HELP WANTED:
Career and Technology Education in Baltimore City Public Schools

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Methodology

This Abell Foundation report was prepared largely by the research of Barbara Hopkins who worked with the Office of Career and Technology in the Baltimore City Public School System (BCPSS) over the last year to collect and analyze information and data.

The report was commissioned by Dr. Bonnie S. Copeland, CEO of BCPSS, and the High School Reform Steering Committee as a way to further inform the efforts of improving achievement in Baltimore City's zoned high schools.

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It is the intent of The Abell Foundation to support further study in the area of Career and Technology education within Baltimore City public schools.

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I. Executive Summary

CAREER & TECHNOLOGY: *organized educational activities that*

A. offer a sequence of courses that provides individuals with the academic and technical knowledge and skills the individuals need to prepare for further education and for careers (other than for careers requiring a baccalaureate, master's, or doctoral degree) in current or emerging employment sectors; and

B. include competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, and occupational specific skills, of an individual.[1]

Vocational education, first offered in America's public high schools in the early 1900s, has evolved over the last century, responding to different times, falling under different names, and assuming different forms. Career and Technology Education (CTE) today encompasses not just technical preparation for a specific field, but also the strong academic underpinnings and analytical and interpersonal skills that are widely deemed critical to success in the workplace. In Baltimore City Public School System (BCPSS), however, a combination of low funding, increased academic standards, and neglect have relegated CTE to the list of endangered initiatives.

An approach to CTE integrates an occupational sequence of courses with rigorous academic coursework can both target workforce needs and address concerns related to academic skills and assessments. CTE has also been shown to engage disadvantaged high school students at risk of dropping out in a way that a strictly academic curriculum cannot. CTE graduates are also more likely to earn higher wages and report greater success in college than their non-CTE counterparts.

Finally, the goals of CTE are consistent with the workforce needs of Baltimore City. CTE can provide students with the skills they will need following high school graduation, both in the workplace and in post-secondary training and education. In Baltimore City, demand is growing for individuals who need not necessarily have four-year degrees but possess specific sets of skills to fill increasingly technical jobs. Likewise, in City schools, more than a third of 12th grade students report that they plan to work (or work in conjunction with part-time college) directly following graduation.

Yet CTE in Baltimore City's public high schools has been decimated over the last five years, a victim of neglect. In the FY'05 budget alone, BCPSS's CTE budget was slashed by 57 percent. Boasting 280 teachers and a central staff of a dozen prior to 2002, CTE today has 94 teachers and one central office administrator. CTE is floundering at a time when the philosophy on which it was founded—to make public education meaningful and useful to all Americans—is also being devalued by national education policy.

The federal *No Child Left Behind Act* emphasizes academic achievement and assessment at the seeming expense of vocational-type programs. At the moment, Perkins funds, the traditional federal funding source for vocational and CTE programs, are at risk of being diverted to support increasingly academic high school programs.

In short, BCPSS has cast a blind eye, perhaps unintentionally, on CTE in recent years as the program takes a path towards extinction. Because BCPSS is in the throes of widespread high school reform; a review of CTE is a natural extension of that effort and should be part of the overall reform process. On the workforce development front, there is similar momentum. The Baltimore Workforce Investment Board, the primary oversight and strategic planning group for workforce development in the city, released a report in 2004 that clearly states the city's workforce needs and trends in the years ahead: Unemployment in Baltimore is nearly double that of the metropolitan region and state, yet the city is uniquely poised for rapid growth and development in expanding service industries tied to medicine, health care and technology. CTE speaks directly to this trend and could help define a key role for BCPSS as a critical partner in local workforce development.

Evidence strongly suggests that CTE belongs among BCPSS's high school reforms. That it should disappear without any consideration of need is troubling, and potentially a significant loss to BCPSS students, the foundation of Baltimore City's future workforce. It would therefore seem advisable for the Baltimore City Board of School Commissioners to explicitly address CTE and determine the effectiveness of its programs. Does CTE increase the graduation and post-high school employment rates for certain students, and at what cost? The future of the CTE program should be decided as the result of a conscious process, rather than unintentional oversight.

II. Background: The History of Career Education

The nation's public schools in the early 20th century focused largely on delivering a liberal education to an elite population heading for college. As a result, fewer than 10 percent of people ages 17 and older actually graduated from high school. While open to all, public schools were clearly not meeting the needs of a majority of the population. In 1914 the Commission on National Aid to Vocational Education demanded that public schools offer opportunities that were more accessible to all segments of the population. Vocational training, it was believed, would provide an educational alternative to students leaving school to work and, in so doing, make public education itself more democratic.[2]

Vocational education aimed to give students a reason to stay in school and complete more years of school, creating a more educated citizenry; it would create more efficient and productive workers; it would increase the earning potential of young people; and it would improve general education by requiring teaching methods that go beyond traditional book-learning and teach students to learn by doing.

The simultaneous demise of traditional paths for learning trade skills—in the home, on the farm and through apprenticeships—further underscored the need for vocational education to benefit large swaths of America's young population. The passage of the Smith-Hughes Act in 1917 allocated federal vocational funds and "provided for an alternative high school education . . . [that] emphasized separatism from the classical curriculum and called for a new one that would better meet the needs of the children of the working class, who, for the first time, were attending high school but were not headed for the professions."[3]

This notion of two separate high school paths for two separate student populations led to a decades-long emphasis on job-specific skills, to the near exclusion of academics and theoretical content. This emphasis was cemented by federal requirements that vocational fields of study be closely tied to specific industries, which in turn created separate, powerful and vast state vocational programs, with separate administrators and staffs, teacher training programs, and funding sources.

With passage of the federal Vocational Education Act of 1963, "Vo-Tech" became viewed less as a means to train young people to take jobs to bolster the economy, and more as a way to serve the poor, disabled and otherwise disadvantaged. Then, in the 1980s, the job-specific nature of vocational education came under fire, due in part to the 1983 publication by the National Commission on Excellence of *A Nation at Risk*, a report that showed academic excellence was more closely linked than job skills with productivity and economic competitiveness. While the resulting Carl D. Perkins Vocational Education and Applied Technology Act I (1984) set out to improve vocational programs generally, as well as vocational access and services for students with special needs, Acts II (1990) and III (1998) reflected the nation's overall educational

shift at the time toward improving student achievement. Following Perkins I, enrollment in vocational education among these special populations soared. Meanwhile, vocational enrollment among general students declined, as they opted more and more for academic courses of study. Perkins III went further, mandating not just a focus on student achievement but preparation of students for careers, further learning and post-secondary education, and state-based systems of performance accountability in which states must track student performance in academic, vocational and technical areas. Most significantly, Perkins over the years has accounted for the single largest pot of federal funds earmarked for secondary education.

Simultaneously, The School-to-Work Opportunities Act (STWOA), passed in 1994, sought to better prepare high school graduates for the workplace by infusing the general education curriculum with a stepped-up career focus. School-to-Work offered states and local jurisdictions federal funds to incorporate career awareness, career exploration and career preparation into their high school curricula, and forge partnerships with employers to create school-to-work pipelines for high-skill, high-wage jobs.

Federal policies have largely driven, and designated dollars have largely funded, these career programs. Having traditionally been run by vocational educators for vocational students, CTE programs have eluded general education policymakers' and leaders' radar.

The New Radar: No Child Left Behind

The focus on academic skills and assessment that characterized public education in the 1990s can be traced to two major developments. First was the widespread belief that economic success hinges on having a four-year college degree, a belief borne out by federal education statistics that showed more than a doubling of college graduates in the United States between 1970 and 1999.[4] Second were the educational reforms that focused solely on academic skills, and the response by states to measure academic achievement through high-stakes tests.[5] Career and Technology education has responded to this challenge by the development of Tech Prep programs and career academies. Tech Prep is a sequenced program of career study that combines at least two years of secondary and two years of postsecondary education, while career academies combine academic and technical curricula in 9th through 12th grades around a career theme and establish partnerships with employers to provide work-based learning opportunities.

In January 2002, President Bush signed the *No Child Left Behind Act (NCLB)* into law, a reauthorization of the Elementary and Secondary Education Act that stresses academic achievement in public education, seeking to ensure it through a rigorous carrot-and-stick system of accountability. While NCLB poses opportunities for raising standards, it perpetuates the notion that academic achievement leading to a college degree is the preferable outcome for all Americans, directing federal education dollars, state accountability and local school system priorities toward that end and away from career-focused work.

III. Is CTE Valuable?

i). The National Case for CTE

Numerous recent studies have shown CTE graduates to have better skills and earn higher salaries than their non-CTE counterparts upon entering the workforce. This body of research also shows that CTE graduates are more likely to succeed in college. But perhaps the most important data-backed fact about CTE is that its students are generally less likely to drop out of high school than their non-CTE counterparts.

CTE participants are more likely to be at risk than the general school population.
Data from around the country indicate that CTE enrolls students who are most at risk of not completing high school.[6] According to Agodini, Uhl, and Novak, vocational students are more likely to be 1) those with low academic achievement, 2) those with low educational aspirations, and 3) those from low socioeconomic backgrounds.[7]

CTE lowers high school dropout rates.
Perhaps most significant among the benefits of CTE is its ability to engage and retain students during their high school years. Studies of career programs, career academies and tech prep programs over the last decade have produced a wealth of data tying CTE to low high school dropout rates, particularly among students who are most at-risk for dropping out.

Research by Stern et al.(1998) identified 10 studies linking career academy students with higher graduation rates or lower dropout rates than comparison groups. In one study, the one-year dropout rate was between 2 and 6 percent for career academy students as compared to 10 to 21 percent for the comparison groups.[8] In a similar study of three cohorts of students in a single large urban school district, Maxwell and Rubin (2000) found that career academy students dropped out at less than half the rate of non-academy students (7.8 versus 18 percent). They concluded that career academies affect dropout and graduation rates indirectly by increasing knowledge and skills (as reflected in GPA), which in turn increases the likelihood of graduating.[9] (Maxwell and Rubin, 2000).

A study of tech prep students in Texas by Carrie H. Brown revealed the same CTE retention trend.[10] Brown compared five cohorts of tech prep students—247,778 in total—to non-tech prep CTE and general education students in Texas. The dropout rates for the tech prep students were consistently lower than those of the comparison groups, a result that also held true when dropout rates were disaggregated for white, Hispanic, African American, at-risk and economically disadvantaged subpopulations.

CTE is particularly effective for students most at risk of dropping out.
The above-noted studies suggest that CTE is indeed effective in keeping students in school, regardless of ability or socioeconomic background. Further research actually

suggests that CTE is particularly effective in the case of students who are at risk of dropping out of school. Stephen B. Plank (2001) analyzed the mix of academic and CTE courses in high schools and found that the risk of dropping out among students already at-risk of leaving school, is lowest when students have completed three CTE courses for every four courses in core academic subjects. The research suggests there may be a mix of CTE and academic courses with the potential to lower schools' dropout rates.[11]

CTE can increase the likelihood of success in college.
The career focus characteristic to CTE can also help students succeed in college. In *Is High School Career & Technical Education Obsolete?* (2004), Gray reports that students who enter college with specific career goals will overcome academic deficiencies in order to graduate, while those without a purpose are more apt to leave, even if they are academically talented.

Furthermore, Michael Harvey's research (2002) has shown that special needs students participating in CTE are more likely to graduate from high school, to be working in higher-paying trades or to enroll in post-secondary education.[12]

CTE leads to better employment outcomes for those who choose work after high school.
Nationally, one-third of high school graduates directly enter the workforce as opposed to college; similarly, one-third of Baltimore City public school students report that they are pursuing full-time work or part-time work directly upon graduating.[13] Furthermore, less than 60 percent of students who enter 9th grade graduate from Baltimore City high schools four years later, and need more reasons to stay in school.

There is evidence that participating in a quality career program can positively impact post-high school job placements. In a 2001 study of tech prep programs, D.D. Braag reported that graduates from mature tech prep programs were more likely than their non-tech prep peers to: be employed, and, among all working graduates, to be employed full-time; to hold highly skilled and technical jobs; and to receive larger wage increases. They were also slightly more likely to enroll in two-year, post-secondary institutions.[14]

ii). The Case for CTE in Baltimore City

Baltimore ranks sixth from the bottom among the nation's 100 largest cities when it comes to labor force participation. Just 57 percent of the City's working-age residents actually work. According to a December 2003 article in *The Baltimore Sun*, "Though

the City is making well-publicized strides—with West-side redevelopment and ritzy waterside townhouses—it's being held back by the weight of about 200,000 residents 16 and older who don't have jobs."[15] Roughly half of all high school students drop out and nearly one-third of City adults lack a high school diploma or its equivalent; yet because many jobs require this credential, there are few positions for those who do not have it. Such realities conspire to "drag the Baltimore region down the list" of the best-ranked metropolitan regions on a variety of measures.

A. Baltimore City's Targeted Workforce Effort

The Baltimore Workforce Investment Board (BWIB) studies and guides workforce development in an effort to make sure that the City is poised to benefit from new business growth opportunities. In a March 2004 workforce report, *Baltimore's Workforce System at Work*, BWIB articulates in detail the possibilities for an educated, skilled workforce. For decades manufacturing, once the driver of Baltimore City's economy, has been in decline. In 1970 it accounted for 20 percent of all local jobs; by 2000 it accounted for just 8 percent. But in recent years, numerous opportunities for employment growth have emerged. Health, education and social services currently employ more than a quarter of the city's workers. "This means Baltimore is also well positioned for rapid growth and development in services industries like health care and medical technology, financial services, information technology, and biotechnology," the BWIB report states.

Top Five Employment Sectors

Industry trends support those prospects. As part of the 2004 report, BWIB identified five industry sectors for targeted workforce development in Baltimore. Based on criteria such as industry growth, vacancy rates, wage growth (after adjustments for inflation) and career ladder opportunities, these sectors pose the best prospects in years to come for citizens of working ability and age.

- **Health and Bioscience**
  The Healthcare/Life Sciences sector is the largest employment industry sector in Baltimore City, employing 67,200 individuals, or 17 percent of the total workforce, as of July 2003. The industry has experienced considerable growth statewide and was one of just three sectors in Baltimore City to grow between 1990 and 2002—to the tune of 9.3 percent. It has high vacancy rates. Wages grew 26 percent during the 1990s. Career ladder opportunities are easily identifiable, and local employers have been receptive to further development of career pipeline strategies. Finally, high-demand jobs requiring little skill or education exist within the health and bioscience fields.

- **Business Services**
  Business Services comprise the City's second largest employment industry sector, employing 45,000 people, or 12 percent of the workforce, as of July 2003. Locally,

the industry grew 9.3 percent from 1990 to 2002. Wages grew 51 percent statewide from 1990 to 1999. It is an industry where career ladders are less obvious, but high-demand, jobs requiring little skill or education do exist.

- **Hospitality and Tourism**
  Hospitality and tourism employed 30,300 people in Baltimore City, or 8 percent of the workforce, as of July 2003. Wages in the industry are characteristically low, but they increased 36 percent statewide during the 1990s. The industry has many entry-level jobs for low-skill workers and local employers are interested in developing existing career ladders further.

- **Construction Development**
  With 12,300 jobs the construction industry accounts for 3 percent of total employment in the city as of July 2003; for the Baltimore Metropolitan area those figures are 74,200 jobs and 5 percent of employment respectively. Average weekly wages increased 46 percent between 1990 and 1999, and there is high demand for workers in many jobs requiring little education.

- **Computer, Internet and Data Services**
  This sector represents 5.5 percent of Baltimore's employment. Between 1991 and 1999, information technology and computer-related services employment grew 10 percent statewide. Wages increased 47 percent during the 1990s, and of all industries in Baltimore, this sector pays the highest weekly wages. Although continued employment growth is uncertain, national studies have shown that there are more computer-related jobs across all industries than there are within the information technology industry itself.

B. Many Baltimore City Public School Graduates Seek Work

Between 1999 and 2002, roughly 35 percent of BCPSS respondents to the Maryland State Department of Education's Pre-Graduation Survey reported that they planned to seek employment following graduation, with about half of this number acknowledging that they planned also to enroll in college.

Table 1: Baltimore City Public School Graduates' Plans for Either Employment or Employment/College Attendance

Students who:	1999	2000	2001	2002
Planned to Seek Employment	545 (16%)	607 (19%)	506 (15%)	523 (15%)
Planned to Seek Employment and Attend College	730 (21%)	548 (17%)	548 (17%)	654 (19%)
Total # of Respondents	3413	3177	3330	3413

Source: MSDE, 2004.

C. Better Connecting Supply and Demand

Given the above demand and need, there is a role for BCPSS to play in placing its work-bound graduates while also being part of the solution to Baltimore's workforce woes. In a June 2003 report, *A Business Perspective on Baltimore City Neighborhood High School Reform*, BWIB urged BCPSS's High School Steering Committee to adopt a stronger career focus. "Career exploration and training should be a vital component of every student's educational experience . . . [and it] must be considered carefully in the design of Baltimore's new neighborhood and innovation high schools," the report asserted, referencing current BCPSS reforms in which neighborhood high schools are being overhauled and several small, independent innovation high schools are being formed. The report makes its case simply: "Baltimore City's students represent this metropolitan area's greatest hope and challenge to building a stable and progressive economy . . . [and] high schools with an authentic workplace focus will engage and prepare students most effectively for post-secondary education and employment opportunities."

IV. Meeting The Demand: The State of Career and Technology Education in BCPSS

Data reflecting both the success of career and technology education in other school systems and local economic realities suggest that Baltimore City would not only benefit from, but thrive with a well-conceived, well-implemented high school CTE program.

Yet a close review of CTE as it exists in Baltimore City today reveals neglect. Ranging from under-enrolled programs to funding disparities among programs based neither on numbers nor need to a pervasive lack of oversight, it is clear that CTE in its current form in Baltimore is failing to serve students effectively and efficiently, and to live up to its potential as outlined above.

i). Overview of BCPSS's CTE Program on Paper

> *Our mission . . . is to prepare students with the academic, career and occupational competencies necessary to successfully compete in the global, technological 21st century economy and technological society. Our philosophy . . . is that all stakeholders must share responsibility for implementing career and technology education programs, activities and services to support the workforce development needs of the Baltimore metropolitan area.*
>
> *– Cheryl Jones, Director of the Office of Career and Technology Education, June 1999*

Dr. Jones' statements of six years ago stand as the school system's most recent, most detailed description of Baltimore City's CTE program available for public review. Collectively, various other state and city sources provide a basic program overview.

CTE programming in Baltimore City is administered and coordinated by BCPSS's Office of Career and Technology Education which reports to the Chief Academic Officer but is not currently aligned with the High School Area Office.

Within CTE there are 10 career clusters, identified by the Maryland State Department of Education (MSDE) and used by school systems statewide to organize their CTE offerings. According to a 2003 MSDE report, *Maryland Career Clusters: Restructuring Learning for Student Achievement in a Technologically Advanced, Global Society*, each cluster "encompasses a range of careers based on essential economic activities,

similar interests, common skills, and training required by those in the field." These 10 clusters are:

Bold denotes one of BWIB's five target industry sectors

- Arts, Media, and Communication
- B**usiness Management and Finance**
- **Consumer Services, Hospitality, and Tourism**
- **Construction and Development**
- Environmental, Agricultural, and Natural Resources Systems
- **Health and Biosciences**
- Human Resource Services
- **Information Technology**
- Manufacturing, Engineering, and Technology
- Transportation Technologies

Each career cluster is broken down into a number of pathways representing the range of careers within the cluster and the requirements for advancement. BCPSS's 10 clusters span 53 programs (described in greater detail in Appendix A), which comprise sequences of four, year-long courses that students typically take in their junior and senior years of high school, although some students start their CTE coursework as early as 9th grade. In FY'03, these 53 programs were offered at a total of 146 locations at the three traditional vocational schools (Carver, Edmondson-Westside, and Mergenthaler) and the zoned high schools. Students interested in one of the three vocational schools must qualify through an admissions process; the career and technology component in these schools is more extensive than that offered in the city's zoned high schools.

BCPSS CTE students are subject to the same academic requirements as non-CTE students. In essence, they choose career courses as their elective credits. Students who complete the entire CTE sequence in their field of study are referred to as "completers;" students who take the first two or three courses within the sequence are referred to as "concentrators."

CTE Funds cut by 57 percent in 2004-05

CTE in Baltimore City receives two types of funding. The largest of these comes from the local "Education Fund," defined by the school system in budget documents as "a fund comprised of General Funds and State education aid used to support the basic

education program of the Public Schools." These funds consistently represent the bulk—upwards of three-quarters—of the CTE budget, and support teacher salaries. Grants provide a second funding source, with the vast majority of grant funds coming from the federal Perkins program.

In FY'03, the last year for which actual (versus projected) CTE budget figures were available, BCPSS's local funding for CTE was $15.4 million, 94 percent of which ($14.5 million) covered teacher and staff salaries, according to *BCPSS's Proposed Fiscal Year 2003-2004 Operating Budget*. That year, there was a CTE office staff of approximately 12 persons, and 280 CTE teachers.

ii). Baltimore City CTE in Practice

A. CTE Programs: Largely Consistent with Baltimore's Workforce Demands

BCPSS's CTE offerings comprise 53 approved programs organized around 10 career clusters.

- Five of these 10 clusters correspond directly with BWIB's list of target industries: Health and Bioscience; Business, Management and Finance; Construction and Development; Consumer Service and Hospitality; and Information Technology.

- Within the Health and Biosciences cluster, seven of the 10 programs are on the Maryland Higher Education Commission's list of 25 high-demand healthcare jobs: Biotechnology, Emergency Medical Technician, Medical Assisting, Nursing Assisting, Nursing, Pharmacy Technician and Rehabilitative Therapeutic Technician.

- Four of the 10 Health and Biosciences programs—Biotechnology, Nursing Assisting, Pharmacy Technician and Surgical Technician—correspond with jobs on the Baltimore Healthcare Coalition's list of seven targeted professions. (The Coalition spans healthcare providers, funders, education and training providers who work to address unemployment, underemployment and healthcare work-force shortage issues in Baltimore City by identifying healthcare career pathways leading to economic independence and training city residents to enter them.)

B. However, one-third of enrollment is in two programs, and many programs are severely under-enrolled

In terms of programs, 30 percent of CTE students participated in one of two programs in FY'03: Administrative Technology or Early Childhood Education. Together, the top 10 CTE programs accounted for 67 percent of total CTE enrollment in FY'03.

Table 2: BCPSS Top Ten Career Programs by enrollment 2003

CTE Program	2003 Enrollment	% of total CTE Enrollment
1. Administrative Technology	1222	19
2. Early Childhood Education	710	11
3. Graphic Printing/Communication	478	7
4. Criminal Justice/Law	446	7
5. Automotive Technology	347	5
6. Drafting/CAD	332	5
7. Culinary Arts	292	4.5
8. Carpentry	231	4
9. Telecommunications	178	3
10. Electrical Construction	174	3

The programs with the least enrollment for the same time period were: Cooperative Education, Design Technology, Emergency Medical Technician-B, Firefighting, Floral Design, Horticulture, Media Production Technology, Medical Assisting, Networking Systems, Nursing, Nursing Assisting, Project-Lead-the-Way Pre-engineer, Secretarial and Administrative Science, Office Technology, Automotive Service, Biotechnology, Painting and Decorating, Diesel Technology, Surgical Technician Assistant, Drycleaning, Welding, and Plumbing. Some of these programs clearly should be eliminated, while others, such as Biotechnology, Engineering and Nursing, are prime candidates for expansion.

C. CTE Enrollment: Numbers are Comparatively Low and Dropping

1. One in four high school students is enrolled in CTE.

In FY'03, 6,488 Baltimore City high school students were enrolled in a CTE course or courses – approximately 25 percent of the total high school population. Among this population, 91 percent were African American and 7 percent were white. That same year, there were slightly more male CTE students (51 percent) than female students, and a large percentage of CTE students were classified with "special needs," a catego-

ry that includes students who are disadvantaged,[16] disabled[17] or participants in the English for Speakers of Other Languages Program. Among those with special needs, 47 percent were disadvantaged, a statistic which grew by 11 percentage points between FY'00 and FY'03. Another 13 percent were classified as special education, a statistic which has remained relatively stable over the same period of years. Given that 14.5 percent of Baltimore's high school population is designated special education, CTE does not appear to be heavily serving those with the greatest propensity for vocational education – perhaps as a result of Baltimore's historical view of vocation education as a selective admission option at Carver, Mergenthaler, and Edmondson-Westside. Less than 1 percent participated in the English for Speakers of Other Languages Program.[18]

2. More than half of all CTE students attend zoned high schools.
While slightly more than one-third of students enrolled in CTE programs attend Baltimore's established vocational schools, 56 percent attend a zoned high school. In fact, Patterson and Walbrook High schools were among the top five City high schools with respect to CTE enrollment in FY'03. (Appendix F)

Table 3: Top Ten BCPSS Schools CTE Enrollment by School FY'03

School	Type	Enrollment	2005 Status
Mergenthaler	Vo-Tech	934	
Carver	Vo-Tech	816	
Patterson	Zoned	753	
Walbrook	Zoned	599	Restructured Fall 2005
Edmondson-Westside	Vo-Tech	556	
Northwestern	Zoned	547	
Forest Park	Zoned	483	
Southwestern	Zoned	380	Restructured Fall 2004
Frederick Douglass	Zoned	354	
Southern	Zoned	324	Closing June 2005

D. Baltimore CTE enrollment lags behind that of other Maryland school systems

Indeed, CTE accounts for a significant proportion of BCPSS high school students overall. But when compared to other Maryland school systems in the region, Baltimore City's enrollment figures reflect CTE participation levels that are disproportionately low.

