Due	Frequency	Action
FY 23	July 1	Once	CTE ERT deployment plan submitted to the AIB
FY 24	-	Once	CTE ERT members are selected
FY 24-31	July 1	Annually	CTE Committee submits an annual deployment plan for CTE ERTs to the AIB
FY 24-31	-	Annually	CTE ERTs visit 10% of schools annually until all schools are visited at least once
FY 24-31	-	Annually	CTE Committee delivers annual training to CTE ERTs on the Blueprint and review process
FY 24-31	-	Annually	CTE Committee submits annual report using CTE ERT data to identify students and demographically distinct student groups not making adequate progress

Subtasks

***3.4.3(a)** - CTE Committee shall choose members of CTE ERTs in FY 24.*

Labor statute 5-412 as well as AIB guidance in their Initial Implementation Plan indicate that, to the extent practicable, members of CTE Expert Review Teams should be reflective of the geographic, racial, ethnic, linguistic, and gender diversity of public school students in Maryland. In an effort to

achieve this objective, the Committee will follow best practices for equitable recruitment and candidate selection processes.

The Committee envisions a regional model, distributing the work among three CTE ERTs led by a full-time staff member per region. Teams may then be built under the leadership of regional staff through a stipend model in order to recruit industry experts, including but not limited to employers, trade and labor unions, apprenticeship sponsors, and CTE educators. As of the submission of this plan, the CTE Committee is working with the AIB and the Department of Budget and Management on the funding to support the ERT staffing and stipends for members. This is a priority as it will greatly impact the ability and scope of the CTE ERT deployment plan due to the AIB on July 1, 2023. Once funding is determined, the CTE Committee will be able to determine the appropriate timeline for hiring staff and recruiting members of the ERTs.

In addition to the financial and staffing aspects of the deployment plan, the Committee will be strategizing for ERT expectations, school visit schedules, reporting structures, onboarding, and professional development for Team members. This can be expected in the July 1, 2023, plan due to the AIB.

***3.4.3(b)** - CTE Committee shall deliver training for reviewers on the Blueprint and the review process from FY 24-31.*

In their Initial Implementation Plan, the AIB indicated that CTE ERTs should be expected to conduct interviews, observe classes, and use other data to determine the sufficiency of student progress in CTE pathways and the collective progress toward the objectives of CTE implementation. Additionally, the AIB stated that CTE ERTs would develop recommendations, measures, and strategies related to their school-based visits. In order to adequately prepare Team members and operate an effective review and feedback program, the Committee is considering a training schedule including onboarding for new Team members and structured check-ins with the Committee to determine commonalities in observable achievements and concerns. Additionally, the Committee will collaborate with organizational and departmental partners to deliver annual professional development to grow the knowledge and skills of Team members, including but not limited to a comprehensive overview of the Blueprint for Maryland's Future, review criteria, reporting processes, interview strategies, focus group facilitation, and implicit bias. The details of this schedule and training modules will be provided in the Committee's CTE ERT deployment plan due to the AIB on July 1, 2023.

***3.4.3(c)** - CTE Committee shall use State accountability data to identify schools for the CTE Expert Review Teams to investigate in which sufficient numbers of students/groups of demographically distinct students are not making adequate progress towards the completion of the CTE pathway from FY 24-31.*

The Committee approaches this subtask as a quality control mechanism to promote equity in CTE opportunities and student outcomes. In order for the Committee to be most effective in this analysis, access to a variety of raw data sets will be critical. This will require close partnership with other key actors in Blueprint implementation and data collection, including but not limited to the AIB, MSDE,

MLDS, and LEAs. The Committee's initial data collection plan is outlined in a later section of this document.

In Phase One of implementation, the CTE ERTs will be expected to monitor the implementation of the CTE related objectives outlined in the LEA implementation plans. This will require partnership with the AIB to ensure cross-department alignment of goals and metrics. Additionally, reporting mechanisms will be developed for CTE ERTs to ensure a streamlined, consistent system for data collection and reporting. Initial mapping of this system is discussed in a later section of this document, and the full system overview will be detailed in the CTE ERT deployment plan due to the AIB on July 1, 2023, and updated in the annual deployment plans submitted to the AIB.

One aspect of this subtask that requires clarification is the directive to evaluate based upon "adequate progress toward the completion of a CTE pathway." The overarching goal in the Blueprint and the AIB's Initial Implementation Plan articulates the goal of CTE implementation to be 45% of all graduates earning an industry-recognized credential, of which the high school level of a registered apprenticeship is the preferred credential as practicable. While completion of CTE programs is a major metric for Perkins V compliance, it is not indicated in the Blueprint as a component of the 45% goal. As the CTE ERT deployment plan is developed, the Committee will consult and collaborate with the AIB to ensure that this objective is more clearly defined to focus on the completion of the new CTE pathways and goals.

In their Initial Implementation Plan, the AIB noted that the CTE ERT visits to school sites should be scheduled "in a manner designed to provide the CTE Committee and MSDE with sufficient information to make informed decisions on the release of school funds conditioned on student performance, including adequate time for a school to respond to an ERT's report and recommendations before decisions are made regarding the retaining of school funds." This will require an ongoing partnership between the Committee, MSDE, and the AIB in order to clearly define "adequate time" and ensure decisions regarding funding and policy are based upon accurate and up-to-date information. The timing of these school site visits will be included broadly in the July 1, 2023, deployment plan and more specifically in each annual deployment plan, allowing for ample time to coordinate with all actors in this subtask.

***3.4.3(d)** - CTE ERTs shall submit reports with recommendations to address identified issues from FY 24-31.*

The Blueprint calls for deploying CTE Expert Review Teams to visit at least 10% of schools annually to determine how they are meeting the career pathway goals. In addition to observing the quality of CTE programming and CTE concentrations, the CTE ERTs can examine how all of the pieces of the plan are working. These include career counseling, systems for matching students with apprenticeship opportunities, overseeing apprenticeship placements, CTE courses and their links with apprenticeship and with achieving industry-recognized credentials, collaborations with community colleges and dual credit courses, and progress toward the 45% goal.

Labor statute 5-412 as well as AIB guidance in their Initial Implementation Plan expand on this subtask by directing the CTE ERTs to submit their school based reports to the school evaluated, local Board of Education, employers, and apprenticeship or internship sponsors in order to review the report and recommendations. The Committee will review these school visit reports and recommendations

throughout the year and recommend a comprehensive annual report inclusive of that year's detailed school visit reports as well as statewide themes and recommendations to be compiled by the Committee and submitted to the AIB annually. These reporting processes are touched on in a later section of this document and will be built out in more detail in the CTE ERT deployment plan due to the AIB on July 1, 2023.

The statute and guidance continue to explain that these local actors may be responsible for submitting a plan to the CTE Committee addressing the recommendations if necessary. As discussed in a prior subtask, the metrics by which CTE ERTs are evaluating schools and programs must be determined in order for the Committee to distinguish in what cases a follow up plan must be submitted by an LEA. The Committee looks forward to working with the AIB Outcomes Measures Workgroup to support this subtask. Once these review metrics are determined, the Committee will develop the elements of and processes for the submission of follow up plans. The Committee intends to elaborate on this in the upcoming CTE ERT deployment plan.

Considerations for the Next Phases of Implementation

Much of the structural planning for CTE ERTs will occur during the initial Phase One of implementation over FY 23-24. Details on the tasks discussed throughout 3.4.3 can be expected in the CTE ERT deployment plan due to the AIB on July 1, 2023. Following the planning of these systems, FY 25 and beyond will bring about the implementation of this deployment plan, during which CTE ERTs will visit at least 10% of schools annually until every school has been visited at least once by the end of FY 31. The proposed regional model will allocate the work of these school visits and subsequent reporting. In order to properly schedule school visits, CTE ERTs will require program information from LEAs, including but not limited to schools offering CTE programs, programs available, industry-recognized credentials associated with programs, apprenticeship programming and sponsors, and student enrollment and demographic data. The Committee will coordinate with the AIB and MSDE to determine which of these data sets LEAs already submit and organize a collection process for additional data points necessary for school visit scheduling.

In the scheduling of school visits, the Committee and CTE ERTs must consider not only the expectation of 10% of schools visited annually but also identifying schools which should be a high priority for early visits in order to effectively progress in their implementation. This determination will require collaboration with the AIB, MSDE, and LEAs. Additionally, the Committee will need to determine the deadlines by which CTE ERTs must submit their school visit reports to the Committee as well as local actors in implementation and, if necessary, a timeline for a follow up plan from LEAs and a scheduled return visit from the CTE ERT to evaluate progress.

The Blueprint recommends that CTE ERTs may coordinate the pairing of schools with similar demographics to foster collaboration and shared expertise between high performing CTE programs and emerging programs. However, detail is not provided on the expected outcomes of these pairings, criteria to measure success, and responsibility of CTE ERTs in their partnership. The Committee may explore a mentorship model between comparable programs, perhaps pairing NBCT CTE teachers and leaders with educators growing their programs. It will take time for the Committee to have visited and identified enough schools for this pairing to be successful, so further guidance in this area will be provided in subsequent implementation plans.

AIB Task 4 (3.4.4) - CTE Committee & Skills Standards

Objectives

LEAs offer a robust set of CTE programs that allow students to earn an industry-recognized credential or postsecondary certificate, including completing the high school level of a registered apprenticeship program approved by the Division of Workforce Development and Adult Learning within the Maryland Department of Labor

Key Actors

- Accountability and Implementation Board (AIB)
- Community Colleges
- CTE Committee
- CTE Expert Review Teams (ERTs)
- Local Education Agencies (LEAs)
- Local Workforce Development Boards (LWDBs)
- Maryland Department of Labor (MD Labor)
- Maryland Longitudinal Data System (MLDS) Center
- Maryland State Board of Education (MSBE)
- Maryland State Department of Education (MSDE)

Timeline

Fiscal Year	Date Due	Frequency	Action
FY 22	-	*Once*	*MSBE requests a waiver from the U.S. Department of Education to transfer responsibility for the Carl Perkins CTE Act to the CTE Committee*
FY 23	-	*Once*	*CTE Committee established and members appointed*
FY 23	*Dec. 31, 2022*	*Once*	*DWDAL develops a ten year plan to pursue federal grant money, submitted to the GWDB, AIB, Senate Budget and Taxation Committee, and House Committee on Ways and Means (originally 12/31/21)*
FY 23	-	Once	Skills Standards Advisory Committee is established and members appointed
FY 23	-	Once	Skills Standards Advisory Committee makes recommendations to the CTE Committee on occupational standards
FY 23	-	Once	CTE Committee approves, rejects, and/or modifies proposals by the Skills Standards Advisory Committee

Fiscal Year	Date Due	Frequency	Action
FY 24	July 1, 2023	Once	MOU established between MSDE & the CTE Committee regarding the administration of the Carl Perkins CTE Act
FY 23-31	-	Annually	CTE Committee adopts and, where appropriate, develops and regularly updates skills standards
FY 23-31	-	Ongoing	CTE Committee forms partnerships with the business community, nonprofits, and apprenticeship sponsors
FY 23-31	-	Ongoing	CTE Committee allocates roles and responsibilities to State agencies for the credentialing of students engaged in CTE programs
FY 23-31	-	Ongoing	CTE Committee addresses operational issues associated with delivering CTE programs to students, including transportation to and from job sites
FY 23-31	Dec. 1	Annually	CTE Committee reports on progress of CTE in the State to the AIB
FY 23-31	Dec. 1	Annually	CTE Committee submits a report to the Governor, MGA, and AIB with the status of programming, statutory, regulatory, budgetary, and structural changes needed to address the CTE system's evolving challenges
FY 23-31	Dec. 15	Annually	CTE Committee reviews agency budget proposals involving CTE and submits recommendations to the Governor and MGA
FY 24	-	Once	CTE programs in the State shall begin to be aligned with the requirements of the system implemented by the CTE Committee
FY 24	-	Once	CTE Committee sets content qualification and recruitment standards for CTE instructors
FY 24-31	-	Annually	CTE Committee determines programs approved for credit toward high school graduation, ensuring that the adoption of programs relating to CTE by County Boards, State Board, and Community Colleges is consistent with the system implemented by the CTE Committee

