Maryland – CAR Narrative

I. PROGRAM ADMINISTRATION:

The first aspect of the program administration portion of the plan is the continuous improvement and development of Career and Technology Education programs. Local school systems and Community Colleges create a local plan for improvement. The state provided guidelines using the progress made in each of the core indicators of performance, and negotiates strategies and activities prior to plan approval.

A. Improving and Expanding the Use of Technology in Career and Technology Education Programs

The following is a summary of the activities and accomplishments in the improvement and development of career and technology education programs:

Maryland Plan for Technology in Education

In keeping with the Maryland Plan for Technology in Education, Maryland's twenty-four local school systems (LSS) are each responsible for ensuring that teachers are competent in using and integrating technology into student learning activities. Currently, teachers are responsible for helping students understand and use technology appropriately as defined by the Voluntary State Curriculum for Technology Education. According to an annual survey produced by the Maryland Business Roundtable for Education Committee on Technology in Education, the following statistics are reported:

The results of the 2007 survey indicate:

- 98% of all Maryland classrooms are connected to the Internet- up from 96% in 2006;
- The student to computer ratio is 3.4:1, compared to 3.7:1 in 2006 and compared to the Maryland target of 5:1;
- 78% of all Maryland teachers have intermediate or higher knowledge of computer skills- up from 76% in 2006;
- 72% of all Maryland teachers have intermediate or higher knowledge of Internet use- up from 70% in 2006; and
- 74% of all Maryland teachers have intermediate or higher knowledge of technology integration- up from 72% in 2006.

The Educational Technology Plan for the New Millennium 2007-2012 is Maryland's blueprint for the effective utilization of technologies in schools statewide. The revised five-year plan is currently being implemented. The plan will be reviewed and revised to ensure alignment with state and federal requirements.

Use of VTECS as a Technology in Program Development and Curriculum Planning

VTECS Direct is a database program designed to manage information about technical standards, performance measures and academic standards linked to technical standards. Along with the alignment of academic and industry standards, Maryland continues to work with the software developers to align Maryland's Career Cluster framework with VTECS Direct-5. VTECS Direct is used to house model career pathways of high quality, industry validated Career and Technology Education (CTE) programs so all staff in local school systems can access standards as they build their CTE programs.

VTECS Connect is a relational database designed to manage information concerning students participating in work-based learning opportunities. This software allows work-based learning coordinators to customize training plans for students to align what they learn in school (both academic and technical) with on-the-job skills. In an on-going effort to align standards and increase access to high quality work-based learning opportunities, Maryland delivered the following:

- In FY 2007, Maryland provided on-site training for 17 school systems (up from 7 in 2006), training 144 (up from 77 in 2006), CTE faculty members and work-based learning coordinators.
- Maryland continues to survey statewide users to better meet customer needs in terms of software distribution, training and recording best practices. As a result of the survey, training has been upgraded to offer an introductory session and then beginner, intermediate and advanced levels. In addition software has been customized to meet individual school system needs.
- Maryland continues to make the use of VTECS software systemic throughout local school systems. Two local school systems are requiring the use of specific reporting functions and have contracted with the VTECS software engineers to customize those reports to meet their needs. A third school system received training in order to switch from its current reporting system to VTECS in the upcoming fiscal year.
- National Academy Foundation (NAF) directors find VTECS Connect a useful tool for their students involved in school-to-work programs. Academy students are required to have an internship between their junior and senior years. The NAF directors use VTECS to assist in aligning their program standards to what students should be learning at the workplace.

B. Improving or Developing New Career and Technology Education Programs

Integrating Academic and Career and Technology Education

Maryland supports the integration of academic and career and technology education through a variety of initiatives. State sponsored professional development geared specifically to the pathway programs has played a prominent role in school systems adopting the model CTE programs. All 24 school systems have adopted Career Clusters. Maryland also supports schools redesigning around career-focused smaller learning communities and in upgrading Career and Technology Education (CTE) programs around broad career clusters and pathways. This model creates a system where all students are challenged to higher academic achievement through a sequence of courses and instructional practices that require students to demonstrate mastery of academic and technical content. Maryland supported this initiative in the following ways:

- State staff have worked with Local School Systems (LSS) and individual high schools to align courses and programs of study around career clusters and pathways. The development of career pathways includes sequencing academic and technical courses at the secondary and postsecondary levels to ensure student success after high school.

Career Cluster Frameworks

Maryland's Career Cluster system is described in a publication originally developed in 2003, which includes an overview and guide to the 10 career clusters. This publication is updated as needed. The career clusters were developed and validated in facilitated, employer focus group sessions and represent key economic sectors of Maryland's economy. Each career cluster is defined by the core business functions of the particular industry. These core functions became the career pathways for each cluster. Each career pathway also includes the full range of careers from those requiring an associate's degree or less, a bachelor's degree and those with more than a bachelor's degree.

To facilitate the development of new programs and the continuous improvement of existing programs, MSDE has identified CTE model programs of study. These are CTE programs that not only meet the requirements for state program approval, but also include curriculum and professional development resources that ensure high quality and allow them to be replicated by local school systems. Maryland's model CTE programs have been either partner developed (e.g. Pre Engineering – Project Lead The Way) or developed through a statewide collaboration process following the state policies and procedures (e.g. Teacher Academy of Maryland). To date Maryland has developed 30 model programs of study, with at least one in each of the 10 career clusters. By 2012 Maryland will have 48 model programs of study. The following key elements are a part of all model programs:

- Standards-based curriculum aligned to industry/technical skill standards, academic standards, and S*kills For Success*;
- Value-added options for students through industry certification, advanced standing, or college credit earned while in high school;
- Work-based learning opportunities for students directly related to the CTE pathway program;
- Oversight and quality assurance through program certification and/or industry advisory groups;
- Teacher professional development for initiation and continuous upgrades of the program as; and
- Program sustainability plan for costs associated with implementation and ongoing quality to keep pace with industry requirements.