Table 4: CTE Enrollment in Baltimore City and in Anne Arundel, Baltimore and Montgomery Counties, FY'03

Public School System	Baltimore City	Anne Arundel County	Baltimore County	Montgomery County
Total High School Enrollment	25,543	22,600	32,587	42,221
Total CTE Enrollment	6,488	10,644	11,237	14,821
CTE as a % of High School Enrollment	25.4%	47.2%	34.5%	35.1%

Source: Local School Program Enrollment LSS 2003, MSDE, 2004

Baltimore City is lagging in CTE enrollment compared to nearby jurisdictions. In these counties, where the high school populations are either comparable in size to the City's or larger, BCPSS's CTE enrollment of 6,488 students in FY'03 seems meager. Anne Arundel County, for example, boasted a CTE enrollment of 10,644, or 40 percent more CTE students than in Baltimore City.

E. Baltimore's CTE enrollment is not only low but declining.

Not only do these numbers for Baltimore City seem low, especially given the local demand for workers with the kinds of skills CTE cultivates; they are falling. Across BCPSS's total of 53 approved CTE programs there was an overall enrollment decline of 16 percent between FY'00 and FY'03 (Appendix B).

Table 5: Baltimore City CTE Enrollment 2000-2003

# programs	# locations (2003)	Enrollment FY 2000	Enrollment FY '01	Enrollment FY '02	Enrollment FY '03	% Change 2000-2003
53	146	7687	7638	7763	6488	-15.6

Source: Adapted from MSDE 2000b, 2001b, 2002b, 2003

F. CTE Enrollment Down in BWIB Target Career Areas

CTE enrollment is down 27 percent for the five career clusters that coincide with BWIB's target industry sectors, and which accounted for 60 percent of BCPSS's total CTE enrollment in FY'03.

Table 6: Trends in CTE Enrollment Rates Grouped According to BWIB's Targeted Industry Sectors

Cluster	Enrollment			
	2001	**2002**	**2003**	**Change 2001-03**
Health and biosciences	246	323	238	-3.3%
Business, Management and Finance	2557	1583	1511	-40.9%
Construction and Development	1022	1433	1236	20.9%
Consumer Services Hospitality and Tourism	798	1030	654	-18.0%
Information Technology	737	398	273	-63.0%
Enrollment Totals	**5360**	**4767**	**3912**	**-27.0%**

Source: Program Enrollment Summaries and PQI Reports 2001-2004, MSDE

Given that these clusters represent the majority of CTE students and, perhaps more importantly, the industries targeted for the bulk of Baltimore City's projected economic growth in years to come, individual program declines within each cluster warrant a closer look.

1. The **Health and Biosciences** cluster includes nine programs, seven of which are on the Maryland Higher Education Commission's list of 25 high-demand healthcare jobs. While some of these programs have seen huge jumps in enrollment between FY'01 and FY'03—Pharmacy Technician Assistant increased from 17 to 62 students and Surgical Technician Assistant increased from 19 to 93 — given current industry growth and workforce demand, these are trends that should be expected. Unexpected, however, under the circumstances, have been the major enrollment declines seen in two other of these seven high-demand programs: Emergency Medical Technician and Medical Assisting, both of which have seen enrollments dwindle from 11 and 47 students, respectively, to none. (The Nursing and Nursing Assistant programs also showed zero enrollment for FY'03 because both programs are relatively young and will not begin to show enrollment until FY'05, according to CTE Director Cheryl Jones.)

2. An overall decline of 41 percent in the **Business Management and Finance** cluster between FY'01 and FY'03 is troubling, given that Business Services repre-

sents the city's second largest employment industry sector. Highlights among this cluster's four programs include a significant enrollment increase in International Business Marketing from FY'01 to FY'03—from 22 students to 64—countered by a sharp enrollment drop in Administrative Technology, from 2,371 students to 1,279. This decline is especially significant because Administrative Technology accounted for 86 percent of all Business Management and Finance enrollees in FY'03.

3. **Construction and Development** was the only cluster among the five to see an overall enrollment increase, but five of the 10 programs within it experienced enrollment declines from FY'01 to FY'03, all but one of them significant: Cabinet Making (-13 percent), Construction Technology (-3 percent), Electrical Construction (-19 percent), Mason and Tile Setter (-35 percent), and Welding (-25 percent). Project Lead the Way Pre-Engineer showed zero enrollment across all three years.

4. **Consumer Services, Hospitality and Tourism** saw an enrollment decline of 18 percent due to declines in two of its seven programs between FY'01 and FY'03: Cosmetology went from 259 students to none, and Hospitality went from 123 to 56. The Academy of Travel, Tourism and Hospitality showed zero enrollment across all years; according to BCPSS's Jones, this is because students in this cluster are counted as part of the Hospitality cluster. Meanwhile, the lack of FY'03 enrollment in Cosmetology is curious, given that MSDE reported 48 completers in Baltimore City for that fiscal year.

5. **Information Technology** saw a dramatic 63 percent decline in enrollment between FY'01 and FY'03. Among the three programs, enrollment in Electronics/Computer Repair dropped 62 percent and enrollment in Programming and Software Development dropped 63 percent. Networking Systems showed zero enrollment across all three years.

The recent, and (in some cases, sharp) declines in CTE enrollment raise serious questions about the scope and relevance of the program as it exists today.

G. Number of CTE Programs: Meeting Demand or Too Many?

CTE's declining enrollment trends, coupled with the comparisons that show nearby jurisdictions serving many more CTE students than Baltimore City, raise additional questions about the scope and content of local CTE programming.

With 53 pathways to choose from, BCPSS students have more CTE options than their peers in surrounding jurisdictions:

Table 7: CTE Programs in Baltimore City and Anne Arundel, Baltimore and Montgomery Counties, 2003

School System	Baltimore City	Anne Arundel County	Baltimore County	Montgomery County
CTE Enrollment	6,488	10,644	11,237	14,821
CTE Programs	53	46	51	34
CTE Locations	146	121	197	147

Source: Program Enrollment LSS Summary, Baltimore, MSDE, 2003

This comparison of program numbers begs the question: If BCPSS has between 39 percent and 56 percent fewer CTE students than nearby jurisdictions, why does it offer more CTE programs? Furthermore, on average, there are 44 students in each of the program locations, a number that is probably not cost effective. These questions become more pressing in light of the enrollment declines noted above.

Seven of the 53 programs had zero enrollment in FY'03. In some cases BCPSS officials have explained these enrollment deficits by stating that the programs are either too new to show enrollment or have been bundled with other programs for tracking purposes. These enrollment deficits as depicted in BCPSS documents raise serious questions about student access to, and demand for, several CTE programs. BCPSS should understand why enrollment has declined so dramatically in individual programs across all five of the primary clusters.

While some programs are under capacity, others are noticeably absent:

- Within BCPSS's **Health and Biosciences** cluster, there is no programming aligned with MSDE's Engineering/Environmental Services pathway, which involves "implementing aseptic procedures, aesthetics, and resource management . . . [and] maintaining and supporting biomedical technology and the physical facility." Nor is there programming representing the Diagnostic Services pathway which includes radiography, a field the Baltimore Healthcare Coalition has identified as one of the seven professions for which it is training prospective workers.

- One pathway lacking programming within the **Construction and Development** cluster is Planning, which, according to MSDE, involves the "planning of construction projects, including the market analysis that determines the need for the project and builds public-private support; environmental impact; and the financial analysis that determines costs and financing requirements." Planning is a critical component of construction and development and is offered in other school sys-

tems, including Anne Arundel County Public Schools. Its absence in BCPSS should be examined.

The **Consumer Services, Hospitality and Tourism** cluster lacks programming in Merchandising/Buying, a pathway represented by programming in Anne Arundel, Baltimore and Montgomery counties' high schools.

H. CTE Student Outcomes: Mixed Reviews

Available data on Baltimore City CTE student outcomes underscore both the opportunities and the problems that exist within the program. CTE programs show mixed results overall in terms of student performance, and the limited data that can be retrieved do not demonstrate definitive success. A look at some general outcomes, however, offers a glimpse into the potential of CTE programs to keep students in school and to improve their post-graduation prospects, consistent with national research data.

1. Completion Rates Are Low but Increasing

Generally only 15 percent of the total number of students enrolled in any CTE program complete the entire course sequence in any given year (Appendix C).

Table 8: Baltimore City CTE Completers Compared to Enrollment 2001-2003

	Enrollment FY '01	Enrollment FY '02	Enrollment FY '03
No. of students enrolled in CTE	7638	7763	6488
No. of Completers	1022	1099	1044
Completion as a percent of enrollment	13.4	14.2	16.1

Adapted from MSDE 2001b, 2002b, 2003b

While the total number of CTE completers (those students who complete an approved sequence of CTE courses) increased by a modest 2 percent over the three years, there was a 20 percent increase in the percentage of CTE completion rates when compared to enrollment; within the five clusters aligned with BWIB's targeted industries CTE completers increased just 1.4 percent during those years. Completion rates represent the number of students who took and completed the entire sequence of courses in a given program versus just one or two. Given the growth prospects within these five primary clusters, it is worth investigating why more students are not completing or opting to take the entire sequence of career courses.

Table 9: Trends in CTE Completion Rates Grouped According to BWIB's Targeted Industry Sectors

	Completers			
Cluster	**2001**	**2002**	**2003**	**Change 01-03**
Health and Biosciences	27	15	19	-29.6%
Business, Management and Finance	345	345	326	-5.5%
Construction and Development	190	161	141	-25.8%
Consumer Services Hospitality and Tourism	122	111	163	33.6%
Information Technology	42	82	87	107.1%
Completer Totals	726	714	736	1.4%

Source: Maryland State Department of Education, 2001-2004

Because BCPSS enrollment figures are not disaggregated by concentrators and completers, there is no real correlation between CTE enrollment figures and completion rates, and it is difficult to exact any conclusions from the completion rate data. What we do know, however, is that higher completion rates would yield more skilled workers for high-demand jobs in Baltimore City and arguably give students who have identified areas of career interest a better foundation with which to enter the workforce or pursue further training or study following graduation from high school.

2. Perkins Indicators Show BCPSS Competitive but declining compared with other Maryland school systems

BCPSS receives approximately $2 million per year in federal Perkins funding to support its CTE programs. In exchange, the Perkins program requires BCPSS to track CTE student progress annually across a number of performance indicators – some of which appear to be more critical measures than others. It is noteworthy that most of the data available regarding Baltimore's CTE results comes from this mandatory state/federal accountability system.

Table 10: BCPSS CTE (Perkins) Outcomes: Baltimore City vs. Maryland 2001-2003

Indicator	2001	2002	2003	Change 01-03	Statewide 2003
Percentages of CTE concentrators who achieve an overall GPA of 2.0 or higher	68.6%	63.4%	68.4%	-0.25%	75.9%
Percentages of CTE concentrators who achieve a technical GPA of 2.0 or higher	77.5%	72.4%	78.1%	0.8%	78.95%
Percentages of CTE completers who meet University System of Maryland requirements	70.96%	50.6%	58.7%	-17.3%	41.3%
Percentages of CTE concentrators who receive Maryland high school diplomas or certificates	100%	100%	100%	0%	98.4%
Percentages of CTE completers who enter post-secondary education, employment or the military within two quarters of graduation	76.2%	77.4%	70.4%	-7.6%	72.9%
Percentages of under-represented students enrolled in non-traditional CTE programs	31.9%	25.3%	27.96%	-12.4%	39.3%
Percentage of underrepresented students completing non-traditional programs	32.1%	27.3%	24.9%	-22.3%	25.4%

Source: Local Perkins Accountability Report (LPAR)—Summary Report 1999-2003: Baltimore, MSDE 2004

Shaded rows represent BCPSS outcomes that exceed or match statewide outcomes

As the table indicates, BCPSS's CTE outcomes approximated or surpassed statewide averages on several measures in recent years.

- During FY'03, 68 percent of CTE concentrators achieved an overall grade point average of 2.0 or higher, not far behind CTE students statewide (79 percent). During FY'02 that figure for BCPSS CTE students was 63 percent; in FY'01, 69 percent.

- During FY'03, 78 percent of CTE concentrators achieved a technical grade point average of 2.0 or higher, as compared to 79 percent of CTE students statewide. During FY'02 that figure for BCPSS CTE students was 72 percent; in FY'01, 77 percent.

- During FY'03, 59 percent of CTE completers met University System of Maryland entrance requirements, surpassing by 18 percentage points CTE completers statewide. During FY'02 that figure for BCPSS CTE students was 51 percent; in FY'01, 71 percent.

At the same time, the table shows that BCPSS reported declines across five of these seven indicators between FY'01 and FY'03. In addition, 100 percent of CTE concentrators within BCPSS received a Maryland high school diploma or certificate between FY'01 and FY'03, compared to 98 percent statewide—a statistic that is inaccurate due to the flawed process by which Baltimore City and other jurisdictions count and track CTE concentrators, according to Jeff Lucas, MSDE program manager. Because the

identity of these courses and changes to them are often not communicated to every school employee responsible for submitting and tracking data, the number of concentrators—students who take one or two courses within a given CTE program—is often misstated. Also, once students are identified as CTE concentrators, BCPSS and other school systems have trouble tracking what happens to them, including whether or not they persist to graduation, Lucas reports. The result is that the number of CTE completers who receive a high school diploma gets reported (not concentrators, as stipulated by Perkins).

Nevertheless, there is good news: Nearly 59 percent of BCPSS's CTE completers met University of Maryland requirements in FY'03, exceeding by a large margin the statewide average of 41 percent. BCPSS's CTE students also came within a percentage point of the statewide average for the percentage of CTE concentrators who achieved a technical GPA of 2.0 or higher in FY'03.

3. CTE Completer students earn more high school credits than their non-CTE peers

According to the Maryland Code of Regulations (COMAR), students must be enrolled in a Maryland public school system and earn a minimum of 21 credits across a range of "specified core credits" in order to receive a high school diploma. BCPSS's CTE programs require that students take more than 21 credits to be considered a CTE "completer." As such, CTE completer students graduate with more credits overall than those students who do not complete a CTE program, as shown in the table below.

Table 11: Credits Earned by Baltimore City CTE Completer Graduates and Non-CTE Completer Graduates FY'01 and FY'02

Class		Total	21-25 credits	%	26-31 credits	%	32 or more credits	%
2001	Completers	881	241	27.4%	303	34.4%	300	34.1%
	Non-Completers	2449	746	30.5%	930	38.0%	671	27.4%
2002	Completers	921	228	24.8%	288	31.3%	347	37.7%
	Non-Completers	2516	864	34.3%	838	33.3%	616	24.5%

Source: MSDE 2004

More CTE completer graduates earned in excess of 32 credits by the time they graduated than non-CTE completer graduates. These results are significant, given the vast number of BCPSS high school students who fail to graduate at all. They are also a testament to the ability of CTE programs to engage and retain students.

4. CTE completers more likely to report intentions to work or work/school after high school

During FY'99 through FY'02, graduating high school seniors in Baltimore City were given a pre-graduation survey, the results of which can be found in Appendix D. In each of these four years, more CTE completers than non-CTE graduates indicated plans for attending a two-year college full-time after graduation. Similarly, more CTE completers than non-CTE graduates said they planned to seek employment in a field related to their program of study. Fewer CTE completers than non-CTE completers however reported plans to attend a four-year institution directly after high school. Finally, in three of the four years, more CTE completers than non-completers cited plans both to seek employment and attend college part-time following high school (Appendix D).

V. Identifying The Issues

i). No Role for CTE in Current Plans, Little Accountability

A hard look at CTE as it is currently operating in Baltimore City high schools reveals numerous deficiencies, many of which are rooted in a lack of coordination and oversight. Perhaps the starkest example of this lack of accountability is the overall neglect of policies to guide and influence the administration of BCPSS's dwindling CTE program.

A. CTE largely ignored in the BCPSS High School Reform Initiative and Master Plan

BCPSS is in the process of implementing aggressive high school reforms, yet CTE is not represented in BCPSS's reform process in any meaningful way—either as the beneficiary of reforms, or as a reform strategy for solving other problems. To the extent that the school system has laid out goals for improving CTE in recent years, these goals have gone largely unmet.

The Blueprint for Neighborhood High Schools, released by BCPSS in October 2001, is the document guiding the school system's high school reform, namely the creation of several new independent "innovation" high schools and the transformation into smaller learning communities of its nine large neighborhood high schools which enroll more than half of Baltimore's CTE students. The reform effort is supported by a $21 million grant from national and local foundations that is administered by the High School Steering Committee.

According to the *Blueprint*, high school reform plans will be evaluated based on three principles: "strong academic rigor, small supportive structures, and effective, accountable instruction and leadership." To promote the first, the *Blueprint* requires a "focus on a rigorous, relevant, standards-driven curriculum based on state standards; University of Maryland entrance requirements; career standards; and life skills, such as problem solving, resource management and communication." The *Blueprint* also advocates establishing "strong partnerships with . . . employers" and developing "ways to create collective responsibility for student success that is shared across all education stakeholders"—including employers. These statements imply a role for CTE.

The *Master Plan II: 2002 – 2008*, meanwhile, BCPSS's system-wide road map for reform, targets CTE as one of the strategies for increasing student achievement. The plan's sub-strategies are to accomplish the following between FY'03 and FY'05:

- "Ensure that career and technology education programs meet industry standards." BCPSS will achieve this by having the CTE industry advisory boards review curriculum and CTE program facilities; provide work-based learning experiences such as internships and job-shadowing; provide professional development for teachers; and provide field trip opportunities for students.

- "Ensure student attainment of challenging state-established academic and career and technology education skill proficiencies." BCPSS will do this by providing technical and instructional training to teachers to achieve annual increases in CTE student performance on the Perkins indicators—the percentage of CTE concentrators who achieve a cumulative GPA of 2.0 or higher; the percentage of CTE completers who receive a Maryland diploma or certificate; and the percentage of CTE completers enrolled in post-secondary education, employed, or in the military two quarters after graduation.

- "Ensure student attainment of a secondary school diploma or its recognized equivalent." To do this BCPSS will increase the number of students who select CTE programs and apply best practices to provide interventions for struggling CTE students.

- "Ensure career and technology education students' placement in, retention in, and completion of post-secondary education or advanced training, placement in military service, or placement or retention in employment." To do this BCPSS will show the relationship between higher education and upper-level careers and enhance opportunities for students to participate in Honors and AP courses largely through its partnership with Baltimore City Community College.

B. Will Plans for the Future Be Implemented?

BCPSS's reform documents speak of CTE—at times broadly, at times very specifically—as a vital, going concern, worthy of greater emphasis and attention. Yet CTE in its current form is not vital, and it is quickly disintegrating.

In *The Blueprint for Neighborhood High Schools*, CTE is referenced in terms of the strategies and expected outcomes for reforms discussed therein. Much of the language—reliance on "career standards," "strong partnerships with employers"—seemingly bodes well for the sustainability and improvement of CTE programs as Baltimore City's high school reforms unfold. Yet, nowhere in the *Blueprint's* 40 pages do goals relate to, let alone mention, CTE. Instead, key goals that are cited include increasing the numbers of graduates who meet University of Maryland standards for college admission, increasing college-going rates, and increasing the percentage of students who take the SAT. These are largely academic and apply not to young people heading into the workplace, but to college-bound graduates.

The *Master Plan* remains an unfulfilled mandate as it pertains to CTE. Many of the steps BCPSS pledged to take by FY'05 have not been taken or the necessary resources have not been secured, or the necessary oversight to ensure their realization has been lacking. In short, the promises the school system has made in the recent past to address CTE's shortcomings are beginning to ring hollow.

These shortcomings begin with recent BCPSS funding commitments for the CTE program.

ii). CTE Funding: FY'05 Cuts Leave Program Gutted

CTE receives two types of funding, with the bulk coming from BCPSS's General Education Fund and the balance in the form of a federal Perkins grant. In BCPSS's FY'04 budget, these funding sources accounted for 84 percent and 16 percent of the CTE budget respectively. A review of CTE budgets and spending reports between FY'03 and FY'05 reveal dramatic funding cuts and a haphazard funding process that, combined, have contributed to the CTE program's decline.

A. Local Funding: Massive Cuts As a Result of the BCPSS $58 Million Deficit

A major setback for Baltimore City schools was the announcement in early 2004 that the system was facing a $58 million deficit midway through its FY'04 budget year. Drastic layoffs took place immediately, and an aggressive two-year plan to reduce the deficit caused BCPSS to propose a very lean FY'05 budget. CTE was particularly hard hit during these recent cutbacks.

CTE's local funds are its largest and, therefore, most critical funding source, earmarked for its largest, most critical investment: teachers for career and technology education. Yet according to BCPSS budget documents, these funds have been slashed by 56 percent in the last two years. These drastic cuts have, in turn, stretched CTE's much leaner Perkins allocation, at a time when the Bush administration is weighing whether to redirect Perkins dollars to fund *No Child Left Behind* initiatives that value academics over vocational and technological skills. In short, CTE in Baltimore City appears to be at risk of dying a not-so-slow death by fiscal starvation. The cuts in BCPSS's FY'03 budget and proposed FY'05 are summarized in the next table.

Table 12: BCPSS General Education Support for Career and Technology Education FY'03- FY'05

	FY '03 Adopted Budget	FY '04 Projected Budget	Change FY 04 v. FY 03 (total)	Change FY 04 v. FY 03 (%)	FY '05 Projected Budget[19]	Change FY 05 v. FY 04 (total)	Change FY 05 v. FY 04 (%)
Total Staff/teaching Positions	**280**	**220**	**-60**	**-21.4%**	**94**	**126**	**-57.3%**
Budget by Object:							
Salaries	$14,463,579	$10,988,000	-$3,475,579	-24.0%	$6,400,800	$4,587, 200	-41.7%
Utilities & Other Charges*	$0	$0	$0	0.0%	N/A		
Contracted Services*	$182,171	$894,084	$711,913	390.8%	N/A		
Materials and Supplies	$673,732	$100,000	-$573,732	-85.2%	N/A		
Non-Public / Out-of-City	$79,829	$0	-$79,829	-100.0%	N/A		
Total by Object	**$15,399,311**	**$11,982,084**	**-$3,417,227**	**-22.2%**	**N/A**		

Source: BCPSS's Proposed Fiscal Year 2003-2004 Operating Budget and Proposed Fiscal Year 2004-2005 Operating Budget

As the table shows, local CTE funds support only CTE teacher and staff salaries. In its CTE operating budget for FY'04, BCPSS contemplated cutting 10 central office staff and 50 teachers, a $3.4 million reduction (22 percent) in the FY'03 budget of $15,399,311. Indeed, the program's central office staff were all but eliminated, leaving only the Director of Career and Technology, but teacher levels remained virtually unchanged, dropping from 235 to 234. Losing an entire administrative staff, including career program coordinators, was a major loss for CTE, compounded by similarly drastic cuts made in local funding for CTE materials and supplies. In FY'03 the CTE program received $673,732 for materials and supplies, only to see that amount reduced to $100,000 in FY'04. The rationale given in BCPSS's *Proposed Fiscal Year 2003-2004 Operating Budget* for the reduction was that it was "a function of the staff reductions"—the implication being that the 50 or so staff and teachers targeted for termination in FY'04 spent nearly $600,000 on supplies and materials in the prior fiscal year. Documentation of Perkins expenditures, however, refutes that notion. Nearly every one of the 157 requests for materials, equipment and supplies that were submitted to BCPSS's Office of Career and Technology Education in anticipation of the FY 04 budget was for items to support classroom instruction. Unless programs are cut along with staff, the need for these items can only remain constant.

The cuts to CTE's central office staffing budgets in FY'04 have crippled BCPSS's ability to run a quality work-based learning program for students and hampered teachers' ability to obtain the basic resources needed to run their programs effectively. But

these cuts paled in comparison to the cuts that followed in FY'05. In the current year, 126 CTE teaching positions were cut, a teacher reduction of 54 percent in a single year. There is little question that cuts of this magnitude will have an enormous impact on CTE program delivery and outcomes in the months ahead.