Subtasks

***3.4.4(a)** - CTE Committee shall be established within the Governor's Workforce Development Board in FY 23.*

This subtask was completed in 2022. The CTE Committee received funding starting in FY 23 and all 11 members of the Committee were officially appointed by August 25, 2022. The original Committee was comprised of both members already on the Governor's Workforce Development Board (GWDB) and some members who had to be appointed to the GWDB and CTE Committee simultaneously. At the time of the submission of this plan, CTE Committee members include:

Myra Norton, Chair	President & CEO, Arena
Kevin Anderson	Secretary, Maryland Department of Commerce
Brian Cavey	International Vice President, International Association of Heat and Frost Insulators & Allied Workers
Mohammed Choudhury	State Superintendent of Schools, Maryland State Department of Education
Judi Emmel	Consultant, Teach Cyber
Matthew Holloway	Farmer, Quantico Creek Sod Farms, Inc.
Deborea Montgomery, Ph.D.	Principal, Dogwood Elementary School
Michael Thomas	Vice President, Workforce Development & Continuing Education, Baltimore City Community College
Portia Wu	Secretary, Maryland Department of Labor
Charnetia Young	Director, Workforce Initiatives Business Development, National CVS Health
TBA	Secretary, Maryland Higher Education Commission

***3.4.4(b)** - CTE Committee shall monitor the progress of CTE in the State, including progress on implementing the CTE goals identified in the Blueprint, and share information on career and technical education with AIB starting in FY 23.*

Monitoring progress of these many complex initiatives will require a coordinated system of data collection, diligent analysis, and dissemination of status updates, highlights, and recommendations. In order to effectively monitor implementation, data access and analysis will be critical to ensuring CTE programming is meeting the moment. The processes will be necessary to collect data from numerous actors in implementation. The Committee examined the data collection and sharing processes currently

in practice by entities such as the AIB and MSDE and sought to establish systems by which the Committee may utilize data already being collected and a seamless process to obtain additional data deemed necessary for implementation. The CTE Committee staff will collect this data which will be analyzed and reported on by the CTE Committee.

In order for all partners to effectively support CTE implementation, all parties must be fully informed of their role in the Committee's work, a large part of which will involve sharing data across departments. As such, the Committee has established a list of initial data that will be essential to implementation, progress monitoring, and accountability. The baseline data below will be collected from the aligned agency in the aforementioned methods. As additional data points become necessary for accurate and comprehensive implementation monitoring, the CTE Committee will notify the appropriate agency in advance of the annual reporting deadline. It should be noted that pursuant to subtask 3.4.2 (a) and (b), the Committee is still defining the exact data qualifications required in meeting the 45% Blueprint goal.

Appendix G - CTE Initial Data Collection Plan

Agency	One Time	Annually	Submission Process
MSDE	• Current list of approved credentials • Projected student enrollment • Current skills standards • Teaching certification standards and requirements • State CTE instructor standards • Current approved programs for credit	• Disaggregated student enrollment • CTE enrollment, credit hours, and completers data • CTE instructor recruitment & vacancies • Industry-recognized credentials earned	Standing data sharing agreement established between MSDE & CTE Committee
MD Labor	• DWDAL 10-year grant plan (completed)	• Apprenticeship student enrollment, hours earned & completion • Apprenticeship employer enrollment • Workforce trend projections (statewide & local)	Standing data sharing agreement established between the CTE Committee, DWDAL, and MATC
LEAs		• Industry-recognized credentials currently offered and their CTE pathway alignment • Updates to CTE course curriculum	Submitted annually on July 1, possibly by a Google Form. LEAs determine the responsible party for submission (Blueprint Implementation Coordinator, CTE Director, etc.).

Agency	One Time	Annually	Submission Process
		• Student apprenticeship experience survey results (to be developed by the CTE Committee)	
LWDBs		• Career counseling use of funds, student enrollment and impact • Local employer/industry engagement	Submitted annually on July 1 possibly by a Google Form.
CTE ERTs		• School site visit reports	Submitted on a rolling basis by the processes established in the CTE ERT deployment plan due to the AIB on July 1, 2023.

The CTE Committee and its partnering agencies are responsible for submitting reports throughout implementation of the Blueprint. These include implementation plans, program development, and annual progress monitoring. The following table includes reports mandated by statute and/or the AIB's implementation plan and is subject to change.

Appendix H - CTE Reporting Calendar

Report	Due Date	Frequency	Recipients
CTE Statewide Goals	December 1, 2022 (*recommend move to 2023*)	Once	AIB
CTE Initial Phase One Implementation Plan	March 15, 2023	Once	AIB
CTE ERT Deployment Plan	July 1, 2023	Once	AIB
Annual CTE Progress Report	December 1	Annually	Governor, MGA, AIB
Annual CTE Budget & Policy Recommendations Report	December 15	Annually	Governor, MGA, AIB
Annual CTE ERT Deployment Plan	July 1	Annually	AIB, MSDE
CTE ERT School Site Visit Reports	-	Ongoing	CTE Committee, School, LEA, Employers, Apprenticeship Sponsors

Report	Due Date	Frequency	Recipients
CTE Updated Phase One Implementation Plan	March 2024	Once	AIB
Career Counseling Program Evaluation & Recommendations	FY 26	Once	AIB, MSDE, LEAs, LWDBs
CTE Phase Two Implementation Plan	Spring 2027	Once	AIB

In their Initial Implementation Plan, the AIB guidance for this subtask noted that, as a unit of the Governor's Workforce Development Board, the Committee will perform other duties assigned by the Board. Additionally, the Committee may contract with a public or private entity to research and analyze elements of implementation, which the Committee has done with the University of Baltimore Jacob France Institute and the Urban Institute in the formation of this plan. The Committee may also create stakeholder advisory structures, which was also implemented in the creation of this plan through the robust stakeholder interview program, and which will continue throughout implementation. The Committee may also adopt necessary regulations to carry out its duties as well as make grants to innovative programs that fall under the Committee's purview, guidance which the Committee will take into consideration as applicable; however, the use of grants may require supplemental budgetary allocations.

***3.4.4(c)** - CTE Committee shall develop a statewide framework for CTE that prepares students for employment in a diverse, modern economy.*

This subtask speaks to the greater mission of the Committee: to shape an innovative, equitable, and globally-competitive system of Career and Technical Education to prepare Maryland students for rewarding careers. Education Statute §21-203 states that "CTE programs in public schools shall offer a sequence of academic and occupational courses, career development, and work experience to prepare students to begin careers and to pursue lifelong learning, and integrate academic knowledge and occupational competence to enable students to develop the critical thinking, problem solving, employability, and technical skills required to meet the workforce preparation and economic development needs of the 21st century." The charge of the CTE Committee is to shape the systems, structures, programs, partnerships, and outcomes of this new vision for CTE in Maryland. The vision of the Committee in regards to this mission is evident throughout this plan.

As the AIB indicates in their Initial Implementation Plan, this requires an alignment of CTE pathways with State workforce needs to ensure CTE programming meets the moment. This requires leaders in the education and workforce spaces to collaborate toward a shared vision. The Committee membership exemplifies this partnership, serving as the foundation to the AIB's guidance to "bring together representatives from public schools, institutions of postsecondary education, and the business community, including nonprofit entities and apprenticeship sponsors, to ensure that CTE programs are aligned with the State's economic development and workforce goals and operate with the best global practices." Since its inception, the Committee has worked to establish foundational knowledge on the elements that make up the State's CTE system in its current form, identify strengths, dissect the root cause of existing challenges, and plan for the future of CTE under the Blueprint. The CTE Committee is

working with the University of Baltimore's Jacob France Institute for a report that will rely on Burning Glass data, one of the world's largest real-time, proprietary databases of job openings and career histories, to demonstrate the number of job openings for CTE students in the U.S. and in Maryland and by education attainment, occupations, industry sectors, skill categories, advertised earnings, posting duration and related employers. This report will be provided in the Committee's updated implementation plan due in FY 24.

In the development of this initial Phase One implementation plan, economists from the Urban Institute analyzed the current status of occupational preparation in Maryland. The most recent data available covers the 2016 high school graduates as of the middle of 2021, or about five years after graduation. At this point, about 18% of graduates had completed a BA or higher degree, 3% a certificate or AA degree, 36% some college and no degree, 19% were still enrolled, and 25% had no college education. Assuming that 60% of the group still enrolled in mid-2021 complete a degree, the total share of graduates with any degree beyond high school would be 32%. Although Census data indicates higher college completion among Maryland 23- to 24-year-olds, this group includes individuals who move to Maryland from out-of-state and thus do not necessarily reflect completion of Maryland high school students.

With respect to wage and employment outcomes of Maryland graduates, the Maryland Longitudinal Data System (MLDS) Center describes information drawn from employer reports of earnings to the Unemployment Insurance (UI) system. Earnings data on an individual may not be available from this source because the worker does not work in Maryland or is self-employed. As a result, MLDS is only able to report earnings for a full calendar quarter on workers in covered employment for three consecutive quarters. Notwithstanding these limitations, the coverage rates and median earnings data by educational level are notable. The data are available for only about 60% of high school graduates.

The reason only 40% of 2016 high school graduates have consistent earnings records five years later is uncertain. It may mean that former graduates are still completing college, are unemployed, have inconsistent work records, or work in another state. Interestingly, the percent of workers covered varies little across education except for the Associate of Arts (AA) group. Examining the quarterly earnings of workers with three consecutive quarters of work provides some insight on levels of earnings. Surprisingly, high school graduates with no college show higher median earnings than those with some college. On the other hand, those with an AA or BA are able to earn significantly more than graduates with no more than a high school degree.

Appendix I - Quarterly Earnings of 2016 Maryland HS Graduates

Education Attained	% with Covered Earnings	Median Earnings
All HS Graduates	40	$7,138
No College	39	$7,189
Some College	41	$6,366
Still in College	42	$6,142
AA or Certificate	52	$8,307
BA or Higher	38	$10,833

Source: MLDS

The MLDS Center recently provided a report to the Maryland Department of Labor on registered apprenticeship graduates from 2012-2013, showing their status five years after program completion (2017). The initial findings indicate that, five years after program completion, apprentices have a median quarterly wage of $13,000 over the quarterly living wage ($7,841) and $10,000 over the median wage calculation wages ($10,872). For comparison purposes, a prior MLDS Center report showed that 2012-2013 graduates with an Associate's Degree from a Maryland Community College had median quarterly wages five years after graduation of $10,967 - almost half the median quarterly wages of the apprenticeship program completers. The MLDS report notes that while this comparison demonstrates impressive earnings for apprentices, it must be considered in the context of the fact that apprentices represent a very small and distinct population.

A good deal of skill development and certification takes place after high school in the form of licenses and registered apprenticeships undertaken by adults. Data on licenses in selected occupations suggest significant increases in this form of skill certification, reaching 28,430 in 2022. The most common occupational licenses were in real estate (8,782), home improvement (4,440), cosmetology (3,319) and HVACR contractors (3,052). Plumbers, master electricians, and professional engineers typically receive about 2,000 licenses per year.

Registered apprenticeships have increased in recent years but are only 0.4% of the Maryland workforce. Still, nearly 4,000 individuals enter apprenticeship programs each year. Even if all 4,000 were drawn from high school graduates, the apprenticeship share would represent about 6% of high school graduates and about 14% of those directly entering college.

Overall, the current state of career readiness is limited. As the Kirwan Commission discovered in their work, not only are academic skills well below proficiency but in-depth career-focused learning and work experience leading to rewarding careers is far less than required to reach the two-thirds of students who do not complete college.

***3.4.4(d)** - The CTE Skills Standards Advisory Committee shall make recommendations and provide advice to the CTE Committee on setting occupational standards necessary for a strong CTE system that will form the basis of the post-CCR CTE pathway starting in FY 23.*

With well-developed and well-defined occupational standards, the apprenticeship registration process could become less time intensive and less burdensome to employers and staff. Like other State apprenticeship agencies, the registration process in Maryland is individualized, wherein Maryland Department of Labor staff review each individual submission and the Maryland Apprenticeship and Training Council (MATC) must approve the registration of each sponsor in bimonthly meetings.