Credentialing of Student Learning

To place greater emphasis on accountability and documentation of student success, Maryland has revised the CTE program approval process to provide direct links to credentialing and developed a new program approval process for Maryland model programs of study or "Fast Track" programs. Maryland model programs of study are CTE programs that meet additional standards for program quality including the certification or credentialing of students through industry certification and/or postsecondary credits. Currently, state-approved Maryland model programs of study programs include:

- Autobody/Collision Repair Technician; (based on the National Automotive Trades Education Foundation [NATEF] standards)
- Automotive Technology; (based on the NATEF standards)
- Business Education Model Program which contains four Pathway Programs: Business Management; Finance and Accounting; Marketing; and Administrative Services (with Microsoft Office Specialist [MOS] industry credential;
- Careers in Cosmetology (with a state licensure requirement);
- Construction Maintenance which contains HVAC, Maintenance and Welding (based on the NCCER Standards - National Center for Construction Education and Research);
- Construction Trades which contains Carpentry, Electrical, Plumbing, and Masonry (based on the NCCER Standards);
- Database Academy (Oracle);
- Fire Science;
- Food and Beverage Management (ProStart and American Culinary Federation, ACF);
- Homeland Security and Emergency Preparedness (Geographic Information Systems and Remote Sensing industry certification);
- Horticultural Services, (Certified Professional Horticulturist);
- Medium-Heavy Truck; (based on the NATEF standards)
- National Academy Foundation (NAF) programs in Finance, Information Technology, and Hospitality and Tourism;

- Networking Academy (Cisco);
- Printing Technologies (Print Ed);
- Pre-Engineering - Project Lead The Way program with pathways in Aerospace Engineering; Biotechnical Engineering; Civil Engineering and Architecture; and Computer Integrated Manufacturing;
- Biomedical Sciences - Project Lead The Way program;
- Teacher Academy of Maryland; and
- Career, Research and Development.

Additional program areas under development for model program designation in FY 2008 include:

- Arts, Media and Communications Cluster, two pathways: Interactive Media Production and Communication and Broadcast Technology;
- Consumer Service, Hospitality and Tourism: Lodging Management; and
- Environmental, Agriculture and Natural Resources: Environmental Sciences.

High Schools That Work/Making Middle Grades Work

In FY 07 Maryland continued to support the efforts of *High Schools That Work (HSTW)* and *Making Middle Grades Work (MMGW)* initiatives. The following activities were conducted to support these initiatives:

- Benchmarking Workshops were conducted for both *MMGW* and *HSTW* sites. Schools analyzed their data and used the information to create plans for continuous school improvement.
- In FY07, $110,000 was awarded to schools through Tech Prep Grants. Schools used these funds to attend both state and national professional development opportunities in support of the *HSTW* and *MMGW* initiatives.
- A *Getting Ready for a Technical Assistance Visit* workshop was conducted for all schools involved in the Technical Assistance Visit (TAV) process during FY 07;
- *HSTW* Technical Assistance Visits were conducted at ten high schools;
- *MMGW* Technical Assistance Visits were conducted at two middle schools; and
- Two statewide *HSTW/MMGW* Council Meetings.

C. Local Perkins Plan Application

The program year 2006 – 2007 local Perkins Plan application was enhanced by including a description of secondary school systems link with the State required Master Plan for each local school system and an emphasis on linking the learning levels. In anticipation of the Transition Year, the local Perkins Plan application was modified for program year 2007 – 2008 to include modified to include all required components of the Maryland Transition Plan. Specific modifications included: secondary to postsecondary transition; postsecondary to postsecondary transition; accountability and how it is measured, monitored, and documented at the local level; establishment of benchmarks and new required plan elements.

Overall the local Perkins Plan addresses how local recipients plan to increase the numbers and percentage of students achieving challenging state standards for academic, occupational and related workplace skill proficiencies. The Plan includes how local programs plan to achieve state standards and additional local evaluation measures for student achievement. It focuses on data based decision making to address gaps identified by Indicators and Sub-Indicators for each of the "Core Indicators of Performance."

Local school systems and community colleges used these Indicators to map out strategies, which assist them in meeting the levels of performance. Technical assistance is provided in the form of statewide workshops, as well as individual assistance from the Regional Coordinators to all local school systems and community colleges. Maryland provided data to each local school system and community college to help them

determine their relative performance for each of the core indicators of performance. Additionally each local recipient was provided program data at the Classification of Instructional Program (CIP) level for each Sub-Indicator and by race, gender, and special population to assist in "drilling down" to target specific programs and student populations for improvements.

D. Preparation for High Skill, High Wage Jobs in Current and Emerging Occupations

Labor Market Information

Maryland's Labor Market Information (LMI) has been organized around the 10 career clusters and pathways. The full range of careers presented in the Maryland Career Cluster publication and support materials have been aligned with the State Occupational system which is ONET. The Career Cluster/LMI system includes education, state licensure and certification requirements.

Maryland's Career Development Model

The Maryland Career Development Framework was designed in 2003 through a large stakeholder group called the State Career Development Council. The Council is made up of representatives from several organizations including the Maryland Higher Education System (MHEC), University System of Maryland (USM), Community Colleges, Local School Systems, Governor's Workforce Investment Board (GWIB), Maryland Department of Labor, Licensing and Regulation (DLLR), Maryland Department of Business and Economic Development (DBED) and leadership from the Career Technology Education and Student, Family and School Support Divisions from MSDE.

The Framework is a companion document with the Maryland Career Clusters booklet. The purpose of this standards-based framework is to enable students to select a career cluster and develop a program sequence. The sequenced program of study becomes part of a secondary-postsecondary academic and career plan in reference to the Code of Maryland Regulations for Pupil Services.

The framework is standards-based and aligned with the format of the Voluntary State Curriculum (VSC) and levels of cognitive demand represented in the VSC. The six standards are based on six process steps including: Self Awareness; Career Awareness; Career Exploration; Career Preparation; Job-Seeking/Advancement, and Career Satisfaction; Re-Focus and Transition. Decision-Making skills are incorporated as indicator statements for each standard. Additional content is derived from the revised National Career Development Guidelines, Maryland's *Skills For Success*, and the National Standards for School Counseling Programs.

