Working Group 3
College and Career Readiness Pathways

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Policy Area:

Develop a world class instructional system that will enable Maryland high school graduates to match the achievement of students in the highest achieving countries in the world with respect both to average achievement and to the gap between top-performing students and the lowest achievers.

The State will establish a standard of literacy in English and mathematics (and when practicable also science) at the level needed to assure a high probability of success in the first year programs of the State's community colleges. Most students will be expected to achieve that standard—the College and Career Readiness or CCR standard—by the end of the 10th grade. Almost all others will be expected to achieve it by the time they leave high school.

All high school students who meet the CCR standard will be able to access a set of **post-CCR pathway programs** that includes: 1) at least one of the following: an AP Diploma program (consisting of Advanced Placement courses specified by the College Board), the International Baccalaureate Diploma program, or the Cambridge International Diploma Program; 2) a program that enables students (at no cost to them or their parents) to earn an Associate's Degree to be awarded along with or subsequent to graduation from high school, or to commence work towards a baccalaureate degree with the possibility of transfer to a Maryland four-year college; and 3) access to CTE programs offered by Maryland high schools, community colleges, four-year institutions, and training providers that allow students to explore various career options and (via apprenticeships wherever feasible) to acquire technical credentials with significant value in the labor market. Elective courses, extra-curricular activities and other programs, services and academic opportunities typically offered by Maryland high schools will remain available to students no matter which post-CCR pathway program they select.

Element Detail 3a

Element: Develop a **fully aligned instructional system**, including curriculum frameworks, course syllabi and assessments, together with clear examples of standard-setting work and formative assessments to ensure that students stay on track

Design Assumptions:

An aligned instructional system includes:

1. **Standards, or curriculum frameworks with embedded standards,** in core subjects (English language arts, mathematics, sciences, history/social studies, music and arts) that map out the core learning goals of each subject at each grade level and lay these out in a logical sequence reflecting the content that students should previously have acquired as well as solid developmental science on how students absorb new skills, knowledge, and ways of thinking

2. **Curriculum resources** for each subject at each grade level, built on the aforementioned frameworks and standards. These should include, for each subject or subject cluster:
    a. State-developed course syllabi for each course at each grade level, with sample lessons for teachers to use as models.
    b. State-approved units of curriculum for all subjects and grade levels, aligned with the curriculum frameworks. These units may be gathered from courses and units developed by teachers and others in and beyond Maryland, and will be reviewed and approved for quality by MSDE and the State Board of Education. Curricula approved by MSDE must be designed as complete courses, which, when properly implemented and taken in sequence, will enable students to meet the CCR standard by the end of grade 10.

Schools identified as low-performing by their scores on statewide assessments will be visited by inspection teams assembled and working under the supervision of MSDE; based on what they find, those teams will recommend courses of action for addressing the problems revealed by the inspections. Among those options is requiring a school to use the State courses as designed until such time as its students are on track to meet the CCR standards by the end of 10th grade. In such cases, the inspection team will also recommend

appropriate forms of training and technical assistance for the designated schools, including possibly pairing them with schools that more successfully serve similar students. Other schools (i.e. those not low-performing) will be encouraged but not obligated to use the State–approved curricular frameworks and units (2b above).

3. **In the core subjects of English, math, science, and history/social studies, an assessment system** designed to assess students' acquisition of the qualities specified in the curriculum standards and frameworks. That system must include:
    a. Summative assessments that meet federal requirements
    b. Summative assessments that provide means by which to judge whether students have met the State CCR standard
    c. Evidence of meeting high school graduation requirements in subjects not covered by the CCR standard
    d. Formative assessments available for all core subjects and grade levels for teachers to use to determine whether students are on track for success against the CCR standard and the high school graduation requirements.

Implementation Considerations:

1. The work should start with an inventory of the current instructional system and then build on curriculum review processes already in place at MSDE (notably, the Maryland District Curricular Support Materials Collaborative) to develop curriculum frameworks and lesson "seeds", which are lesson outlines for teachers to expand, although much work will be needed to accomplish this goal
2. Designing this system will be a multi-year effort that will involve the development and piloting of each component by teachers and incorporating their feedback
3. The system will require an online platform to house this set of tools
4. The strongest teachers in each content area and grade level should play key roles in this work, which could tie into the teacher leader career ladder framework being developed by Working Group 2

Element Detail 3b

Element: Establish and implement a **CCR standard** set to global standards that most students should meet by the end of grade 10 and almost all students should meet by the time they leave high school. This standard will certify that students have the requisite literacy in English and mathematics (and when practicable science) needed to succeed

in first-year credit-bearing courses in open enrollment postsecondary institutions in the State. This CCR standard must be periodically reviewed to ensure that it is – and remains – internationally competitive.