The CTE Skills Standards Advisory Committee setting occupational standards could ensure the consistent application of industry-driven and consensus-based standards, providing further assurance that all apprentices will gain the skills to become fully qualified in their occupation. This is necessary because without the assurance that apprentices will attain high level skills, apprentices, employers, and other sponsors will lose confidence in apprenticeship as a workforce solution.

In stakeholder interviews, occupational skills standards were noted as an area of great opportunity. Brian Cavey, a CTE Committee member and the MATC Chair, stated that a statewide system of skill

standards could help apprenticeships move through the registration process more quickly and efficiently. Similarly, Governor's Workforce Development Board Vice Chair Chris Sachse believes that the development of skills standards will help increase employer participation by streamlining the process, reducing apprehension to undertake the process of becoming an apprenticeship sponsor.

Occupational skills standards are present in top performing CTE and apprenticeship programs globally. In Germany, apprenticeship plans are developed for 327 different occupations jointly by employers' associations, experts from the vocational training sector, and the Federal Institute for Vocational Training (BIBB) and are signed into law by the federal government. Standardization of occupational skill standards helps ensure quality and that apprenticeship training in a particular occupation conveys the same occupation-specific and general skills throughout Germany. However, revisions of standards often take years, leading to concerns about how current all the standards are. Assessment of each apprentice is a serious matter with exams and panels tasked with ensuring apprentices achieve the skills specified for the occupation.

Similarly, in Switzerland, each industry sector in partnership with the State Secretariat for Education, Research, and Innovation (SERI), develops qualifications and assessments for the industry, establishes curriculum, and provides through their affiliated training companies varying amounts of course work during the 3- or 4-year upper secondary vocational education. These "training plans" are complex and cover entry into the 240 occupations with apprenticeships. The commercial sector alone includes 21 areas of specialization including banking, retail, public administration, and some areas of IT, and is the most popular choice of Vocational Education and Training (VET) students. The training plans are standardized for use throughout the country and include clear criteria for assessment.

The UK system also devotes considerable resources to developing skill standards and assessment tools for all apprenticeships. The Institute for Apprenticeship and Technical Education collaborates with industry groups to build competency maps to cover over 500 apprentice occupations. Similar institutions exist in Australia, Austria, Canada, and other countries with robust apprenticeship systems. The UK has recently developed a whole industry undertaking "End Point Assessments."

In the U.S., no national body develops and mandates skill standards for the Registered Apprenticeship programs. Each apprentice sponsor, which may be one company or an entity overseeing apprenticeships in several companies, can register its own program specifying what skills are taught at work and in classes and for how long. The registration body, either a state or federal apprenticeship office, may require sponsors to show how their list of skill requirements make sense not only for their company but also for someone well-trained in the occupation more broadly. But this process involves one-by-one assessments of sponsor programs and thus differs greatly from standard practice in other countries. Moreover, there are no requirements for third parties to assess the capabilities of the apprentice upon completion. The absence of assessments upon completion of apprenticeships potentially reduces their value and portability as well as ensuring a high reputation for the apprenticeship system.

Interestingly, the one U.S. apprenticeship program that uses clearly specified skill standards throughout the state is the Wisconsin Youth Apprenticeship program. Wisconsin lays out the on-the-job learning performance guides and related coursework for eight career pathways and about 50 occupations.

Based on the Urban Institute's own experience in building competency-based occupational frameworks for registered apprenticeships, it is recommended that each framework developed should begin with job

functions (i.e., what functions should the skilled worker in the occupation be able to complete at a high level?), and then specify both the competencies needed to undertake the job functions and the criteria for judging performance in those functions. The frameworks should also describe the knowledge, skills, and tools and technologies required to achieve the competencies and thus perform the job functions at a high level. For the frameworks to encourage employer apprenticeship programs, the MATC could consider the standards as having a kind of "safe harbor," such that employers using the standards would gain immediate or very quick registrations for their programs.

In preparation for the development of skills standards in Phase One, the Committee has designated Committee member Judi Emmel as the Chair of the CTE Skills Standards Advisory Committee (SSAC). Under her leadership, membership of the SSAC will be established in FY 23-24. Education statute 21-210 outlines expectations for membership of the SSAC, stating that members will be appointed by the CTE Committee Chair and, to the extent practicable, be composed of members of the Governor's Workforce Development Board (GWDB) who do not serve on the CTE Committee. The statute continues by detailing that members of the SSAC should include representatives from employers, unions, apprenticeship sponsors, and other experts on occupational skills, including agricultural skills. The terms, meeting schedule, procedures, and policies will be developed by the CTE Committee in FY 24. Given the quickly approaching deadline of the development of the skills standards, the Committee will appoint members and begin the work as a high priority.

Without an existing skills standards model in Maryland and acknowledging the enormity of the work to be done by volunteer members, the Committee will pursue hiring additional staff or contractual services dedicated solely to the work of developing skills standards. The Committee will explore potential contracted support from organizations with experience developing occupational skills standards in comparable states and programs. The hiring and reporting structures will exist under the CTE Committee within the GWDB and utilize funding allocated to conduct the work of the Committee.

In their Initial Implementation Plan, the AIB indicated that the new skills standards developed by the SSAC should be implemented in CTE programs beginning in FY 23. This deadline would give the SSAC only a few months to be established, staffed, researched, and skills standards developed, including engaging stakeholders and other actors in implementation. In order to launch the new skills standards, LEA programs, MSDE, employers, and units of the Maryland Department of Labor must be fully informed and engaged, working in tandem with the Committee for a smooth and consistent rollout of the new standards. These steps are not feasible to achieve on such a short timeline. The Committee respectfully recommends that the AIB extend this deadline to FY 24 to allow the SSAC to most effectively complete this work. Additionally, the publication of the College and Career Readiness study in September 2023 by MSDE will support the work of the SSAC which would not be possible on the current compressed timeline.

3.4.4(e) - *CTE Committee shall approve, reject, or modify proposals made by the CTE Skills Standards Advisory Committee to establish CTE programs for public school students starting in FY 23.*

In alignment with the deadline extension requested in 3.4.4(f), the Committee projects that the new skills standards will be adopted for implementation in CTE programs in FY 24. The Committee will need

time to thoroughly review proposals, collaborate on any necessary modifications, and convene to vote on approval.

Following the approval of the new skills standards, the Committee will develop a communications strategy alongside MATC, DWDAL, MSDE, and the AIB in order to effectively implement the standards in CTE programs as well as apprenticeship registration. These standards will be integrated into the Expert Review Team criteria as detailed in AIB Task 3 (3.4.3).

***3.4.4(f) -** CTE Committee shall adopt and, where appropriate, develop and regularly update a comprehensive and cohesive system of occupational skills standards to drive the State's CTE system starting in FY 23.*

In alignment with the deadline extension requested in 3.4.4(f), the Committee projects that the new skills standards will be adopted for implementation in CTE programs in FY 24. Following the initial adoption of the new skills standards, the Committee will monitor effectiveness of the skills standards as part of its annual implementation review, which will consider reports from Expert Review Teams, feedback from stakeholders, workforce data and projections, and developments from comparable programs. Recommended updates to the state's skills standards will be outlined in the report submitted on December 1 annually, with the Committee taking action to implement any changes in the months following.

***3.4.4(g) -** CTE Committee shall work with the business community, including nonprofit entities and apprenticeship sponsors, to develop CTE learning opportunities starting in FY 23.*

The CTE Committee was established with the directive for members to be representative of the workforce, education, and State government. This partnership within the Committee is reflective of the intent behind Pillar 3 of the Blueprint, a vision for collaborative programming which expands opportunities for students and employers alike. As a unit of the Governor's Workforce Development Board, the Committee has access to the expansive industry expertise represented on the 59-member Board as well as the 13 Local Workforce Development Boards and numerous partners throughout the State.

These organizational relationships are only the beginning for what lies ahead of the Committee as Maryand seeks to transform CTE programming to an innovative, globally competitive system intertwined with the future of the Maryland workforce. The presence of the Committee is emblematic of the State's commitment to shaping a system of education providing opportunities to all students to succeed well beyond graduation. Stakeholder interviews illustrated this potential, with local CTE directors noting that these educational and workforce partnerships benefit students not only with new knowledge, skills, and work-based learning experiences, but also by supporting the needs of students as many contribute financially to their families, build resumes for college, and get a head start on a rewarding long term career. These factors are extremely motivating for students as well as employers who are seeking well-trained, reliable, and ambitious professionals to forge a lasting career.

Local Education Agencies (LEAs) across Maryland are laying the groundwork for these partnerships between the school system and local economy. Washington County distributes a one pager to all local employers outlining the programs the school CTE system offers and what related instruction they can support. Washington County also holds an annual “apprenticeship bash” with employers, families, students, and CTE educators to show what students and programs are producing, celebrate successes, and demonstrate a commitment to the mission. Caroline County publishes updates from their CTE programs in their local economic development newsletters. Prince George’s County does recruiting and media campaigns to spark interest in CTE programs and host a town hall with business partners to get them engaged with the school system. Innovative practices such as these can be expanded through partnerships with LWDBs and apprenticeship intermediaries.

The main constraint in creating apprenticeship at scale in Maryland is attracting sufficient employer apprenticeship positions. Apprenticeships arise only when employers create programs and sufficient slots for apprentices. Convincing employers to develop programs and offer apprenticeships is especially difficult in the U.S., where apprenticeships are not commonly used for recruiting and training workers. Directly marketing an apprenticeship program to help solve an employer’s talent management challenges typically requires several face-to-face encounters. It requires determining the most suitable occupations, developing a plan to combine work-based and academic instruction, and filling out the forms and other materials required for registering apprenticeships. Advertising will not suffice without a well-developed system for selling and organizing apprenticeships. Also, it is unrealistic to expect school officials to persuade enough employers to use apprenticeships and create programs. Such efforts are difficult, typically requiring several face-to-face encounters by staff with sales and apprenticeship expertise. Employers whose interest is piqued by an advertisement must have a resource they can turn to for more information about developing and implementing an apprenticeship program. Working with a company to organize apprenticeships requires determining the most suitable occupations, developing a plan to combine work-based and academic instruction, and gaining approval from relevant committees.

Fortunately, incentives for organizations (private or public) such as apprenticeship intermediaries to undertake the selling and organizing work are likely to yield a good deal of success in attracting employers. Taking into consideration best practices from other models, the incentives for intermediaries should be performance-based, with one payment based on each apprentice in a position for at least 60 days and one payment based on completion. Funding would go only to intermediaries that follow the official occupational frameworks. Intermediaries should also help employers find and fund quality training options for the off-job components of apprenticeship. Other countries have managed to achieve scale in apprenticeship with incentives of the type outlined here. Britain had created over 850,000 in about eight years, largely through the efforts of 850 employment and learning providers. Australia achieves high levels of apprenticeship partly through private, often nonprofit, Group Training Organizations (GTOs). The GTOs, which serve as the formal employer and place apprentices with host employers, select and recruit apprentices; pay wages and provide for workers’ compensation, sick/holiday pay, and other employment benefits; manage the quality and continuity of training, both on and off the job; and provide the ongoing support necessary for the apprentice to complete the apprenticeship successfully. A temporary measure in England provided a 3,000 British pound subsidy per apprentice and resulted in an increase of 161,000 apprenticeships. Evidence in the U.S. drawn from the American Apprenticeship Initiative indicates intermediaries are able to stimulate employers to start programs at a reasonable cost (about $4,000 per added apprentice). The incentives needed to fully scale to 30,000 apprenticeships using intermediaries is expanded on in the Considerations for the Next Phase of Implementation section at the end of this section.