Three products were developed to implement the Career Development Framework across the education levels using a systemic approach:

- **Grades Three through Eight** - Career development lesson seeds were developed by teachers from across the state. The lesson seeds are linked to the lesson seeds for the English informational and literary standards of the Voluntary State Curriculum.
- **Grades Seven Through 12** – Career Guidance/Advisory Resources are grade-specific materials that are structured around four components: Counseling, School-Based Activities, Career-Based Activities and Postsecondary Planning. Implementation is a shared responsibility by administrators, teachers, counselors and other staff.
- **Postsecondary/Adult:** Five toolkits, consisting of skill-building activities and related online activities, focus on the following needs of clients:
    - Toolkit One- Helping Client to Assess and Improve their Own Work Readiness
    - Toolkit Two- Helping Clients to Identify a Career Path
    - Toolkit Three- Helping Clients to Get the Job

- Toolkit four- Helping Clients to Keep the Job and Advance
- Toolkit Five- Helping Clients Transition to Higher Education

Through the Citi Schools That Work Institutes and Coaching Series, the Maryland Career Development Framework is used in the Career Guidance and Advisory Systems learning strand to guide local school site implementation of systematic instructional programs in career development.

The process has begun to align the Code of Maryland Regulations (COMAR) with the Maryland Career Development Framework and repeal the current regulation that uses the World of Work Declared Competencies Index.

E. Professional Development

Maryland provided a variety of professional development (PD) opportunities for faculty, administrators, and counselors at both the secondary and postsecondary levels. In addition, Maryland collaborated with postsecondary institutions to support in-service PD as well as pre-service PD opportunities for emerging teachers. The following is a list of the major professional development opportunities provided by Maryland in 2006:

- Maryland's Career Development Model was offered to local school systems and community colleges;
- VTECS training was conducted for 17 (up from 7 in 2006) local school systems for 144 (up from 77 in 2006) CTE faculty and work-based learning coordinators;
- Information Technology (IT) instructors across the state attended professional development workshops to support instruction in the networking IT pathway;
- Graphic Communications instructors attended workshops in the summer and fall to support instruction in the printing technologies model program of study;
- Two Teacher Academy of Maryland (TAM) professional development institutes were conducted with 60 teachers in attendance. The institutes are a partnership among Towson University, The University System of Maryland, and the Maryland State Department of Education. Continued work sessions took place throughout the remaining school year;
- Transportation Technology instructors attended a five-day workshop in July and a one-day workshop in October. The workshops are a partnership with the Community College of Baltimore County and MSDE; and
- Pre-engineering - Project Lead The Way program PD was provided to 46 teachers in 14 school systems. The PD was a partnership between The University of Maryland, Baltimore County and MSDE. The workshops focused on new course implementation.

In addition to these activities, Maryland provided professional development to a cadre of Technology Education teachers on the new Voluntary State Curriculum (VSC). Maryland has also provided support on the development of a VSC for Family and Consumer Sciences.

F. Involving Parents, Teachers, Local Businesses and Labor Organizations in Career and Technology Education Programs

Maryland's history of education reform is based on a collaborative model inclusive of stakeholder groups. Groups such as the High School Assessment Task Force, Maryland Business Roundtable, Governor's Workforce Investment Board, and the Local Advisory Committees all involve parents, teachers, business and industry. Most notably, in this past year, MSDE has continued to use these stakeholder groups in the developing CTE programs related to the 10 Career Clusters.

In addition, as part of the revision of the CTE program approval process, LSS are realigning and upgrading CTE programs using the Career Cluster Frameworks. As new programs are developed, LSS use Program Advisory Committees (PAC) that represent the full range of occupations in a career cluster. LSS will also specify the contribution of each PAC member in terms of providing industry standards, program development resources, and/or work-based learning opportunities.

G. Improving the Academic and Technical Skills of Students Participating in Career and Technology Education Programs

Maryland currently has in place a number of initiatives that are designed to raise academic expectations. These initiatives include the Maryland School Assessment Program and the High School Assessment Program. A statewide assessment system, promotes rigor and higher-level skills, which are demanded in the workplace and higher education. Career and Technology Education programs are linked to these initiatives and support the skills and content via Maryland's *Skills For Success* and the reinforcement of academic standards through curriculum integration and/or Blended Instruction.

The Blended Instruction Model is the vehicle by which Career and Technology Education programs synthesize rigorous academic skills with technical content. Professional Development opportunities during the past year have provided many educators and administrators with the tools needed to develop rigorous technical programs that meet high academic standards as well as national occupational skill standards. The framework, developed by the Southern Regional Education Board, has provided a model for continuous improvement in Career and Technology Education programs that link high academic and technical standards.

H. Ensuring That Participants in Career and Technology Education Programs are Taught Challenging Academic Proficiencies

The *High Schools That Work (HSTW)* initiative has provided Maryland with a vehicle for school reform in career and technology education programs. As a member of this network, Maryland has provided schools with the opportunity to become a *HSTW* site. One of the key practices of this network is a means to leverage resources necessary for increasing the academic proficiencies of students enrolled in career and technology education programs. The data provided to the schools who are members of the network allows educators and administrators to see gaps in the rigor of academic areas while promoting the technical skills needed in the workplace. Another strategy that has helped Maryland schools is the development of common course syllabi. This tool assists teachers in aligning the written curriculum with the taught and graded curriculum so that proficiency with the standards is achieved.

Maryland continues to promote challenging CTE programs such as Pre-Engineering - Project Lead The Way, the National Academy Foundation (NAF) Academy of Information Technology (AOIT), Cisco Networking Academy, and Oracle Database Academy. Academic components of these rigorous programs are aligned to the industry-related curricula. It is a requirement that students in an NAF AOIT participate in a quality work-based learning experience. VTECS Connect assists coordinators in creating individualized training plans for students, aligning what they learn in school (both academic and technical) with on-the-job skills.