Design Assumptions:

1. Setting the standard:
    a. At the outset, the CCR standard will remain a score of 4 on PARCC Algebra 1 and English 10 exams
    b. At such time as PARCC is no longer a viable option (and because PARCC's standard was not empirically set for success in Maryland), the State should base its CCR standard on NCEE's empirical study of community college curriculum, which can be found here: http://ncee.org/college-and-work-ready/
    c. The State should conduct the research needed to establish whether the CCR literacy and numeracy standards set by the NCEE study are comparable to the global standard in top-performing countries for the same age cohort as in Maryland and whether they also align with the workforce needs of Maryland. This entails doing an equating study in which a sample of Maryland students take the assessments of top-performing jurisdictions as well as Maryland assessments and comparing the results. It also requires continuing coordination (as described in the section below on Career & Technical Education) with Maryland employers and with the bodies charged with economic and workforce development.
    d. The State should put in a place a process for reviewing the CCR standard periodically to ensure that it continues to align with the academic expectations of open-enrollment institutions, with global standards, and with the State's workforce needs.
    e. At such time as it is practicable to include science in the CCR standards, the State will follow similar procedures with respect to standards and assessments.
2. Assessing student achievement against the standard: the State will use PARCC until the State's new tests, collectively known as the Maryland Comprehensive Assessment Program (MCAP), is fully implemented in the 2020-21 school year.
3. Maryland should participate in the OECD PISA survey so that it can compare its education system and student achievement with the best in the world.

Implementation Considerations:

1. Incorporate the findings from NCEE's empirical study of community college curriculum (which can be found here: http://ncee.org/college-and-work-

ready/) into the MCAP test design process to ensure that students have the opportunity to meet the desired CCR standard by grade 10.
2. If teacher-scored exams are adopted, scoring of exams could be a strategy for professional development for teachers
3. Engage with open enrollment postsecondary institutions to discuss phasing out of placement testing and the acceptance of MCAP proficiency as readiness for credit-bearing coursework in English and math.
4. Work with community colleges to enable high school students who have met the CCR standard to access credit–bearing college courses in grades 11 and 12, building on and extending statewide the existing dual enrollment options that community colleges and some four–year institutions offer
5. Develop a communication strategy to explain the new CCR standard, the new State assessment system, and the implications for college entry and career readiness to parents, students, educators and the wider public.

Element Detail 3c

Element: The Commission's Preliminary Report calls for reorganizing schools so that teachers trained to diagnose and address students' learning needs can work collaboratively to monitor students and intervene when they are struggling. Teachers will meet regularly to compare notes on student progress, decide on any needed interventions —academic or referral to services— and assign a single teacher to take responsibility for following the student until he or she is back on track. (See Working Group 2 elements)

As it will take several years to put this system in place, it will be necessary to develop a transitional program to address the needs of struggling learners. This will be a program to provide **tutoring in reading** for all students who are behind grade level, with a particular emphasis on bringing students up to grade level in reading by 3rd grade. (At such time as the State can provide sufficient resources, and if at that time a transitional program is still needed, similar tutoring arrangements should be made for students needing help with math.) Funding will be provided for a lead teacher in each school who will be in charge of the tutoring program. The school will be required to use the rest of this special grant money for tutoring but the design of the program will be up to the school, to enable it to determine how best to address the unique needs of its pupils and to take advantage of local resources. MSDE will be responsible for developing a statewide professional development program for the lead teachers in tutoring. Over time, fewer students will need tutoring as teachers are better trained to provide individualized instruction to students that is aligned with CCR standards and State curriculum frameworks. There will always be some students who fall behind but increasingly

they will be tutored by their regular teachers as those teachers' time is freed up for such work and as they are trained in diagnosing and addressing learning difficulties. [See Working Group 2 element on teacher PD and sufficient time in the school day for this purpose.] Many of the students who require tutoring after the transitional program ends (in roughly 6 to 8 years) will attend schools serving high proportions of disadvantaged, low-performing students or students with special needs, and a portion of the additional resources recommended by Working Group 4 for these at–risk students will be available over the long–term to provide the needed supports and services.