Documenting how apprenticeships are often profitable investments is another lesson from other programs. Employers save in the form of reduced recruitment and training costs, reduced errors in placing employees, and reduced costs when the demand for skilled workers cannot be quickly filled. Other benefits of apprenticeship for employers include reliable documentation of appropriate skills, increased worker productivity, higher morale, and a reduction in safety issues. The evidence suggests that employers usually achieve positive returns on their investments in apprenticeship, partly as a result of the apprentice's productivity in performing tasks that the employer would have to pay someone else to perform. After reviewing several empirical studies, Muehlemann and Wolter conclude that:

> …in a well-functioning apprenticeship training system, a large share of training firms can recoup their training investments by the end of the training period. As training firms often succeed in retaining the most suitable apprentices, offering apprenticeships is an attractive strategy to recruit their future skilled work force… (p. 1)

Another lesson is the importance of funding for related technical instruction (RTI). Because the Austrian, Danish, German, and Swiss systems begin and are part of a vocational education system funded by the government, employers are not required to finance the academic instruction component of an apprenticeship. In fact, the high quality of the vocational education teachers in these countries adds to the attractiveness of apprenticeships to employers. This lesson is embedded in the Blueprint and Kirwan recommendations, which call for apprenticeships to begin in high school. Since high school is an entitlement already paid for by the State, employers do not have the burden of financing both wages and related instruction.

The presence of skill standards, discussed in subtasks 3.4.2 Considerations and 3.4.4(d), complements the recruiting efforts of intermediaries. Employers can utilize an existing list of skills and competencies for their training program without having to devise, validate, and await permission to use their own. Once they choose to start a program, they can begin immediate implementation of their apprenticeship.

Further ideas for expanding apprenticeship can be found throughout this plan and within the Considerations for the Next Phases of Implementation at the end of AIB Task 4.

3.4.4(h) - *CTE Committee shall set content qualification and recruitment standards for CTE instructors in FY 24.*

The role of a CTE educator is unique, intertwining industry experience with instructional skill. These lanes of expertise converge in a way that is reflective of the Blueprint's vision for CTE programming, where students acquire new knowledge and skill through related instruction as well as work-based learning opportunities. Recruiting instructors with experience in their respective industries, however, poses a financial challenge, as the Kirwan Commission indicated in their Interim Report in 2019 that salaries for educators are on average lower than professions with comparable levels of education and experience.

The new Career Ladder in Pillar 2 of the Blueprint seeks to impact this issue, and school-based CTE instructors would benefit from this as teachers of record. However, the salary enhancements for Nationally Board Certified Teachers (NBCT) may present an obstacle for CTE instructors to advance

professionally and financially, as the CTE NBCT certification offers only eight broad industry pathways, including: Business, Marketing, and Financial Services; Community Services; Decorative Arts and Design; Engineering, Design, and Fabrication; Information Systems and Technology, Communications, and the Arts; Leisure and Recreation Services; Natural Resources; and Transportation Systems and Services. Candidates would select a pathway that most closely aligns with their industry expertise, earning a CTE NBCT certification at the conclusion. In total, only 97 educators in Maryland have earned the CTE NBCT, of which only 66 have active certifications as of publication of this plan. One Maryland educator who has earned this credential is AIB member Joe Manko, who the Committee would like to consult with on his experiences attaining this certification.

CTE instructors enter the classroom with experience in their respective industries as well as the credentials they attained throughout their career to advance as industry experts. One CTE instructor outlined the multiple nursing licenses she obtained prior to entering the classroom as a CTE instructor, while another Maryland CTE instructor worked in corporate communications for NASDAQ and FDIC prior to teaching Interactive Media Production. This wealth of knowledge, experience, and industry-recognized credentials are not a factor for professional advancement on the new teacher career ladder. This presents a challenge for CTE instructor recruitment and retention, as their comparable certifications are not credited toward their salary enhancement. The Committee recognizes that similar discussions are occurring among other school based personnel excluded from the career ladder salary enhancements, including but not limited to school counselors, social workers, and school psychologists. The CTE Committee recommends that the AIB and MSDE consider salary enhancements in recruiting high quality industry professionals to teach CTE courses in their profession. This is an issue that will require collaboration with the AIB and MSDE in order to ensure cross-content alignment of advancement opportunities and recruitment incentives.

As it relates to completing this subtask within FY 24, this may prove challenging given the time needed to work with various entities to allocate incentives for the recruitment of CTE instructors.

***3.4.4(i) -** CTE Committee shall determine which programs should be approved for credit towards high school graduation requirements in FY 24.*

Countries where apprenticeship is more common prioritize flexibility in their graduation requirements. For example, “compulsory education in Switzerland ends at grade 9,” although the compulsory curriculum is still very successful at preparing students for college and careers, as evidenced by high Swiss performance against OECD standards. Students are given the option of whether to continue with classroom instruction or to start an apprenticeship program, and this results in the majority of Swiss students of high school age entering a 3-to-4-year apprenticeship. While this may be a drastic difference from the American educational system, there are lessons to be learned on increasing flexibility for students to supplement elements of a traditional curriculum with on-the-job learning centered around an apprenticeship.

Beyond the issue of flexible hours, Maryland CTE curricula must be refined to support related instruction for apprenticeships. The AIB’s Initial Comprehensive Implementation Plan calls for “developing a fully aligned instructional system including curriculum frameworks, syllabi, assessments, clear examples of standard-setting work, and formative assessments to keep students on track.” Currently, many CTE directors we interviewed expressed confusion over what adjustments to the curriculum would need to happen. Many also did not know or understand whether different types of

credentialing or CTE program curricula would count towards the 45% goal. The AIB Comprehensive Implementation Plan also illustrates this need, requiring that the CTE Committee and the AIB collaborate to "determine which credentials will count toward the 45% goal." This is distinct from apprenticeships, which will still meet the 45% goal, but for which curricula will be developed individually for the specific apprenticeship program. There is also a distinction to be made between whether a program counts for Perkins funding and whether it counts for the Blueprint goals. The CTE Committee and related workgroups, the AIB, MSDE, and CTE directors at schools, in addition to other stakeholders, should all be involved in decision-making around how to restructure individual curricula. AIB Task 2 (3.4.2) elaborates on this in greater detail.

3.4.4(j) - *CTE Committee shall allocate roles and responsibilities to State agencies for the credentialing of students engaged in CTE programs starting in FY 23.*

Full and faithful implementation of the Blueprint relies on the interconnected work of all actors, including State agencies, school systems, stakeholders, employers, and legislators. This subtask is no exception, as its success relies on the CTE Committee, MSDE, Maryland Department of Labor, AIB, LEAs, apprenticeship intermediaries, and employers to work in tandem toward our shared goals. These partnerships began long before the Blueprint became law in 2021 and will continue to expand as Maryland moves forward through implementation.

The Committee has spent a considerable amount of FY 23 gaining institutional knowledge on the systems and structures currently in place related to the credentialing process, which can be referenced further in AIB Task 2 (3.4.2). In the process of developing this plan, our partners at the University of Baltimore and Urban Institute examined these systems and structures and reported their analysis to the Committee. As a result, the Committee identified areas of strength and opportunities for improvement, much of which is detailed throughout this plan. A priority for the Committee moving forward is to connect the key actors in implementation who are diligently working to shape CTE under the Blueprint to ensure common understanding, open communication, collaborative planning, and consistent implementation.

Once the CTE Committee has established a more precise mechanism for industry-recognized credentials, the CTE Committee will work with its partner State agencies on allocating specific roles and responsibilities in a streamlined manner.

3.4.4(k) - *CTE Committee shall address operational issues associated with delivering CTE programs to students, including transportation to and from job sites starting in FY 23.*

In the process of creating this Phase One plan, the Committee explored existing systems and structures related to CTE programming, including interviews with stakeholders involved in a variety of aspects of the operations of CTE and apprenticeship implementation. The Committee identified challenges in program operation that fall under the purview of the Committee's work which will be examined throughout the initial Phase One implementation period. As other CTE programming challenges are mentioned throughout other subtasks, the CTE Committee will primarily focus its recommendations in this subtask as it relates to expanding high school level registered apprenticeships. Subtask 3.4.4(g) provides additional information and recommendations with respect to recruiting employers to expand apprenticeships.

The highest cost of an apprenticeship is the wage paid to the apprentice. A key but often underemphasized feature of apprenticeships for 16- to 18-year-olds in Austria, Germany, and Switzerland is that apprentice wages are a low share of the wages of fully qualified workers. In Switzerland, apprentices are paid a starting monthly wage of $600-700 per month, or $5-6 per hour, assuming about 30 hours/week at the workplace. By their third year, they double their earnings to about $1,100-1,200 per month. As Hoffman points out, these rates are "…substantially below the Swiss minimum but attractive for a teenager living at home." Similarly, German apprentices earn only about 30-33% of what low wage workers earn. One way of interpreting low wages is to see apprentices as "high wage students" (they would not earn any wage sitting in class) and not "low wage workers." The relatively low wage levels for apprentices in systems that achieve apprenticeships at scale for youth raise questions about what employers will be willing to pay Maryland students in their high school level of a registered apprenticeship. According to Federal regulations, the apprentice's starting wage must be at least the minimum wage, which is set to increase to $15 by 2025 in Maryland. One consideration is offsetting some of the cost of wages for employers. Australia recently launched a $1 billion special initiative that involved subsidizing 50% of apprentice wages, leading to an increase of 100,000 apprenticeships.

An operational issue frequently mentioned in stakeholder interviews was the process of apprenticeship sponsor recruitment and registration. As a State Apprenticeship Agency with delegated authority to register apprenticeship programs, the Maryland Apprenticeship and Training Council (MATC) must approve all applications by program sponsors. In some cases, the process goes smoothly and at reasonable speed. In other cases, registration can take several months. Concerns have surfaced in interviews with intermediaries, employers, and CTE directors about the duration and complexity of the process and the limited portability of sponsor programs registered in other states or as part of federally registered programs. The CTE Committee will consult with MATC to determine how best to streamline the registration process. One specific approach the Committee will consider involves the use of recognized skill standards that employers can use to efficiently develop and register new apprenticeship programs, which is outlined more in subtask 3.4.4(d).

Additionally, barriers to access exist among student populations in Maryland. Students who are undocumented or from mixed-status families may not be eligible for work permits, thus disqualifying them from participation in apprenticeship programs. The Higher Ed Immigration Portal reports that 2,000 undocumented students graduate high school each year in Maryland, constituting approximately 3% of total graduating students. The Committee recognizes the inequity of this barrier to access for the innovative new CTE pathways and will partner with the appropriate parties to determine next steps.

Stakeholder interviews illuminated the barriers that exist within some occupations and industries. Multiple interviewees reported that age restrictions in Maryland prevent essential work-based learning aspects of apprenticeship. Some of these age requirements are set by national licensing bodies due to safety (electrical and HVAC), or industry standard (pharmacy and health care). Some restrictions exist in Maryland but are not applicable in other states. The Committee will investigate these instances of industry-specific age restrictions, identify their source, and develop guidance on apprenticeships and work-based learning for high school students in collaboration with the appropriate agencies.

In stakeholder interviews, CTE directors frequently mentioned how transportation can be a barrier to participating in apprenticeships. Although CTE directors and teachers commonly mention the issue of transportation to and from job sites, solutions to the transportation problems will likely vary by local

area. In some cases, public buses are available to transport students, while some counties face the challenge of no public transit options, requiring students to rely on private vehicles for transportation to job sites. The Committee will explore available options to support students in this area in partnership with relevant agencies.

School scheduling can be a barrier as well. The structure of student schedules varies by county and, at times, by school within an LEA, with some using A/B schedules, others block schedules, and some local CTE programs designating half of each day to CTE coursework at a technical school and the other half of the day focused on classes at a comprehensive high school. Additionally, balancing apprenticeship hours with graduation requirements can prove to be challenging. Navigating these issues will require both creativity and flexibility. The Committee will consult with MSDE on this topic and work to establish flexible and inclusive scheduling frameworks.

Just as school schedules vary across LEAs, so does the youth apprenticeship onboarding and support process. The Committee must keep in mind that high school students need support and guidance when starting their (likely) first job, and employers also need to be supported and guided on how to work with a high school student and mentor them effectively. It may be beneficial to develop processes and procedures that can be implemented state-wide, including orientations, onboarding, regular check-ins, and documentation.