It is impossible for a one-person Career and Technology Department to stay abreast of the current status of CTE programs, much less to analyze and build on these programs for the future. These huge reductions in local CTE funding have caused increased reliance on Perkins funds to underwrite critical aspects of the program, including equipment, instructional materials, supplies, professional development and vocational services. According to the Perkins Act, these funds are to be used to "develop more fully the academic, vocational, and technical skills of secondary students." They are now being used to keep CTE afloat in Baltimore City.

B. Perkins Funds: In Jeopardy – Allocations Questionable

BCPSS's CTE program receives federal funding through the Carl D. Perkins Vocational and Technical Education Act, which is administered by MSDE. These funds target initiatives to advance programs and improve the skills of CTE students—in other words, expenses above and beyond the basics required to operate CTE programs.

According to CTE director Cheryl Jones, these funds have declined with enrollment in recent years. More significant, however, is how Perkins money has been spent. A review of BCPSS budget documents showing actual distribution of the Perkins grant reveals a questionable system of resource allocation in which funds awarded did not correlate with funding requests, CTE enrollment or schools' needs. In 34 separate instances, funds went to schools where the targeted CTE programs did not exist, according to state enrollment records.

According to the Office of Career and Technology's *FY'04 Local Application*, Perkins funds for CTE in FY'04 were budgeted at $2,238,636, and were distributed among high schools with CTE programs as follows: 47 percent went to fund equipment, textbooks and instructional materials; 33 percent went to fund vocational services; and staff development received just 6.5 percent. The balance funded initiatives at BCPSS's three vocational-technical high schools, ranging from work-study and guidance counseling to tech prep and administration.

1. Equipment, Textbooks and Instructional Supplies

For FY'04, CTE teachers system-wide made 157 requests for materials, equipment and supplies totaling $2.7 million, among them requests for such basic necessities as workbooks, computers, printer cartridges and toner. While such purchases of basic supplies do not necessarily violate the parameters of the Perkins grant, they may not advance the goals for which the funds are given: to enhance and strengthen CTE programs versus underwrite basic program infrastructure. At the

same time, comments accompanying CTE teachers' request forms confirm that conventional resources for equipment, material and supplies are not adequate to run programs appropriately. One CTE teacher wrote:

> *Each year I submit a request for funds to provide classroom/shop equipment. Each year, the amount I receive drops dramatically—despite a record of consistently providing regional and state-level medal winners. Example: Yr 1 received $4000, Yr 2 received $2000, Yr 3 received $1800 (for equipment and supplies). As my shop can not exist at this level of funding, I am requesting a negative amount this year in the hopes that the budget will go up instead of down.*
>
> *--Senior High School Needs List, BCPSS Office of Technology and Career Education, 2003*

According to proposed budget documents, BCPSS's FY'04 Perkins grant covered only about one-third—or $954,500 worth—of CTE teachers' requests for equipment, materials and instructional supplies that year. (See Appendix E for a detailed breakdown) Not only did these funds not meet demand, they were distributed in ways that raise questions.

- Nearly 25 percent of it—$234,500—went to 10 high schools for which there were no requests for materials, equipment and supplies on file.

- Several schools received more money than they requested, in some cases for items that were not even part of the original request. Edmondson-Westside, for example, submitted requests for computers, printers, furniture, a refrigerator, an EKG machine, textbooks and other items totaling $179,368; the FY'04 proposed budget showed an allocation of $215,000.

- Other schools' requests for equipment and supplies funding were denied. Fairmount-Harford Institute requested $16,445 for computers, toner and texts, and Waverly Career Center requested $26,944 request for texts, uniforms, lumber, tools, computers, office supplies and safety equipment. Yet neither schools received any equipment and supplies funds.

In some cases there was a correlation between CTE enrollment and dollars budgeted for equipment, materials and supplies. Carver, with the second highest CTE enrollment in FY'03, was budgeted to receive the third highest funding allocation; Mergenthaler, which had the highest CTE enrollment, was budgeted to receive the second highest allocation; and Patterson, which had the third highest CTE enrollment, was budgeted to receive the fifth highest allocation.

There were also many other instances of a weak correlation between CTE enrollment and equipment and supplies funding. Edmondson-Westside, with approximately 9 percent of total CTE enrollment in FY'03, was allocated nearly 23 percent of total funds; meanwhile, Northwestern High School, with more than 8 percent of total CTE enrollment, was budgeted to receive less than 1 percent of the available funding.

2. ***Vocational Services***
   One-third of the $711,000 budgeted for Vocational Support Services paid for vocational services staff salaries in FY'04. Of this amount, 62 percent went to Edmondson-Westside High School and the balance was divided relatively equally among Fairmount-Harford, Patterson, Mergenthaler, and Carver. According to CTE Director Cheryl Jones, the reason for this pattern of distribution is that BCPSS cannot afford to hire a vocational support services person for every high school, so it tries to place them geographically with one individual serving multiple schools. But a look at this assignment of staff within geographic quadrants raises questions of equity. The northeast and southwest quadrants each had two vocational services staff members in FY'04. Meanwhile, the southeast quadrant, which had the lowest CTE enrollment in FY'03, had one, and the northwest quadrant, which had the highest CTE enrollment in FY'03, had none.

3. ***Program and Staff Development***
   Only 6.5 percent of the total Perkins budget for FY'04 was earmarked for CTE professional development—a mere $140,000. Approximately 54 percent of this was earmarked for professional development at four "High Schools That Work" sites to improve implementation of key practices. A little more than one-third—36 percent—was allocated to "refine the skills and knowledge of all CTE teachers in the district with regards to software applications, current technical operations, working with students with disabilities, differentiated instruction, and work-based learning student preparation." A $50,000 budget for this purpose begs the question: how much "refinement of skills and knowledge" can truly be accomplished across so many subject matter areas and teachers?

Although the Perkins funds have been diminishing and aspects of its distribution questioned here, it remains critical to the continuation of CTE in Baltimore City.

iii).CTE Teachers: Qualifications In Question, Numbers in Jeopardy

In FY'03, BCPSS provided funding for 235 CTE teacher positions, 8 percent of which were vacant, according to BCPSS's *Personnel Staffing Report—By Subject as of 8/1/03*. The majority—55 percent—were African American and female; 24 percent were black males, 17 percent were white males, 3 percent were white females, and 1 percent were males and females of other ethnicities.

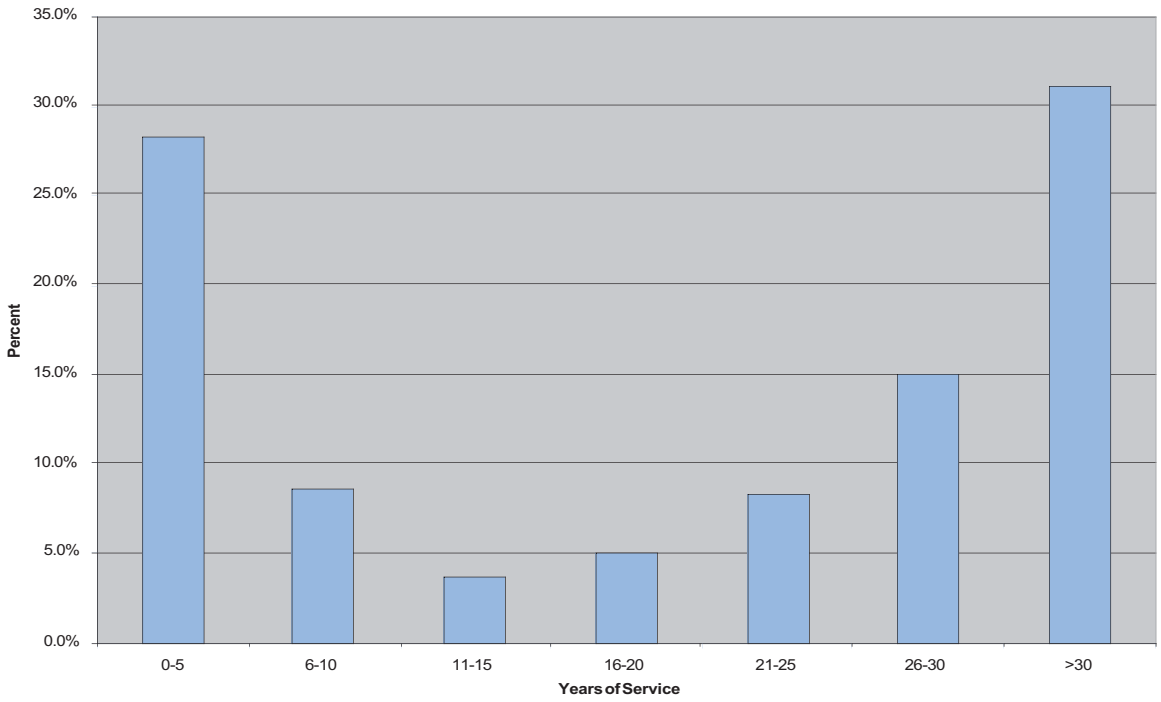
The 235 positions were divided across 25 high schools and 33 program areas. (It is impossible, however, to make a one-to-one match between the program areas on the *Personnel Staffing Report* and those used by the Office of Career and Technology Education because, according to CTE Director Jones, the program names on the staffing report are old.) This distribution across schools appears to correlate well with CTE enrollment statistics. One notable exception: Edmondson-Westside was fifth in CTE enrollment but, along with Carver, claimed the second highest number of CTE teachers.

Among these CTE teachers, however, a number were ill-qualified for what they were assigned to teach in FY'03. Approximately 60 percent of CTE teachers were tenured in FY'03, meaning they had served the requisite two-year probationary period; 5 percent were probationary, meaning that they had not yet completed two years of service; and another 1.3 percent were incorrectly assigned, meaning they were teaching in a discipline in which they were not certified. Across BCPSS, 25 percent of CTE teachers overall were provisionally certified in 2003. This number reflects MSDE's system-wide general education statistics, which show that in 2003 nearly 33 percent of all City teachers were provisionally certified. Yet upon reviewing CTE teacher statistics for individual schools, most notably zoned high schools, the percentages for provisionally certified teachers are much higher. At Patterson, for example, 65 percent of CTE teachers were provisionally certified in FY'03, and at Walbrook 46 percent were provisionally certified, according to the BCPSS staff report.

A. Many CTE Teachers Near Retirement

Finally, not only are a handful of teachers uncertified to be teaching CTE courses, many of the qualified ones are long-timers and nearing retirement age. Should these teachers retire, as expected, in the near future, CTE could face more significant teacher quality issues.

Table 13: Length of Service of BCPSS CTE Teachers in FY'03



The above figure shows that nearly half of all CTE teachers have served for 26 years or more. When viewed by career program (Appendix G), CTE teachers' length of service shows that many of those in career programs with high enrollments are nearing retirement. According to MSDE enrollment figures, Administrative Technology had the highest enrollment in FY'03, Graphic and Printing Communication had the third-highest enrollment, and Automotive Technology had the fifth-highest enrollment. BCPSS's *Personnel Staffing Report—By Subject as of 8/1/03*, meanwhile, shows that at least 50 percent of CTE teachers in high enrollment programs like Administrative Technology, Graphic and Printing Communication and Automotive Technology have served for 26 years or more.

B. Professional Development for CTE Teachers Scant

Despite the significant number of under-qualified CTE teachers, professional development among CTE teachers has been minimal—even with ready access to professional development resources through BCPSS's partnership with the Maryland Center for Career and Technology Education Studies (MCCTES). In some CTE programs—food service, clothing services and some health occupations, for example—the minimum education required to be able to teach is a high school diploma; in others, certification typically requires some combination of college, professional education courses

and occupational experience. MCCTES is a provider of coursework needed to meet these requirements.

Housed at the Baltimore Museum of Industry and funded by local school systems and the MSDE, MCCTES offers undergraduate and graduate courses through the University of Maryland Eastern Shore. Though teachers are free to take courses required for certification elsewhere, taking them through MCCTES has certain advantages. Its offerings are comprehensive, making it possible to earn all the credits needed for certification through a single provider. Its educational provider, University of Maryland Eastern Shore, has the only bachelor's and master's education programs in Maryland that are designed specifically to prepare individuals to be Career and Technology Education teachers. MCCTES schedules courses five years out, making it possible for teachers to plan for a logical progression through the required courses well in advance of enrolling. Finally, MCCTES has advisers on-hand who are familiar with the unique needs of CTE teachers, and the certification requirements that apply to them.

Between FY'02 and FY'04, 343 teachers statewide went this route and participated in MCCTES training: 142 from Baltimore County, 44 from Baltimore City, and 20 each from Anne Arundel and Montgomery counties. (The balance comprised teachers from Harford County and private schools.) By any measure, BCPSS's use of MCCTES services was low during this time, especially given that 25 percent of its CTE teachers were provisionally certified, and given that the school system pays several thousand dollars a year to be an MCCTES member. BCPSS officials have suggested that teachers simply do not know enough about MCCTES and its services, a problem exacerbated by the loss of Career Connections staff. In the past, these staff members were charged with monitoring the certification status of teachers in their assigned schools and helping teachers enroll in courses leading to certification.

Something will need to be done very soon to recruit and train qualified teachers into these career programs if current enrollment levels are to be sustained.

iv). Once Thriving, the Tech Prep Program is Threatened

Tech Prep is a federal program that, through BCPSS's partnership with Baltimore City Community College (BCCC), linked the junior and senior years of high school with the first two years of college through an instructional sequence of college preparatory courses and rigorous technical training. Slightly more than one-third of BCPSS programs lead to professional certification[20] and/or the award of college credit through the Tech Prep Program.[21] (Appendix A)

For a number of years, BCPSS collaborated with BCCC and received federal Tech Prep funding and staffing. Although the base grant funding paid primarily for an individual to coordinate the Tech Prep efforts of BCPSS and the community college, receipt of this funding made the partners eligible to apply for incentive grants, which have fewer strings attached and can be used for other purposes. Prior to FY 03, the partners received the base and incentive grants.

MSDE, however, did not award a base grant to the BCPSS-BCCC partnership for FY'04 because it found the partnership's proposal to be inadequate. This resulted in the loss of the Tech Prep coordinator's position. The fact that the proposal was written, even though not approved, however, made the System eligible to apply for the incentive grants. BCPSS applied for and was awarded $60,000 in incentive grants in FY'04, which it used as follows: $20,000 for the National Academy of Finance, $25,000 for Professional Development for CTE teachers; $5,000 for High Schools That Work; and $10,000 for Project-Lead-the-Way.[22]

But BCPSS did not submit a Tech Prep grant for FY'05, resulting in loss of both the coordinator position and supplemental funding.

Loss of program coordination and incentive grant funding are not the only problems that have resulted from the deterioration of the BCCC-BCPSS Tech Prep Partnership. Twenty of BCPSS's 53 CTE programs are offered through tech prep; 16 of these are in fields that BWIB has identified as workforce shortage areas; nearly half made the CTE list of programs with highest enrollment; and of the 444 students who completed Tech Prep programs in FY'02, 35 percent went on to college.[23] Considering that 37.6 percent of statewide Tech Prep attended college in 2002, Baltimore City's outcomes in Tech Prep are impressive.

A number of programs falling within BWIB focus areas are not presently the subject of a BCPSS/community college partnership: Construction Trades, International Business Marketing, Manufacturing Engineering, Media Production Technology, Nursing, and Telecommunications. It would make sense for BCPSS to identify a suitable community college partner for these programs.

v). Work-Based Learning: Unmet Goals

BCPSS provides work-based learning experiences to CTE students through a statewide program linking career development and education reform activities at the school system level with local economic and workforce development initiatives. State quality indicators have gone largely unmet in Baltimore City, and BCPSS's own goals for the program remain similarly unfulfilled, largely as a result of federal funding cutbacks..

Launched by Maryland in response to the School-to-Work Opportunities Act (1994),Career Connections was designed to link cooperative education, internships, and career development with local economic and workforce development initiatives; the program in Baltimore City falls under the purview of the Office of Career and Technology Education.

At one time, Career Connections provided staff in each of the nine zoned high schools and in the city-wide vocational-technical high schools; a special program existed for students with disabilities called Start on Success. The primary role of these counselors was to develop and oversee work experiences and internships for City students.

BCPSS's Career Connections program received $4.3 million in funding under the federal School-to-Work Opportunities Act for a five-year period ending in FY'01. Not surprisingly, with the loss of that funding and staff, work-based learning in Baltimore City has basically fallen apart. Other than the CTE director, there is nobody to manage the many functions essential to the successful operation of an internship and cooperative education program: the recruitment of employers, monitoring of student progress, the collection and evaluation of information on outcomes. Similarly, there are little or no efforts to promote the program to students and community members or to regularly visit work-based learning sites to follow up with students and employers.

Student outcomes for Career Connections in Baltimore City reflect the program's demise. Student participation in work-based learning experiences has suffered dramatically, dropping 66 percent between FY'00 and FY'03.

More troubling still, are the declines in student participation in work-based learning in four of the five clusters aligned with BWIB's five targeted industry sectors—most notably the Health and Biosciencess cluster which had 31 student participants in FY'00, and just one in FY'03.

Table 14: Students Participating in Work-Based Learning, FY'00-FY'03

	2000	2001	2002	2003	Change FY '00-03
Internships	293	142	81	108	-63.1%
Mentorships	25	27	0	1	-96%
General Cooperative Work Experience	348	466	218	122	-64.9%
Capstone Cooperative Work Experience	284	355	18	77	-72.9%
Apprenticeship/Pre-Apprenticeship	7	0	0	14	100%
Service-Learning	35	0	1	14	-60%
Total number of students in work-based learning.	**992**	**990**	**318**	**336**	**-66.1%**
Total CTE students	7628	7627	7846	6488	-14.9%
Work-based Learning as a percent of Total CTE Enrollment	13%	12.98%	4.1%	5.2%	-60.2%

Source: MSDE's Work-Based Learning Reports for Baltimore City, FY'00-FY'03

Table 15: Work-Based Learning Student Participation By Career Cluster, FY'00-FY'03

Career Cluster	2000	% Total	2001	% Total	2002	% Total	2003	% Total	Change 01-03
Arts, Media and Communication	88	9%	100	10%	5	2%	10	3%	-88.6%
Business Management and Finance	350	35%	359	36%	33	10%	55	16%	-84.3%
Construction and Development	34	3%	32	3%	29	9%	36	11%	5.9%
Consumer Service, Hospitality and Tourism	273	28%	202	20%	121	38%	62	18%	-77.3%
Environmental, Agricultural and Natural Resources	26	3%	0	0%	0	0%	2	1%	-92.3%
Health and biosciences	31	3%	36	4%	24	8%	1	0%	-96.8%
Human Resource Services	91	9%	130	13%	72	23%	146	43%	60.4%
Information Technology	9	1%	43	4%	2	1%	7	2%	-22.2%
Manufacturing, Engineering and Technology	41	4%	56	6%	20	6%	8	2%	-80.5%
Transportation Technologies	49	5%	32	3%	12	4%	9	3%	-81.6%
	992		990		318		336		

Source: MSDE's Work-Based Learning Reports for Baltimore City, FY'00-FY'03

Even at its peak in FY'00 only 13 percent of CTE students participated in the program. BCPSS has attributed this to a dearth of students with the appropriate academic standing to participate; According to BCPSS's *Career Connections Handbook for Work-Based Learning*, a student has the standing to participate only if he or she "has 90 percent attendance and is passing all subjects." But academic standing alone may not explain the low participation rates. MSDE records show that in FY'03 there were 760 CTE concentrators who achieved an overall GPA of 2.0 or higher, yet only 336 who participated in a work-based learning experience. This was after BCPSS had stopped receiving federal Career Connections funding, but the program was still operating.

Start on Success, the program through which work-based learning services are provided to students with disabilities, has shown similarly low participation levels. According to BCPSS's *Start on Success Annual Report, September 1 2003-August 31 2003*, some 640 CTE students with disabilities participated in the program in FY'03, boasting a completion rate of 95 percent and a post-program employment rate of 65 percent. Yet only 38 of these 640 students participated in work-based learning that year.

Despite low participation levels and dramatic drops in funding and staffing, the Career Connections program has enjoyed consistently positive feedback from businesses and other organizations that have served as work-based learning sites. Between FY'00 and FY'03, more than 95 percent of employer respondents to MSDE's *Work-Based Learning Survey* reported that student workers met or exceeded minimum job requirements. Between 64 percent and 86 percent also reported that students learned new skills rapidly with little instruction or required less than average instruction. Finally, asked for an overall rating of student preparation, 58 percent of the employers reported that students were "exceptionally well prepared" in FY'03, a 72 percent improvement over what they had reported for FY'00. Most of the remaining employers surveyed (41 percent) rated students as "well prepared" in FY'03.

vi). Industry Advisory Boards: Essentially Defunct

Steps to ensure that CTE programs "meet industry standards" were delegated by BCPSS to the 10 industry advisory boards charged with developing CTE curricula, locating CTE resources and providing oversight for the career clusters that comprise BCPSS's CTE program. Yet based on documents outlining their activities—or lack thereof—these advisory boards appear dysfunctional at best, at worst barely existent.

Former CTE staff members interviewed recall a time about 10 to 15 years ago when advisory boards were not only active, but proactive. One well-known example: The machinists program at Mergenthaler Vocational-Technical High School hired an

instructor with an industrial arts background but insufficient experience to teach. One member of the advisory board for Manufacturing, under which the machinists program fell, hired the instructor at his plant over the summer to train, through work, as a teacher. Former CTE staffers recall other programs that remained activist right up until 2000, such as the Transportation and Graphics and Communication advisory boards.

The work and commitment of these bodies today is another story. Advisory board membership lists were unavailable for five of the 10 career clusters, four of which align directly with BWIB's five target industry sectors. (Appendix I) The advisory boards are designed to bring outside expertise and legitimacy to BCPSS's CTE offerings, and include representatives of local businesses, non profit organizations, government and higher education, as well as BCPSS staff. But according to the lists that were available, BCPSS staff comprise one-third of membership overall and higher-education officials are rare; community college officials represent just 2.5 percent of members, yet nearly half of all CTE programs in Baltimore are classified as "tech prep." Finally, despite the charge given to them by the *Master Plan*, records show that CTE advisory boards met just once in FY'04, and meeting minutes were unavailable for review.

vii). CTE Program Distribution: Inequitable Access for Students

The actual locations of BCPSS's CTE programs represent gaps in programming and service. Only the southeast quadrant has programs across all 10 of MSDE's career clusters. The other three quadrants lack programming in the Environmental, Agricultural, and Natural Resources cluster; the northwest quadrant lacks programming in Health and Biosciencess; and the northeast quadrant lacks programming in Construction and Development. (See Appendix H for program locations by school and quadrant.) There is also a great deal of duplication within clusters. Eleven programs are duplicated once or more in a given quadrant or pair of quadrants—all in BWIB focus areas. These same programs are completely absent from other quadrants. Such program distribution poses a significant obstacle to moving more students through programs in the BWIB's five target sectors.

viii). Marketing/Outreach: As Problematic as CTE Program Itself

The materials and channels of communication through which students learn about BCPSS's CTE program are difficult to navigate.

Information about CTE programs is disseminated by eighth-grade and high school guidance staffs, and $30,000 in Perkins funds is allocated annually for their work, according to CTE Director Jones. A booklet published by BCPSS, *Planning Your High*

School Program 2004-2005, further supports the guidance staffs' efforts, but it contains inconsistencies and misinformation. When it was published for FY'04, only 53 of the 64 CTE programs listed in it had been approved by MSDE. BCPSS asserts that the 11 non-approved programs were included because they were either awaiting MSDE approval, or contracts were in place for their curricula to be written.

Discerning programs within the booklet is another problem. Several programs share the same Classification of Instruction (CIP) code index number but have different names and descriptions. As such, administrators charged with assessing the effectiveness of individual programs face an impossible task: where shared CIP numbers exist, enrollment and completion rates are available only for the pair. There are also instances where programs share the same CIP number and description, but have different names at different locations. Then there is the difficulty of locating the programs. *Planning Your High School Program* lists 25 locations that do not appear in MSDE enrollment records, and 15 programs listed in MSDE enrollment records do not appear in the *Planning Your High School Program* booklet.

VI. Recommendations

i) The First Step: Commit to Review CTE

Some of the problems within CTE in Baltimore City are related to recent budget cuts and insufficient funds. Other issues could be righted with decisions to do things differently.

School system officials must first decide whether they are committed to exploring the potential of CTE and undertaking an in-depth review of the program. BCPSS must, in other words, place CTE on its radar screen as it moves forward with high school reform, so that, at a minimum, it can make an informed decision about what place CTE has in those reforms.

As the report shows, research and economic development data make a strong case for preserving CTE in Baltimore City; glimmers of CTE success throughout the City's high schools underscore the possible benefits and achievements of a sound CTE program. To ignore such evidence and simply let CTE continue on its current course in a city where nearly as many students drop out of high school as graduate, and where there are more jobs than skilled workers would be irresponsible.

ii) Next Steps: Concrete Actions Strengthen the CTE Program

1. Immediately clarify CTE enrollment and programming for the current 2004-05 school year

As CTE data for this report were available only through 2003/2004 prior to the dramatic 60 percent budget reduction, it is strongly recommended that the Office of Career and Technology provide enrollment figures by school, by program and by CTE teacher for programs offered in the current (2004-05) school year. The Abell Foundation has offered external support for completing this process on a timely basis.