Just as the Commission's Preliminary Report proposed several measures to greatly reduce the proportion of students falling behind, it also proposed measures for enriching the curriculum for students who need and could benefit from challenges that go beyond the standard curriculum. MSDE and local districts will need additional funding—and policy direction—to develop options for students who would benefit from opportunities for academic acceleration and enrichment.

Design Assumptions for Transitional Program:

1. As a new system is implemented, school leaders and teachers should be trained in new approaches to supporting students. This will involve three strands of training: for school leaders on the system of supports; for veteran teachers in schools; and for new teachers in preparatory programs on the pedagogy as well as the new system.
2. The special-education system will remain in place for students with disabilities, but as more students are supported early, fewer students will be referred for special-education services

Implementation Considerations:

1. HB 1415 (Chapter 361) of 2018 authorizes funding for evidence–based early literacy intervention in grades K-8 with a priority for K-3rd graders in schools with high concentrations of students living in poverty. The bill mandates $2.5 million in each of fiscal 2019 through 2022 for the program.
2. HB 1415 funding for these interventions expires after fiscal 2022, with a requirement to evaluate the effectiveness of the program at that time. Because tutors are considered a transitional program, needed until teachers have time and capacity to provide this support themselves, HB 1415 funding will have to continue in order to cover the full 6 to 8 years required to fully implement the new forms of school organization and professional development that will make it possible for regular teachers to take over the tutoring function

Element Detail 3d

Element: Develop an extended curriculum **for students in middle school and early high school** who are not likely to meet the CCR standard by the end of 10th grade that gives them extra time and more supports to help them meet it as soon thereafter as possible

Design Assumptions:

1. Starting in middle school, students likely not to meet the CCR standard by the end of 10th grade should be offered more personalized options by which to work toward that standard, including additional time and support as well as differentiated instructional techniques customized for each student. Differentiation may include culturally responsive lessons, adjustments in pedagogy (especially project- and problem-based applied learning), and varied instructional timing.
2. Such alternative, "extended" classes will work towards the *same standards*, but spend *more time* (and supply more support) on the content in order to assure student success.
3. Teachers will recommend students for this option, informed by standardized assessments, formative assessments, and their experience in the elementary and middle-school curricula. Parents can appeal this recommendation and request that students not be placed in an "extended" curriculum so long as students maintain a certain level of performance in the standard curriculum.
4. If any student moves more quickly than expected, he/she should be transferred into the standard stream of classes.
5. Students can be placed in the differentiated option for specific subjects, not necessarily their entire curriculum. (As the CCR is based on ELA and math, those are the subjects where such differentiated options are most needed.)

Implementation Considerations:

1. There will need to be a development and start-up period for the creation of new curriculum materials and course syllabi.

Element Detail 3e

Element: Require all local school systems to provide all high school students who meet the CCR standard with access to a set of **post-CCR program pathways** that includes: 1) at least one of the following: an AP Diploma program (consisting of Advanced Placement courses specified by the College Board), the International Baccalaureate Diploma program, or the Cambridge International Diploma Program; 2) a program that enables students (at no cost to them or their parents) to earn an Associate's Degree to be awarded along with or subsequent to graduation from high school, or to commence work towards a baccalaureate degree with the possibility of transfer to a Maryland four-year college; and 3) access to CTE programs offered by Maryland high schools, community colleges, four-year institutions and training providers that allow students to explore various career options and (via apprenticeships wherever feasible) to acquire technical credentials with significant value in the labor market. Electives, extra-curricular activities, and the full range of courses and services typically offered by Maryland high schools will remain available to students no matter which post-CCR pathway they select.

Design Assumptions:

1. Local school systems will ensure that all high schools that offer at least one of the selective college preparatory programs will be certified by the organization that provides and scores their examinations, and will train staff to deliver the curriculum.
2. Local school systems will partner with Maryland colleges and out–of–state institutions approved by the Maryland Higher Education Commission to offer programs leading to Associate's degrees or coursework pointed toward four-year degrees. Students can take college credit courses at their high school or at a postsecondary institution, depending on specific agreements between districts and those institutions. There is also the option of using technology (online or distance learning) to assist with delivery of courses in whole or in part to increase student access. Some courses may count for both high school and college credit, under dual enrollment agreements.
3. Schools will be encouraged to introduce students to career and academic options early, including during middle school. This can include giving students the opportunity to take introductory CTE coursework before meeting the CCR standard in order to engage their interest and retain them in high school. It may also include selected AP, IB or Cambridge courses. However, continuation into CTE courses required as part of sequences leading directly to approved occupational credentials is available only to students meeting the CCR standard. Similarly, students who plan to take a full AP, IB or Cambridge program will not be able to begin those programs until they have met the CCR standard.