CTE director interviewees shared concerns that staff capacity would be a major barrier to implementing the Blueprint goal. Both in terms of expertise and hours, current staffing may not meet the demand involved with getting to 45%. Large LEAs reported the challenge of a large quantity of students to support through the apprenticeship process, while smaller LEAs reported a small staff of CTE administrators who oversee multiple programs and initiatives, spreading their time thin between all of their assigned duties. The Committee will consult with DWDAL, MATC, LWDBs, MSDE, and other relevant agencies on ways in which existing structures can be strengthened and expanded to support the new CTE initiatives.

During the current Maryland legislative session (2023), a bill was introduced to establish an Apprenticeship 2030 Commission. The purpose of this Commission, as of the writing of this plan, is to examine and make recommendations to reduce skill shortages in high-demand occupations and provide training for career pathways to young people by: expanding registered apprenticeships in industry sectors with skill shortages; growing the number of registered apprenticeships to at least 60,000 by 2030; and reaching the Blueprint goal for 45% of high school graduates completing the high school level of a registered apprenticeship. The Commission would be tasked with reporting its findings and recommendations by December 1, 2023. The CTE Committee will be monitoring this bill through the remainder of session and if it passes, the Committee looks forward to working with the Commission and receiving additional recommendations on the expansion of high school level registered apprenticeships.

3.4.4(I) - *CTE Committee shall submit an annual report to the Governor, General Assembly, and AIB with an assessment of CTE within the State, as well as statutory, regulatory, budgetary, and structural changes needed to address the CTE system's evolving challenges starting in FY 23.*

The objectives of this subtask align with the objectives of subtask 3.4.2(b) in which the Committee will submit a report to the Governor, MGA, and AIB on the progress toward the 45% goal of Task 2 on

December 1 annually. Given that subtask 3.4.4(l) addresses topics closely related to this annual report and is presented without a due date, the Committee will streamline the reporting process by combining the reporting requirements for both subtasks to be submitted annually on December 1.

The AIB Initial Implementation Plan states the expectation that student-level information in the report should be "disaggregated by race, ethnicity, gender, family income level, linguistic, and disability status." In order to be most effective and impactful with the use of data, the Committee will require the close partnership of MSDE, MLDS, and other agencies integral to collecting, sharing, analyzing, and disaggregating student-level data.

Maryland has already seen technical updates to the Blueprint in the legislature, such as HB 1372 of the 2021 Legislative Session and HB 1450 of the 2022 Legislative Session. In order to ensure statewide alignment, the Committee will continue to work in partnership with the AIB and lawmakers who lead efforts in the General Assembly to monitor and, as necessary, update the Blueprint in statute. The Committee views the report in this subtask as a contribution to this collective effort by informing the AIB, legislatures, and the public on the status of CTE implementation in Maryland and uplifting new challenges that may require legislative action.

Similarly, the Committee recognizes that the funding for the Committee itself and the initiatives it oversees involves the budgets of various agencies. The Committee commits to collaboration with all partners involved in the budget process impacting CTE implementation and will utilize the annual report in this subtask to provide analysis and recommendations to ensure CTE funding meets the moment.

3.4.4(m) - *CTE Committee shall review agency budget proposals involving CTE and make annual recommendations to the Governor and General Assembly on or before 12/15.*

In order to accomplish this annual subtask, the Committee must determine when and how they will have access to agency budget proposals for the purpose of these recommendations. Due to Executive Budget Privilege, the Committee will not have access to detailed budget proposals prior to their public submission for consideration in January of each year. This brings the annual deadline of December 15 into question, a discrepancy on which the Committee will work with the AIB to resolve and, if necessary, shift the due date to a time after the January budget publications. The Committee will also consider past agency budgets as they relate to CTE as an indicator of funding trends, and proposed budgets will be analyzed to the extent the Committee has access.

3.4.4(n) - *MSBE shall request a waiver from the U.S. Department of Education to transfer responsibility for administering the Carl Perkins CTE Act to the CTE Committee in FY 22.*

Many county public schools CTE staff expressed concern that Perkins V funding, which is used to support much of the existing CTE programming, may not apply for the industry credentials, particularly apprenticeship, outlined in the Blueprint goal. This concern is addressed to a certain degree in the AIB's Initial Implementation Plan that, "in the absence of a waiver option, MSDE and the CTE Committee shall enter into an agreement to administer Perkins V funding collaboratively pursuant to the CTE Committee's framework to implement the Blueprint's CTE requirements and goals. The agreement shall be submitted to the Governor, General Assembly, and AIB by 7/1/23." This requirement indicates that

the CTE Committee may have leeway to allocate funding towards some Blueprint priorities, such as funding to support the RTI component of registered apprenticeship, which will help school districts move forward. In Switzerland, the majority of funding for apprenticeship programs comes from the canton (the Swiss equivalent of a state), as opposed to the federal government. This is something to consider as Maryland makes decisions about how to prioritize state and federal education funding.

At the time of submission of this plan, this subtask is under discussion between the CTE Committee, MSDE, and the AIB.

Considerations for the Next Phases of Implementation

The CTE Committee has many duties as outlined in the tasks and subtasks throughout this report. However, one of the primary long-term goals of the Committee is to support the Maryland Department of Labor and Local Education Agencies (LEAs) in the expansion of the number of high school level registered apprenticeships. This will be an ongoing effort and collaboration, potentially with significant funding implications as explained below. As previously stated, by 2030, the target number of seniors completing one of the career qualifications would reach about 30,000. Were all the apprenticeships beginning in junior year and lasting two years or more, the number of high school students in an apprenticeship at any one time could reach about 60,000. The number in apprenticeships at one time would be lower if some of the registered apprenticeships began in senior year, but the number of new apprenticeships required would still be 30,000 per year. Creating 30,000 apprenticeships per year for high school students by 2030-2031 will be a major challenge, but will yield dividends for students, employers, and the Maryland economy.

Through its research, the CTE Committee notes that building and sustaining a high-quality apprenticeship system should include several elements, including:

- effective branding and broad marketing;
- incentives for direct marketing and organizing apprenticeships to private and public employers;
- one or two certification bodies to audit programs and issue credentials;
- credible, recognized occupational standards with continuing research on changing requirements;
- public funding for off-job quality instruction;
- a system of credible end-point assessments of apprentices and programs;
- a system for posting apprenticeship openings and apprenticeship applications;
- simple systems enabling employers to create and to track the progress of apprentices;
- counseling and screening for prospective apprentices to insure they have the aptitude for, and interest in, the field;
- training for the trainers/mentors of apprentices; and
- follow-up data on apprentices coupled with research, evaluation, and dissemination.

Recognizing that Maryland may be unable to accomplish all of these steps in the near future, we can focus on several steps that are critical to the program's success or that do not require extensive funding and effort.

Collaboration with employers, as noted in subtask 3.4.4(g), presents an opportunity to expand apprenticeship options for students within the public and private sectors. Apprenticeships in government employment can contribute to reaching the Blueprint goals of about 30,000 apprenticeship openings per year. Many state and local government jobs are in occupations that are common to the private sector. Utilizing registered apprenticeships to fill jobs in government offices and jobs is a way of leading by example. Government apprenticeships can have significant returns to the public sector, filling important civic job openings and providing training in local communities. Because the work of state and local government is so diverse, this

could include any of a whole host of occupations, although it has previously been used in other states most frequently in public safety and emergency services provision.

Maryland state and local governments employed nearly 370,000 workers in late 2022. Nearly 220,000 are in education services, leaving only about 150,000 in other fields. In attempting to expand its apprenticeship programs, England set a target for new apprenticeship starts equal to 2.3% of public sector employment. Although the number of new starts fell short of the target, new apprenticeships equaled about 1.8% of government employment in 2021-2022. Ultimately achieving this goal set in Maryland would generate over 6,600 apprenticeship starts; limiting the new apprenticeships to areas outside the education sector would yield about 2,700. Assuming the education sector could generate at least apprenticeship starts of 0.8% of employment, it would add 1,760 positions, thereby allowing government jobs to account for about 15% of the required 30,000 apprenticeship starts. Another indicator of the capacity to generate apprenticeships is the number of new hires outside the private sector. In a recent year, new hires outside the private sector averaged about 37,000 per quarter. If 12% of these hires were apprenticeship starts, government apprenticeships would equal 15% of the 2030 target. The public sector could provide apprenticeship programs in occupations ranging from IT to healthcare to education. State task force reports on the health, public safety, and transportation sectors reveal that a significant number of public service openings could be filled by apprenticeships in healthcare, public safety, and transportation. The public sector covers a wide range of occupations ripe for apprenticeship, especially now that state jobs have become far more open to those without a BA degree. One CTE committee member and school principal we interviewed discussed the desirability of teacher apprenticeships both to increase apprenticeship opportunities and to address the teacher shortage across the state. In addition, some school district officials mentioned partnering with the Teacher Academy of Maryland to provide CTE for students interested in teaching. Weaving these together could be a way for public school districts to get directly involved in stimulating apprenticeships for their students. Youth apprenticeships in public school teaching have already been successful in other states including Colorado. During the current Maryland legislative session (2023), a bill has been introduced to provide grants to expand teacher apprenticeships, and grantees would need to work with the CTE Committee to develop a high school version. The CTE Committee will be monitoring this bill progress and any other efforts to expand apprenticeships in the education sector.

Building apprenticeships in the private sector is especially demanding, but the private sector is where 90% of the jobs are. Private employers must be convinced that their need for skilled workers is best accomplished by creating and investing in apprenticeship programs. The employers must determine the relevant apprentice occupation and have confidence that their spending on wages, mentoring costs, and other components will be offset by the productivity of the apprentice during and after the apprenticeship. While the apprentices will be learning occupational skills and employability skills that could be used in other organizations, he or she will be especially valuable to the training employer since the skills will be learned in the context of the employer's operations. Once the employer is willing to explore creating a registered apprenticeship program, the employer's next step is gaining registration for the program and potentially qualifying for any relevant tax credits or assistance in financing wages or related instruction (RTI).

The registration effort often takes months and involves a significant paper application process. Even after approval as a registered program, the employer or other program sponsor must seek approval for each apprentice as well as the wage as specified in the application. For these reasons, developing new apprenticeship opportunities generally requires talented salesmanship, organizational abilities, and patience. However, in some cases, where organizations operate as "group sponsors," the task of creating and operating an apprenticeship by an employer becomes substantially simplified. Employers can sign an employer acceptance agreement with the group sponsor, thereby agreeing to follow the provisions of the skill standards and other program requirements, such as equal opportunity hiring. However, even in these cases,

apprenticeships will generally not sell themselves. In general, someone will have to convince the employer to join or start an apprenticeship program.

Assuming the public sector creates about 4,000 high school apprenticeships per year, Maryland would require 26,000 new apprenticeships in the private sector per year. If the State could encourage more of the existing 11,000 Maryland registered apprenticeships to begin in high school, and can provide incentives to other organizations, some growth in reaching the 30,000 necessary apprenticeship spots could be seen. If Maryland ambitiously started in 2024 to stimulate about 2,000 new slots per year and existing registered programs shift 1,000 slots per year to start in high school, Maryland would still be short nearly 10,000 spots by 2030. The job of selling and organizing enough Maryland employers for this gap will be difficult.