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2. Align CTE planning with the High School Reform Initiative

Based on the *Blueprint for Baltimore's Neighborhood High Schools*, high school reform is moving forward with little consideration for what a well-supported CTE program might do to improve outcomes. This is occurring despite the fact that most of the CTE enrollment is in the very schools (the nine zoned high schools) currently undergoing break-up and reform. This matter deserves the attention of the High School Steering Committee.

3. Build staffing, oversight, and accountability of CTE department

On numerous fronts BCPSS's CTE program today reflects oversight lapses, which have in turn contributed to the program's spotty system of accountability. These lapses must be addressed both through increased staffing capacity and the establishment of a sound reporting system.

Clearly, the CTE effort in BCPSS requires a staff larger than one central administrator: staffing cuts have decimated the Tech Prep program, the workplace learning effort, and individual career program development and oversight. But the solution is not in manpower alone: many of the reporting discrepancies predate the draconian cuts made that resulted in a one-person CTE administrative staff. Other than Perkins reports to the State, there is no data collection, much less analysis, occurring regularly within CTE. The absence of results, and the lack of demand for them, make CTE program evaluation and improvement nearly impossible. It is critical for BCPSS to establish a reliable process for identifying and tracking CTE programs outcomes, particularly among program "concentrators."

For years, CTE has functioned as an autonomous division within BCPSS. As of 2001, a separate High School Area Office was created in part to aid the High School Reform Initiative. It is strongly recommended that CTE become a line report to this High School Area Office in order to facilitate coordination and alignment of CTE programs with the creation of new high schools. It is also recommended that BCPSS assign CTE program staff with accountability for student outcomes in key career programs.

4. Conduct a program review with an eye toward consolidation

BCPSS has the highest number of CTE programs and the lowest percentage of high school students enrolled in CTE compared with the three other jurisdictions reviewed in this study. There are also staffing and funding issues that necessitate a rigorous review to determine essential programs and areas for expansion.

A. *Eliminate Programs with low enrollment and high program duplication*
   Low enrollment programs falling outside of BWIB focus areas should be cut. Programs meeting this definition include but are not limited to Floral Design, Horticulture, Automotive Service, Painting and Decorating, Diesel Technology, and Drycleaning. At the same time, program duplication also needs to be addressed.

B. *Strengthen current or add programs in BWIB Focus Areas*
   As part of a comprehensive program review, stagnant and declining enrollments in programs in BWIB focus areas should be investigated first, and measures then taken to reverse these trends. Particular attention should be paid to the following programs: EMT-B, Medical Assisting, Nursing, Nursing Assisting, Biotechnology, Networking Systems, Plumbing, Welding, Hospitality and Office Technology. Similar action should be taken with respect to programs with few completers; immediate attention should be given to programs in Biotechnology, Carpentry, Construction Trades, Networking Systems, Nursing, Nursing Assisting, Plumbing and Surgical Assisting.

When resources and staffing levels permit, BCPSS may wish to consider adding or expanding of programming in the following pathways, given the current lack of programming in them and their connection to BWIB target occupational fields:

- Health and Biosciences: Engineering/Environmental Services and Diagnostic Services
- Business, Management and Finance: Human Resources
- Construction and Development: Planning
- Consumer Services, Hospitality and Tourism: Merchandizing/Buying, Attractions and Recreation, Convention/Destination/Event Management, and Lodging and Travel Management

C. *Make BWIB a CTE planning partner*

The CTE program would benefit from a closer collaboration with Baltimore City's business community, starting with the Baltimore Workforce Investment Board. In its June 2003 report, *A Business Perspective on Baltimore City Neighborhood High School Reform*, BWIB offered to "work with the High School Steering Committee and the BCPSS to improve opportunities for students in Baltimore's high schools." BWIB could be a rich resource for BCPSS's CTE program in many ways, such as providing data to evaluate CTE programs, helping locate work-based learning sites and providing a wealth of industry contacts.

D. *Re-activate Advisory Boards as an essential piece of the review process, beginning with Health/Biosciences and Business Management*

Advisory boards are a vital component of the CTE program, because they link it to the business and higher-education communities, which make up the entire post-secondary world. They also represent pro bono capacity and expertise. The Office of Career and Technology Education would do well to re-activate and strengthen its advisory boards. Areas where they could be useful include analysis of CTE program content, resources and distribution; reinvigoration of work-based learning; review of the CTE budget toward maximizing resources; and enhancing CTE teacher qualifications. New advisory board members are particularly needed from community colleges, businesses, government agencies and nonprofit organizations. The Catering and Pharmacy Technician programs have established successful relationships with their affiliated industries; these programs might offer a model for recruiting industry representatives to other programs.

E. *Given the move towards high school choice, redistribute successful CTE programs on a geographic basis*

There are at least two career clusters in BWIB focus areas that are absent in the City's Northwest quadrant, and 11 programs in BWIB focus areas that are duplicated within some quadrants but absent in others. BCPSS should examine program duplication and career cluster representation in different geographic areas of the city and take steps to resolve inequities within and between geographic areas.

5. Ensure that the CTE budget is allocated equitably and fully provides for program needs

Given recent and continuing budget cuts and a record of unclear resource allocation, the Office of Career and Technology Education needs a budget-making and distribution process that is, above all, transparent; that maximizes existing resources; that is responsive to—and not crippled by—fluctuating funds; and that is accountable and equitable. Given the fragility of Perkins funding, BCPSS must make further investment beyond teacher salaries in CTE-related equipment, materials and resources. It is recommended that BCPSS improve the process by which equipment requests are made, emphasizing better oversight by principals, better tracking of who gets what from one year to the next, a better match between what gets requested and what is authorized for purchase, and a better match between a school's enrollment and the percentage of equipment and supplies funding it receives.

6.. Identify and invest in quality CTE teachers and ongoing career training

A census should be taken of all CTE teaching staff and reviewed within the context of teacher qualifications for all programs; appropriate teacher assignment; CTE enrollment across programs; individual programs' and schools' outstanding teaching needs; and prospective teacher retirements. This way, the Office of Career and Technology Education will understand and be better able to maximize existing teaching resources. It will also be in a better position to address both immediate and future teaching needs. Staffing should also be reviewed with an eye toward maximizing available resources. Given that there appears to be a surplus of CTE teachers at Edmonson-Westside, BCPSS should investigate and relocate staff, if necessary. Vocational services staff should be reassigned, given the current situation in which the Northwest quadrant, which had the highest enrollment in FY'03, has no vocational services staff person. It may also be prudent to investigate hiring more vocational services staff members, given the dearth of high school students whose career interests and abilities are tested annually under the current system.

Given that 25 percent of CTE teachers are provisionally certified and all CTE teachers face continuing certification responsibilities, the Maryland Center for Career and Technology Education Studies (MCCTES) should be better used to help these teachers complete the courses necessary to obtain the first professional certificate. BCPSS

pays an annual membership of $11,000. MCCTES staff have offered (while providing information about its programs for this report) to work with individual BCPSS CTE teachers to create professional development plans and to find industry placements for them during the summer and on professional development days.

7. Rebuild Tech Prep Program by partnering with Area Community Colleges

The System's fractured relationship with its Tech Prep partner, BCCC, needs immediate attention given the vast number of Tech Prep programs on the books, the funding at stake, and the promise that Tech Prep has shown elsewhere in helping students succeed and in addressing workforce needs. BCPSS may wish to consider partnering with another community college system for some of programs. This strategy comes with its own obstacles: Absent a change in the law, City students would have to pay out-of-county tuition, and new articulation agreements would be required for each program.

A number of BCPSS programs in BWIB focus areas do not as yet have articulation agreements with postsecondary institutions. BCPSS should move forward to create them. Examples of such programs include: Construction Trades, International Business Marketing, Manufacturing Engineering, Media Production Technology, Nursing, and Telecommunications.

8. Ensure access to work-based learning for students most likely to work immediately following high school

BCPSS's work-based learning efforts are in shambles, a situation which is particularly troubling given the promise of work-based learning to help students succeed in the world of work. Although staffing increases are not the only answer, it is unreasonable to think that work-based learning problems can be executed without additional school-based staff. While this strategy comes with a price tag, targeting internships to those who intend to work after high school graduation would make it more cost-effective. Efforts must be undertaken to increase the number of students participating in transition activities, to increase the number of CTE students who are eligible for work-based learning, and to find new work-based learning sites.

9. Examine how JROTC can help CTE improve outcomes

In FY'04, there were 1,762 BCPSS students in JROTC programs which are currently overseen by the Office of Career and Technology. Little is known about programming, funding, and outcomes for participating students, but JROTC represents another vehicle for insuring that students complete high school and are successfully launched in working life. BCPSS should further analyze and maximize the potential of these high-interest, high-enrollment programs.

10. Improve outreach to middle school students

More communication about CTE programs and better marketing materials are needed to raise interest in CTE among middle and high school students. Given its current use as the sole publication with any information on BCPSS's CTE programs, the *Planning Your High School Program Guide* must be correct and up-to-date. As important, middle school guidance counselors who advise 8th grade students must fully understand CTE program options. Further consideration should be given to how the BCPSS website could be used to better explain choices in CTE programs.

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As mandated by the *No Child Left Behind* Act of 2001, meeting the needs of all Baltimore City's public high school students will require meaningful programming. Career and technology education can keep students engaged through their high school education and provide a solid first step in the "real world." BCPSS should fully investigate the problems and potential of its CTE strategy before unsystematically dismantling it. On the path towards extinction, CTE may yet be a valuable strategy to meet the needs of both career-bound students and Baltimore's workforce in the 21st Century.

Endnotes

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[15] Hopkins, Jamie Smith. "Baltimore Isn't Working Because Its Residents Don't." The Baltimore Sun, March 28, 2004
[16] Disadvantaged students are those who are eligible for the National School Lunch Program's assistance program for low income children. (Baltimore City Public School System [BCPSS], 2001a, p. 28).
[17] A disabled student is one "requiring special education services, as defined by the federal Individuals with Disabilities Education Act" (Md. Regs. Code tit. 13A, Section 02.06.02B(8)). The Individuals with Disabilities Education Act defines "child with a disability" as a child (i) with mental retardation, hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), serious emotional disturbance (hereinafter referred to as "emotional disturbance"), orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities; and (ii) who, by reason thereof, needs special education and related services. (20 U.S. Code section 1401(3) (A) (2003)).
[18] Maryland State Department of Education [MSDE], 2003b.
[19] The FY 05 budget did not break out CTE expenditures by object, as was done in FY 04. (BCPSS, 2004c).
[20] The 15 programs with professional certifications include Carpentry, Catering, Cosmetic Services, Cosmetology, Culinary Arts, Early Childhood Education, Electronics and Computer Repair, Emergency Medical Technician-B, Firefighting, Hospitality, Medical Assisting, Nursing Assistant, Pharmacy Technician. Surgical Technician and Telecommunications. (BCPSS, 2002, last page of unpaginated document).
[21] The 20 Tech Prep programs include Accounting, Apparel Technology, Biotechnology, Catering, Criminal Justice/Law, Culinary Arts, Drafting/CAD, Early Childhood Education, Electronics/Computer Repair, Emergency Medical Technician-B, Firefighting, Machine Tool Technology, Medical Administrative Technology, Medical Assisting, Office Technology, Pharmacy Technician Assistant, Programming and Software Development, Rehabilitative/Therapeutic Technician, Secretarial and Administrative Technology and Surgical Technician Assistant (MSDE 2003b, 2004h).
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Appendix A: BCPSS CTE PROGRAM PROFILES, MAY 2004

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
Accounting	520302	This college preparatory program will provide students with the rules and procedures of accounting for non-profit and profit-driven businesses. Students will learn the "hows" and "whys" of accounting for keeping accurate financial data. They will gain experiences in keeping financial records, preparing federal and state income taxes, and exploring careers available to the accounting profession. Technology is integrated throughout instruction as students design and develop accounting records, databases, spreadsheets, correspondence, and presentations. Students will explore business principles and management as it relates to the business world and accounting and they will develop business plans. Students will study the investment environment, global economics, and its impact on the financial world. Additionally, students will gain knowledge in business and cyber ethics, develop organizational and employability skills, and maintain portfolios to highlight their high school instruction and experiences. Job shadowing, mentoring, and internships with accounting firms and individuals, attending student conferences sponsored by accounting organizations, and community service are available to students. Upon completion of this program, students will be prepared to further their education in a post-secondary institution, enter the world of work as an accounting technician, or both.		Tech Prep	On MSDE's List A, this program is shown as "Health Care Business, Finance and Economics;" MSDE's Enrollment Report calls it "Accounting Technician."	44	82	52	Yes	Lake Clifton High School	40	NE	34	0	Location not shown in 2003.[5]
										Mergenthaler Vocational-Technical High School	410	NE	62	27	
										Walbrook High School Uniform Services Academy	411	NW	60	61	
										Western High School	407	NW	42	30	
										Carver Vocational-Technical High School	454	SW	83	40	
										Total Enrollment:			281	158	
Administrative Technology	520408	This program is designed to prepare students to meet the challenges and		Occup		288	229	263	Yes	Patterson High School	405	SE	129	82	

[1] Program descriptions are drawn from *Planning Your High School Program, 2004-2005*, unless otherwise noted.

[2] "BWIB Focus?" refers to whether the program is in one of the 5 MSDE career clusters that correspond with fields that are targeted as critical shortage areas by the Baltimore Workforce Investment Board. The 5 clusters include: (1) Business, Management and Finance; (2) Construction and Development; (3) Consumer Services, Hospitality and Tourism; (4) Health and Biosciences; and (5) Information Technology.

[3] "Quad" refers to the quadrant in which a listed high school is located. In categorizing high schools in this way, the City was divided into four quadrants, with North Avenue being used as the basis for making North and South determinations and Charles Street being used as the basis for making East and West determinations.

[4] All enrollment numbers were taken from the "Program Enrollment by Local Schools Report, April 2004," available from MSDE, Division of Career, Technology and Adult Learning.

[5] "Location not shown …" means that a school was not reported as having a given program in MSDE's "Program Enrollment by Local Schools Report" in the year noted.

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
		students to meet the challenges and opportunities presented by the changing office world. Students will learn about and experience state-of -the-art technology used in the modem office. Information processing through word processing, database management, spreadsheets, graphics, personal information management, publishing and presentations are included in this program. The management of financial records will play a major role. Students will explore, through research, the various career paths. The study of management, consumer and business law, and business and cyber ethics will further strengthen the skills of the students. Students will have an opportunity to experience the real world using Administrative Technology through job shadowing, mentoring, internships, interacting with professionals in the area, and community service.								Waverly Career Center	115	NE	3	0	Location not shown in 2003
										Walbrook High School Uniform Services Academy	411	NW	185	199	
										Southwestern High School	412	SW	53	87	
										Southern High School	70	SE	32	36	
										Paul Laurence Dunbar High School	414	SE	22	47	
										Northwestern High School	401	NW	73	276	
										Northern High School	402	NE	298	0	Location not shown in 2003.
										Laurence G. Paquin Middle/High School	457	NE	5	10	
										Lake Clifton High School	40	NE	48	0	Location not shown in 2003.
										Reginald F. Lewis High	419	NE	0	0	Location not shown in 2003.
										Harbor City High School	413	SW	0	0	Location not shown in 2003.
										Francis M. Wood Alternative High School	178	SW	29	0	Location not shown in 2003.
										Forest Park High School	406	NW	160	238	
										Fairmount-Harford Institute	456	NE	53	0	Location not shown in 2003.
										Edmondson-Westside High School	400	SW	59	59	
										Carver Vocational-Technical High School	454	SW	28	90	
										Mergenthaler Vocational-Technical High School	410	NE	54	98	
										Total Enrollment:			1793	1538	

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
Apparel Technology	200303	This program provides opportunities for learning skills that may be applied wherever sewing is done. Practical experiences are given in operating machines with speed and accuracy. Included are straight lock stitch, top feed, chain stitch, serging, buttonhole, button-sewing, ziz-zag, and automatic tacking and binding machines. There is instruction in pattern layout marking, and cutting. Instruction is also given in basic construction, and the opportunity is provided to make items of general utility.	Through an articulation agreement with the Baltimore City Community College, students are able to enter the college program with advanced credits toward an Associate's Degree.	Tech Prep		0	2	1	No	Fairmount-Harford Institute	456	NE	0	0	Location not shown in 2003.
										Carver Vocational-Technical High School	454	NW	46	48	
										Laurence G. Paquin Middle/High School	457	NE	0	16	
										Total Enrollment:			46	64	
Automotive Collision Repair	470603	An instructional program that prepares individuals to apply technical knowledge and skills to repair, reconstruct and finish automobile bodies, fenders, and external features. Includes instruction in all phases of body work preparation and finishing.		Occup		7	13	4	No	Mergenthaler Vocational-Technical High School	410	NE	0	0	Location not shown in 2003.
										Northwestern High School	401	NW	41	66	
										Total Enrollment:			41	66	
Automotive Service	470699	This program provides opportunities to apply technical knowledge and skills to maintain and repair vehicles. Included are oil changes, brake work, engine cleaning and auto body maintenance.		Occup.		2	0	0	No	Central Career Center at Briscoe	451	SW	10	11	
										Total Enrollment:			10	11	
Automotive Technology	470604	This program provides learning experiences focusing on the maintenance, repair, and/or replacement of various components of the automobile-the engine, transmission, steering, brakes, and electrical system. The program also includes training in the use of diagnostic and testing equipment.		Occup.		28	5	17	No	Edmondson-Westside High School	400	SW	59	52	
										Forest Park High School	406	NW	96	107	
										Mergenthaler Vocational-Technical High School	410	NE	108	79	
										Patterson High School	405	SE	100	109	
										Southern High School	70	SE	0	0	
										Total Enrollment:			363	347	

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
Biotechnology	510802	Biotechnology is the applied biological science of using cells or parts of cells to develop new and different products to benefit humankind. It is responsible for recent discoveries in medicine, pharmacology, marine biology, forensics, and agriculture. This program is for students who like science, mathematics, computers, and research. It provides students with the opportunity to develop technical, biological, chemical, and medical laboratory skills in preparation for employment in a variety of laboratory settings. The Biotechnology Program also provides opportunities for students to work off campus under the supervision of professional scientists at local biotechnology businesses and academic institutions. Biotechnology offers many areas to explore in agriculture, marine biology, and clinical and laboratory research.	Through an articulation agreement with Baltimore City Community College, students are able to enter the college classroom with advanced credits toward an Associate's Degree in the biotechnology option of the Science Technology Program.	Occup.	This program is shown as being a Tech Prep program in "Planning Your High School Program, 2004-2005." On MSDE's "Approved CTE Programs Report" it is shown as an Occupational Prep Program.	0	0	0	Yes	Paul Laurence Dunbar High School	414	SE	13	14	
										Southern High School	70	SE	0	0	Location not shown in 2003.
										Total Enrollment:			13	14	
Cabinet Making	480703	This program includes training in cutting and shaping furniture and cabinet parts, using hand tools and woodworking machines, assembly methods, wood finishing, and hardware installation. Related instruction includes basic carpentry principles, drafting, blueprint reading, and the study of woods. Veneering, inlaying, carving, and furniture repair are also important segments of the course.		Occup.		16	11	9	Yes	Mergenthaler Vocational-Technical High School	410	NE	53	51	
										Southern High School	70	SE	12	16	
										Total Enrollment:			65	67	
Carpentry	460201	This program provides classroom and shop experiences involving layout, fabrication, assembly, installation, and repair of structural units. Instructional units emphasize the care and use of hand and power tools, equipment, and materials; common systems of frame construction and the principles involved; and drafting, blueprint reading, applied mathematics, and materials estimating	A State certification is available.	Occup.		55	16	14	Yes	Carver Vocational-Technical High School	454	SW	113	111	
										Edmondson-Westside High School	400	SW	117	112	
										Lake Clifton High School	40	NE	35	5	

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
		mathematics, and materials estimating.								Mergenthaler Vocational-Technical High School	410	NE	53	3	
										Waverly Career Center	115	NE	11	0	
										Total Enrollment:			329	231	
Catering	200405	This program is designed to provide students with instruction in management and marketing of a catering business. Planning, preparation, and presentation of food for service at banquets, parties, weddings, and other special occasions, equipment use and care, concepts of menu planning and nutritional emphasis, cost control, standardization and the assurance of sanitation and safety prepare students for various options within the hospitality industry.	Through an articulation agreement with the Baltimore City Community College, students are able to enter the college program with advanced credits toward an associate degree. A national certification is available.	Tech Prep		15	4	22	Yes	Forest Park High School	406	NW	70	76	
										Total Enrollment:			70	76	
Commercial Art	500402	This program provides the theoretical and practical learning experiences related to the production of signs, displays, and other advertising media. Instruction includes advertising theory, poster design, fashion illustration, commercial lettering, sign painting, silk screening, air brush techniques, color dynamics, package and product design, drawing for line and halftone reproduction, and other display devices and exhibits. 10 or more periods/week; 4 or more credits/year.		Occup.	This program is shown as having CIP# 480203 in Planning Your High School Program, 2.004-2005. The program description is taken from the "Course Sequence Booklet," as none appears in "Planning Your High School Program, 2004-2005."	13	14	14	Yes	Carver Vocational-Technical High School	454	SW	54	61	
										Total Enrollment:			54	61	

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
Commercial Baking	120501	This program provides classroom and practical work experiences associated with the preparation of bread, cakes, pies, pastries, and other bakery products. Instruction includes making, freezing, and handling baked products; decorating; counter display; and packaging. Related instruction includes the science of ingredient mixing, fermentation, baking processes, formula balance, merchandising, and baking experimentation.		Occup.	This program is shown as having CIP# 200402 in "Planning Your High School Program, 2004-2005."	18	15	17	Yes	Edmondson-Westside High School	400	SW	34	44	
										Mergenthaler Vocational-Technical High School	410	NE	50	52	
										Total Enrollment:			84	96	
Construction Technology	460401	This program provides instruction in basic skills needed to keep the physical structure of an office building, factory, apartment house, or similar structure in good repair. Experiences are provided in painting, carpentry, plumbing, ceiling and floor repair, electrical wiring, masonry, and other areas where maintenance and minor repairs are usually performed.		Occup.		14	13	14	Yes	Francis M. Wood Alternative High School	178	SW	0	0	Location not shown in 2003.
										Lake Clifton High School	40	NE	37	12	
										Harbor City High School	413	SW	0	20	
										Edmondson-Westside High School	400	SW	0	0	Location not shown in 2003.
										Central Career Center at Briscoe	451	SW	12	9	
										Fairmount-Harford Institute	456	NE	69	70	
										Waverly Career Center	115	NE	18	17	
										Total Enrollment:			136	128	
Construction Trades	460499	This program provides instruction to apply technical knowledge and skills to		Occup.	This program is listed as being a	5	0	0	Yes	Southwestern High School	412	SW	102	147	

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
		the finishing, inspection, and maintenance of structures including commercial and industrial buildings and homes. Instructional units emphasize construction of structures, heating, plumbing, and electrical systems.			Tech Prep program in "Planning Your High School 2004-2005." On MSDE's "Approved CTE Programs Report," it is shown as Occupational.					Mergenthaler Vocational-Technical High School	410	NE	0	0	
										Total Enrollment:			102	147	
Cooperative Education	850000	None provided in either "Planning Your High School Program, 2004-2005" or the "Course Sequence Booklet."				0	0	0	N/A	Patterson High School	405	SE	6	0	Location not shown in 2003.
										Forest Park High School	406	NW	0	0	Location not shown in 2003.
										Mergenthaler Vocational-Technical High School	410	NE	61	0	Location not shown in 2003.
										Walbrook High School Uniform Services Academy	411	NW	35	0	Location not shown in 2003.
										Southwestern High School	412	SW	0	0	Location not shown in 2003.
										Harbor City High School	413	SW	0	0	Location not shown in 2003.
										Paul Laurence Dunbar High School	414	SE	0	0	Location not shown in 2003.
										Frederick Douglass High School	450	NW	32	0	Location not shown in 2003.
										Central Career Center at Briscoe	451	SW	0	0	Location not shown in 2003.
										Carver Vocational-Technical High School	454	SW	0	0	Location not shown in 2003.
										Northern High School	402	NE	31	0	Location not shown in 2003.
										Fairmount-Harford Institute	456	NE	24	0	Location not shown in 2003.