I. Providing Technical Assistance to Local Recipients

Technical assistance to local school systems and community colleges is a critical component of the role of the branches of Career and Technology Education within the Division of Career Technology and Adult Learning at the Maryland State Department of Education. The Governance Structure for Career and Technology Education in Maryland is as follows:

Maryland State Board of Education (MSBOE)

The Board takes action on matters of the Maryland public schools. It approves policy including graduation requirements. The MSBOE serves as the State Board for Career Technology Education and annually convenes a meeting to address CTE issues.

The Maryland State Department of Education is the direct recipient of Perkins funds. The Division of Career Technology and Adult Learning administers career and technology education programs. The three CTE branches of the Division are: Student and Assessment Services; Instruction; and Systems. These three branches provide leadership, guidance and technical assistance to local school systems and community colleges. They assist in the development of CTE programs of study, Perkins Plans and have provided technical assistance. Examples of the leadership provided by these branches include: professional development for new community college deans/local Perkins Plan contacts and local school system directors of career and technology education; quarterly meetings for CTE directors; joint meetings with community college deans/local Perkins Plan contacts and directors; and individualized technical assistance on an as needed basis. Regional meetings (three to four) are conducted for each learning level on an annual basis.

Maryland Higher Education Commission (MHEC)

MHEC provides a direct link between secondary and postsecondary CTE programs. Postsecondary programs, that are articulated, are first submitted to MHEC for approval. Once a CTE program is approved by MHEC the community college submits the appropriate paperwork to MSDE for approval. This program development process links learning at the secondary and postsecondary levels.

Local Boards of Education

Local boards of education are the public authority legally responsible for educational matters that affect their local school system. They are free to impose additional requirements at the local level; however, all state requirements must be met.

J. Career and Technology Education and State and Regional Occupational Opportunities

Maryland's workforce development agencies collaborate on numerous economic priorities. These agencies include: DBED; DLLR; GWIB; MHEC; as well as local entities such as school systems, representatives at the postsecondary level, business and labor. This collaboration has led to the development of cluster templates for Maryland's growing industries. The mapping of ten career clusters has led to the development of new programs that prepare students to enter the workplace in high growth and high wage areas.

K. Methods for Joint Planning and Coordination of Perkins III Programs with Other Federal Education Programs

Maryland faculty and staff serve on committees for the GWIB, Maryland's Workforce Development entity, to develop and continually improve Maryland's workforce preparation system. Another method of joint planning is the requirement that the local superintendent of schools and the occupational dean of the community college serve on the Local Workforce Investment Board. Many times the superintendent appoints the Local Director of Career and Technology Education to serve in his/her place on this committee.

L. Linking Secondary and Postsecondary Education

Secondary and postsecondary education is linked in a variety of ways, including the following:

- Maryland's State Partnership Team for Project Lead The Way (PLTW), a pre-engineering program for high school students, is in the process of developing a common articulation agreement among Maryland's two- and four-year institutions;
- The Maryland State Department of Education with it's PLTW Affiliate, the University of Maryland, Baltimore County continues to college certify PLTW programs, which allows students to receive transcripted and/or articulated credit at a number of postsecondary colleges and universities throughout the country. In the 2006-2007 school-year, two additional schools received college certification bringing the total number to 25 certified schools.
- The Maryland State Department of Education has established a new partnership with Villa Julie College for the PLTW Biomedical Sciences Program. The Biomedical Sciences program is in its pilot stage, but once it is fully developed students will receive transcripted and/or articulated credit through Villa Julie College.
- Tech Prep consortia agreements ensure that all activities span secondary and postsecondary levels;
- A program development process has been instituted which requires all programs to include course sequences that include secondary and postsecondary courses; and
- Many school systems and community colleges have joint advisory committees.

M. Addressing Equity

Maryland is committed to providing continued technical support to promote equity in career and technology education. A list of programs by CIP numbers that are non-traditional by gender is provided to local school systems and community colleges. This enables the school systems and community colleges to identify non-traditional programs in their consortia and develop strategies to promote these programs. Students at both educational levels are assisted by Support Services Teams to help them meet the core indicators of performance.

N. Developing the Memorandum of Understanding

Maryland has developed a Memorandum of Understanding in concert with Workforce Investment Act (WIA) partners for each local WIB and one-stop partners.

O. Coordination of Non-duplication Among Programs

Under the leadership of the Governor's Workforce Investment Board, Maryland continues to work with other workforce development partners to ensure non-duplication among workforce development programs.

P. Special Populations

Program Strategies for Special Populations:

As CTE programs are updated and as new programs are designed, local school systems and community colleges are required to identify how they will meet the needs of members of special populations. Maryland has successfully used the Support Services Team approach, which provides both direct and indirect services to special populations enrolled in CTE programs.

Non-traditional funds have been targeted to statewide improvements in the automotive area and construction careers. The purpose is to increase the numbers of female program participants and completers. In the automotive area there is a partnership in place with the Maryland Automobile Dealers Association and Automotive Youth Services Excellence (AYES) affiliation program. In addition, non-traditional funds were used to support University of Maryland Baltimore County's (UMBC) Computer Mania Day. Computer

Mania Day is hosted by UMBC and recruits middle school girls and boys to attend a full day of exploring high tech information technology sessions with adult mentors from information technology companies such as Cisco, Oracle, Microsoft and Sun Systems. The day is designed to expose young girls and boys to a variety of careers in the information technology sector, encourage them to take advantage of CTE pathways in information technology and manufacturing and engineering, and challenge them to take rigorous math and science courses when they enter high school.

Technology has played a major role in meeting the needs of special populations. Through the use of technology, all students have access to a variety of strategies, which improve their opportunities to learn and grow. Students may gather and absorb information at their own pace. An example of how technology can assist special populations is Career Net. Not only can special populations' students utilize Career Net, due to its accessibility over the Internet, but also counselors, educators and others who work with special populations have access to it for resource purposes.