Fortunately, other organizations have the capability of generating apprenticeships. Most are intermediaries, including nonprofits, community organizations, staffing firms, for-profits, and colleges, that have experience with helping develop and sustain apprenticeship programs. Intermediaries have played central roles in scaling apprenticeships in Australia, France, and the UK. A number of intermediaries have emerged with federal funding to stimulate apprenticeship programs. According to a 2022 brief by the Urban Institute, the best way to mobilize these intermediaries to scale apprenticeships s through a formula funded system that pays for the number of apprenticeships each intermediary generates. To focus on the Blueprint goal, the funding could be limited only to apprenticeships that begin in high school. Evidence from the evaluation of the American Apprenticeship Initiative suggests that the effective selling and organizing of apprenticeships could be achieved at a cost of about $3,500-4,000 for each apprentice that completes the first 60 days of a program, along with an additional $750 for each apprentice that completes the program in full. The payments could vary with the long-term returns to occupations. Funding might be reduced once enough employers establish an apprenticeship program, since most are likely to continue the program over time (with less effort by intermediaries). Economists at the Urban Institute calculated the gross costs of this potential incentive scheme, noting that it would depend on the number of new apprentices that complete 60 days of their programs and the number that complete their programs in full. At scale, were intermediaries to successfully generate 23,000 registered apprenticeships starting in high school (with the assumption that the other spots are generated by means mentioned previously), the annual cost would be $92 million. Over time, the costs of incentives to intermediaries could fall as employers adopted apprenticeships without intermediaries and intermediaries lowered their costs by gaining repeat business.

The specifics of the incentive plan to pay intermediaries for each apprenticeship generated will require detailed analysis. Among the questions are: Should the subsidies exclude the traditional industrial and commercial construction industries? Or should these industries be included so long as their apprentices begin their programs in high school? Should the payments vary by the program's duration, by the years of off-job training required, or by the expected gains in earnings? What should be the premium for completion? Should the subsidies pay only for new positions or for new apprentices? At what point should the incentives be decreased as the level of apprenticeships reaches the Blueprint target or be increased if the pace of apprenticeship growth is too slow? Accompanying the initial implementation of the incentives should be a close study of how they are working to build quality apprenticeships and what adaptations might be required.

Along with intermediary incentives, the Urban Institute suggests that Maryland could establish an independent auditing system to assure program quality and to avoid fraud. The audits, which would increase the credibility of the apprenticeship system, should identify the strengths and weaknesses of existing programs. Following the experience of Ofsted in the United Kingdom, the audits could rank intermediaries for quality and identify intermediaries with programs that are deemed inadequate to receive continued funding.

Because the Blueprint allows for a gradual implementation, intermediaries can make incremental gains in employer demand that accumulate. Persuading a company to start a program and hire apprentices will

generally lead to a change in business practice that continues over time. The likelihood of repeat business for intermediaries increases their incentives to create, develop, and sustain apprenticeships with employers.

Another consideration is that once high school apprenticeships are brought to a significant scale, a statewide site for matching students with apprenticeship openings should be established. This could potentially streamline the process across LEAs, especially given that many employers would be interested in recruiting students from adjacent counties.

Data is vital to determine the effectiveness of the Blueprint's approach to Career Readiness. Currently, CTE programs have little access to data on whether CTE completers enter and remain in careers and what earnings they attain. Some evidence indicates that CTE completers attend college at or above the levels of other students. The CTE Committee could recommend at a minimum that Maryland develop a system similar to what Washington State uses to follow CTE completers, apprentices, and participants in other selected programs. The Maryland Longitudinal Data System (MLDS) Center already undertakes similar studies on an occasional basis that, like Washington State, draw on Unemployment Insurance (UI) wage records in Maryland. The CTE Committee could recommend reports that are more frequent and more detailed in terms of types of CTE programs and outcomes. In addition, researchers could obtain estimates of the net impacts of program participation (what happened compared with what would happen without the program) by using matched comparison groups of individuals that register with the workforce system but do not participate in relevant training programs. For best results, the tracking could attempt to match earnings records not only with Maryland data but also data from the District of Columbia and Virginia. To add value to the tracking of earnings, the project should decompose outcomes and impacts by the type of apprentice and CTE completer and by the geographic area. High school CTE programs are eager to learn about earnings impacts as well as about which students enter careers in fields related to their CTE and apprenticeship experience.

Apprenticeships are a highly cost-effective approach to preparing young people for rewarding careers. Evidence from Washington State indicates a $28 return for each dollar of government funding. But, apprenticeships do not create themselves. As noted above, the critical step is to sell and organize new apprenticeship programs with employers to generate sufficient apprenticeship openings. As noted in an earlier section, this process of developing apprenticeships with employers will be the costliest component of any plan to reach 45% of high school seniors undertaking the high school component of a registered apprenticeship. A reasonable estimate will be about $92 million to incentivize intermediaries and funding for key staff to create apprenticeships in the public sector as well as the expansion to hire additional apprenticeship staff and others that can speed the registration process. Funding should also be set aside for digitizing aspects of registration, auditing, and follow-up of apprenticeship programs and apprenticeship. Finally, funding should be available for research to determine how apprenticeships and non-apprenticeship industry-recognized credentials are affecting the earnings and careers of Maryland high school alumni.

Supporting Documents

Appendix A - CTE Implementation Timeline

Fiscal Year	Date Due	Frequency	Task	Action
FY 22	*-*	*Once*	*4*	*MSBE requests a waiver from the U.S. Department of Education to transfer responsibility for the Carl Perkins CTE Act to the CTE Committee*
FY 23	*-*	*Once*	*4*	*CTE Committee established and members appointed*
FY 23	*Dec. 31, 2022*	*Once*	*4*	*DWDAL develops a ten year plan to pursue federal grant money, submitted to the GWDB, AIB, Senate Budget and Taxation Committee, and House Committee on Ways and Means*
FY 23	July 1, 2023	Once	4	MOU established between MSDE & the CTE Committee regarding the administration of the Carl Perkins CTE Act
FY 23-31	July 1	Annually	3	CTE ERT deployment plan submitted to the AIB
FY 23	-	Once	4	Skills Standards Advisory Committee is established and members appointed
FY 23	-	Once	4	Skills Standards Advisory Committee makes recommendations to the CTE Committee on occupational standards
FY 23	-	Once	4	CTE Committee approves, rejects, and/or modifies initial proposal by the Skills Standards Advisory Committee
FY 23-31	-	Annually	4	CTE Committee adopts and, where appropriate, develops and regularly updates skills standards
FY 23-31	-	Ongoing	4	CTE Committee forms partnerships with the business community, nonprofits, and apprenticeship sponsors
FY 23-31	-	Ongoing	4	CTE Committee allocates roles and responsibilities to State agencies for the credentialing of students engaged in CTE programs
FY 23-31	-	Ongoing	4	CTE Committee addresses operational issues associated with delivering CTE programs to students, including transportation to and from job sites

Fiscal Year	Date Due	Frequency	Task	Action
FY 23-31	Dec. 1	Annually	4	CTE Committee reports on progress of CTE in the State to the AIB
FY 23-31	Dec. 1	Annually	4	CTE Committee submits a report to the Governor, MGA, and AIB with the status of programming, statutory, regulatory, budgetary, and structural changes needed to address the CTE system's evolving challenges
FY 23-31	Dec. 15	Annually	4	CTE Committee reviews agency budget proposals involving CTE and submits recommendations to the Governor and MGA
FY 24	-	Once	1	LEAs, LWDBs, and community colleges establish an MOU for local career counseling programs
FY 24	-	Once	3	CTE ERT members are selected
FY 24	-	Once	4	CTE programs in the State shall begin to be aligned with the requirements of the system implemented by the CTE Committee
FY 24	-	Once	4	CTE Committee sets content qualification and recruitment standards for CTE instructors
FY 24-26	-	Ongoing	1	Career counseling services are delivered to middle and high school students in accordance with local MOU agreements
FY 26	-	Once	1	CTE Committee conducts an evaluation of each local career counseling agreement for best practices
FY 24-31	-	Annually	3	CTE Committee submits an annual deployment plan for CTE ERTs to the AIB
FY 24-31	-	Annually	3	CTE ERTs visit 10% of schools annually until all schools are visited at least once
FY 24-31	-	Annually	3	CTE Committee delivers annual training to CTE ERTs on the Blueprint and review process
FY 24-31	-	Annually	3	CTE Committee submits annual report using CTE ERT data to identify students and demographically distinct student groups not making adequate progress
FY 24-31	-	Annually	4	CTE Committee determines programs approved for credit toward high school graduation, ensuring that the adoption of programs relating to CTE by County Boards, State Board, and Community Colleges is consistent with the system implemented by the CTE Committee

Appendix B - Maryland Industry Credential and Youth Apprenticeship Completion Rates by LEA

LEA	Attained Industry Credential	Youth Apprenticeship Completers	Total	% Away from 45% Goal
Allegany	5.07%	0.00%	5.07%	39.93%
Anne Arundel	3.78%	0.00%	3.78%	41.22%
Baltimore City	2.63%	0.00%	2.63%	42.37%
Baltimore County	2.04%	0.00%	2.04%	42.96%
Calvert	6.77%	0.00%	6.77%	38.23%
Caroline	18.98%	0.00%	18.98%	26.02%
Carroll	9.30%	0.00%	9.30%	35.70%
Cecil	13.21%	0.00%	13.21%	31.79%
Charles	6.88%	0.23%	7.11%	37.89%
Dorchester	22.39%	0.00%	22.39%	22.61%
Frederick	14.52%	0.10%	14.62%	30.38%
Garrett	0.00%	0.00%	0.00%	45.00%
Harford	21.61%	0.00%	21.61%	23.39%
Howard	2.30%	0.46%	2.76%	42.24%
Kent	26.39%	0.69%	27.08%	17.92%
Montgomery	6.60%	0.00%	6.60%	38.40%
Prince George's	3.29%	0.00%	3.29%	41.71%
Queen Anne's	7.50%	0.00%	7.50%	37.50%
Somerset	25.81%	0.00%	25.81%	19.19%
St. Mary's	0.50%	0.00%	0.50%	44.50%
Talbot	13.61%	0.30%	13.91%	31.09%
Washington	11.11%	0.59%	11.70%	33.30%
Wicomico	8.37%	0.00%	8.37%	36.63%
Worcester	32.09%	0.00%	32.09%	12.91%
Statewide	**6.53%**	**0.28%**	**6.81%**	**38.19%**

Source: MSDE

Appendix C - CTE Completion by Career Cluster - 2021

Career Cluster	Number of Completers
Arts, Media, and Communication	725
Business Management and Finance	1,040
Career Research and Development	1,340
Construction and Development	1,321
Customer Services, Hospitality, and Tourism	1,427
Environmental, Agricultural, and Natural Resources	529
Health and Biosciences	2,274
Human Resources Services	2,204
Information Technology	1,037
Manufacturing, Engineering, and Technology	1,424
Transportation Technologies	725
Other	29
Total	**14,075**

Source: MSDE

Appendix D - Maryland Apprenticeship Pathways

	School-To-Apprenticeship (STA)	Youth Apprenticeship	Registered Apprenticeship
Definition	A method of registration to enter a Registered Apprenticeship program. The STA is designed to allow high school youth ages 16-17 to directly enter a Registered Apprenticeship while still in high school and continue after graduation with full credit given for the high school portion. (State and Federal definition)	An "earn and learn" work model, based on the principles of Registered Apprenticeship, available through the local school systems that prepares students for the workforce while earning them credits towards High School graduation. (State definition - no Federal definition)	Jobs where workers earn and learn. While working on the job, employees receive one-on-one full-time training from a skilled craftsperson as well as related classroom instruction. An apprentice is "sponsored" by an employer or association and is paid according to a progressive pay scale. (State and Federal definition)
Age Groups	High school students enrolled in secondary school who meet the minimum legal age of 16	11th and 12th grade	Varies by occupation & sponsor
Industry Focus	The student/apprentice is directly registered with an approved Registered Apprenticeship Sponsor through MD Labor's DWDAL.	"High growth, high-demand industries"	"Industry-driven" with occupations approved at the federal and state level.
On-the-Job Training (OJT)	Beginning at age 16 and is a Registered Apprentice with the MD Labor's DWDAL.	With a mentor in a specific in-demand occupation with a DWDAL/MATC-approved employer.	Full time paid work progresses through skills and knowledge that the apprentice must learn to become fully proficient at the job under the direction of a highly skilled worker at the work site.
Related Technical Instruction (RTI)	Coursework is approved by an RA program in addition to their required high school coursework. These courses may or may not count toward high school graduation. The Registered Apprenticeship Sponsor agrees to accept either the High School curriculum or the apprentice can attend courses through the Sponsor.	Coursework (RTI) is approved by the school and employer, then by DWDAL/MATC and counts towards the high school curriculum.	Classroom-style training to complement the OJT to refine technical and academic skills that apply to the job. May be provided by a community college, technical school/college, apprenticeship training school, nonprofit, community-based organization, industry organization, labor organization, business association, or by the