Implementation Considerations:

1. Maryland will need to set a date by which all local school systems must offer students access to the post-CCR pathways specified above.
2. It is the Commission's intent that there should be statewide uniformity in the way postsecondary courses taken during high school, and regular high-school courses, are paid for. This includes but is not limited to Associate's Degree programs, certificate programs and dual enrollment programs. All such programs should be offered to high school students who have attained their CCR at no cost to the student or the student's parents and without regard to ability to pay. Because many students may be expected to take such programs and courses, the State cannot be expected to pay both the high school and the postsecondary institution for the same offering, as is sometimes currently the case. The General Assembly must determine whether the funds appropriated for this purpose flow to the school district or the postsecondary institution or some combination of these institutions. In addition to tuition, this decision will need to take into account any applicable fees and necessary textbooks.
3. Postsecondary courses and programs offered as part of the high school program may continue to be offered on the postsecondary institution campus or the high school campus, but preference should be given to the latter so as to minimize the need for student travel.
4. The issue of which State authority is empowered to deal with issues concerning the qualifications of instructional staff providing postsecondary-level instruction in the high schools must be dealt with, but it should be dealt with uniformly throughout the State. (See section on Career and Technical Education for more on this issue).
5. Maryland may need to provide start-up funds for AP, IB and Cambridge programs in situations where these programs are not already available.

Element Detail 3f.

The State Board will revise high school graduation requirements so that students who achieve CCR will be able to enter any of the post-CCR pathways and still earn high school diplomas. This includes retaining the expectation that students will satisfactorily complete four years of English and math, which is the admission standard for the University System of Maryland. All courses required for graduation, including those in history, science and social studies, should be organized such that students can, by the end of their senior year, satisfy both the requirement for post-CCR pathways described in Element 3e and the State high school diploma requirements. Students who participate in one of the post-CCR pathways may take as many of the other courses offered by their high school as their schedules will allow and may participate in high school extracurricular activities.

Design Assumptions:

1. Any high school graduation requirements in mathematics or English that go beyond the CCR requirements and that have not been met by the time a student achieves CCR will need to be made available by the providers of the pathway on which the student progresses. Requirements not yet met in other subjects will have to be provided by the high school at times worked out in collaboration with the pathway provider.
2. Students who complete all course requirements will still earn a Maryland high school diploma upon graduation. Award of the high school diploma will require successful completion of these courses and a passing score on the tests associated with specified courses (currently English 10, Algebra 1, government, and science.). The State Board of Education will set the pass points for these end-of-course tests.
3. The State Board of Education will create diploma "endorsements" that acknowledge students with attainments that go beyond the course-completion requirements, including meeting the CCR standard, getting an AP, IB, or Cambridge diploma, getting an Associate's Degree, and/or getting an occupational certification.
4. While students pursue any of the post–CCR pathways, they will remain enrolled at least part–time in their high school and the high school remains responsible for them until their diplomas are awarded; this includes the range of services that a student may need, such as academic, career and personal advising.
5. College courses meeting high school graduation requirements and approved by MSDE must also count for high school credit.

Element Detail 3g

Element: Develop **11th and 12th grade programs** for students who do not meet the CCR standard by the end of 10th grade. At the outset, this will probably include many young people but their number will diminish over time, as the many Commission recommendations designed to improve the performance of students at every stage of their education take effect. Yet there will always be some students who do not meet the CCR standard by the end of grade 10. Programs must be designed to provide the content and develop the skills that such students need to reach the CCR standard by the end of 12th grade. Such programs must also enable students to satisfy all high school graduation requirements by the end of 12th grade. Any CCR preparation courses should use a curriculum that is highly applied (project- and problem-based) and engaging. It may be occupationally focused. For students who are close to meeting the CCR standard, the necessary instruction could be provided in the summer following 10th grade to allow the student to participate in one of the post-CCR pathways beginning in 11th grade.

1. Districts must make provision for students who have not met the CCR standard by 12th grade, permitting them to stay in school until age 21 so long as they are working toward that standard. (Such students are not precluded from taking the GED, which also remains available for those who don't meet either the CCR or HS graduation requirement.)