Another example of how Maryland has provided for special populations is the Local Plan Application and the Tech Prep application. The Local Plan Application requires local recipients to identify how members of special populations will be served. The Tech Prep application requires equal access to programming for special populations.

Special Populations and Performance Levels

Each local plan addresses how members of special populations will be served. Included in this plan are support services for members of special populations. Tech Prep also addresses special populations and a description of how members of special populations will be served is a required element in all Tech Prep consortia agreements.

Students in Alternative Programs

Maryland had contributed to the state unified plan under the Governor's Workforce Investment Board to address the needs of at-risk students and adults.

Non-Traditional Employment and Training

Non-traditional employment and training are a priority for Maryland. First, Maryland measures non-traditional enrollment and completion at both the secondary and postsecondary levels. By measuring these indicators of performance, local school systems and community colleges make these indicators a priority. This, along with the collaboration with other government agencies, indicates that Maryland is working to integrate non-traditional employment and training in all aspects of CTE program development.

Q. Individuals in State Correctional Institutions

The Correctional Education Occupational Programs are located in 10 State Adult Correctional Institutions and one external facility (AACC). Eighteen different disciplines are included in the 37 programs that are offered. The total enrollment for FY'07 was 1,854 students with 979 completions.

In all the institutional programs, CTE instructors have actively developed linkages with private business and industry. Such partnerships have recently provided valuable material and equipment donations for instruction in several of the programs at the Occupational Skills training Center. These partnerships not only have netted material gain such as raw construction materials, autos from the major auto manufacturers for diagnostic instruction, and cut-away demonstration models for theory instruction, but also valuable input from industry for curriculum updating with the instructors.

The addition of a new program, Telecommunications and Cabling known as "C-Tech", at the Metropolitan Transitional Center in the Central Region, enabled correctional education to increase enrollment and completions. This program provides curriculum in network cabling with shortened hours of instruction for inmates soon to be released. The C-Tech Program is nationally recognized in the Telecommunications Industry, which is in critical need of skilled workers.

Occupational programs offer six different external certifications that are nationally recognized:

1. **Environmental Protection Agency Chlorofluorocarbon** (EPA CFC) Refrigerant Management Test (for HVAC-R students), 54 certificates awarded;
2. **National Center for Construction, Education and Research** (NCCER) certifications are offered to the students in all construction programs, 273 certificates;
3. **Automotive Service Excellence** (ASE) (for Auto Mechanics & Auto Body Students), 16 certificates awarded;
4. **A+ certification** test is offered for computer repair students, 14 certificates awarded;
5. **Telecommunications Certification** (C-Tech), 39 certificates awarded; and
6. **PrintEd Certification**, Graphic programs, 18 certificates awarded.

Total External Certificates issued in FY'07 = 414

Pre-tests for Microsoft Office Specialist (MOS) are also provided for Office Technology Students.

The important activity of formally establishing advisory/craft committees is ongoing and continuous meetings are planned for the Occupational Skills Training Center for the Greater Baltimore Businesses. We have evidence that these meetings will continue to translate into committed job opportunities for all correctional education programs.

Professional development improved significantly this year due to the employment/transition training and professional workshops attended by the instructors. Federal funding provided instructors the opportunity to attend workshops on career development, employability factors, and made resources available that could be utilized in the classroom.

Employment Assessment and Post-Incarceration Job Placement

Initiative: Continue to expand the systematic job readiness/job placement initiatives by using outreach programs which interface with current on-site occupational training and enhance current life skills, education, training, counseling, and pre-release planning with structural services to enhance and accelerate individualized reintegration into the community. These services act as a transitioning agent to assist inmates in securing employment prior to or immediately after release, to maintain employment, provide post-placement follow-up and client tracking.

R. Tech Prep

Tech Prep Program and Articulation Agreements

Tech Prep funds have been awarded on a competitive basis to local consortia consisting of local school systems and eligible postsecondary partners in the consortium. Funds support Tech Prep programs carried out under both consortium and articulation agreements. Additional incentive funds have been awarded to consortia to support the development of new Tech Prep programs to address economic and workforce development needs including pre-engineering, information technology, nursing, automotive technology, law enforcement and manufacturing.

Tech Prep incentive grant funds also supported the enhancement and development of High Schools That Work (HSTW) sites and professional development opportunities for career and technology education teachers; guidance counselors and post-secondary faculty. In partnership with USM, a statewide articulation agreement is being developed for students who complete the Pre-engineering – Project Lead The Way program. Maryland will continue to support the review and update of articulation agreements and to expand the number of Tech Prep programs linked with four-year degree programs.

In FY 07, Maryland continued its support of PLTW with almost $600,000 in Tech Prep funds. This money supported new and ongoing development of both the pre-engineering and biomedical sciences programs as well as the middle school Gateway to Technology program in 18 of Maryland's 24 school systems.

Two Years at the Secondary Level and Two or More of Higher Education or Apprenticeship

Maryland required that each funded Tech Prep program consist of at least two years of secondary school preceding graduation and two years or more of higher education, or a two-year apprenticeship program. Proposed Tech Prep programs were evaluated through Maryland's program approval process to ensure secondary instruction includes a common core of required proficiencies in math, science, written communications and technology designed to lead to an associate degree or a postsecondary certificate in a specific career field. Technical assistance continued to be provided to local consortia on the program proposal process, the evaluation of Tech Prep programs and the development of local Tech Prep plans, which strengthen student academic and technical preparedness.

Meeting Academic Standards and Ensuring Non-duplicative Sequences of Courses

In order to prepare students for Maryland's High School Assessment program, new and revised Tech Prep programs incorporated the High School Core Learning Goals, including the *Skills For Success*, into curriculum and instruction. Secondary and postsecondary stakeholders collaborated in the development of non-duplicative course sequences to ensure the smooth transition from secondary to postsecondary education. The program proposal process continued to emphasize collaboration among stakeholders to ensure non-duplicative course sequences and facilitate a seamless transition between educational institutions.