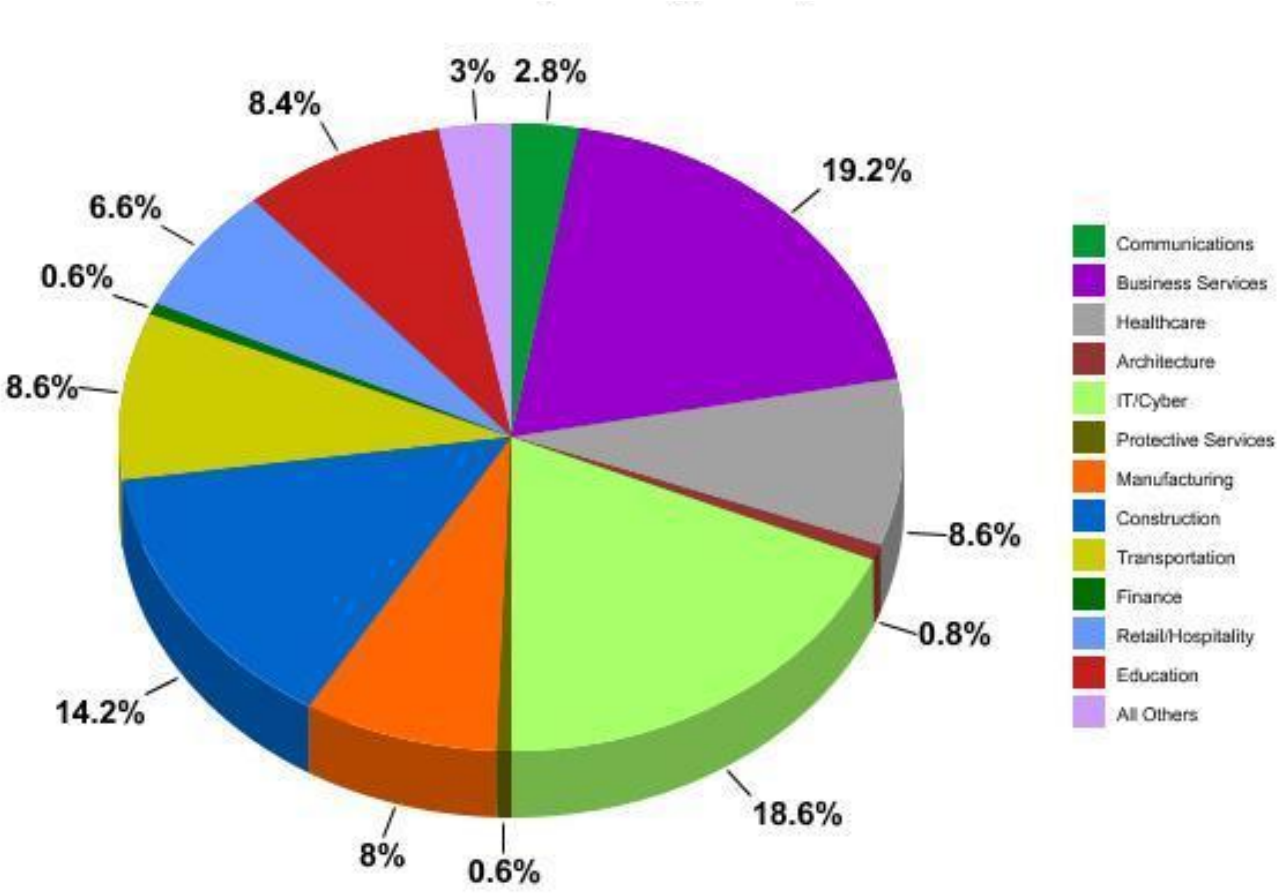
			business itself.
Required Hours	Hours are the same as for an adult Registered Apprentice in order to complete; however, an STA would likely need more time to complete the hours of OJT as they are unlikely to complete the hour requirement in high school.	OJT - 450 hours (state mandated) RTI - at least one year of classroom instruction that is related to the career track of the student	OJT - 2,000 hours or a minimum of 12 months registered in a competency based program (federally mandated) RTI - 144 hours per year
Guiding Principles	Framework Principles: 6. Ages 16+ 7. OJT and RTI while enrolled in high school 8. Aligns academic and technical standards with the Registered Apprenticeship Sponsor 9. Stackable credentials of value for multiple pathways 10. Sponsor/Employer involvement	Five Principles: 6. Career Oriented 7. Equitable 8. Portable 9. Adaptable 10. Accountable	Five Core Components: 6. Business Involvement 7. On-the-Job Learning 8. Related Instruction 9. Rewards for Skill Gains 10. National Occupational Credential
Apprentice Pay	Paid with salary enhancements as skill and knowledge progress over time.	At least MD minimum wage (state mandated)	Full time pay with salary enhancements as skill and knowledge progress over time.
Culminating Credential Options	Opportunity to earn industry-recognized credentials, certifications and licenses. Upon completion of the full registered apprenticeship program, every graduate receives a nationally recognized credential, referred to as a Certificate of Completion, which is portable nationwide. Additionally, some programs offer interim credentials as apprentices demonstrate mastery of specific skills during their apprenticeship.	Industry-recognized credentials, post-secondary credentials, and/or industry-recognized experience that will lead to an industry-recognized credential	Every graduate receives a nationally recognized credential, referred to as a Certificate of Completion, which is portable nationwide. Some programs offer interim credentials as apprentices demonstrate mastery of specific skills during their apprenticeship.

Appendix E - Industry Representation for Current Youth Apprentices

Industry Sector	# of Youth Apprentices	% of Total
Aeronautics	0	0.0%
Agriculture	2	0.4%
Animal Care	2	0.4%
Architecture	1	0.2%
Association Management	1	0.2%
Automotive	28	5.6%
Business	15	3.0%
Communications	1	0.2%
Construction	66	13.2%
Education	80	16.0%
Engineering	0	0.0%
Finance, Banking and Real Estate	1	0.2%
Furniture Repair	0	0.0%
Government	166	33.2%
Retail	1	0.2%
Healthcare	51	10.2%
Hospitality and Tourism	30	6.0%
Information Technology	8	1.6%
Manufacturing	45	9.0%
Maritime	2	0.4%
Transportation and Logistics	0	0.0%
Total	**500**	**100.0%**

Source: DWDAL, as of 3/7/2023

Appendix F - Occupation Representation for Current Youth Apprentices



Source: DWDAL, as of 3/7/2023

Appendix G - CTE Data Collection Plan

Agency	One Time	Annually	Submission Process
MSDE	• Current list of approved credentials • Projected student enrollment • Current skills standards • Teaching certification standards and requirements • State CTE instructor standards • Current approved programs for credit	• Disaggregated student enrollment • CTE enrollment, credit hours, and completers data • CTE instructor recruitment & vacancies • Industry-recognized credentials earned	Standing data sharing agreement established between MSDE & CTE Committee
MD Labor	• DWDAL 10-year grant plan (completed)	• Apprenticeship student enrollment, hours earned & completion • Apprenticeship employer enrollment • Workforce trend projections (statewide & local)	Standing data sharing agreement established between the CTE Committee, DWDAL, and MATC
LEAs		• Industry-recognized credentials currently offered and their CTE pathway alignment • Updates to CTE course curriculum • Student apprenticeship experience survey results (to be developed by the CTE Committee)	Submitted annually on July 1, possibly by a Google Form. LEAs determine the responsible party for submission (Blueprint Implementation Coordinator, CTE Director, etc.).
LWDBs		• Career counseling use of funds, student enrollment and impact • Local employer/industry engagement	Submitted annually on July 1 possibly by a Google Form.
CTE ERTs		• School site visit reports	Submitted on a rolling basis by the processes established in the CTE ERT deployment plan due to the AIB on July 1, 2023.

Appendix H - CTE Reporting Calendar

Report	Due Date	Frequency	Recipients
CTE Statewide Goals	December 1, 2022 (*recommend move to 2023*)	Once	AIB
CTE Initial Phase One Implementation Plan	March 15, 2023	Once	AIB
CTE ERT Deployment Plan	July 1, 2023	Once	AIB
Annual CTE Progress Report	December 1	Annually	Governor, MGA, AIB
Annual CTE Budget & Policy Recommendations Report	December 15	Annually	Governor, MGA, AIB
Annual CTE ERT Deployment Plan	July 1	Annually	AIB, MSDE
CTE ERT School Site Visit Reports	-	Ongoing	CTE Committee, School, LEA, Employers, Apprenticeship Sponsors
CTE Updated Phase One Implementation Plan	March 2024	Once	AIB
Career Counseling Program Evaluation & Recommendations	FY 26	Once	AIB, MSDE, LEAs, LWDBs
CTE Phase Two Implementation Plan	Spring 2027	Once	AIB

Appendix I - Quarterly Earnings of 2016 Maryland HS Graduates

Education Attained	% with Covered Earnings	Median Earnings
All HS Graduates	40	$7,138
No College	39	$7,189
Some College	41	$6,366
Still in College	42	$6,142
AA or Certificate	52	$8,307
BA or Higher	38	$10,833

Source: MLDS

Glossary & Acronym Guide

Accountability and Implementation Board (AIB) - An independent unit of the Maryland State government created by the Blueprint for Maryland's Future law to ensure successful implementation of the Blueprint over the multi-year implementation period and achievement of the Blueprint's intended outcomes.

Apprenticeship - An industry-driven program that provides high-quality career pathways. Registered apprenticeships are regulated by the federal and State government. Youth apprenticeships or high school level of registered apprenticeships offer students the opportunity to receive training in a particular vocation from an eligible employer while in high school.

Career Counseling - A Blueprint initiative to provide individualized support to all middle and high school students in the planning of their career options and mapping necessary steps in order to achieve their goals.

Career and Technical Education (CTE) - Consists of courses and learning opportunities in a range of vocations that provide students with the skills, knowledge, and competencies necessary to thrive in their careers.

Career Ladder - A compensation system developed by an LEA with the input of local school leaders, educators, and union representatives that provides teachers with opportunities to advance in their careers while remaining in the classroom and recognizes high quality school leaders. As they advance to higher tiers of the career ladder, educators will take on additional leadership responsibilities such as mentoring new teachers and curriculum and assessment development.

College and Career Readiness (CCR) - A student's readiness to succeed in entry-level courses at a postsecondary institution or a professional pathway upon graduation from high school.

Division of Workforce Development and Adult Learning (DWDAL) - Within the Maryland Department of Labor, overseeing Maryland's apprenticeship programs, American Job Centers, Maryland Workforce Exchange, correctional education, and other workforce development initiatives.

Expert Review Teams (ERT) - Teams of expert educators and industry leaders who visit schools on scheduled visits to observe, interview, and engage with school faculty, staff, students, and stakeholders. Expert Review Teams will review data, conduct a comprehensive school visit, and then identify opportunities for improvement, particularly for implementation related to the Blueprint for Maryland's Future.

Fiscal Year (FY) - Covers a period that starts on July 1 and ends on June 30, i.e., fiscal 2022 (also referred to as FY 22) begins July 1, 2021, and ends June 30, 2022.

Governor's Workforce Development Board (GWDB) - A business-led board that is responsible for developing policies and strategies to form a variety of education, employment, and training programs.

High School Level of a Registered Apprenticeship (HSLRA) - Definition under development.

Industry-Recognized Credential (IRC) - Verifies an individual's qualification or competence in a specific occupation or industry. They are authorized by a third party and recognized in the labor market.

Local Education Agency (LEA) - Also known as a local school system or school district. Maryland has 24 local education agencies, one for each of the counties and Baltimore City.