Implementation Considerations:

To develop cost and savings estimates, the Commission will need to:

1. Estimate the number of students who will not be able to meet the CCR standard when it is used in 10th grade to determine eligibility for the post-CCR pathway programs, as well as how far they are from meeting the standard
2. Estimate the proportion of students who, as the reforms are implemented, will not meet the CCR standard and how long it will take for them to do so, at what cost
3. Estimate the yearly rate of decline in the students needing additional preparation and supports to meet the CCR standards
4. Estimate what it will cost to develop engaging curricula and appropriate materials for students who are behind the CCR standard at the end of grade 10, and to train teachers to use these materials and curricula well
5. Estimate the number of students who, in the early stages of implementation and then, in the steady state, will not have reached the CCR standard by the end of grade 12, and the cost of getting those who choose to stay in school to the standard by age 21

Career and Technical Education

(Design Elements H, I, J, K, L, M)

Maryland can lay claim to having one of the best systems for career and technical education in the United States. Its CTE system has dedicated leaders and instructors and one can find high schools and community colleges that provide engaging programs and lead to rewarding careers.

But the numbers of students who leave our State's schools with a credential – a credential that employers value enough to pay higher wages to young people who have it – are much too small. In Maryland, as in much of the United States, despite the best efforts of dedicated educators and employers that want to help, career and technical education is widely viewed as the place students go who are struggling academically. Such programs are often viewed as successful if they keep students who might otherwise have dropped out in school. Too many of today's high school students leave without either a solid work credential to launch them on a career or the academic standing to have a decent chance of going to college and succeeding there.

That is unacceptable. Maryland's economy cannot long remain competitive if half of its workforce is uncompetitive in a labor market that is suffering from surpluses of people with low skills and severe shortages of people with high skills. That is the situation today in our State – as in most other states.

The future of the Maryland economy, and of many of our citizens, depends on a massive upgrading of the skills of the workforce, not so much among those who earn professional degrees in a university as among everyone else, from cosmeticians to medical technicians using advanced medical technology, specialty welders to farmers with driverless tractors, from people who build and maintain factory automation systems employing advanced robotics technologies to automotive repair and maintenance technicians who are now dealing with computers on wheels.

A world-class career and technical education system for Maryland: What it will look like

No economy can long survive employing only university-educated professionals. We envision a Maryland economy in which, by 2030, close to half of our students are in apprentice and apprentice-like programs that involve much work-based learning supported by classwork tied to what is being learned in the work place. Students will constantly apply in the workplace what they are learning in class, using state-of-the-art

equipment under the supervision of expert practitioners. These programs will lead to occupational credentials that are gateways to rewarding careers that do not necessarily require professional degrees. Because the standards for these credentials will be defined by employers, students will know that, at the end of their program, there is a good job leading to a rewarding career. Some of these credentials will qualify students to take the first step into a good career right out of high school, while others will choose careers in which the first job comes after a year or two or more of college. These programs will include registered apprenticeships as well as many other opportunities for advanced technical training. The distinction will be much clearer than it is now between what students have to do to make the transition between programs that offer beginning skills in high-skill fields and programs that offer more advanced skills in those (and other) fields. For many careers, students will be able to start that progression earlier and complete it faster and at much less expense to them and their families than they can now.

There will be no dead ends in this system. Students will have much better opportunities, beginning in middle school, to learn about the varieties of work that adults do and to explore careers that might interest them. Once they have chosen a path to follow, students will be able to start out getting enough knowledge to begin at the bottom of the ladder, go to work and then go back to get a more advanced credential if they want to. They will be able to go down one path and then shift to another without returning to square one. They will be able to start out in a CTE direction and then shift to a university path or, if they wish, start out on a university-bound path and pick up a CTE credential, too. There will be smooth transitions among high school CTE programs, community college programs and university-based technical programs. 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.

To produce those outcomes for almost half of Maryland's young people will require a *whole system* that is carefully designed for this purpose. Our purpose here is to describe the essential elements of such a system. Its crucial foundation is the Commission's bold proposal to get Maryland high school students to a solid college-and-career-ready standard by the end of grade 10. At that point, many will be able to pursue credentials that employers will be willing to pay for. When that system is in place, no one will be able to say that CTE is for weak students. It is where you go for compelling, absorbing and exciting education and training that lead 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.

This is no dream. There are countries that are doing exactly this right now. There is no reason why Maryland cannot do it, too. Fortunately, there is much to build on. Officials at MSDE; the Governor's Workforce Development Board; the Department of Labor, Licensing and Regulation; the Maryland Higher Education Commission; the community colleges; the Maryland Economic Development Commission; the P-20 Council; and many local leaders, employers, trade unions, and professional educators have all been working on pieces of this problem. The highlights of our proposed plan follow.