Professional Development for Teachers

Professional development for teachers focused on: upgrading teachers' skills and knowledge of engineering concepts to be taught in PLTW; integrating mathematics and reading strategies into technical curricula; the use of blended instruction to ensure student mastery of challenging academic and technical standards within a specified career area; implementation of the Maryland Career Development Model and National Occupational Information Coordinating Council competencies; the use of technology for career and technology education administrators, teachers, and counselors; and technical assistance to create plans promoting higher levels of student attainment.

In committing to implement PLTW, schools agreed to have PLTW teachers trained to deliver the PLTW curriculum. In FY 2007, Maryland hosted an on-going training for the 71 PLTW teachers that had been trained in previous PLTW Summer Training Institutes. During the summer of 2006, 53 teachers received 80 hours of training on one or more of the following curricula: Gateway to Technology, Principles of Engineering, Introduction to Engineering Design, Digital Electronics, Computer Integrated Manufacturing, Civil Engineering and Architecture, and/or Engineering Design and Development curriculum. In conjunction, faculty members from the Engineering Department at the University of Maryland, Baltimore County Campus (UMBC), as well as faculty from the community colleges' engineering departments were also trained in order to offer continuing professional development on the PLTW curriculum within the state.

Professional Development for Counselors

Professional development was designed to provide counselors with resources to inform students about Tech Prep programs. Teams representing secondary and postsecondary counselors, administrators and teachers attended a statewide career development conference focusing on ways to systemically integrate the Maryland Career Development Model. Project Lead the Way designed a counselor's conference that assists counselors in guiding students toward educational and career opportunities in engineering. In FY 2007, Maryland hosted a conference and invited a maximum of four guidance counselors from each PLTW high school and/or feeder middle school site to attend. Eighty-one counselors participated in sessions that addressed issues pertinent to secondary and postsecondary engineering education. As a result of attending the conference, the counselors were able to apply for credit from the National Board for Certified Counselors.

Equal Access for Special Populations

Maryland requires local Tech Prep consortia to provide equal access to individuals who are members of special populations to cover fairness in admission practices, adaptations necessary to ensure that students succeed in their CTE programs, and support services for members of special populations. Local plans, progress reports, and final programmatic reports are monitored to ensure equal access to individuals who are members of special populations.

Providing Preparatory Services in Tech Prep

Local consortia worked to enhance curriculum in career and technology education to prepare students for postsecondary education and decrease student remediation rates in reading, writing and mathematics. The state provided professional development for personnel from local consortia in the implementation of the Maryland Career Cluster Frameworks and pathways, Maryland's Career Development Model and on the recruitment, retention and tracking of students enrolled in Tech Prep programs. Efforts will continue to support the development and implementation of local marketing actions of Tech Prep programs, appropriate career development activities, and data collection.

WIA State Incentive Grant

Funds were continued to provide the consortium formed last year to develop a Biomedical Program under the direction of Project Lead The Way in cooperation the following states: Connecticut, Oklahoma, Indiana, Missouri, and South Carolina. The mission of the initiative is to create dynamic partnerships within the nation's schools to prepare an increasing and more diverse group of students to become more successful in the study of Biomedical Sciences at the post-secondary level and to move into careers. The goals are to improve the quality of programs, increase the number of programs to ensure student access, and increase the number of students graduating prepared to enter careers in the biomedical field. The first of four courses, Principles of Medical Science, was piloted by the curriculum writers. The course was written, edited and prototyped by teachers in cooperation with representatives from higher education and the business community. The second course is in development and the remaining two courses will be developed and rolled out to local schools implementing the entire program over the next three years in all of the states involved in the consortium.

II. PROGRAM PERFORMANCE

A. State Performance Summary

The following provides a description of Maryland's performance results as compared to negotiated performance levels for program year 2006-2007. All performance data is reported for program participants during 2006-2007 except as noted.

1S1 - Secondary Academic Achievement **(Did Not Meet Performance Level)**

The performance of secondary CTE concentrators for this measure decreased and did not meet the negotiated performance level by 5.44% for the program year. Significant performance gaps between gender (males underperforming by 10 percentage points) and special population groups (students with a disability and economically disadvantaged) exist for this measure and are addressed in current year strategies below.

1S2 - Secondary Technical Achievement **(Did Not Meet Performance Level)**

The percentage of CTE concentrators meeting the technical achievement standard declined and did not meet the negotiated level by 5.97% for the program year. As above, there are performance gaps for males and some subpopulations, especially students with a disability, limited English proficient, and economically disadvantaged. These performance gaps are addressed in current year strategies below.

2S1 - Secondary Completion **(Did Not Meet Performance Level)**

Secondary CTE concentrators graduate from high school at high rates (91.9%), however, they did not meet the performance standard. Gaps in performance persist for males, Black and Hispanic students, as well as disabled, economically disadvantaged and limited English proficient subgroups. Strategies to address this performance measure are listed below, including alignment to new reporting procedures.

3S1 - Secondary Placement **(Did Not Meet Performance Level)**

The percentage of CTE completers who can be shown to have entered postsecondary education, employment, or the military two quarters after high school completion decreased by 5% for the current program year, however, this may be attributed to a change in reporting of employment. Due to limitations in the record exchange process, regional employment data was not available, as in the past. While placement in post-secondary education showed an increase of 2.2%, employment showed a decrease of 7.5%. Strategies to address this performance measure and to ensure accurate data collection are listed below.

4S1 - Secondary Non-Traditional Enrollment **(Met Performance Level)**

The percentage of under-represented individuals enrolled in secondary non-traditional programs had a slight decrease (0.25%), however, met the performance standard. The rate of participation is significantly higher for males and somewhat higher for Asian students and limited English proficient students.

4S2 - Secondary Non-Traditional Completion **(Did Not Meet Performance Level)**

Overall performance increased by more than 1%, however, did not meet the performance standard by 1.5% for the program year. The lowest performing subgroups included Hispanic students and economically disadvantaged students. Strategies to address this performance measure are listed below.