Local Workforce Development Board (LWDB) - Entities supporting local workforce development. There are 13 statewide ranging from county-specific to regional. Involved in Career Counseling programming.

Maryland Apprenticeship and Training Council (MATC) - A unit of the Maryland Department of Labor, this 12-member body formulates apprenticeship policies, registers standards, and adopts agreements.

Maryland General Assembly (MGA) - The legislative body of the state of Maryland, including the House of Delegates and State Senate.

Maryland State Department of Education (MSDE) - State agency overseeing education throughout the state of Maryland.

Maryland Workforce Association (MWA) - An association of the 13 Local Workforce Development Board directors that collaborates with the Maryland Department of Labor and other state workforce partners to foster regional and statewide collaboration and share best practices.

Memorandum of Understanding (MOU) - A document describing the broad outlines of an agreement that two or more parties have reached.

National Board Certification (NBC) - Professional certification available in pre-K–12 education that certifies a teacher's demonstrated ability to positively impact student learning. NBC is administered by the National Board of Professional Teaching Standards (NBPTS). It was designed to develop, retain, and recognize accomplished teachers and to promote ongoing improvement in schools.

On the Job Training (OJT) - Hands-on training from an experienced mentor at the job site, focusing on skill and knowledge necessary for occupational proficiency.

Post-CCR Pathways - Opportunities to pursue advanced academic courses and/or career interests for students who meet the CCR standard at no cost to the student or the student's parents/guardians. The options include: a competitive entry college preparatory program chosen by the local school board, consisting of the International Baccalaureate (IB) Diploma Program, the Cambridge AICE Diploma Program, or a comparable program consisting of Advanced Placement (AP) courses specified by the College Board; an early college or dual enrollment program at a student's high school and an institution of higher education that allows a student to earn an associate degree or at least 60 college credits; and Career and Technology Education (CTE) programs that are recommended by the CTE Skills Standards Advisory Committee and approved by the CTE Committee, including apprenticeships and dual enrollment in credit or eligible non-credit certificate programs.

Postsecondary Institution - Includes 2- and 4-year public and private colleges and universities and private career schools. Also known as an Institution of Higher Education (IHE).

Registered Apprenticeship - A paid job that incorporates work-based learning and academic instruction, leading to full competence in an occupation. In Maryland, an apprenticeship program must be approved by the Division of Workforce Development and Adult Learning (DWDAL) in the State Department of Labor in order to be registered.

Related Technical Instruction (RTI) - A systematic form of instruction that teaches technical and academic competencies that apply to the occupation, often in a classroom setting or online.

Technical Assistance - The process of providing targeted support to an organization.

Technical Skill Assessment (TSA) - Locally developed end-of-course assessments that lead to college credit or third-party assessments that could include an industry-recognized credential.

United States Department of Labor (USDOL) - The department of the federal government overseeing labor in the United States.

Youth Apprenticeship - An “earn and learn” work model, based on the principles of Registered Apprenticeship, available through the local school systems that prepares students for the workforce while earning them credits towards High School graduation.

Source Material

Author	Title	Date	Link
Accountability & Implementation Board	Initial Implementation Plan	December 2022	https://aib.maryland.gov/Pages/BCPDownloads.aspx
AELP - Association of Employment and Learning Providers, United Kingdom			https://www.aelp.org.uk/
Apprenticeships.ov.uk	Understanding end-point assessments		https://www.apprenticeships.gov.uk/employers/end-point-assessments#
Bewick, Tom	Switching off Treasury cash for apprenticeship is a big mistake	January 31, 2022	https://feweek.co.uk/switching-off-treasury-cash-for-apprenticeships-is-a-big-mistake/
Carr, Wright, & Brody	Effects of High School Work Experience A Decade Later	1996	https://www.jstor.org/stable/2112724
Credential Engine			http://www.credentialengine.org/
CTE Committee	Email Address		dlcte-labor@maryland.gov
CTE Committee	Membership, Meetings, & Resources		http://www.gwdb.maryland.gov/ctecomm/
CTE Committee	YouTube Channel - Meeting Recording Archives		https://www.youtube.com/@marylandctecommittee/featured
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Frederick County Public Schools	Work Based Learning		https://www.fcps.org/academics/work-based-learning
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Holondy, Elena	Americans who haven't gone to college are way worse off than 40 years ago	2017	https://www.businessinsider.com/high-school-graduates-worse-off-today-2017-11
Howard County Public School System	Career Academies - Teacher Academy of Maryland		https://www.hcpss.org/academy/teacher-academy-maryland/

Institute for Apprenticeships and Technical Education	Search Apprenticeships		https://www.instituteforapprenticeships.org/apprenticeship-standards/?
Junior Achievement	Program Information		https://centralmaryland.ja.org/; https://easternshore.ja.org/; https://www.myja.org/
Katz, Keuhn, Shakespeare, & Lerman - Urban Institute	What Are the Costs of Generating Apprenticeships?	October 26, 2022	https://www.urban.org/research/publication/what-are-costs-generating-apprenticeships
Kirwan Commission	Interim Report	2019	https://msa.maryland.gov/megafile/msa/speccol/sc5300/sc5339/000113/023600/023691/20190075e.pdf
Kirwan Commission	Final Report	2020	http://dls.maryland.gov/pubs/prod/NoPblTabMtg/CmsnInnovEduc/2020-Final-Report-of-the-Commission.pdf
Langer & Weiderhold	The Value of Early-Career Skills	2023	https://www.cesifo.org/en/publications/2023/working-paper/value-early-career-skills
Maryland Apprenticeship and Training Program	Healthcare Apprenticeship Workgroup Interim Report	2022	https://www.dllr.state.md.us/employment/appr/apprintreporthc2022.pdf
Maryland Apprenticeship and Training Program	Public Safety Apprenticeship Workgroup Interim Report	2022	https://www.dllr.state.md.us/employment/appr/apprintreportps2022.pdf
Maryland Apprenticeship and Training Program	Transportation Apprenticeship Workgroup Interim Report	2022	https://www.dllr.state.md.us/employment/appr/apprintreportt2022.pdf
Maryland Apprenticeship and Training Program	Youth Apprenticeship Program Guide	August 2016	https://www.labor.maryland.gov/employment/appr/youthapprguide.pdf
Maryland Department of Labor	Employment of Minors (Work Permit)		https://www.dllr.state.md.us/labor/wages/empm.shtml
Maryland Department of Labor	Minor Fact Sheet		https://www.dllr.state.md.us/labor/wages/minorfactsheet.pdf
Maryland Department of Labor	Reports - Maryland Apprenticeship and Training Program		https://www.labor.maryland.gov/employment/appr/apprannrep.shtml
Maryland Department of Labor	Labor Policy Issuance 2022-12		https://www.labor.maryland.gov/employment/mpi/mpi12-22.pdf
Maryland Department of Labor	Apprenticeship Higher Ed Report	2022	https://labor.maryland.gov/employment/appr/apprhigheredreportdec2022.pdf
Maryland General Assembly	HB 1300 - Blueprint for Maryland's Future	2020	http://mgaleg.maryland.gov/2020RS/Chapters_noln/Ch_36_hb1300e.pdf
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Maryland Longitudinal Data System	Exploring Workforce Outcomes of Maryland Apprenticeship and Training Program	November 2021	https://mldscenter.maryland.gov/ApprenticeshipReport.html
Maryland Longitudinal Data System	Career Preparation Expansion Act Report	December 2022	https://mldscenter.maryland.gov/egov/publications/CenterReports/CareerPreparationExpansionAct/CPEAReport_2022_Final.pdf
Maryland State Department of Education	CTE Data Dashboard - More Jobs for Marylanders 45% Goal Progress & Attainment		https://www.mdctedata.org/dashboards/mjfm.php
Maryland State Department of Education	Press Release: High School Graduation Rates	March 2022	https://news.maryland.gov/msde/wp-content/uploads/sites/12/2022/03/3.22.22-2021-High-School-Graduation-Data-Press-Release.pdf
Maryland State Department of Education	Public School Enrollment Projections 2021-30	September 2021	https://planning.maryland.gov/MSDC/Documents/school_enrollment/school_2021/Final-2021-School-Enrollment-Projections-Report.pdf
Maryland State Department of Education	CTE Data Dashboard - Career and Technical Education (CTE) Technical Skills Assessments (TSAs) and Attainment in Maryland Public Schools and Community Colleges		https://www.mdctedata.org/dashboards/technicalskillsassessments.php
Maryland State Department of Education	CTE Data Dashboard - Work-Based Learning Survey Responses		https://app.powerbi.com/view?r=eyJrIjoiMTg5MThlODQtYTcyMC00NWQwLTlmOGEtYjI3YTlmNzA0NDJmIiwidCI6ImYxYmFiZmUxLTg2ZmYtNDJjZS04YmVlLWYzYWViOWY5OGYzMSIsImMiOjF9&pageName=ReportSection74e44579136172523bab
Maryland State Department of Education	Policies and Procedures for the Development and Continuous Improvement of Career and Technical Education	2020	https://www.marylandpublicschools.org/programs/Documents/CTE/2022_CTE_Policies_Procedures.pdf
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Maryland State Department of Education	Division of Career and College Readiness - Career and	November 2020	https://marylandpublicschools.org/programs/Documents/CTE/CTE_Educator_Certificatio

	Technical Education Educator Certification Areas		n_Areas.pdf
National Archives	Part 29 - Labor Standards for the Registration of Apprenticeship Programs		https://www.ecfr.gov/current/title-29/subtitle-A/part-29
National Board Certification	Career and Technical Education - Maryland - Directory		https://www.nbpts.org/nbct-directory/?state=md
National Center for Education and the Economy	Gold Standard: The Swiss Vocational Education & Training System	2015	https://ncee.org/wp-content/uploads/2015/03/SWISSVETMarch11.pdf
Northeast Wisconsin Building and Construction Trades Council	Apprenticeship in Wisconsin		https://newbt.org/apprenticeships/
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Transfr	Virtual Reality Career Exploration		https://transfrinc.com/
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US Census	American Community Survey	2021	https://data.census.gov/table?q=DP03
US Census Bureau	QWI Explorer		https://qwiexplorer.ces.census.gov/#x=0&g=0
US Department of Labor	Framework on Registered Apprenticeship for High School Students		https://wdr.doleta.gov/directives/attach/TEN/TEN_31-16.pdf
US Department of Labor	Child Labor Provisions for Nonagricultural Occupations under the Fair Labor Standards		https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/childlabor101.pdf

	Act		
US Department of Labor - Employment & Training Administration	FY 2021 Data & Statistics		https://www.dol.gov/agencies/eta/apprenticeship/about/statistics/2021
US Department of Labor - Employment & Training Administration	Guidelines for Competency-based Hybrid and Time-based Apprenticeship Training Approaches	October 2015	https://www.apprenticeship.gov/sites/default/files/bulletins/Cir2016-01.pdf
US Department of Labor - Employment & Training Administration	Making Registered Apprenticeship Work for the Public System		https://www.dol.gov/sites/dolgov/files/ETA/advisories/TEGL/2017/TEGL_13-16_Attachment_Iii_acc.pdf
US Department of Labor & Apprenticeship USA	Fact Sheet: Explore Registered Apprenticeship		https://www.apprenticeship.gov/sites/default/files/dol-industry-factsheet-apprenticeship101-v10.pdf
US Department of Labor & Apprenticeship USA	Our History		https://www.apprenticeship.gov/about-us/our-history
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Wisconsin Department of Workforce Development	Youth Apprenticeship Programs		https://dwd.wisconsin.gov/apprenticeship/ya/programs.htm
Wisconsin Department of Workforce Development	Youth Apprenticeship Student Participation Dashboard		https://dwd.wisconsin.gov/apprenticeship/ya/yoda.htm
Wisconsin Department of Workforce Development	Youth Apprenticeship Skills Standards Checklists and OJL Guide Checklists	2022-23	https://dwd.wisconsin.gov/apprenticeship/ya/skills-checklists.htm
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For updates from the Committee, meeting archives, and additional resources, visit the CTE Committee website at http://www.gwdb.maryland.gov/ctecomm/.