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
										Lake Clifton High School	40	NE	0	0	Location not shown in 2003.
										Francis M. Wood Alternative High School	178	SW	0	0	Location not shown in 2003.
										Edmondson-Westside High School	400	SW	0	0	Location not shown in 2003.
										Northwestern High School	401	NW	140	0	Location not shown in 2003.
										Southern High School	70	SE	0	0	Location not shown in 2003.
										Waverly Career Center	115	NE	0	0	Location not shown in 2003.
										Total Enrollment:			189	0	
Cosmetic Services	120499	This program provides instruction and practice in the care and beautification of the nails, hands and arms. Students learn the science of nail technology through studying skin and nail disorders and basic, advanced and creative nail procedures. Emphasis is also placed on safety, hygiene, sanitation, customer relations, professionalism and salon management and entrepreneurship.	Instruction prepares students for the State Board of Licensing examination.	Occup.		13	10	6	Yes	Forest Park High School	406	NW	0	0	Location not shown in 2003.
										Waverly Career Center	115	NE	0	0	Location not shown in 2003.
										Patterson High School	405	SE	58	62	
										Northwestern High School	401	NW	36	35	
										Frederick Douglass High School	450	NW	0	0	Location not shown in 2003.
										Fairmount-Harford Institute	456	NE	49	37	
										Central Career Center at Briscoe	451	SW	0	0	Location not shown in 2003.
										Northern High School	402	NE	0	0	Location not shown in 2003.
										Laurence G. Paquin Middle/High School	457	NE	0	0	Location not shown in 2003.
										Total Enrollment:			143	134	

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
Cosmetology	120403	Instruction is provided in manicuring, shampooing, hair cutting, finger waving, permanent waving, hair styling, tinting, scalp treatments, facials, wiggery, hair pressing, chemical relaxing, and the theory of cosmetology. Hygiene, sanitation, salon management, and customer relations are also emphasized.	This program offers the 1500 hours of instruction and practice required to qualify for the State Board of Cosmetologists' licensing examination.	Occup.		76	36	48	Yes	Carver Vocational-Technical High School	454	SW	122	0	Location not shown in 2003.
										Edmondson-Westside High School	400	SW	51	0	Location not shown in 2003.
										Mergenthaler Vocational-Technical High School	410	NE	91	0	Location not shown in 2003.
										Total Enrollment:			264	0	Need to follow up with BCPSS and MSDE on how # completing could exceed # enrolled in 2003.
Criminal Justice/Law	430104	This instructional program provides for the study of the criminal justice system, its organizational components and processes, and its legal and public policy contexts. It includes instruction in criminal law and policy, police and correctional systems organization, the administration of justice and the judiciary, and public attitudes regarding criminal justice issues.	Through an articulation agreement with the Baltimore City Community College, students are able to enter the college program with advanced credits toward an associate degree.	Tech Prep	In the BCPSS "Program Utilization Table," this program is also called "Community Law."	1	37	26	No	Lake Clifton High School	40	NE	0	0	Location not shown in 2003.
										Walbrook High School Uniform Services Academy	411	NW	229	284	
										Northern High School	402	NE	0	0	Location not shown in 2003.
										Northwestern High School	401	NW	112	100	
										Patterson High School	405	SE	72	62	
										Total Enrollment:			413	446	
Culinary Arts	200401	This program provides a planned program of instruction for students wishing to pursue a vocational program in the foods area. This is a dual-track program. One track leads to entry level jobs in food service areas in various types of operations. The second tract leads to entry level management positions in the food industry and/or the pursuit of post secondary education at a community college or a four-year college. The basic areas of instruction for both tracks include nutrition, sanitation, equipment use and care, safety, and food preparation and service. For the management segment,	Through an articulation agreement with the Baltimore City Community College, students are able to enter the college program with advanced credits toward an associate degree. A national certification is available.	Tech Prep		34	33	49	Yes	Mergenthaler Vocational-Technical High School	410	NE	53	75	
										Waverly Career Center	115	NE	18	25	
										George W. F. McMechen	177	NW	0	0	Location not shown in 2003.
										Francis M. Wood Alternative High School	178	SW	22	23	
										Fairmount-Harford Institute	456	NE	30	38	

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
		instruction in purchasing, accounting, storage, and inventory procedures will be taught.								Edmondson-Westside High School	400	SW	67	55	
										Central Career Center at Briscoe	451	SW	0	0	Location not shown in 2003.
										Carver Vocational-Technical High School	454	SW	72	76	
										Total Enrollment:			262	292	
Diesel Technology	470605	This program provides classroom and shop experiences focusing on all phases of repair work on diesel engines used to power buses, trucks electrical generators, construction machinery and similar equipment. Instruction is provided in the diagnosis of engine malfunction; disassembly of engines and examination of parts; reconditioning and replacement of parts; and repair and adjustment of fuel injection systems, oil and water pumps, generators, governors, controls and transmissions.		Occup.	This program description is taken from the "Course Sequence Booklet;" none appears in "Planning Your High School Program, 2004-2005."	4	7	6	No	Carver Vocational-Technical High School	454	SW	24	18	
										Total Enrollment:			24	18	
Drafting/CAD	480101	This instructional program prepares individuals to apply technical knowledge and skills to plan and prepare scale pictorial interpretations of engineering and design concepts. The program includes instruction in the use of precision drawing instruments, computer assisted design (CAD) programs, sketching and illustration, specifications interpretation, layout and design of architectural prints, and renderings as applied in both the mechanical and architectural fields.		Tech Prep		28	32	38	Yes	Edmondson-Westside High School	400	SW	39	35	
										Southern High School	70	SE	121	100	
										Patterson High School	405	SE	62	54	
										Carver Vocational-Technical High School	454	SW	30	36	
										Mergenthaler Vocational-Technical High School	410	NE	79	107	
										Total Enrollment:			331	332	
Drycleaning	200309	This program provides a thorough knowledge of dry cleaning, spotting, and pressing of garments, slip covers, and			This program description is taken from the	10	4	9	No	Carver Vocational-Technical	454	SW	35	33	

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
		other articles of wool, silk, and nonwashable fabrics. Emphasis is placed on the use, repair, and care of tools and equipment-steam spotting boards, pressing machines, and dry cleaning and wet cleaning machines. 10 or more periods/week; 4 or more credits/year.			"Course Sequence Booklet;" none appears in "Planning Your High School, 2004-2005."					High School					
										Total Enrollment:			35	33	
Early Childhood Education	200201	This program provides training for work as a classroom aide in programs for children and training to meet requirements for senior staff positions. The ECE Program provides opportunities to work in child day care programs and to engage in the planning and administration of many activities. Participants greet children and their parents; organize and direct indoor and outdoor games; and plan movement and quiet times that encourage self-expression and development of artistic, musical, linguistic, reasoning, and socialization skills. ECE workers assist in preparing and serving nutritious snacks and see that children have appropriate rest periods. ECE is on the cutting edge of human services occupations. This training permits entry to many careers involving children, their care, education, and development.	Through an articulation agreement with Baltimore City Community College, students are able to go directly into the college classroom with advanced credits toward an Associate's Degree in Early Childhood Education. Students may sit for State certification exam.	Tech Prep		118	154	112	No	Mergenthaler Vocational-Technical High School	410	NE	73	72	
										Southern High School	70	SE	67	66	
										Patterson High School	405	SE	65	64	
										Northwestern High School	401	NW	64	70	
										Northern High School	402	NE	77	0	Location not shown in 2003.
										Southwestern High School	412	SW	80	113	
										Laurence G. Paquin Middle/High School	457	NE	0	0	Location not shown in 2003.
										Lake Clifton High School	40	NE	76	122	
										Frederick Douglass High School	450	NW	0	0	Location not shown in 2003.
										Forest Park High School	406	NW	70	62	
										Fairmount-Harford Institute	456	NE	46	47	
										Edmondson-Westside High School	400	SW	33	39	
										Carver Vocational-Technical High School	454	SW	55	55	
										Total Enrollment:			706	710	

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
Electrical Construction	460302	This program provides classroom and shop experiences concerned with the layout, assembly, installation, testing, and maintenance of electrical fixtures, apparatus, and wiring used in electrical systems. Instruction is provided in the reading, interpretation, and application of the electrical code.		Occup.	This program is listed as being both Tech Prep and Occupational Prep in "Planning Your High School Program, 2004-2005." In MSDE's "Approved CTE Programs Report," it is shown as Occupational.	33	38	24	Yes	Carver Vocational-Technical High School	454	SW	38	74	
										Lake Clifton High School	40	NE	41	14	
										Mergenthaler Vocational-Technical High School	410	NE	98	86	
										Northern High School	402	NE	97	0	Location not shown in 2003.
										Total Enrollment:			274	174	
Electronics/ Computer Repair	470104	This program provides students the opportunity to develop the understanding of electrical theory that is necessary to perform electrical design testing, assembly, and network analysis. The program provides application of theory to hands-on experiences, which in turn helps students develop technical communication skills. Students will study electrical power, communications, entertainment, data storage, and artificial intelligence. Electronics is essential in an array of careers in communication, manufacturing, medicine, transportation, security, and power distribution.	Through an articulation agreement with the Baltimore City Community College, students are able to enter the college classroom with advanced credits toward an Associate's Degree in Computer Electronics, Computer Repair, or Telecommunications. A national certification is available.	Tech Prep		50	14	18	Yes	Frederick Douglass High School	450	NW	0	0	Location not shown in 2003.
										Lake Clifton High School	40	NE	60	30	
										Southwestern High School	412	SW	0	0	Location not shown in 2003.
										Mergenthaler Vocational-Technical High School	410	NE	59	63	
										Edmondson-Westside High School	400	SW	19	19	
										Carver Vocational-Technical High School	454	SW	0	0	Location not shown in 2003.
										Total Enrollment:			138	112	
Emergency Medical	510904	This instructional program prepares students to perform initial medical	Instruction prepares	Tech Prep		0	2	1	Yes	Patterson High School	405	SE	0	0	Location not shown in 2002.

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
Technician-B		diagnosis, treatment and comprehensive care in medical crises, under the general supervision of a coordinating physician. It includes instruction in all aspects of basic health care; disease, disorder, and injury symptomology and diagnosis; emergency medical treatment procedures for various injuries and disease outbreaks; basic pharmacology; anesthetics; intravenous and other drug administration procedures; obstetrics procedures; basic surgical techniques; emergency medical equipment operation and maintenance; special care of patients exposed to heat, cold, radiation, or contagious disease; and administrative aspects of emergency vehicle operation and patient transportation procedures, depending on level of training.	students for the certification examination. Through an articulation agreement with the Baltimore City Community College, students are able to enter the college program with advanced credits toward an Associate's Degree.							Paul Laurence Dunbar High School	414	SE	12	0	Location not shown in 2003.
										Total Enrollment:			12	0	Need to follow up with BCPSS and MSDE on how # completing could exceed # enrolled in 2003.
Firefighting	430203	An instructional program that prepares individuals to perform the duties of firefighters. The program includes instruction in firefighting equipment operation and maintenance, principles of fire science and combustible substances, methods of controlling different types of fires, hazardous material handling and control, fire rescue procedures, public relations, applicable laws and regulations, and emergency medical technician training.	Students who complete the program are eligible to take the State certification exam.	Tech Prep		14	1	0	No	Baltimore City Central Office	0	0	177	0	Location not shown in 2003.
										Walbrook High School Uniform Services Academy	411	NW	0	0	Location not shown in 2002 and 2003 by MSDE; program is listed at this location in the BCPSS' "Planning Your High School Program, 2004-2005."
										Total Enrollment:			177	0	
Floral Design	010603	This program provides theoretical and practical instruction in the principles and elements of design and correct procedures for creating pleasing and salable arrangements. The safe use of tools, materials, and supplies, inventory and cost control, customer relations, communication, professionalism, marketing and management of a business are stressed.		Occup.		0	0	0	No	Laurence G. Paquin Middle/High School	457	NE	0	0	Location not shown in 2003.

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
										Total Enrollment:			0	0	
Graphic and Printing Commun.	480201	This program focuses on the basic operations of offset and letterpress printing. (The equipment available in the individual shop determines the areas of printing that will be taught.) The new methods of strike-on composition, photocomposition, and paste make-up complement the traditional methods of preparing forms for the press. Reproduction camera work and darkroom techniques, offset stripping, platemaking, and lithographic presswork are major blocks of instruction that expand the traditional letterpress-based printing course.		Occup.		28	47	48	No	Carver Vocational-Technical High School	454	SW	27	37	
										Southwestern High School	412	SW	0	0	Location not shown in 2003.
										Southern High School	70	SE	90	77	
										Mergenthaler Vocational-Technical High School	410	NE	48	48	
										Patterson High School	405	SE	70	120	
										Frederick Douglass High School	450	NW	118	125	
										Edmondson-Westside High School	400	SW	37	28	
										Fairmount-Harford Institute	456	NE	0	19	
										Lake Clifton High School	40	NE	91	24	
										Total Enrollment:			481	478	
Horticulture	010601	Ornamental horticulture prepares students to produce, process, and market plants, shrubs, and trees used principally for ornamental, recreational, and aesthetic purposes and to establish, maintain and assist in the management of horticultural enterprises such as arboriculture, floriculture, greenhouse operation, landscaping, nursery operation, and turf management. This program includes instruction in basic machinery and equipment necessary for each horticulture enterprise.		Occup.		0	0	0	No	Central Career Center at Briscoe	451	SW	4	0	Location not shown in 2003.
										Total Enrollment:			4	0	
Hospitality	080901	This program provides opportunities to apply management and supervisory skills in the field of hospitality. Includes instruction in management, purchasing	A national certification is available.	Occup.		0	13	21	Yes	Central Career Center at Briscoe	451	SW	0	0	Location not shown in 2003.

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
		and storage, food preparation, staff supervision, sanitation and safety.								National Academy Foundation School	421	SE	0	0	Location not shown in 2002 or 2003 by MSDE; location is shown on the BCPSS Program Utilization Report.
										Waverly Career Center	115	NE	8	13	
										Southwestern High School	412	SW	178	33	
										Lake Clifton High School	40	NE	21	10	
										Fairmount-Harford Institute	456	NE	0	0	Location not shown in 2003.
										Total Enrollment:			207	56	
International Business Marketing	521403	Students will study international marketing including channels of distribution and transportation, advertising and legal, environmental and technological, economic and cultural factors. They will study the problems related to market surveys and policies within the global perspective. In addition to further studies, completers of this program will be able to pursue careers as liaisons in governmental services, military, import/export specialists, financial services, money exchangers, entrepreneurs, wholesale/retail sales and promotions, and travel and tourism. It is recommended that students take a variety of related coursework, economics, geography, world and classical languages.		Occup.	This program is shown as "International Marketing," CIP # 520403, Tech Prep in "Planning Your High School Program, 2004-2005."	13	34	11	Yes	Southern High School	70	SE	0	0	Location not shown in 2003.
										Patterson High School	405	SE	32	27	
										Western High School	407	NW	28	37	
										Total Enrollment:			60	64	
Machine Tool Technology	480503	This program prepares students for technical level employment in industry. Extensive instruction is provided in mathematical and scientific areas. Emphasis is placed upon the use of computers in design, machine control, and problem solving. The graduate is prepared to enter the job market on the first level of a career ladder in technology.	The program is coordinated with Catonsville Community College so that the student may proceed to advanced levels of training in a minimum of time.	Tech Prep	This program is shown as being both Tech Prep and Occupational Prep in "Planning Your High School Program, 2004-2005."	11	17	9	No	Southern High School	70	SE	27	29	
										Mergenthaler Vocational-Technical High School	410	NE	52	73	

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
										Total Enrollment:			79	102	
Manufacturing Engineering	141701	None provided in either "Planning Your High School Program, 2004-2005" or the "Course Sequence Booklet."		Occup.		7	8	7	Yes	Patterson High School	405	SE	46	47	
										Total Enrollment:			46	47	
Mason and Tile Setter	460101	This program includes all the basic operations of bricklaying; mixing and spreading mortar; and cutting and laying bricks and blocks (concrete, cinder, and glass). The construction of walls, piers, steps, pilasters, and other brick and block-laying projects is used for skill development. The course may include work in mixing, laying, and finishing cement, and/or the plastering of walls and ceilings.		Occup.		21	32	26	Yes	Mergenthaler Vocational-Technical High School	410	NE	29	26	
										Carver Vocational-Technical High School	454	SW	53	40	
										Lake Clifton High School	40	NE	40	17	
										Total Enrollment:			122	83	
Media Production Technology	100104	The purpose of this program is to prepare students for employment as a television production operator, television broadcast technician, or video recording engineer. The content includes, but is not limited to, communication skills, leadership skills, human relations and employability skills, safe and efficient work practices, and preparation to assume responsibility for overall production of television studio activities including scripts, lighting, filming and directing, electronic news gathering, and field production as well as web site design.		Tech Prep	Program is shown as Tech Prep in "Planning Your High School Program, 2004-2005," but is not shown in MSDE's "Approved CTE Programs Report" in either 2003 or 2004.	0	0	0	No	Francis M. Wood Alternative High School	178	SW	0	0	Location not shown in 2002.
										Total Enrollment:			0	0	
Medical Administrative Technology	520408	This program is very much like the description noted above for Administrative Technology with a medical approach. Students will learn medical terminologies, the use of special forms, correspondence, and equipment as used in medical/health care/health related offices/ institutions. Job shadowing, internships, work-based learning experiences will be in a Medical		Tech Prep	This program is shown as being Occupational Prep in "Planning Your High School Program, 2004-2005."	0	0	0	Yes	Frederick Douglass High School	450	NW	86	104	

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
		Administration Office or a health care/health related agency.													
										Total Enrollment:			86	104	
Medical Assisting	510801	This program prepares the student to assist licensed physicians in offices and in joint practice associations. The duties include assisting the physician and health practitioner during medical examinations, assisting in the collection of specimens, and conducting laboratory tests on body fluids. The assistant also makes appointments and performs other office procedures. Student observation in health facilities and supervised clinical experience in hospitals, clinics, or doctors' offices is a part of the instructional program.	Through an articulation agreement with the Baltimore City Community College, students are able to enter the college program with advanced credits toward an Associate's Degree. A national certification is available.	Tech Prep		7	5	14	Yes	Harbor City High School	413	SW	0	0	Location not shown in 2003.
										Paul Laurence Dunbar High School	414	SE	84	0	Location not shown in 2003.
										Edmondson-Westside High School	400	SW	29	0	Location not shown in 2003.
										Total Enrollment:			113	0	Need to follow up with BCPSS and MSDE on how # completing could exceed # enrolled in 2003.
Networking Systems	521204	This program focuses on the design, implementation, and management of linked systems of computers, peripherals, and associated software to maximize efficiency and productivity, and that prepares students to function as network specialists and managers at various levels. Includes instruction in operating systems and applications; systems design and analysis; networking theory and solutions; types of networks; network management and control; network and flow optimization; security; configuring; and troubleshooting.		Tech Prep	This program is shown as being Tech Prep in "Planning Your High School Program, 2004-2005; but it is not yet approved by MSDE. On 4/22/04, Dr. Jones noted that programs will not show enrollment until 2004.	0	0	0	Yes	Digital Harbor High	416	SE	0	0	Location not shown in 2002 and 2003.
										Total Enrollment:			0	0	
Nursing	511699	This program is designed to introduce the student to the field of professional nursing. Emphasis is placed on the	Upon graduation the student will be	Occup.	On 4/22/04, Dr. Jones noted that this	0	0	0	Yes	Edmondson-Westside High School	400	SW	0	0	Location not shown in 2002.

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
		scope of professional nursing, trends, historical development, practices and technological changes. An interdisciplinary team approach will be utilized for this four-year course of study. The student is introduced to developmental concepts, the physiological and psychological needs of people and effective communication skills. Building upon prior learning, the student is challenged to make application of basic health skills, use critical thinking and integrate learning from reading, science and other courses. All students will participate in field trips, shadowing and clinical learning experiences.	prepared to earn prerequisite credits for entrance into a baccalaureate nursing program and earn a Bachelor of Science degree in nursing.		program will not begin to show enrollments until 2005.					Paul Laurence Dunbar High School	414	SE	0	0	Location not shown in 2002 and 2003 by MSDE; program is shown by the BCPSS in "Planning Your High School Program, 2004-2005."
										Total Enrollment:			0	0	
Nursing Assisting	511614	This instructional program prepares the student to assist in direct patient care in general hospitals, nursing homes and health maintenance organizations. The duties include assisting with diagnostic procedures; observations and recording of vital signs; aseptic techniques; care of surgical patients, etc.. Student clinical experiences are provided in a general hospital, extended care facilities, or nursing homes and are supervised by the nursing assistant teacher.	Students who complete the program are eligible to take the State certification exam.	Occup.	This program is shown as being a Tech Prep program in "Planning Your High School Program, 2004-2005," but as Occupational Prep on MSDE's "Approved CTE Programs Report." On 4/22/04, Dr. Jones noted that this program will not begin to show enrollments until 2005.	6	0	0	Yes	Edmondson-Westside High School	400	SW	0	0	Location not shown in 2003.
										Paul Laurence Dunbar High School	414	SE	0	0	Location not shown in 2003.
										Total Enrollment:			0	0	
Office Technology	520408	Office Technology is a four-credit instructional program designed to allow students to work at their own pace with basic administrative support under the supervision of office managers and other office personnel. Students will gain marketable business skills in such areas as word/information processing,		Tech Prep	This program is shown as being Occupational Prep in "Planning Your High School Program, 2004-2005." It has	See Admin Tech	See Admin Tech	See Admin Tech	Yes	Central Career Center at Briscoe	451	SW	11	10	

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
		database management, records management, accounting/recordkeeping, use of the calculator and transcription equipment, business math, business law and career applications/preparation. Students will be able to apply these skills in every day life and through participation in internships, work-based learning, and or service learning opportunities.			the same CIP# as Administrative Technology, above.										
										Total Enrollment:			11	10	
Painting and Decorating	460408	This program provides experiences concerned with the preparation and finishing of exterior and interior surfaces through application of protective or decorative coating materials such as lacquer, paint and wallpaper. Instruction includes experiences in scraping, burning, or sanding surfaces; making, mixing, and matching paints and colors; and applying coating with brush, roller, or spray gun or by cutting, pasting, and hanging wallpaper.		Occup.		0	2	3	No	Waverly Career Center	115	NE	13	15	
										Total Enrollment:			13	15	
Pharmacy Technician Assistant	510805	This program is designed to introduce the student to the field of pharmacy. Emphasis is placed on all pharmaceutical services, which include diagnostic, therapeutic, environmental, technological and general services. Historical developments, medical and	A national certification is available.	Tech Prep		2	1	3	Yes	Edmondson-Westside High School	400	SW	0	0	Location not shown in 2003.
										Northwestern High School	401	NW	0	0	Location not shown in 2003.
										Patterson High School	405	SE	55	62	

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
		pharmacy terminology, the health care delivery system, ethical and legal aspects of health care and pharmaceutical services are included. The student is introduced to selected developmental concepts, the physiological and psychological needs of people, effective communication and job readiness skills. Building upon prior learning the student is challenged to make application of basic health skills, use critical thinking skills, and integrate learning from reading, science and other courses. Through classroom and laboratory experience the student will learn to assist in mixing pharmaceutical preparations under the direction of a pharmacist. Principles and practices related to issuing medicine, labeling and storing supplies, and cleaning equipment and work areas is [sic] included. The course provides clinical exposure with job shadowing experience and laboratory practice in basic pharmaceutical skills. Each student will experience a clinical rotation with a pharmacist in a variety of health care settings.								Paul Laurence Dunbar High School	414	SE	0	0	Location not shown in 2003.
										Total Enrollment:			55	62	
Plumbing	460501	This program provides shop and classroom experiences that will enable the student to become proficient in the installation, repair, and maintenance of domestic and commercial heating and air conditioning systems. Instruction in plumbing includes layout, assembly, installation, and alteration and repair of piping systems.		Occup.		12	10	7	Yes	Mergenthaler Vocational-Technical High School	410	NE	38	38	
										Total Enrollment:			38	38	
Programming and Software Development	521201	Programming and Software Development prepares students to analyze business situations. Students will design, develop and write computer programs, store, locate, and retrieve specific documents, data, and information; analyze problems using		Tech Prep	On 4/22/04, Dr. Jones noted that programs will not show enrollment until the next cycle.	42	82	87	Yes	Lake Clifton High School	40	NE	21	0	Location not shown in 2003.
										Walbrook High School Uniform Services Academy	411	NW	137	55	

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
		logic/analysis tools, code into computer language; and test, monitor, debug, document and maintain computer programs. They will learn and use basic and advanced computer languages and the computer programming languages. Students may study Visual BASIC, C++, Visual C, HTML, XML, Java, and Java Script. They will learn to understand and be able to create programs in the language(s). Students will be able to participate in Advanced Placement courses in Visual BASIC, C++ and or Java.								Edmondson-Westside High School	400	SW	49	46	
										Digital Harbor High	416	SE	0	0	Location not shown in 2002 or 2003 by MSDE; program is listed at this location in "Planning Your High School Program 2004-2005. "
										Carver Vocational-Technical High School	454	SW	53	60	
										Total Enrollment:			260	161	
Project Lead The Way - Pre-Engineer	155000	None provided in either "Planning Your High School Program, 2004-2005" or the "Course Sequence Booklet."		Tech Prep		0	0	0	Yes	Patterson High School	405	SE	0	0	Location not shown in2002 or 2003 by MSDE; program does appear at this location in the BCPSS' "Planning Your High School Program, 2004-2005."
										Total Enrollment:			0	0	
Rehabilitative/ Therapeutic Technician	512399	An instructional program that prepares individuals, under direct supervision of health professionals to support and assist selected therapists (i.e., physical, occupational, rehabilitation therapist, etc.) by providing assistance during patient examinations, treatment administration, routine care and monitoring; by keeping patient and related health record information; and by performing a wide range of routine practice-related duties.	Through an articulation agreement with the Baltimore City Community College, students are able to enter the college program with advanced credits toward an Associate's Degree.	Tech Prep		0	2	0	Yes	Frederick Douglass High School	450	NW	29	22	
										Total Enrollment:			29	22	
Secretarial and Administrative Technology	520401	None provided in either "Planning Your High School Program, 2004-2005" or the "Course Sequence Booklet."		Tech Prep		1	10	0	Yes	Carver Vocational-Technical High School	454	NW	22	0	Location not shown in 2003.