1P1 & 1P2 - Postsecondary Academic and Technical Achievement **(Exceeded Performance Level)**

Postsecondary student performance increased slightly and continues at a very high level (98.46%). However, subgroup performance gaps exist for students with disabilities. Strategies to address this subgroup performance gap are listed below.

2P1 - Postsecondary Completion **(Exceeded Performance Level)**

Although performance on this measure showed a slight decrease (0.66%), the performance target was met. Subgroup performance gaps exist by race and for students with a disability, economically disadvantaged and non-traditional enrollees. Strategies to address the subgroup performance gaps are listed below.

3P1 - Postsecondary Placement **(Did Not Meet Performance Level)**

Placement for post-secondary CTE program students declined by more than 3% during the current program year. Most subpopulations exceed the performance level, with the exception of limited English proficient students. The decrease in total placement rate may be attributed to a change in reporting of employment. Due to limitations in the record exchange process, regional employment data was not available, as in the past. While placement in post-secondary education showed a slight decrease of 1.5%, employment showed a decrease of 3.4%. Strategies to address this performance measure and to ensure accurate data collection are listed below.

3P2 - Postsecondary Retention **(Exceeded Performance Level)**

Retention in employment of post-secondary CTE completers who entered employment two quarters after completion showed a 3.4% increase and exceeded the performance standard. Subgroup performance gaps exist for Hispanic students and for students with a disability. Strategies to address these performance gaps are listed below.

4P1 - Postsecondary Enrollment **(Did Not Meet Performance Level)**

Enrollment of under-represented individuals in non-traditional programs declined slightly during the current program year causing Maryland to miss the performance target by 1.47%. As in the case of secondary nontraditional enrollment, females are significantly less likely than males to participate (5% compared to 68% respectively). Strategies to address this performance measure are listed below.

4P2 - Postsecondary Completion **(Did Not Meet Performance Level)**

Completion of non-traditional programs by under-represented students at the post-secondary level increased by 1.17%, however, Maryland did not meet the negotiated performance target. There continues to be more underrepresented males completing these programs than females.

B. Define Vocational Concentrator and Tech Prep Students

Definitions remain the same as the previous program year:

- Concentrator students any students enrolling in a course at the Concentrator level for a CTE completer program. Concentrator courses were identified for every CTE program sequence in every local school system in Maryland; and
- Tech Prep students are all students that are concentrators in a Tech Prep program. Tech Prep is a combined secondary and postsecondary program that leads to an associate's degree, two-year certificate, or completion of a two-year apprenticeship program.

Measurement Approaches and Data Quality Improvement

Measurement approaches for all sub-indicators remain the same as in the previous program year, and are accurately reflected in the electronic and paper reports published by OVAE.

Data quality improvements for the current program year were an on-going effort with the Maryland Higher Education Commission (MHEC) to more accurately capture data for Perkins eligible programs. Working with MHEC, MSDE utilized the state approved Academic Program Inventory to construct a new Occupational Program Inventory that allows for more accurate extraction of Perkins enrollment and performance measures.

C. Effectiveness of Improvement Strategies in Previous Year

The following provides a brief summary of state level improvement strategies by sub-indicator for program year 2006-2007 and an assessment of their effectiveness:

1S1 - Secondary Academic Achievement

Overall, there was a decrease in the percentage of students meeting the standard and the negotiated level of performance was not met. Through the analysis of subgroups, efforts will be targeted for the lowest performing groups including males, economically disadvantaged, and students with a disability. Targeting subpopulation performance is increasingly important given the shift in the CTE student demographics in the past year. Overall, there is a decrease in concentrators by 7%, with 65% of the decrease females. At the same time, there is a significant increase in economically disadvantaged students (from 13.9 % of the population to 19.0%). Across all measures, achievement gaps by race and other subpopulations persist and will continue to be addressed, most directly through alignment of academic standards to CTE programs. Specific program areas with high enrollment of low performing students will be targeted for support.

1S2 - Secondary Technical Achievement

Overall, there was a decrease in the percentage of students meeting the standard and the negotiated level of performance was not met. As we move to new measures of performance for technical achievement, MSDE leadership will continue to focus on developing CTE model programs with high-level academic and technical standards. All model programs include alignment to industry standards and "value-added" options for students through industry certification, licensure and/or earning college credit while in high school. Currently, 27 model programs include industry certification or licensure options. Continued collaboration with industry and postsecondary partners is leading to the identification of additional certification options and increasing access to industry certification. State-wide work-groups have been convened to address challenges in meeting the needs of students with disabilities and Limited English Proficient (LEP) students.

2S1 - Secondary Completion

Overall, there was a decrease in the percentage of students meeting the standard and the negotiated level of performance was not met. Maryland will continue to integrate and align CTE program improvement activities with the broader state level high school reform programs, such as *High Schools That Work* and Smaller Leaning Communities, to ensure higher levels of high school graduation for CTE concentrators. State-wide work-groups have been convened to address challenges in meeting the needs of students with disabilities and Limited English Proficient (LEP) students, including increasing CTE program completion and high school graduation.

3S1 - Secondary Placement

Overall, there was a decrease in the percentage of students meeting the standard and the negotiated level of performance was not met. On-going implementation of the Maryland Career Development Model and Career Cluster Frameworks (including model CTE Pathway Programs) will reach all school systems and targeted as a means of providing students with transparent information about the demands of further

education and the contemporary job market. Continued development of state-wide articulation agreements has strengthened student transition to college (more than 2% increase). In the next year, increasing emphasis on early college experiences and student achievement of industry certifications will strengthen the transition from high school to college and careers.

4S1 - Secondary Non-Traditional Enrollment

State-wide efforts have continued to produce high levels of under-represented student enrollment in non-traditional programs. On-going support for demonstration projects in Pre-Engineering, Printing Technologies, Information Technology and Health and Biosciences programs has contributed to meeting the performance standard. The greatest challenge in this area is getting females to participate in male-dominated fields. Males far exceed the standard at 69% participation, while females have a participation rate of 11%. The projects listed above are showing promise, especially in the model programs for engineering and information technology.