Plan Highlights

Element Detail: 3h

Element: A new Career and Technical Education Subcabinet will be created to drive the process of building a world-class career and technical education system for Maryland. It will be comprised of the agency heads of MSDE, MHEC, DLLR, Commerce, and the Governor's Workforce Development Board; a representative of the community colleges, which provide much of the postsecondary training in the State; the Chair of the Skills Standards Board (see below); and four additional representatives of employers, industry associations, and labor, selected by the Governor, the President of the Senate, and the Speaker of the House. It will be charged with creating a framework for the new system and then bringing that system into being. The Subcabinet will have a dedicated staff, including an Executive Director, not simply staff assigned to it from other agencies.

The Subcabinet will be tasked with building on the good work already done to create a system focused on developing the talent needed for staffing the high-tech industries on which Maryland's future depends, from health care and agriculture to cybersecurity and precision manufacturing. It will take the lead in developing the framework for the State's CTE system, mobilizing the business community to become a central player in developing opportunities for apprenticeship and work-based learning, approving CTE programs and standards, bringing the schools and colleges and universities together to align their offerings, assuring that Maryland's entire CTE system is fully aligned with the State's priorities for economic and workforce development and benchmarking that system against the best CTE systems in the world, to make sure that Maryland's workforce is—and can remain—among the most competitive in the world.

Design Assumptions

1. CTE Subcabinet will be staffed by an Executive Director and other staff.
2. CTE Subcabinet chair to serve as Ex Officio member of the State Board of Education, the Higher Education Commission, the Governor's Workforce Development Board, the Skills Standards Board (see below) and, at the Governor's discretion, other agencies that play a key role in economic development and workforce development.
3. CTE Subcabinet will have the authority to issue whatever regulations are required to implement the statewide framework that it develops for CTE, allocating roles and responsibilities to agencies, mandating required offerings and resolving conflicts that arise among agencies in the course of carrying out those responsibilities. This incudes, but is not limited to, deciding which institutions set qualifications for instructors and whether credit is awarded for a course or

program. The Subcabinet will issue regulations describing all approved course sequences for CTE.

4. CTE Subcabinet will review all agency budget requests for CTE-related programs and make recommendations to the Governor and General Assembly on the disposition of those requests. This includes middle-and-high school career exploration programs, specialized high school CTE programs, and postsecondary career pathway options, including college credit-bearing certificate programs, two-year associate's degree CTE programs, and four-year degree programs technical CTE programs. It also includes postsecondary non-degree, non-credit options, including workforce training programs, non-credit certificate and licensure programs, registered apprenticeship training and other programs that lead to credentials approved by the CTE Subcabinet
5. The CTE Subcabinet will also have a substantial budget of its own, with which to make start-up grants, invest in promising innovations and experiments, contract for needed research and analysis, and more.
6. The CTE Subcabinet staff will provide policy analysis, technical support and recommendations to the CTE Subcabinet and the Skills Standards Board described below. They will conduct benchmarking research on leading CTE systems, including skills standards systems, in the United States and abroad; collect data on the performance of the Maryland CTE system, including reports on the throughput of the system showing results for each entering high school cohort as they progress through the CTE system with particular attention to the proportion of students who gain economically valuable credentials, how many drop out and how many go on to further education.
7. The CTE Subcabinet will provide annual public reports to the Governor and the General Assembly on the performance of the Maryland CTE system and, in those reports, will recommend statutory, regulatory, budgetary and structural changes based on its analysis of Maryland's needs and the performance of the evolving CTE system.

Element Detail: 3i

Element: There will also be a Skills Standards Board comprised primarily of employers, leaders of industry associations, and labor groups, and it will be charged with setting the standards for a greatly strengthened statewide system of work-based learning and apprenticeships that will form the backbone of the new system. Employers and labor will be asked to play the key role in defining Maryland's system of occupational standards. They will also take the lead in creating a robust array of opportunities for students to earn such credentials in workplace settings provided by employers all over the State and creating a quality-assurance system to ensure that those employers supply the experiences that students need to earn the credentials they seek. Finally, they will be asked to play a key role in establishing the standards and criteria by which candidates will be evaluated for credentials. When the CTE system is fully operational, all programs leading to credentials needed for rewarding mid-level skill jobs will include major

work-based learning/apprenticeship components, offered either on the students' high school or community college campus, or, preferably, at the work site of a private or public sector employer or provider of registered and/or youth apprenticeships. To ensure coordination with the CTE Subcabinet, the Chair of the Skill Standards Board will serve as a member of the Subcabinet, and the Chair of the Subcabinet will serve on the Skills Standards Board.