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
										Total Enrollment:			22	0	
Surgical Technician Assistant	510909	The Surgical Technician Assisting Program is designed to enable the high school student to simultaneously meet requirements for high school graduation and state certification examination. The program is designed to assist students in acquiring the knowledge and skills necessary for entry-level positions as a surgical technician assistant in a variety of health care settings. Clinical practice is scheduled in hospitals, long-term care, managed care, and other health care facilities. Surgical technician assistant students work directly with clients and members of the surgical team under the guidance of the program teachers and in cooperation with experienced staff personnel. Interested students may apply for the Surgical Technician Assisting Program in the second semester of the eighth grade; those students who are accepted are designated pre-surgical technician students and a special schedule of study is designed beginning in the ninth grade. Students enrolled in the Surgical Technician Program are expected to complete the program and seek employment in the health care field, and/or continue study in an institution of higher learning.	A national certification is available.	Tech Prep		12	5	1	Yes	Edmondson-Westside High School	400	SW	15	29	
										Patterson High School	405	SE	0	64	
										Total Enrollment:			15	93	
Telecommunications	470103	None provided in either "Planning Your High School Program, 2004-2005" or the "Course Sequence Booklet."	A national certification is available.	Occup.		2	50	34	Yes	Frederick Douglass High School	450	NW	85	103	
										Edmondson-Westside High School	400	SW	43	38	
										Mergenthaler Vocational-Technical High School	410	NE	0	0	Location not shown in 2003.
										Carver Vocational-Technical High School	454	SW	25	37	

BCPSS Name	CIP #	Program Description[1]	Certifications/ Qualifications	Type	Program Info Notes	Completers			BWIB[2] Focus	School Name	#	Quad[3]	Enroll[4]		Enrollments and Locations Notes
						2001	2002	2003					2002	2003	
										Total Enrollment:			153	178	
The Academy of Travel, Tourism and Hospitality	080901	The Academy of Travel, Tourism & Hospitality is a national college-preparatory program as well as an MSDE approved career and technology program. This program prepares students for careers in the hospitality industry or related fields in travel and tourism. Emphasis is placed on consumer services and personal development. Among other careers available in this area are hospitality management, hotel/restaurant management, travel agent services, convention services and tourism. The NAF School has a foods lab to teach students interested in the culinary arts.	Graduates receive a Certificate of Travel and Tourism Studies from the National Academy Foundation in addition to the Maryland High School Diploma.	Tech Prep	On 4/22/04, Dr. Jones noted that enrollments for this program are reflected under "Hospitality."	0	0	0	Yes	National Academy Foundation School	421	SE	0	0	Location not shown in 2002 or 2003 by MSDE; the program is reflected at this location in the BCPSS' "Planning Your High School Program, 2004-2005."
										Total Enrollment:			0	0	
Welding	480508	This program focuses on the basic operations involved in all types of metal welding, brazing, and flame cutting. The use of gas, arc, and other electric welding equipment to weld parts as specified by drawings, blueprints, or written specifications is stressed. Instruction also is given in inert gas shielded arc welding with a manually-operated torch and semi-automatic gun.		Occup.		6	9	9	Yes	Mergenthaler Vocational-Technical High School	410	NE	36	36	
										Total Enrollment:			36	36	

Appendix B: Trends in Enrollment by Program FY 2000-FY 2003							
BCPSS Name	**CIP #**	**# Locations (2003)**	**Enrollment FY 2000**	**Enrollment FY 2001**	**Enrollment FY 2002**	**Enrollment FY 2003**	**% Change 2000-2003**
Accounting	520302	5	228	164	281	158	-30.70%
Administrative Technology	520408	14	2370	2371	1232	1279	-46.03%
Apparel Technology	200303	2	63	59	46	64	1.59%
Automotive Collision Repair	470603	1	37	50	41	66	78.38%
Automotive Service	470699	1	13	13	10	11	-15.38%
Automotive Technology	470604	5	463	391	363	347	-25.05%
Biotechnology	510802	2	81	56	13	14	-82.72%
Cabinet Making	480703	2	98	77	65	67	-31.63%
Carpentry	460201	5	223	211	329	231	3.59%
Catering	200405	1	57	64	70	76	33.33%
Commercial Art	500402	1	49	51	54	61	24.49%
Commercial Baking	120501	2	48	83	84	96	100.00%
Computer Programming Technology	521201	0	0	0			
Construction Technology	460401	12	121	132	136	128	5.79%
Construction Trades	460499	1	33	59	102	147	345.45%
Cooperative Education	850000	8	0	30	329	0	
Cosmetic Services	120499	5	92	80	143	134	45.65%
Cosmetology	120403	1	272	259	264	0	-100.00%
Criminal Justice/Law	430104	4	241	287	413	446	85.06%
Culinary Arts	200401	1	291	189	262	292	0.34%
Custodial, Housekeeping and Home Services Worker	200601	0	79	0	0	0	-100.00%
Dental Assistant	510601	0	8	21	0	0	-100.00%
Design Technology	150301	2	0	0	0	0	
Diesel Technology	470605	1	22	32	24	18	-18.18%
Drafting/CAD	480101	5	131	119	331	332	153.44%
Drycleaning	200309	1	26	29	35	33	26.92%
Early Childhood Education	200201	11	723	701	706	710	-1.80%
Electrical Construction	460302	3	151	215	274	174	15.23%

Appendix B: Trends in Enrollment by Program FY 2000-FY 2003							
BCPSS Name	**CIP #**	**# Locations (2003)**	**Enrollment FY 2000**	**Enrollment FY 2001**	**Enrollment FY 2002**	**Enrollment FY 2003**	**% Change 2000-2003**
Electronics/Computer Repair	470104	3	203	297	138	112	-44.83%
Emergency Medical Technician-B	510904	1	15	11	12	0	-100.00%
Firefighting	430203	0	211	306	177	0	-100.00%
Floral Design	010603	0	2	0	0	0	-100.00%
Graphic and Printing Communication	480201	8	224	156	481	478	113.39%
Health Aide	512601	0	12	4	0	0	-100.00%
Horticulture	010601	0	12	15	4	0	-100.00%
Hospitality	080901	3	0	123	207	56	
Industrial Electronics Installer and Repairer	470105	0	0	1	0	0	
Interactive Media	100104	0	0	0	0	0	
International Business Marketing	521403	3	0	22	60	64	
Machine Tool Technology	480503	2	76	49	79	102	34.21%
Manufacturing Engineering	141701	1	58	37	46	47	-18.97%
Mason and Tile Setter	460101	3	151	128	122	83	-45.03%
Media Production Technology	100104	1	0	0	0	0	
Medical Administrative Technology	520408	1	0	0	86	47	
Medical Assisting	510801	3	35	47	113	0	-100.00%
Networking Systems	521204	1	0	0	0	0	
Nursing	511699	1	0	0	0	0	
Nursing Assisting	511614	1	127	70	0	0	-100.00%
Office Technology	520408	1	0	0	10	10	
Orthotics/Prosthetics	512307		105				
Painting and Decorating	460408	1	10	2	13	15	50.00%
Pharmacy Technician Assistant	510805	3	16	17	55	62	287.50%
Plumbing	460501	1	30	33	38	38	26.67%
Pre-engineering	151101	0	0	0	0	0	
Programming and Software Development	521201	4	340	440	260	161	-52.65%

Appendix B: Trends in Enrollment by Program FY 2000-FY 2003							
BCPSS Name	**CIP #**	**# Locations (2003)**	**Enrollment FY 2000**	**Enrollment FY 2001**	**Enrollment FY 2002**	**Enrollment FY 2003**	**% Change 2000-2003**
Project Lead The Way - Pre-Engineer	155000	1	0	0	0	0	
Rehabilitative/ Therapeutic Technician	512399	1	44	26	29	22	-50.00%
Secretarial and Administrative Tech	520401	0	49	44	22	0	-100.00%
Surgical Technician Assistant	510909	1	0	19	15	93	
Telecommunications	470103	3	0	0	153	178	
The Academy of Travel, Tourism and Hospitality	080901	1	0	0	0	0	
Upholsterer	480303	0	8	0	0	0	-100.00%
Video Production	100104	0	0	0	0	0	
Welding	480508	1	39	48	36	36	-7.69%
		146	7687	7638	7763	6488	-15.60%

Note. Adapted from MSDE 2000b, 2001b, 2002b, 2003b.

Appendix C: Trends in Completers by Program, FY 2001-FY 2003										
BCPSS Name	**CIP#**	**Compl 2001**	**Compl 2002**	**Compl 2003**	**%Change 2001-2003**	**Top 10 Compl Programs 2003**	**Lowest 10 Compl Programs**	**Enroll 2003**	**Compl as a % of 2003 Program Enroll**	**Notes**
Accounting	520302	44	82	52	18.18%	4		158	32.91%	The PQI report for 2003 calls this program "Health Care Business, Finance."
Administrative Technology	520408	288	229	263	-8.68%	1		1336	19.69%	
Apparel Technology	200303	0	2	1	_		2	64	1.56%	
Automotive Collision Repair	470603	7	13	4	-42.86%		4	66	6.06%	
Automotive Service	470699	2	0	0	-100.00%		1	11	0.00%	
Automotive Technology	470604	28	5	17	-39.29%		10	347	4.90%	
Biotechnology	510802	0	0	0	_		1*	14	0.00%	
Cabinet Making	480703	16	11	9	-43.75%		7	67	13.43%	
Carpentry	460201	55	16	14	-74.55%		9	231	6.06%	
Catering	200405	15	4	22	46.67%			76	28.95%	
Commercial Art	500402	13	14	14	7.69%		9*	61	22.95%	
Commercial Baking	120501	18	15	17	-5.56%		10*	96	17.71%	
Community Law	430104	0	0	0	_		1*	0	_	
	460401	14	13	14	0.00%		9*	128	10.94%	
Construction Trades	460499	5	0	0	-100.00%		1*	147	0.00%	
Cooperative Education	850000	0	0	0	_		1*	0	_	
Cosmetic Services	120499	13	10	6	-53.85%		5	134	4.48%	
Cosmetology	120403	76	36	48	-36.84%	6		0	_	
Criminal Justice/Law	430104	1	37	26	2500.00%	10		446	5.83%	
Culinary Arts	200401	0	33	49	_	5		292	16.78%	Not listed in PQI Report in 2001.
Diesel Technology	470605	4	7	6	50.00%		5*	18	33.33%	
Drafting/CAD	480101	28	32	38	35.71%	8		332	11.45%	
Drycleaning	200309	10	4	9	-10.00%		7*	33	27.27%	
Early Childhood Education	200201	118	154	112	-5.08%	2		710	15.77%	
Electrical Construction	460302	33	38	24	-27.27%			174	13.79%	
Electronics/Computer Repair	470104	50	14	18	-64.00%			112	16.07%	
Emergency Medical Technician-B	510904	0	2	1	_		2*	0	_	

Appendix C: Trends in Completers by Program, FY 2001-FY 2003										
BCPSS Name	**CIP#**	**Compl 2001**	**Compl 2002**	**Compl 2003**	**%Change 2001-2003**	**Top 10 Compl Programs 2003**	**Lowest 10 Compl Programs**	**Enroll 2003**	**Compl as a % of 2003 Program Enroll**	**Notes**
Firefighting	430203	14	1	0	-100.00%		1*	0	_	
Floral Design	010603	0	0	0	_		1*	0	_	
Graphic and Printing Communication	480201	28	47	48	71.43%	7		478	10.04%	
Horticulture	010601	0	0	0	_		1*	0	_	
Hospitality	080901	0	13	21	_			56	37.50%	
International Business Marketing	521403	13	34	11	-15.38%		8	64	17.19%	
Machine Tool Technology	480503	11	17	9	-18.18%		7*	102	8.82%	
Manufacturing Engineering	141701	7	8	7	0.00%		6	47	14.89%	
Mason and Tile Setter	460101	21	32	26	23.81%	10		83	31.33%	
Masonry	460101	0	0	0	_			0	_	Reported under Mason and Tile Setter
Media Production Technology	100104	0	0	0	_		1*	0	_	Not listed in PQI Report in 2001, 2002 or 2003.
Medical Administrative Technology	520408	N/A	N/A	N/A	N/A		1*		_	There were 47 students enrolled in FY 03. Subsumed under Administrative Technology for purposes of reporting completion rates.
Medical Assisting	510801	7	5	14	100.00%		9*	0	_	
Networking Systems	521204	0	0	0	_		1*	0	_	Not listed on PQI Report in 2001, 2002 or 2003.
Nursing	511699	0	0	0	_		1*	0	_	Not listed on PQI report in 2001,2002.
Nursing Assisting	511614	6	0	0	-100.00%		1*	0	_	
Office Technology	520408	N/A	N/A	N/A	N/A					There were 10 students enrolled in FY 03. Subsumed under Administrative Technology for purposes of reporting completion rates.
Painting and Decorating	460408	0	2	3	_		3	15	20.00%	

Appendix C: Trends in Completers by Program, FY 2001-FY 2003										
BCPSS Name	**CIP#**	**Compl 2001**	**Compl 2002**	**Compl 2003**	**%Change 2001-2003**	**Top 10 Compl Programs 2003**	**Lowest 10 Compl Programs**	**Enroll 2003**	**Compl as a % of 2003 Program Enroll**	**Notes**
Pharmacy Technician Assistant	510805	2	1	3	50.00%		3*	62	4.84%	
Plumbing	460501	12	10	7	-41.67%		6*	38	18.42%	
Programming and Software Development	521201	42	82	87	107.14%	3		161	54.04%	
Project Lead The Way - Pre-Engineer	155000	0	0	0	_		1*	0	_	Not listed in PQI Report in 2001 and 2002.
Rehabilitative/ Therapeutic Technician	512399	0	2	0	_		1*	22	0.00%	
Secretarial and Administrative Tech	520401	1	10	0	-100.00%		1*	0	_	
Surgical Technician Assistant	510909	12	5	1	-91.67%		2*	93	1.08%	
Telecommunications	470103	2	50	34	1600.00%	9		178	19.10%	
Welding	480508	6	9	9	50.00%		7*	36	25.00%	
Total		1022	1099	1044	2.15%			6488	16.09%	
Note. MSDE, 2003e..										

Appendix D: Pre-Graduation Survey Results for the Classes of 1999-2002

Class of 2002					
Completers	921		Non-Completers	2516	
Full time:			Full time:		
4-Year College	268	29.10%	4-Year College	947	37.64%
2-Year College	127	13.79%	2-Year College	338	13.43%
Special school/training	31	3.37%	Special school/training	55	2.19%
Employment Related	79	8.58%	Employment Related	112	4.45%
Employment Unrelated	75	8.14%	Employment Unrelated	257	10.21%
Military	23	2.50%	Military	70	2.78%
Full time college and employment	52	5.65%	Full time college and employment	136	5.41%
Part time college and employment	166	18.02%	Part time college and employment	300	11.92%
Other/No Response	100	10.86%	Other/No Response	301	11.96%

Class of 2001					
Completers	881		Non-Completers	2449	
Full time:			Full time:		
4-Year College	281	31.90%	4-Year College	1004	41.00%
2-Year College	142	16.12%	2-Year College	345	14.09%
Special school/training	26	2.95%	Special school/training	79	3.23%
Employment Related	82	9.31%	Employment Related	100	4.08%
Employment Unrelated	88	9.99%	Employment Unrelated	236	9.64%
Military	32	3.63%	Military	104	4.25%
Full time college and employment	28	3.18%	Full time college and employment	93	3.80%
Part time college and employment	137	15.55%	Part time college and employment	304	12.41%
Other/No Response	65	7.38%	Other/No Response	184	7.51%

Class of 2000					
Completers	826		Non-Completers	2351	
Full time:			Full time:		
4-Year College	191	23.12%	4-Year College	909	38.66%
2-Year College	157	19.01%	2-Year College	341	14.50%
Special school/training	20	2.42%	Special school/training	78	3.32%
Employment Related	99	11.99%	Employment Related	110	4.68%
Employment Unrelated	100	12.11%	Employment Unrelated	298	12.68%
Military	46	5.57%	Military	88	3.74%
Full time college and employment	41	4.96%	Full time college and employment	97	4.13%
Part time college and employment	129	15.62%	Part time college and employment	281	11.95%
Other/No Response	43	5.21%	Other/No Response	149	6.34%

Class of 1999					
Completers	968		Non-Completers	2445	
Full time:			Full time:		
4-Year College	260	26.86%	4-Year College	953	38.98%
2-Year College	161	16.63%	2-Year College	305	12.47%
Special school/training	30	3.10%	Special school/training	88	3.60%
Employment Related	100	10.33%	Employment Related	107	4.38%
Employment Unrelated	100	10.33%	Employment Unrelated	238	9.73%
Military	31	3.20%	Military	102	4.17%
Full time college and employment	76	7.85%	Full time college and employment	98	4.01%
Part time college and employment	149	15.39%	Part time college and employment	407	16.65%
Other/No Response	61	6.30%	Other/No Response	147	6.01%

Note. MSDE, 2004i.

Appendix E: Requests and Allocations for Equipment, Materials and Supplies for BCPSS CTE Programs, FY 2003									
School #	**School Name**	**BCPSS Name**	**Request Amount**	**Request Notes**	**% of Total CTE Enrollment**	**Total Allocations**	**Allocations for Equip., Mat. & Supp.**	**Equip, Mat. & Supp. Allocations as a % of Requests**	**Allocations as a % of Total Equip, Mat. & Supp. Funds**
454	**Carver Vocational-Technical High School**	Graphic and Printing Communication	$16,000	Plates, chemicals, toner, ink, software and licenses	**12.58**	1) Part of $5,000 allocation for students to participate in PASS. 2) Part of $2,000 allocation for staff development; 3) $114,000 for equipment; 4) $30,000 to upgrade textbooks and instructional materials; 5) $65,000 to provide vocational assessment services to students.	**$144,000**	**23.3%**	**15.09%**
		Programming and Software Development	$141,114	60 computers, 3 color printers, 1 scanner, furniture, 5 digital cameras, 20 laptops					
		Secretarial and Administrative Tech	$18,790	LCD projector, texts, printer cartridges					
		Secretarial and Administrative Tech	$50,676	20 computers, 1 printer, software, LCD projectors					
		Commercial Art	$13,400	Chemicals, toner, ink, vinyl					
		Early Childhood Education	$26,200	Digital camera, 4 computers, 2 air conditioners, new floor					
		Graphic and Printing Communication	$54,800	3 printers, 3 computers, 1 printer, risograph, texts					
		Commercial Art	$64,600	5 scanners, 5 computers, 2 plotters, 3 projectors, texts, software and licenses, 1 printer, furniture					

Appendix E: Requests and Allocations for Equipment, Materials and Supplies for BCPSS CTE Programs, FY 2003									
School #	**School Name**	**BCPSS Name**	**Request Amount**	**Request Notes**	**% of Total CTE Enrollment**	**Total Allocations**	**Allocations for Equip., Mat. & Supp.**	**Equip, Mat. & Supp. Allocations as a % of Requests**	**Allocations as a % of Total Equip, Mat. & Supp. Funds**
		Carpentry	$26,750	Textbooks, wood. One instructor wrote the following: Each year I submit a request for funds to provide classroom/shop equipment. Each year, the amount I receive drops dramatically - despite a record of consistently providing regional and state-level me					
		Masonry	$24,250	Brick, concrete, glass block, cement, stone, sand					
		Cosmetology	$3,415	Manikins, texts, videos, nail brushes, computer disks					
		Electronics/Computer Repair	$92,760	Computers, tools, work stations					
		Masonry	$23,023	Tools, 3 computers, first aid kits, masks, gloves					
		Drycleaning	$3,200	Texts, drycleaning supplies					
		Carpentry	$17,878	Saws, other tools					
		Drycleaning	$41,500	Drycleaning equipment					
			$618,356						
						3			
451	**Central Career Center at Briscoe**	Office Technology	$3,000	Miscellaneous materials and supplies	**0.46**	1) Part of $2000 allocation for staff development; 2) $8,000 for equipment; 3) $10,000 for textbooks and instructional materials.	**$18,000**	**91.4%**	**1.89%**
		Automotive Service	$2,000	Assorted minor equipment					
		Automotive Service	$3,000	Miscellaneous materials and supplies					

Appendix E: Requests and Allocations for Equipment, Materials and Supplies for BCPSS CTE Programs, FY 2003									
School #	**School Name**	**BCPSS Name**	**Request Amount**	**Request Notes**	**% of Total CTE Enrollment**	**Total Allocations**	**Allocations for Equip., Mat. & Supp.**	**Equip, Mat. & Supp. Allocations as a % of Requests**	**Allocations as a % of Total Equip, Mat. & Supp. Funds**
		Construction Technology	$2,000	Miscellaneous materials and supplies					
		Horticulture	$3,000	Miscellaneous materials and supplies					
		Office Technology	$2,000	Assorted minor equipment					
		Construction Technology	$2,700	Stock cart, service cart, cement mixer					
		Hospitality	$2,000	Miscellaneous materials and supplies					
			$19,700						
400	**Edmondson-Westside High School**	Carpentry	$10,319	Projector, computer, scaffold set, tools	**8.57**	1) Part of a $2000 allocation for staff development; 2) Part of a $5000 allocation for students to participate in the PASS Program; 3) $183,000 for upgrade equipment to allow for advanced technical applications in technical areas. (Styling chairs and furniture; mixers, play equipment, tables and chairs, ladders; computers with monitors and printers); 4) $32,000 for textbooks and instructional materials; 5) $444,000 to provide vocational support services to career and technology education students, including vocational assessment, citywide job placements, academic coaching, and post-secondary transition services for CTE concentrators.	**$215,000**	**119.9%**	**22.52%**
		Drafting/CAD	$6,000	5 computers and monitors					
		Electronics/Computer Repair	$15,000	LCD projector, 25 stools, 4 printers					

Appendix E: Requests and Allocations for Equipment, Materials and Supplies for BCPSS CTE Programs, FY 2003									
School #	School Name	BCPSS Name	Request Amount	Request Notes	% of Total CTE Enrollment	Total Allocations	Allocations for Equip., Mat. & Supp.	Equip, Mat. & Supp. Allocations as a % of Requests	Allocations as a % of Total Equip, Mat. & Supp. Funds
		Automotive Technology	$19,500	Tools					
		Automotive Technology	$8,000	Texts, 4 printers, shop supplies					
		Commercial Baking	$24,950	Floor mixers, oven, stove					
		Commercial Baking	$4,050	Air brush machine, photo transfer machine, furniture, videos					
		Culinary Arts	$8,789	Refrigerator, freezer, utensils, containers					
		Carpentry	$10,300	Paper, texts, videos, construction materials					
		Cosmetology	$6,034	Furniture, 5 mobile workstations					
		Early Childhood Education	$3,819	Texts, office supplies					
		Nursing	$6,800	Computers, printers, tv/vcr, scanner, furniture					
		Nursing	$8,000	Office supplies, instructional materials, bus passes					
		Nursing Assisting	$12,229	2 computers, software, dvd, stereo, hospital bed					
		Nursing Assisting	$10,169	Instructional materials, journal subscription, texts					
		Surgical Technician Assistant	$12,272	EKG machine, IV materials, 4 computers, 2 printers					
		Surgical Technician Assistant	$1,998	Printer cartridges, surge protectors, scrub brushes, gowns, auto clove					
		Administrative Technology	$7,222	2 VCR's, 3 printers, 1 sequel system					