4S2 - Secondary Non-Traditional Completion

Major strategies for non-traditional completion are in the early stages of implementation, but showing promising results. For example, a new pre-engineering program has increased enrollment to 2,500 students while increasing the enrollment of females (19% compared to 11% in all non-traditional programs).

1P1 & 1P2 - Postsecondary Academic and Technical Achievement

Post secondary institution's use of improved instructional and assessment strategies have continued to provide improvements in both academic and technical performance. Efforts in the past year to realign programs to the Career Cluster Frameworks and expand programs has lead to increased success of students moving from secondary to postsecondary CTE programs. Only one subpopulation did not meet the performance standard – individuals with a disability. A state-wide work-group has been convened to address specific challenges in meeting the needs of students with disabilities.

2P1 - Postsecondary Completion

Overall, there was an increase in the percentage of students meeting the standard and the negotiated level of performance was met. Post-secondary recipients are continuing efforts to have students achieve program completion prior to transfer and/or placement in employment. These efforts have included providing more customized degrees and certificates, and transcript analysis to determine program completion. In the next year, increasing emphasis will be placed on updating information management systems and targeting efforts to increase the percentage of students (across all subpopulations) earning a certificate, degree and/or industry certification.

3P1 - Postsecondary Placement

Overall, there was a decrease in the percentage of students meeting the standard and the negotiated level of performance was not met. However, this may be due to the loss of regional employment data. There was a 3.4% decline in employment compared to the previous two years, which included regional employment. On-going implementation of the Maryland Career Development Model (Pre-K to Adult standards) and Career Cluster Frameworks continues to be an effective means of providing students with transparent information about the demands of further education and the contemporary job market. Increased emphasis and availability of industry certification will also increase employment and postsecondary placement.

3P2 - Postsecondary Retention

Overall, there was an increase in the percentage of students meeting the standard and the negotiated level of performance was met. Implementation of the Maryland Career Development Model and Career Cluster Frameworks continues to be an effective means of providing students with transparent information about the demands of further education and the contemporary job market. Expanding data collection and reporting to the regional level will reflect the greater opportunities for Maryland graduates.

4P1 - Postsecondary Nontraditional Enrollment

Major strategies for non-traditional enrollment and completion are in the early stages of implementation, but showing promising results. For example, a new pre-engineering program at the secondary level that includes state-wide articulation in Maryland colleges has increased enrollment to 2,500 students while increasing the enrollment of females (19% compared to 11% in all non-traditional programs). The greatest challenge in this area is getting females to participate in male-dominated fields. Males far exceed the standard at 68% participation, while females have a participation rate of 5%.

4P2 – Postsecondary Nontraditional Completion

Focus on program completion for underrepresented students in non-traditional programs by way of the initiation of demonstration projects appears to have raised awareness of this issue. Targeted efforts will include: females, economically disadvantaged and limited English proficient students.

D. Improvement Strategies for Next Year

The following is a brief summary of improvement strategies for program year 2007-2008:

1S1 - Secondary Academic Achievement

- Develop and utilize performance data for CTE program improvement (Program Quality Index (PQI) Reports and data summary tools for use by recipients and stakeholders)
- Create success strategies for special needs students (state-wide work group in collaboration with DOSS)
- Align Perkins Core Indicators of Performance with School System Master Plans and central data collection systems

1S2 - Secondary Technical Achievement

- Require all new CTE programs to align to state standards as outlined in the CTE Policies and Procedures for the Development and Continuous Improvement of CTE Programs (annually updated each January)
- Promote the development of quality secondary and postsecondary CTE programs, including options for state-wide articulation, industry certification and licensure
- Fully implement CTE cluster frameworks and CTE Programs of Study (48 identified)
- Align Career and Technology Student Organizations (CTS0) standards and leadership development resources to CTE Model Programs

2S1 - Secondary Completion

- Provide leadership to LSS Guidance Supervisors on implementation of Maryland's Career Development Standards, *High Schools That Work*, and related curriculum resources
- Create success strategies for special needs students (state-wide work group in collaboration with DOSS)

3S1 - Secondary Placement

- Align Career Development Model with CTE cluster frameworks and integrate academic measures aligned with new state curriculum to ensure successful transition and development of state-wide articulation agreements
- Increase opportunities for early college experiences and student achievement of industry certifications

4S1 - Secondary Non-Traditional Enrollment

- Implement non-traditional demonstration grants and target intervention/support services to low performing groups (especially females entering male-dominated fields)

4S2 - Secondary Non-Traditional Completion

- Implement non-traditional demonstration grants and target intervention/support services to low performing groups (especially females entering male-dominated fields)
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1P1 / 1P2 - Postsecondary Academic / Technical Achievement

- Align Tech Prep resources to increase academic and technical rigor of CTE Programs
- Create success strategies for special needs students (state-wide work group in collaboration with Division of Student, Family and School Support (DSFSS), Division of Special Education/Early Intervention Services (DSE/EIS) and the Division of Rehabilitation Services (DORS)

2P1 - Postsecondary Completion

- Update information management systems and increase the percentage of students (across all subpopulations) earning a certificate, degree and/or industry certification
- Create success strategies for special needs students (state-wide work group in collaboration with DSFSS, DSE/EIS, and DORS

3P1 - Postsecondary Placement

- Provide leadership to college guidance and faculty on Maryland Career Development Model, CTE cluster frameworks, and state-wide programs of study
- Increased emphasis and availability of industry certification to increase employment and postsecondary placement

3P2 - Postsecondary Retention

- Provide leadership to college guidance and faculty on Maryland Career Development Model, CTE cluster frameworks, and state-wide programs of study

- Create success strategies for special needs students (state-wide work group in collaboration with DSFSS, DSE/EIS, and DORS)

4P1 - Postsecondary Nontraditional Enrollment

- Implement non-traditional demonstration grants and target intervention/support services to low performing groups (especially females entering male-dominated fields)

4P2 - Postsecondary Nontraditional Completion

- Implement non-traditional demonstration grants and target intervention/support services to low performing groups (especially females in male-dominated fields)