Design Assumptions

1. The Skills Standards Board will be comprised of senior business executives, association leaders and representatives of labor, with one third appointed by the Governor, one third by the Senate President and one third by the Speaker of the House. The chair will be appointed by the Governor with the advice and consent of the Senate.
2. The Skills Standards Board, supported by the staff of the CTE Subcabinet, will adopt and, where appropriate, develop and regularly update a comprehensive, cohesive system of occupational skills standards to drive the Maryland CTE system, including a comprehensive array of career progressions, standards for each occupation and steps in those progressions, for the credentials to be issued to individuals when they achieve the standards, and the criteria to be used for awarding those credentials. The Board need not develop new standards for occupations or industries that have already developed standards that the Board believes are well-matched to Maryland's needs, but should strive to build a system of standards which, when taken together, is coherent and makes it possible for students and workers to move between careers with credit given for relevant skills and knowledge they already possess
3. Standards and other components will comprise a comprehensive, unified system of career progressions for a wide range of low-skill, middle-skill and high-skill occupations that embrace grades 11 through 14 and beyond, with particular attention to the industries and occupations prioritized by the CTE Subcabinet
4. The Skills Standards Board will have the regulatory power needed to determine which credentials will be approved for award by Maryland high schools and postsecondary institutions; it will set the standards and criteria by which those credentials will be awarded to individuals, based, wherever possible, on performance assessments conducted (and where necessary developed) by expert industry practitioners. The standards approved by the Skills Standards Board will, wherever possible, represent not average industry practice but state-of-the-art practice, designed to keep Maryland globally competitive
5. The Skills Standards Board will have the authority to regulate the criteria under

which employers will be authorized to offer various forms of work-based learning experiences, except that the existing authority vested in DLLR to regulate registered apprenticeships will not change

6. The Skills Standards Board will be responsible for regularly updating all the skills standards components to reflect changes in technology and work organization

Implementation considerations

1. The first phase of this system will focus on high priority occupations and industries and will be in place no later than two years after passage of the enabling legislation.

Element Detail: 3j

Element: The mission of the State's American Job Centers will be expanded to the extent practicable to open their doors to high school and community college students to provide information on jobs and careers and make connections for young people to employers offering opportunities for work-based learning, youth and registered apprenticeships, internships and job shadowing. However, recognizing that these centers are located in specific places and may not have the capability to serve all students, each middle and high school will be funded to add one career counselor for the express purpose of providing guidance to students on jobs and careers and CTE pathways. Taken together, these investments in students who could benefit from the expanded CTE pathways created by the Commission report should greatly enhance student interest in those pathways and help them navigate among the available and emerging opportunities.

Design Considerations

Together, the American Job Centers in Maryland and career counselors in middle and high schools will:

1. Arrange to have firms, associations and other representatives of the employer community make presentations to students in the schools at appropriate times
2. Arrange to have students visit the Job Centers for presentations, counseling and information gathering
3. Provide counseling to individual students
4. Arrange with firms for exploratory visits from students, internships, apprenticeships and other work-based learning opportunities
5. Obtain and create materials and software programs for students enabling them to access a wide range of information about jobs and careers

School counselors are already more than fully engaged with the needs of students bound for college. Hence our recommendation to specifically provide a career counselor for each

middle and high school dedicated to the needs of students who might be interested in CTE pathways. Some of these counselors will be in schools located near American Job Centers, in which case they will be able to collaborate with those centers by arranging for student visits to them and hosting Job Center visits to the schools. In other cases, the schools will not be near enough to Job Centers to collaborate in that way, but will be responsible for providing much of the same information to students and to make connections for students to internships, work-based education and apprenticeships offered by local employers, working in collaboration with school CTE program staff

Element Detail: 3k

Element: The system of high schools specializing in CTE will be expanded and strengthened. These schools and the CTE staff of Maryland's community colleges and other higher education institutions will be asked to work together to build career development course sequences that begin in high school and continue seamlessly through community college occupational programs (and sometimes into the programs of four-year institutions). The sequences will be designed so that students can earn credentials at various points along the career sequence, get a job with that credential and then, if they wish, go on later to acquire a more advanced credential in the same sequence. Students in the specialized 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 certificate leading toward a good job. These programs will include both youth and registered apprenticeship programs of the kinds already offered in Maryland.