Appendix E: Requests and Allocations for Equipment, Materials and Supplies for BCPSS CTE Programs, FY 2003									
School #	**School Name**	**BCPSS Name**	**Request Amount**	**Request Notes**	**% of Total CTE Enrollment**	**Total Allocations**	**Allocations for Equip., Mat. & Supp.**	**Equip, Mat. & Supp. Allocations as a % of Requests**	**Allocations as a % of Total Equip, Mat. & Supp. Funds**
		Early Childhood Education	$3,180	Overhead projector, camcorder, stereo, furniture					
		Cosmetology	$737	Texts and instructional materials					
			$179,368						
456	**Fairmount-Harford Institute**	Early Childhood Education	$1,230	Toner, texts, art supplies	**3.25**	1) Part of $2000 allocation for staff development; 2) $72,000 to provide a staff person to coordinate vocational assessment.	**$0**	**0.0%**	**0.00%**
		Early Childhood Education	$1,075	Computer					
		Administrative Technology	$10,100	6 computers, texts					
		Administrative Technology	$4,040	Toner, paper, laminator supplies					
			$16,445						
406	**Forest Park High School**	Administrative Technology	$62,220	60 computers, printers, ink, toner,	**7.44**	1) Part of a $2,000 allocation for staff development; 2) Part of a $5,000 allocation for students to participate in the PASS project; 3) $8000 to upgrade textbooks and instructional materials; 4) $15,000 to upgrade technologies to allow for advanced technical applications in technical areas (server; play equipment; mixers; tables; refrigeration)	**$23,000**	**29.9%**	**2.41%**
		Catering	$2,304	Table linen, containers					
		Catering	$7,346	Gas stove, digital scale, fryer, 40 chairs					
		Early Childhood Education	$2,000	60 texts					

Appendix E: Requests and Allocations for Equipment, Materials and Supplies for BCPSS CTE Programs, FY 2003									
School #	**School Name**	**BCPSS Name**	**Request Amount**	**Request Notes**	**% of Total CTE Enrollment**	**Total Allocations**	**Allocations for Equip., Mat. & Supp.**	**Equip, Mat. & Supp. Allocations as a % of Requests**	**Allocations as a % of Total Equip, Mat. & Supp. Funds**
		Administrative Technology	$3,075	35 texts, 150 workbooks, office supplies					
			$76,945						
					0.31				
413	**Harbor City High School**	Medical Assisting	$5,000	1 LCD Projector, 10 anatomical models		1) Part of a $2000 allocation for staff development; 2) $10,000 to continue to upgrade equipment to allow for advanced technical applications in technical areas. (Computers with monitors and printers); 3) $4,000 to upgrade textbooks and instructional materials.	**$14,000**	**39.9%**	**1.47%**
		Administrative Technology	$25,550	10 computers, 5 printers, 2 LCD Projectors, 2 scanners, 2 TV/VCR					
		Medical Assisting	$4,500	Texts, microscope slides, bio specimens					
			$35,050						
40	**Lake Clifton High School**	Office Technology	$17,251	Texts, paper, ink cartridges, software	**3.61**	1) Part of a $2000 allocation for staff development; 2) $9,000 to upgrade the textbooks and instructional materials;	**$9,000**	**4.5%**	**0.94%**
		Carpentry	$9,250	Wood, glue, transparencies, building supplies					
		Mason and Tile Setter	$4,521	Tools, chalk, line					
		Office Technology	$24,400	3 printers, 3 scanners, 1 LCD projector, 20 computers					
		Electrical Construction	$4,000	Digital voltmeter, 3 computers, 1 printer					
		Electronics/Computer Repair	$2,447	Computer parts, supplies					
		Carpentry	$6,799	Tools, safety glasses					

Appendix E: Requests and Allocations for Equipment, Materials and Supplies for BCPSS CTE Programs, FY 2003									
School #	**School Name**	**BCPSS Name**	**Request Amount**	**Request Notes**	**% of Total CTE Enrollment**	**Total Allocations**	**Allocations for Equip., Mat. & Supp.**	**Equip, Mat. & Supp. Allocations as a % of Requests**	**Allocations as a % of Total Equip, Mat. & Supp. Funds**
		Mason and Tile Setter	$3,613	3 computers, 1 printer, ink cartridges, texts, furniture					
		Early Childhood Education	$42,000	Computers, printers, LCD projector, printers, copier, video camera, digital camera, playground equipment, software					
		Electrical Construction	$2,500	tools, wire, switches					
		Graphic and Printing Communication	$5,736	Ink cartridges, film, masking sheets, paper					
		Construction Technology	$14,000	Tools, sandpaper, overhead projector, furniture					
		Graphic and Printing Communication	$7,350	6 computers, 3 laser printers, 1 scanner					
		Electronics/Computer Repair	$9,093	7 computers					
		Hospitality	$28,050	6 computers, furniture, overhead projector, LCD projector, cash register, printers					
		Hospitality	$13,925	Texts, cartridges, videos, office supplies					
		Computer Programming Technology	$1,860	Software					
		Accounting	$3,349	Texts, software					
			$200,144						
410	**Mergenthaler Vocational-Technical High School**	Automotive Technology	$37,968	Scanners, tools, safety face shields, 15 computers	**14.4**	1) Part of a $2000 allocation for staff development; 2) $36,000 to upgrade textbooks and instructional materials; 3) $125,000 to Upgrade	**$161,000**	**29.4%**	**16.87%**

Appendix E: Requests and Allocations for Equipment, Materials and Supplies for BCPSS CTE Programs, FY 2003									
School #	**School Name**	**BCPSS Name**	**Request Amount**	**Request Notes**	**% of Total CTE Enrollment**	**Total Allocations**	**Allocations for Equip., Mat. & Supp.**	**Equip, Mat. & Supp. Allocations as a % of Requests**	**Allocations as a % of Total Equip, Mat. & Supp. Funds**
						$125,000 to Upgrade equipment and technologies to allow for advanced technical applications in technical areas. (Furniture; mixers; tables and chairs; computers with monitors and printers; plotter; printing press; ladders; diagnostic meters); 4) $60,000 to provide vocational assessment support services to students.			
		Masonry	$2,650	Bricks, textbooks					
		Drafting/CAD	$2,636	Drawing pencils, scales, graph paper, drafting tape					
		Graphic and Printing Communication	$5,146	Paper, toner cartridges					
		Graphic and Printing Communication	$39,300	Computers, software, equipment					
		Welding	$17,900	Welding helmets, gloves, software, texts					
		Welding	$18,500	Computers, welding tools					
		Masonry	$2,899	Tools					
		Drafting/CAD	$57,779	30 computers and software, 48 drafting tables and chairs					
		Plumbing	$13,853	Pipe, coupling, screws					
		Electronics/Computer Repair	$13,400	Computers, monitors, tables					
		Automotive Technology	$6,800	Tools, supplies					
		Electronics/Computer Repair	$5,600	70 texts, electronic parts and supplies					

Appendix E: Requests and Allocations for Equipment, Materials and Supplies for BCPSS CTE Programs, FY 2003									
School #	**School Name**	**BCPSS Name**	**Request Amount**	**Request Notes**	**% of Total CTE Enrollment**	**Total Allocations**	**Allocations for Equip., Mat. & Supp.**	**Equip, Mat. & Supp. Allocations as a % of Requests**	**Allocations as a % of Total Equip, Mat. & Supp. Funds**
		Early Childhood Education	$4,000	Texts, supplies					
		Machine Tool Technology	$56,450	Tools					
		Plumbing	$20,377	Tools, computer, printer					
		Programming and Software Development	$11,200	10 computers and monitors					
		Machine Tool Technology	$11,800	Texts, software, hand tools					
		Electrical Construction	$8,650	TV, VCR, tools, file cabinets, 4 computers and color printers					
		Administrative Technology	$22,993	Texts, printer cartridges,					
		Administrative Technology	$39,650	28 computers, 3 printers, 1 server					
		Accounting	$10,538	Texts, office supplies					
		Programming and Software Development	$964	Software licenses, furniture					
		Cosmetology	$4,500	Furniture, hair supplies, facial supplies, manicure supplies, computer supplies					
		Cosmetology	$7,230	Projector screen, furniture, hair dryers					
		Early Childhood Education	$350	Letter machine					
		Carpentry	$14,700	Tools					
		Cabinet Making	$15,459	Tools, furniture					
		Commercial Baking	$4,595	Food, cleaning supplies, decorating supplies					
		Commercial Baking	$14,412	Food processor, TV, vcr, refrigerator					

Appendix E: Requests and Allocations for Equipment, Materials and Supplies for BCPSS CTE Programs, FY 2003									
School #	**School Name**	**BCPSS Name**	**Request Amount**	**Request Notes**	**% of Total CTE Enrollment**	**Total Allocations**	**Allocations for Equip., Mat. & Supp.**	**Equip, Mat. & Supp. Allocations as a % of Requests**	**Allocations as a % of Total Equip, Mat. & Supp. Funds**
		Cabinet Making	$4,200	Wood, sand paper, saw blades, computer supplies					
		Culinary Arts	$10,000	Texts, food, kitchen utensils, dishes					
		Accounting	$22,150	25 computers, furniture, copier, fax machine, 3 printers					
		Culinary Arts	$22,050	Computers, printers, washer, dryer, ice maker, refrigerator, furniture					
		Carpentry	$6,025	Wood					
		Electrical Construction	$10,200	Lumber, wire, switches					
			$546,924						
402	**Northern High School**	Administrative Technology	$208,581	Furniture, texts, software	**0**	Part of $2000 allocation for staff development.	**$0**	**0.0%**	**0.00%**
		Administrative Technology	$138,980	50 computers, 4 printers, wiring of rooms, 4 laser printers/scanners, 6 cameras, slide projector, 10 TVs, 1 LCD projector, 15 overhead projectors, 1 tv/vcr, 3 servers					
			$347,561						
401	**Northwestern High School**	Early Childhood Education	**$6,416**	Office and art supplies, furniture	**8.43**	1) Part of a $2000 allocation for staff development; 2) $8,000 to upgrade textbooks and instructional materials	**$8,000**	**124.7%**	**0.84%**
405	**Patterson High School**	Criminal Justice/Law	$8,100	Texts, office supplies	**11.61**	1) Part of $2000 allocation for staff development; 2) Part of a $5,000 allocation	**$53,000**	**13.2%**	**5.55%**

Appendix E: Requests and Allocations for Equipment, Materials and Supplies for BCPSS CTE Programs, FY 2003									
School #	**School Name**	**BCPSS Name**	**Request Amount**	**Request Notes**	**% of Total CTE Enrollment**	**Total Allocations**	**Allocations for Equip., Mat. & Supp.**	**Equip, Mat. & Supp. Allocations as a % of Requests**	**Allocations as a % of Total Equip, Mat. & Supp. Funds**
						for students to participate in the PASS program; 3) $39,000 to upgrade equipment to meet industry standards and to assist students with preparation for the world of work (Computers with monitors; printers; automotive diagnostic testers; play equipment; vital signs equipment); 4) $14,000 to upgrade textbooks and instructional materials; 5) $70,000 to provide vocational support services for students who get vocational assessment			
		Pharmacy Technician Assistant	$19,100	Water and sewer hook-up for lab, air conditioner unit, aspirator bottle, laminar flow hood, prescription balance					
		Pharmacy Technician Assistant	$3,400	Glassware, texts, lab equipment, labels, bottles					
		International Business Marketing	$104,852	40 computers, 1 laptop, 4 printers, 1 LCD projector, furniture, texts					
		Drafting/CAD	$41,002	23 computers, 24 zip drives, software, LCD projector, furniture					
		Drafting/CAD	$8,000	50 texts, toner cartridges, paper					
		Criminal Justice/Law	$1,000	video camera					
		Manufacturing Engineering	$1,765	Gas, saw blades, lumber, shop supplies, gloves, safety glasses					
		Cosmetic Services	$2,685	Creams, lotions, tools, nail polish, towels					

Appendix E: Requests and Allocations for Equipment, Materials and Supplies for BCPSS CTE Programs, FY 2003									
School #	**School Name**	**BCPSS Name**	**Request Amount**	**Request Notes**	**% of Total CTE Enrollment**	**Total Allocations**	**Allocations for Equip., Mat. & Supp.**	**Equip, Mat. & Supp. Allocations as a % of Requests**	**Allocations as a % of Total Equip, Mat. & Supp. Funds**
		Early Childhood Education	$2,893	scooters, tumbling mats, balls, building blocks, table, bikes and trikes					
		Early Childhood Education	$2,073	Safety cones, paper towels, tape, printer cartridges					
		Automotive Technology	$11,054	Texts, software					
		Cosmetic Services	$565	Exam gloves, towels, hand cleaner					
		Automotive Technology	$23,580	Tools, wheel balancer, air hose, shop vac					
		International Business Marketing	$11,885	Texts, software					
		Manufacturing Engineering	$159,200	Saws and other tools, software, LCD projector					
		Graphic and Printing Communication	$1,882	Printer ink, tag board, paper					
			$403,036						
414	**Paul Laurence Dunbar High School**	Accounting	$11,400	Texts and software	**0.94**	1) $30,000 to upgrade equipment to allow for advanced technical applications in technical areas (Nursing station; microscopes; patient bed); 2) $11,000 for textbooks and instructional materials.	**$41,000**	**28.0%**	**4.30%**
		Accounting	$37,000	Presentation equipment, 20 computers					
		Medical Administrative Technology	$15,500	Texts, videos, software					
		Medical Administrative Technology	$82,300	Wiring for Internet and networking of labs, 35 computers, access to Internet					

Appendix E: Requests and Allocations for Equipment, Materials and Supplies for BCPSS CTE Programs, FY 2003									
School #	**School Name**	**BCPSS Name**	**Request Amount**	**Request Notes**	**% of Total CTE Enrollment**	**Total Allocations**	**Allocations for Equip., Mat. & Supp.**	**Equip, Mat. & Supp. Allocations as a % of Requests**	**Allocations as a % of Total Equip, Mat. & Supp. Funds**
			$146,200						
412	**Southwestern High School**	Construction Trades	$1,550	Lumber	**5.86**	1) Part of a $2000 allocation for staff development; 2) Part of a $5,000 allocation for students to participate in the PASS project; 3) $14,000 to upgrade equipment to allow for advanced technical applications in technical areas. (Computer with monitor and printer; tables and chairs); 4) $6,000 to upgrade textbooks and instructional materials.	**$20,000**	**28.4%**	**2.10%**
		Early Childhood Education	$6,200	Tripod, 5 computers, 1 stove					
		Administrative Technology	$3,229	Texts, printer cartridges					
		Administrative Technology	$37,350	30 computers, 3 printers, 1 scanner, 1 LCD projector, software, calculators					
		Hospitality	$5,000	Food, other supplies					
		Hospitality	$4,840	2 overhead projectors, 5 computers					
		Construction Trades	$6,876	Tools, safety goggles, nails, texts					
		Early Childhood Education	$5,300	Texts, printer cartridges, office supplies					
			$70,345						
115	**Waverly Career Center**	Hospitality	$726	Texts, software	**1.08**	Part of a $2,000 allocation for staff development.	**$0**	**0.0%**	**0.00%**
		Culinary Arts	$4,467	Uniforms, texts, detergent, brillo pads, foil, ink cartridges, videos, cd's, tools					
		Construction Technology	$222	Lumber, nails, drywall, screws, masks					

Appendix E: Requests and Allocations for Equipment, Materials and Supplies for BCPSS CTE Programs, FY 2003									
School #	**School Name**	**BCPSS Name**	**Request Amount**	**Request Notes**	**% of Total CTE Enrollment**	**Total Allocations**	**Allocations for Equip., Mat. & Supp.**	**Equip, Mat. & Supp. Allocations as a % of Requests**	**Allocations as a % of Total Equip, Mat. & Supp. Funds**
		Construction Technology	$244	Tools, caution signs					
		Painting and Decorating	$3,267	1 computer, 1 camcorder, 1 storage cabinet for flammable materials					
		Painting and Decorating	$1,577	Safety glasses, gloves, chemicals, sand paper, brushes					
		Administrative Technology	$2,833	Office supplies, printer cartridges					
		Administrative Technology	$3,170	Copier rental, laminator, printer					
		Carpentry	$586	Saws, drill					
		Hospitality	$4,050	Counter top, double sink, 2 computers, 4 lamps					
		Culinary Arts	$4,655	6 shredders, 2 mopping systems, 1 scale, garbage disposal, clothes dryer, washing machine					
		Carpentry	$1,147	Wood, knife blades, chemicals and cleaners, glue					
			$26,944						
407	**Western High School**	International Business Marketing	$9,198	10 computers, printer cartridges, printer	**1.03**	1) $10,000 to Purchase upgraded equipment to allow for advanced technical applications in technical areas (Overhead projector; printers; copier); 2) $4,000 to upgrade textbooks and instructional materials.	**$14,000**	**439.8%**	**1.47%**
		International Business Marketing	$4,405	160 texts; software; periodicals.					

Appendix E: Requests and Allocations for Equipment, Materials and Supplies for BCPSS CTE Programs, FY 2003									
School #	**School Name**	**BCPSS Name**	**Request Amount**	**Request Notes**	**% of Total CTE Enrollment**	**Total Allocations**	**Allocations for Equip., Mat. & Supp.**	**Equip, Mat. & Supp. Allocations as a % of Requests**	**Allocations as a % of Total Equip, Mat. & Supp. Funds**
		Accounting	$3,183	160 texts. Cover note to Dr. Jones says, "although we appreciate the conditions that lead to decreased funding this year the $2000 was far below the minimum we need to sustain these programs.					
			$16,786						
		Total $ Requested:	$2,710,220						
		Total # of Requests:	157						
70	**Southern High School**	Biotechnology	$0	Request either not made or not available for review.	**4.99**	1) Part of a $2,000 allocation for staff development; 2) $2,000 to upgrade the instructional materials in the Biotechnology Program.	**$2,000**		**0.21%**
177	**George W. F. McMechen**		$0	Request either not made or not available for review.	**0**	$2500 to purchase current instructional materials and supplies	**$2,500**		**0.26%**
178	**Francis M. Wood Alternative High School**		$0	Request either not made or not available for review.	**0.35**	1) Part of a $2,000 allocation for staff development; 2) $12,000 to purchase current instructional materials and supplies including textbooks and consumables	**$12,000**		**1.26%**

Appendix E: Requests and Allocations for Equipment, Materials and Supplies for BCPSS CTE Programs, FY 2003									
School #	**School Name**	**BCPSS Name**	**Request Amount**	**Request Notes**	**% of Total CTE Enrollment**	**Total Allocations**	**Allocations for Equip., Mat. & Supp.**	**Equip, Mat. & Supp. Allocations as a % of Requests**	**Allocations as a % of Total Equip, Mat. & Supp. Funds**
411	**Walbrook High School Uniform Services Academy**		$0	Request either not made or not available for review.	**9.23**	1) $20,000 to upgrade equipment to a allow for advanced technical applications in technical areas. (Computers with monitors and printers); 2) $8,000 to upgrade textbooks and instructional materials.	**$28,000**		**2.93%**
416	**Digital Harbor High School**		$0	Request either not made or not available for review.	**0**	1) $60,000 to provide equipment for the new school that will allow for advanced technical applications in technical areas (Computers with monitors and printers; cameras); 2) $28,000 to purchase textbooks and instructional materials.	**$88,000**		**9.22%**
418	**W.E.B. Dubois High School**		$0	Request either not made or not available for review.	**0**	$2,000 to purchase textbooks and instructional materials	**$2,000**		**0.21%**
419	**Reginald F. Lewis High**		$0	Request either not made or not available for review.	**0**	$12,000 to purchase textbooks and instructional materials.	**$12,000**		**1.26%**

Appendix E: Requests and Allocations for Equipment, Materials and Supplies for BCPSS CTE Programs, FY 2003									
School #	**School Name**	**BCPSS Name**	**Request Amount**	**Request Notes**	**% of Total CTE Enrollment**	**Total Allocations**	**Allocations for Equip., Mat. & Supp.**	**Equip, Mat. & Supp. Allocations as a % of Requests**	**Allocations as a % of Total Equip, Mat. & Supp. Funds**
421	**National Academy Foundation School**		$0	Request either not made or not available for review.	**0.71**	1) $39,000 to Purchase equipment and other technologies that will provide opportunities for exposure to current industry practice; 2) $11,000 for textbooks and instructional materials.	**$50,000**		**5.24%**
450	**Frederick Douglass High School**		$0	Request either not made or not available for review.	**5.46**	1) Part of a $2,000 allocation for staff development; 2) Part of a $5,000 allocation for students to participate in PASS; 3) $8,000 for textbooks and instructional materials; 4) $20,000 to purchase equipment.	**$28,000**		**2.93%**
457	**Laurence G. Paquin Middle/High School**		$0	Request either not made or not available for review.	**0.4**	1) Part of a $2,000 allocation for staff development; 2) $10,000 to purchase textbooks and instructional materials.	**$10,000**		**1.05%**
							$954,500		

Note. Adapted from BCPSS, 2003e.

Appendix F: BCPSS CTE Enrollment by School FY 2003								
School Name	**Sch. #**	**BCPSS Name**	**CTE Program Enrollment 2003**	**School Enrollment 2003**	**CTE Program Enrollment as a % of School Enrollment 2003**	**CTE Program Enrollment as a % of Total CTE Enrollment 2003**	**Top 5 Schools Based on 2003 Enrollments**	**Lowest 5 Schools Based on 2003 Enrollments**
Baltimore City Central Office	**0**	**Firefighting**	0	0	N/A	0.00%		
			0	0	N/A	0.00%		1
Carver Vocational-Technical High School	**454**	**Diesel Technology**	18	1423	1.26%	0.28%		
		Culinary Arts	76	1423	5.34%	1.17%		
		Early Childhood Education	55	1423	3.87%	0.85%		
		Apparel Technology	48	1423	3.37%	0.74%		
		Programming and Software Development	60	1423	4.22%	0.92%		
		Administrative Technology	90	1423	6.32%	1.39%		
		Commercial Art	61	1423	4.29%	0.94%		
		Graphic and Printing Communication	37	1423	2.60%	0.57%		
		Drafting/CAD	36	1423	2.53%	0.55%		
		Telecommunications	37	1423	2.60%	0.57%		
		Electrical Construction	74	1423	5.20%	1.14%		
		Carpentry	111	1423	7.80%	1.71%		
		Mason and Tile Setter	40	1423	2.81%	0.62%		
		Accounting	40	1423	2.81%	0.62%		
		Drycleaning	33	1423	2.32%	0.51%		
			816	1423	57.34%	12.58%	2	
Central Center at Briscoe	**451**	**Culinary Arts**	0	116	0.00%	0.00%		
		Construction Technology	9	116	7.76%	0.14%		
		Automotive Service	11	116	9.48%	0.17%		
		Office Technology	10	116	8.62%	0.15%		

Appendix F: BCPSS CTE Enrollment by School FY 2003								
School Name	Sch. #	BCPSS Name	CTE Program Enrollment 2003	School Enrollment 2003	CTE Program Enrollment as a % of School Enrollment 2003	CTE Program Enrollment as a % of Total CTE Enrollment 2003	Top 5 Schools Based on 2003 Enrollments	Lowest 5 Schools Based on 2003 Enrollments
		Horticulture	0					
			30	116	25.86%	0.46%	16	5
Digital Harbor High	416	Programming and Software Development	0	315	0.00%	0.00%		
		Design Technology	0	315	0.00%	0.00%		
		Networking Systems	0	315	0.00%	0.00%		
			0	315	0.00%	0.00%	20	1
Edmondson-Westside High School	400	Design Technology	0	1056	0.00%	0.00%		
		Construction Technology	0	1056	0.00%	0.00%		
				1056	0.00%	0.00%		
		Commercial Baking	44	1056	4.17%	0.68%		
		Cooperative Education	0	1056	0.00%	0.00%		
		Construction Technology	0	1056	0.00%	0.00%		
		Drafting/CAD	35	1056	3.31%	0.54%		
		Automotive Technology	52	1056	4.92%	0.80%		
		Graphic and Printing Communication	28	1056	2.65%	0.43%		
		Surgical Technician Assistant	29	1056	2.75%	0.45%		
		Administrative Technology	59	1056	5.59%	0.91%		
		Programming and Software Development	46	1056	4.36%	0.71%		
		Electronics/Computer Repair	19	1056	1.80%	0.29%		
		Carpentry	112	1056	10.61%	1.73%		

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School Name	**Sch. #**	**BCPSS Name**	**CTE Program Enrollment 2003**	**School Enrollment 2003**	**CTE Program Enrollment as a % of School Enrollment 2003**	**CTE Program Enrollment as a % of Total CTE Enrollment 2003**	**Top 5 Schools Based on 2003 Enrollments**	**Lowest 5 Schools Based on 2003 Enrollments**
		Early Childhood Education	39	1056	3.69%	0.60%		
		Culinary Arts	55	1056	5.21%	0.85%		
		Cosmetology	0	1056	0.00%	0.00%		
		Telecommunications	38	1056	3.60%	0.59%		
			556	1056	52.65%	8.57%	5	
Fairmount-Harford Institute	**456**							
				408				
		Graphic and Printing Communication	19	408	4.66%	0.29%		
		Construction Technology	70	408	17.16%	1.08%		
		Early Childhood Education	47	408	11.52%	0.72%		
		Cosmetic Services	37	408	9.07%	0.57%		
		Culinary Arts	38	408	9.31%	0.59%		
			211	408	51.72%	3.25%	11	
Forest Park High School	**406**	**Automotive Technology**	107	815	13.13%	1.65%		
		Administrative Technology	238	815	29.20%	3.67%		
		Cooperative Education	0	815	0.00%	0.00%		
		Catering	76	815	9.33%	1.17%		
		Early Childhood Education	62	815	7.61%	0.96%		
			483	815	59.26%	7.44%	7	
Francis M. Wood Alternative High School	**178**	**Cooperative Education**	0	434	0.00%	0.00%		
		Media Production Technology	0	434	0.00%	0.00%		

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School Name	**Sch. #**	**BCPSS Name**	**CTE Program Enrollment 2003**	**School Enrollment 2003**	**CTE Program Enrollment as a % of School Enrollment 2003**	**CTE Program Enrollment as a % of Total CTE Enrollment 2003**	**Top 5 Schools Based on 2003 Enrollments**	**Lowest 5 Schools Based on 2003 Enrollments**
		Administrative Technology	0	434	0.00%	0.00%		
		Early Childhood Education	0	434	0.00%	0.00%		
		Construction Technology	0	434	0.00%	0.00%		
		Culinary Arts	23	434	5.30%	0.35%		
			23	434	5.30%	0.35%	18	3
Frederick Douglass High School	**450**							
		Rehabilitative/Therapeutic Technician	22	1319	1.67%	0.34%		
		Administrative Technology	104	1319	7.88%	1.60%		
		Graphic and Printing Communication	125	1319	9.48%	1.93%		
		Telecommunications	103	1319	7.81%	1.59%		
			354	1319	26.84%	5.46%	9	
Harbor City High School	**413**	**Construction Technology**	20	1040	1.92%	0.31%		
		Administrative Technology						
			20	1040	1.92%	0.31%	19	2
Lake Clifton High School	**40**	**Graphic and Printing Communication**	24	2031	1.18%	0.37%		
		Hospitality	10	2031	0.49%	0.15%		
		Cooperative Education	0	2031	0.00%	0.00%		
		Accounting	0	2031	0.00%	0.00%		

Appendix F: BCPSS CTE Enrollment by School FY 2003								
School Name	**Sch. #**	**BCPSS Name**	**CTE Program Enrollment 2003**	**School Enrollment 2003**	**CTE Program Enrollment as a % of School Enrollment 2003**	**CTE Program Enrollment as a % of Total CTE Enrollment 2003**	**Top 5 Schools Based on 2003 Enrollments**	**Lowest 5 Schools Based on 2003 Enrollments**
		Electronics/Computer Repair	30	2031	1.48%	0.46%		
		Construction Technology	12	2031	0.59%	0.18%		
		Electrical Construction	14	2031	0.69%	0.22%		
		Carpentry	5	2031	0.25%	0.08%		
		Mason and Tile Setter	17	2031	0.84%	0.26%		
		Early Childhood Education	122	2031	6.01%	1.88%		
			234	2031	11.52%	3.61%	10	
Laurence G. Paquin Middle/High School	**457**	**Apparel Technology**	16		8.84%	0.25%		
				181				
		Administrative Technology	10	181	5.52%	0.15%		
		Early Childhood Education						
			26	181	14.36%	0.40%	17	4
Mergenthaler Vocational-Technical High School	**410**	**Commercial Baking**	52		3.73%	0.80%		
				1393				
		Mason and Tile Setter	26	1393	1.87%	0.40%		
		Carpentry	3	1393	0.22%	0.05%		
		Plumbing	38	1393	2.73%	0.59%		
		Automotive Technology	79	1393	5.67%	1.22%		
		Drafting/CAD	107	1393	7.68%	1.65%		
		Welding	36	1393	2.58%	0.55%		
		Cabinet Making	51	1393	3.66%	0.79%		
		Accounting	27	1393	1.94%	0.42%		

Appendix F: BCPSS CTE Enrollment by School FY 2003								
School Name	**Sch. #**	**BCPSS Name**	**CTE Program Enrollment 2003**	**School Enrollment 2003**	**CTE Program Enrollment as a % of School Enrollment 2003**	**CTE Program Enrollment as a % of Total CTE Enrollment 2003**	**Top 5 Schools Based on 2003 Enrollments**	**Lowest 5 Schools Based on 2003 Enrollments**
		Administrative Technology	98	1393	7.04%	1.51%		
		Machine Tool Technology	73	1393	5.24%	1.13%		
		Electronics/Computer Repair	63	1393	4.52%	0.97%		
		Culinary Arts	75	1393	5.38%	1.16%		
		Early Childhood Education	72	1393	5.17%	1.11%		
		Electrical Construction	86	1393	6.17%	1.33%		
		Graphic and Printing Communication	48	1393	3.45%	0.74%		
		Computer Programming Technology						
		Cosmetology						
		Barbering						
			934	1393	67.05%	14.40%	1	
National Academy Foundation School	**421**	**Hospitality**	0	409	0.00%	0.00%		
		The Academy of Travel, Tourism and Hospitality	46	409	11.25%	0.71%		
			46		N/A	0.71%	15	
Northwestern High School	**401**	**Criminal Justice/Law**	100	1239	8.07%	1.54%		
		Early Childhood Education	70	1239	5.65%	1.08%		
		Cosmetic Services	35	1239	2.82%	0.54%		

Appendix F: BCPSS CTE Enrollment by School FY 2003								
School Name	**Sch. #**	**BCPSS Name**	**CTE Program Enrollment 2003**	**School Enrollment 2003**	**CTE Program Enrollment as a % of School Enrollment 2003**	**CTE Program Enrollment as a % of Total CTE Enrollment 2003**	**Top 5 Schools Based on 2003 Enrollments**	**Lowest 5 Schools Based on 2003 Enrollments**
		Administrative Technology	276	1239	22.28%	4.25%		
		Automotive Collision Repair	66	1239	5.33%	1.02%		
			547	1239	44.15%	8.43%	6	
Patterson High School	**405**							
		Graphic and Printing Communication	120	1905	6.30%	1.85%		
		Surgical Technician	64	1905	3.36%	0.99%		
		Project Lead The Way - Pre-Engineer	0	1905	0.00%	0.00%		
		Early Childhood Education	64	1905	3.36%	0.99%		
		Criminal Justice/Law	62	1905	3.25%	0.96%		
		Cosmetic Services	62	1905	3.25%	0.96%		
		Automotive Technology	109	1905	5.72%	1.68%		
		Drafting/CAD	54	1905	2.83%	0.83%		
		Pharmacy Technician Assistant	62	1905	3.25%	0.96%		
		Manufacturing Engineering	47	1905	2.47%	0.72%		
		International Business Marketing	27	1905	1.42%	0.42%		

Appendix F: BCPSS CTE Enrollment by School FY 2003								
School Name	**Sch. #**	**BCPSS Name**	**CTE Program Enrollment 2003**	**School Enrollment 2003**	**CTE Program Enrollment as a % of School Enrollment 2003**	**CTE Program Enrollment as a % of Total CTE Enrollment 2003**	**Top 5 Schools Based on 2003 Enrollments**	**Lowest 5 Schools Based on 2003 Enrollments**
		Administrative Technology	82	1905	4.30%	1.26%		
		Emergency Medical Technician-B	0	1905	0.00%	0.00%		
			753	1905	39.53%	11.61%	3	
Paul Laurence Dunbar High School	**414**	**Emergency Medical Technician-B**	0	782	0.00%	0.00%		
		Biotechnology	14	782	1.79%	0.22%		
		Medical Administrative Technology	47	782	6.01%	0.72%		
		Nursing Assisting	0	782	0.00%	0.00%		
		Medical Assisting	0	782	0.00%	0.00%		
			61	782	7.80%	0.94%	14	
Reginald F. Lewis High	**419**	**Criminal Justice/Law**	0	712	0.00%	0.00%	21	
Southern High School	**70**	**Automotive Technology**	0	658	0.00%	0.00%		
		Cooperative Education	0	658	0.00%	0.00%		
		International Business Marketing	0	658	0.00%	0.00%		
		Administrative Technology	36	658	5.47%	0.55%		
		Cabinet Making	16	658	2.43%	0.25%		
		Machine Tool Technology	29	658	4.41%	0.45%		
		Graphic and Printing Communication	77	658	11.70%	1.19%		
		Early Childhood Education	66	658	10.03%	1.02%		

Appendix F: BCPSS CTE Enrollment by School FY 2003								
School Name	**Sch. #**	**BCPSS Name**	**CTE Program Enrollment 2003**	**School Enrollment 2003**	**CTE Program Enrollment as a % of School Enrollment 2003**	**CTE Program Enrollment as a % of Total CTE Enrollment 2003**	**Top 5 Schools Based on 2003 Enrollments**	**Lowest 5 Schools Based on 2003 Enrollments**
		Drafting/CAD	100	658	15.20%	1.54%		
			324	658	49.24%	4.99%	10	
Southwestern High School	**412**	**Administrative Technology**	87	1664	5.23%	1.34%		
		Hospitality	33	1664	1.98%	0.51%		
		Construction Trades	147	1664	8.83%	2.27%		
		Early Childhood Education	113	1664	6.79%	1.74%		
			380	1664	22.84%	5.86%	8	
Walbrook High School Uniform Services Academy	**411**	**Administrative Technology**	199	2049	9.71%	3.07%		
		Accounting	61	2049	2.98%	0.94%		
		Criminal Justice/Law	284	2049	13.86%	4.38%		
		Programming and Software Development	55	2049	2.68%	0.85%		
		Firefighting						
		Emergency Medical Technician-B						
			599	2049	29.23%	9.23%	4	
Waverly Career Center	**115**	**Hospitality**	13	91	14.29%	0.20%		
		Culinary Arts	25	91	27.47%	0.39%		
		Carpentry	0	91	0.00%	0.00%		
		Construction Technology	17	91	18.68%	0.26%		
		Painting and	15	91	16.48%	0.23%		

Appendix F: BCPSS CTE Enrollment by School FY 2003								
School Name	**Sch. #**	**BCPSS Name**	**CTE Program Enrollment 2003**	**School Enrollment 2003**	**CTE Program Enrollment as a % of School Enrollment 2003**	**CTE Program Enrollment as a % of Total CTE Enrollment 2003**	**Top 5 Schools Based on 2003 Enrollments**	**Lowest 5 Schools Based on 2003 Enrollments**
		Decorating						
			70	91	76.92%	1.08%	12	
Western High School	**407**	**Accounting**	30	879	3.41%	0.46%		
		International Business Marketing	37	879	4.21%	0.57%		
			67	879	7.62%	1.03%	13	
Note. Adapted from MSDE. (2002, 2003) Local School Program Enrollment Report. Baltimore, MD: Author.								

Appendix G: Length of CTE Teacher Service

Dept. of Personnel Program Name	Yrs	%	Yrs	%	Yrs	%	Yrs	%	Yrs	%	Yrs	%	Yrs	%
	0-5		6-10		11-15		16-20		21-25		26-30		>30	
APPLIANCE RE		0.0%		0.0%		0.0%		0.0%		0.0%		0.0%	1	100.0%
AUTO BODY &	1	100.0%		0.0%		0.0%		0.0%		0.0%		0.0%		0.0%
AUTO MECHANI		0.0%	2	40.0%		0.0%		0.0%		0.0%	2	40.0%	1	20.0%
BUILDING MAI	1	14.3%	1	14.3%		0.0%	1	14.3%	2	28.6%	1	14.3%	1	14.3%
BUSINESS EDU	27	35.1%	7	9.1%	1	1.3%		0.0%	1	1.3%	8	10.4%	33	42.9%
CABINET MAKI		0.0%		0.0%		0.0%	1	100.0%		0.0%		0.0%		0.0%
CARPENTRY	3	50.0%	1	16.7%		0.0%		0.0%		0.0%		0.0%	2	33.3%
CHILD CARE	4	30.8%		0.0%		0.0%	1	7.7%	2	15.4%		0.0%	6	46.2%
COMMERCIAL A		0.0%		0.0%		0.0%		0.0%		0.0%	1	50.0%	1	50.0%
COMMERCIAL B	1	50.0%		0.0%		0.0%		0.0%	1	50.0%		0.0%		0.0%
COSMETOLOGY	4	50.0%		0.0%		0.0%	1	12.5%	2	25.0%	1	12.5%		0.0%
DATA PROCESS	2	18.2%	1	9.1%	2	18.2%		0.0%		0.0%	1	9.1%	5	45.5%
DRY CLEANING		0.0%		0.0%	1	100.0%		0.0%		0.0%		0.0%		0.0%
ELECTRICAL C	1	20.0%		0.0%		0.0%		0.0%	1	20.0%	3	60.0%		0.0%
ELECTRONICS	1	33.3%		0.0%		0.0%		0.0%		0.0%	2	66.7%		0.0%
ENGINEERING	3	33.3%	1	11.1%	1	11.1%	1	11.1%	2	22.2%		0.0%	1	11.1%
HEALTH SV	4	57.1%		0.0%		0.0%		0.0%	2	28.6%	1	14.3%		0.0%
HEAVY EQUIPM		0.0%	1	100.0%		0.0%		0.0%		0.0%		0.0%		0.0%
HOME ECON.		0.0%		0.0%		0.0%		0.0%		0.0%	1	14.3%	6	85.7%
HORTICULTURE		0.0%		0.0%		0.0%		0.0%	1	100.0%		0.0%		0.0%
HOTEL & MOTE		0.0%		0.0%		0.0%		0.0%		0.0%	1	50.0%	1	50.0%
INDUSTRIAL		0.0%	1	50.0%		0.0%		0.0%		0.0%	1	50.0%		0.0%
INDUSTRIAL A	1	20.0%	1	20.0%		0.0%		0.0%		0.0%	1	20.0%	2	40.0%
MACHINE MAIN		0.0%		0.0%		0.0%	1	33.3%	2	66.7%		0.0%		0.0%
MACHINE SHOP	2	50.0%		0.0%		0.0%		0.0%		0.0%	1	25.0%	1	25.0%
MASONRY	1	33.3%		0.0%		0.0%		0.0%	1	33.3%		0.0%	1	33.3%
MEDIA	4	44.4%	2	22.2%	1	11.1%	2	22.2%		0.0%		0.0%		0.0%
NEEDLE TRADE	1	33.3%		0.0%		0.0%		0.0%		0.0%	1	33.3%	1	33.3%
NURS'G HEALT		0.0%	1	100.0%		0.0%		0.0%		0.0%		0.0%		0.0%
PRINTING	2	16.7%		0.0%		0.0%		0.0%	2	16.7%	4	33.3%	4	33.3%
SECRETARIAL		0.0%		0.0%		0.0%		0.0%		0.0%		0.0%	1	100.0%
TRAVEL AND T		0.0%		0.0%	1	50.0%		0.0%		0.0%		0.0%	1	50.0%
WELDING		0.0%		0.0%		0.0%		0.0%		0.0%		0.0%	1	100.0%

Note. Adapted from BCPSS, 2003g.

Appendix H: Programs by School and Quadrant FY 2003																											
Program	**Career Cluster**	**Northwest Quadrant**						**Northeast Quadrant**							**Southeast Quadrant**					**Southwest Quadrant**							
		Forest Park	**Fred. Douglass**	**G.W.F. McMech**	**Northwestern**	**Walbrook**	**Western**	**Fairmount Harford**	**Lake Clifton**	**Laur. G. Paquin**	**Mervo**	**Northern**	**Reginald F. Lewis**	**Waverly**	**Digital Harbor**	**NAF Academy**	**Patterson**	**Paul Lawr. Dunbar**	**Southern**	**Carver**	**Centr. Career Cntr**	**Edmond-West**	**Francis M. Wood**	**Harbor City**	**Southwestern**		
Accounting	Bus., Mgt. and Finance					x	x				x									x						
Administrative Technology	Bus., Mgt. and Finance	x			x	x				x	x						x	x	x	x		x				x
Apparel Technology	Human Res. Serv.									x										x						
Automotive Collision Repair	Transp. Tech				x																					
Automotive Service	Transp. Tech																				x					
Automotive Technology	Transp. Tech	x									x						x		x			x				
Biotechnology	Health & Biosciences																	x								
Cabinet Making	Construction and Develop.										x								x							
Carpentry	Construction and Develop.								x		x			x						x		x				
Catering	Cons. Serv., Hosp. & Tour.	x																								
Commercial Art	Arts, Media & Commun.; Cons. Serv., Hosp. & Tour.																			x						
Commercial Baking	Cons. Serv., Hosp. & Tour.										x											x				
Computer Programming Technology																										
Construction Technology	Construction and Develop.							x	x					x							x			x		

Appendix H: Programs by School and Quadrant FY 2003																												
Program	**Career Cluster**	**Northwest Quadrant**						**Northeast Quadrant**							**Southeast Quadrant**					**Southwest Quadrant**								
		Forest Park	**Fred. Douglass**	**G.W.F. McMech**	**Northwestern**	**Walbrook**	**Western**	**Fairmount Harford**	**Lake Clifton**	**Laur. G. Paquin**	**Mervo**	**Northern**	**Reginald F. Lewis**	**Waverly**	**Digital Harbor**	**NAF Academy**	**Patterson**	**Paul Lawr. Dunbar**	**Southern**	**Carver**	**Centr. Career Cntr**	**Edmond-West**	**Francis M. Wood**	**Harbor City**	**Southwestern**			
Construction Trades	Construction and Develop.; Manuf., Engin., & Tech										x																	x
Cooperative Education	N/A																											
Cosmetic Services	Cons. Serv., Hosp. & Tour.				x			x									x											
Cosmetology	Cons. Serv., Hosp. & Tour.																											
Criminal Justice/Law	Human Res. Serv.				x	x											x											
Culinary Arts	Cons. Serv., Hosp. & Tour.							x			x									x		x	x					
Design Technology	Info. Tech.																											
Diesel Technology	Transp. Tech.																			x								
Drafting/CAD	Construction and Develop.; Manuf., Engin., & Tech; Transp. Tech.										x						x		x	x		x						
Drycleaning																				x								
Early Childhood Education	Human Res. Serv.	x			x			x	x		x						x		x	x		x						x
Electrical Construction	Construction and Develop.; Manuf., Engin., & Tech								x		x											x						
Electronics/Computer Repair	Info. Tech.; Manuf., Engin., & Tech								x		x											x						

Appendix H: Programs by School and Quadrant FY 2003																												
Program	**Career Cluster**	**Northwest Quadrant**						**Northeast Quadrant**							**Southeast Quadrant**					**Southwest Quadrant**								
		Forest Park	**Fred. Douglass**	**G.W.F. McMech**	**Northwestern**	**Walbrook**	**Western**	**Fairmount Harford**	**Lake Clifton**	**Laur. G. Paquin**	**Mervo**	**Northern**	**Reginald F. Lewis**	**Waverly**	**Digital Harbor**	**NAF Academy**	**Patterson**	**Paul Lawr. Dunbar**	**Southern**	**Carver**	**Centr. Career Cntr**	**Edmond-West**	**Francis M. Wood**	**Harbor City**	**Southwestern**			
Emergency Medical Technician-B	Health & Biosciences																											
Firefighting	Human Res. Serv.																											
Floral Design	Env., Agr. & Nat. Res. Systems																											
Graphic and Printing Communicatio n	Arts, Media & Commun.		x					x	x		x						x		x	x		x					
Horticulture	Env., Agr. & Nat. Res. Systems																											
Hospitality	Cons. Serv., Hosp. & Tour.; Bus., Mgt. and Finance								x					x														x
Interactive Media																												
International Business Marketing	Bus., Mgt. and Finance; Cons. Serv., Hosp. & Tour.; Manuf., Engin., & Tech						x										x											
Machine Tool Technology	Manuf., Engin., & Tech										x								x									
Manufacturing Engineering	Manuf., Engin., & Tech; Cons. Serv., Hosp. & Tour.; Bus.; Env., Agr. & Nat. Res. Systems; Health & Biosciences; Transp. Tech.																x											

Appendix H: Programs by School and Quadrant FY 2003																												
Program	Career Cluster	Northwest Quadrant						Northeast Quadrant							Southeast Quadrant					Southwest Quadrant								
		Forest Park	Fred. Douglass	G.W.F. McMech	Northwestern	Walbrook	Western	Fairmount Harford	Lake Clifton	Laur. G. Paquin	Mervo	Northern	Reginald F. Lewis	Waverly	Digital Harbor	NAF Academy	Patterson	Paul Lawr. Dunbar	Southern	Carver	Centr. Career Cntr	Edmond-West	Francis M. Wood	Harbor City	Southwestern			
Mason and Tile Setter	Construction and Develop.								x		x									x								
Media Production Technology	Arts, Media & Commun.																											
Medical Administrative Technology	Bus., Mgt. and Finance		x																									
Medical Assisting	Health & Biosciences																											
Networking Systems	Bus., Mgt. and Finance; Info. Tech.; Manuf., Engin., & Tech																											
Nursing	Health & Biosciences																											
Nursing Assisting	Health & Biosciences																											
Office Technology	Bus., Mgt. and Finance; Info. Tech.																				x							
Painting and Decorating	Construction and Devep.													x														
Pharmacy Technician Assistant	Health & Biosciences																x											
Plumbing	Construction and Develop.										x																	
Programming and Software Development	Info. Tech.; Manuf., Engin., & Tech					x														x		x						

Appendix H: Programs by School and Quadrant FY 2003																												
Program	**Career Cluster**	**Northwest Quadrant**						**Northeast Quadrant**							**Southeast Quadrant**					**Southwest Quadrant**								
		Forest Park	**Fred. Douglass**	**G.W.F. McMech**	**Northwestern**	**Walbrook**	**Western**	**Fairmount Harford**	**Lake Clifton**	**Laur. G. Paquin**	**Mervo**	**Northern**	**Reginald F. Lewis**	**Waverly**	**Digital Harbor**	**NAF Academy**	**Patterson**	**Paul Lawr. Dunbar**	**Southern**	**Carver**	**Centr. Career Cntr**	**Edmond-West**	**Francis M. Wood**	**Harbor City**	**Southwestern**			
Project Lead The Way - Pre-Engineer	Manuf., Engin., & Tech; Construction and Develop.																											
Rehabilitative/ Therapeutic Technician	Health & Biosciences		x																									
Secretarial and Administrative Tech	Bus., Mgt. and Finance																											
Surgical Technician Assistant	Health & Biosciences																x					x					
Telecommunications	Info. Tech.		x								x									x		x					
The Academy of Finance	Bus., Mgt. and Finance															x												
The Academy of Information Technology	Bus., Mgt. and Finance; Info. Tech.; Manuf., Engin., & Tech																											
The Academy of Travel, Tourism and Hospitality	Cons. Serv., Hosp. & Tour.; Bus., Mgt. and Finance																											
Video Production																												
Welding	Construction and Develop.										x																	
Note. MSDE, 2004b.																												

Appendix I: Businesses Represented on BCPSS CTE Advisory Boards in FY 2003

AAI Corporation	Pritchard Brown
Abrams, Foster, Nole & Williams, P.A.	The ROC Realty Group
The Alpha Group/Invocsystems.com	SAIC
Antek Healthware Inc.	System Source
Baltimore Gas and Electric Company (2)	T.Rowe Price Investment Services Inc.
Berman's Automotive (2)	United Parcel Service (2)
Black and Decker Power Tools (2)	University of Maryland Medical Center
Burns International Security Services	Verizon (3)
Canton Railroad Company	Watkins Security Agency
Chesapeake Machine Company	Whiteford, Taylor & Preston
Cisco Networking Academy Program	Wingard Company
Clorox Products Manufacturing Co. (2)	Yellow Transportation (2)
CMK Associates, LLC	
Constellation Power Source, Inc.	
EMEC	
GE Financial Assurance	
Honeywell Technology Solutions	
Hopkins Transportation	
IntelliMark	
Irwin, Green, Dexter & Murtha	
Kaydon Ring and Seal	
Kenlee Precision Corporation	
Lancer Insurance Company	
Law Offices of Peter G. Angelos	
Legacy Unlimited	
Lockheed Martin Corporation (2)	
Logicon, Inc.	
Maryland Association of Urban Bankers, Inc.	
Micro Machine	
Middleton and Meads Co.	
Millennium Community Outreach Institute, Inc. (2)	
National Railroad Passenger Corporation	
Neo Technologies	
Nor-Ark Technology	
Northrop Grumman (3)	
O'Conner, Piper & Flynn	
PDS Research Associates	
Phillips Restaurants	
Priority One Staff Services	