Design Considerations

1. Some schools will be in Maryland's major population centers, others organized as collaborations of rural and semi-rural communities. All counties should make provision to accommodate 45 percent of their students aged 17 and 18 in CTE programs consistent with 2. below, with at least 30 percent being served in specialized CTE high schools or youth apprenticeships within eight years from the date the enabling legislation is passed
2. Students will be working toward credentials defined and authorized by the Skills Standards Board with priorities for program development set by the CTE Subcabinet and for the county by a county-wide board of employers and other apprenticeship sponsors
3. In order to earn an occupational credential, a student will have to spend some time in the workplace and some time in school. In most cases, a student will spend not less than two days a week in some form of work-based learning or apprenticeship, with preference given to apprenticeships wherever possible.

4. Because it is not yet clear whether the CTE Subcabinet, working with the employer community, will be able find sufficient workplace learning/apprenticeship placements in employer establishments, the State must also be prepared to fund workplace learning opportunities in the specialized high schools, community colleges and other educational institutions in sufficient numbers to ensure that all students who want them have access to high quality placements. Further, because employers may be reluctant to offer high quality slots in sufficient numbers, the State should plan to offer subsidies for these slots and for the employer associations that provide the training that individual employers cannot offer. To the extent that employer slots cannot be found, the State will have to provide enough funds to the specialized high schools and postsecondary institutions to enable them to offer state-of-the art personnel, facilities and equipment to their trainees

Element Detail: 3l

Element: The whole system will be informed by a close relationship between the providers of CTE and the State's economic development, workforce development and labor agencies. While the CTE system will continue to prepare future carpenters, auto mechanics and cosmetologists, it will also prepare young people with the complex skills needed for success in an economy permeated by artificial intelligence, robotics, neural networks and machine learning. But technological mastery will be just part of a student's career and technical education. The curriculum will also emphasize ethics, the qualities needed to collaborate with others in teams but also to work independently on finding solutions for real problems, as well as the habits of mind needed to learn new things quickly and well. Not least, the CTE programs will be designed to provide the insights and skills needed to play an active role as an informed citizen, engage with our cultural world and be a fully contributing member of the society.

Design Considerations

1. In order to implement this element, the CTE Subcabinet will have to organize teams of educators and employers to agree on the design of a system of course and program progressions that incorporate the standards developed by the Skills Standards Board but also the qualities of character and good citizenship described above, specifying what has to be taught in each progression and how it should be assessed. In most cases, these progressions will include both course work and work-based learning/apprenticeship in both high school and postsecondary institutions. This system will be rolled out over a period of four to six years, with the highest priority given to course and program progressions identified by the CTE Subcabinet as most important for State economic development

Element Detail: 3m

Element: The funding of CTE in the State – from State funds, local sources and federal Perkins funds – will be modified. Specialized CTE programs will be funded at levels per student that recognize that they require costlier facilities, equipment and – sometimes – faculty. In addition, special grant programs (currently established in law as CTE Innovation Grants) will make funds available to teams of schools, community colleges, employers and others, often building on good work already going on, to develop occupational standards, curriculum, and new forms of assessment that will be needed as key parts of the infrastructure of the new system. The aim, as much as possible, is to grow the new system from the bottom up, building on the points of excellence already in our midst, guided by the framework provided by the CTE Subcabinet and meeting the standards established by the Skills Standards Board.

Design Considerations

1. In the early stages of implementation, the State will use data from Maryland high schools with effective CTE programs to determine an average cost per pupil for those programs, which will be used to calculate a weight to be added to the base formula for specialized CTE high schools and apprenticeships; A similar process will be used to calculate a premium for the award of funding to postsecondary certificate programs and degree programs approved by the CTE Subcabinet as CTE offerings.
2. In the later stages of implementation, the CTE Subcabinet will use data on the actual cost per student of offering approved programs in specialized CTE high schools and apprenticeships, if a subsidy remains necessary to support employer–based apprenticeships
3. The CTE-Subcabinet will build on the existing CTE Innovation Grants to build on the comprehensive program of Innovation grants involving the specialized CTE high schools, the relevant postsecondary institutions, employers, apprenticeship sponsors and others in innovative efforts to pioneer the new CTE system in the early stages of implementation
4. The CTE Subcabinet will collect data on the current allocation of Perkins, State and local funds for CTE and make recommendations to the Governor and General Assembly for legislation to make the best possible use of each source of funds, along with recommendations for suitable measures to hold users of these funds accountable for their performance. The CTE Subcabinet will solicit the views of all participants on the funding issues and take those views into account in their recommendations.