

Task Force on the Status of Women and Information Technology

Annual Report

In Accordance with Section 2 of Chapter 489,
Acts of 2004

With Staff Support Provided by:
Maryland Department of Business and Economic Development

October 1, 2005

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Report of the Task Force on the Status of Women and Information Technology

Introduction

During the 2004 session of the General Assembly, the Senate Education, Health and Environmental Affairs Committee and the House Economic Matters Committee heard legislation addressing the declining percentage of women entering and remaining in information technology (IT) professions. Senate Bill 917 (Chapter 489) and House Bill 1538 (Chapter 490) established a 20-member Task Force on the Status of Women and Information Technology to study this decline and its impact on the future of the IT workforce in Maryland, to examine existing laws and services pertaining to the issue of women in IT, to develop a statewide Women and Information Technology Plan and to formulate strategies to implement and promote this plan.

Specifically, the Task Force was charged with:

- Studying the issues relating to the declining involvement of girls and women in information technology;
- Studying the impact this decline has on the overall technology literacy of Maryland's workforce;
- Studying the impact of this decline on the future of the information technology workforce in Maryland;
- Creating awareness throughout the state on the issue of women and information technology and the findings of this task force;
- Identifying and examining existing programs and services, laws, and regulations with respect to identifying practices that best address the issue in education and workforce development;
- Investigating strategies to address the challenges that will better meet the State's workforce demands in all career areas where technology is used;
- Developing a statewide comprehensive women and information technology plan and strategies for plan implementation and public promotion of the plan; and
- Facilitating coordination and communication among state and local agencies and organizations regarding achieving the goals of the plan.

To achieve this mission, the following people were appointed to the Task Force.

Appointed by the Governor:

One member from the Maryland Commission for Women.

- The Honorable H. Victoria Goldsborough, Town of Denton, Council Member

One business entrepreneur who is the chief executive officer of an information technology company.

- Donna Stevenson, CEO, Early Morning Software, Inc.

Two information technology business professionals, at least one of whom is a woman.

- Beth Perlman, Chief Information Officer and Senior Vice President, Constellation Energy
 - *Appointed Chairperson by the Governor*
- Linda Gooden, President, Lockheed Martin Information Technology

One human resources representative from a major corporation who hires information technology workers.

- Gregory Hodges, Director of Human Resources, Northrop Grumman, was appointed to this role on September 28, 2005. This role was filled by Jeff Shuman of Northrop Grumman until July 21, 2005.

One representative of a local educational agency that represents technology education.

- Shelley Johnson, Curriculum Coordinator of the Business Management, Entrepreneurship and Information Technologies Programs, Montgomery County Public Schools

One representative of a community college information technology program.

- Judy Thomason, Chairperson, Technical Studies Department, College of Southern Maryland

One representative of a 4-year educational institution information technology program.

- James Clements, Ph.D., Vice President, Economic and Community Outreach, Towson University

One secondary school teacher.

- Marilyn S. Martin, Computer Technology Coordinator, Prince George's County Public Schools

Two college students majoring in information technology, preferably women.

- One of these roles was filled by Selin Mariadhas of the University of Maryland at College Park until July 26, 2005. Both roles are currently vacant; however, nominations to fill these vacancies are under review.

Other Appointees:

One member from the Senate of Maryland and one member of the Women Legislators of Maryland, appointed by the President of the Senate.

- The Honorable Gloria Lawlah, District 26, Prince George's County
(*Senator Lawlah satisfies both requirements*)

One member from the House of Delegates and one member of the Women Legislators of Maryland, appointed by the Speaker of the House.

- The Honorable Jeannie Haddaway, District 37B, Caroline, Dorchester, Talbot and Wicomico Counties
- The Honorable Sally Jameson, District 28, Charles County

The Deputy Secretary of the Department of Business and Economic Development or the Deputy Secretary's designee.

- Ovetta Moore, Chief Information Officer, Information and Technology Management, Department of Business and Economic Development

The Deputy Secretary of the Department of Labor, Licensing and Regulation or the Deputy Secretary's designee.

- Carol Walter, Director of Systems Development, Office of Information Technology, Department of Labor, Licensing and Regulation

The Deputy Secretary for the Maryland Higher Education Commission or the Deputy Secretary's designee.

- Janet Moye Cornick, Ph.D., Maryland Higher Education Commission

The Assistant State Superintendent for the Division of Career Technology and Adult Learning, State Department of Education, or the Assistant State Superintendent's designee.

- Katharine Oliver, Assistant State Superintendent, Division of Career Technology and Adult Learning, Maryland State Department of Education

The Director for the Center for Women and Information Technology or the Director's designee.

- Claudia Morrell, Director, Center for Women and Information Technology
- *Elected Vice-Chairperson of the Task Force*

Task Force staff is provided by the Department of Business and Economic Development. Elissa Prichep currently fills this role.

Activity

Once the membership of the Task Force was in place, the group met four times. A scheduled March 1, 2005 meeting was cancelled due to snow. Each meeting integrated research and planning. The research portion of the meetings typically involved a presentation by an expert, but sometimes included data sharing by Task Force members who were assigned a research project at the previous meeting.

The meeting dates and corresponding presentations are listed below. For more information, please refer to the meeting minutes in Appendix C.

January 11, 2005

- Claudia Morrell presented “Identifying the Issues” on behalf of the Center for Women and Information Technology.

April 27, 2005

- Katharine Oliver presented “Career Technology Education Pathway Programs in IT” on behalf of the Maryland State Department of Education.
- Claudia Morrell presented “Addressing the Issues” on behalf of the Center for Women and Information Technology.
- Carol Walter presented “Education, Occupation and Industry Data” on behalf of the Department of Labor, Licensing and Regulation.

July 18, 2005

- Pat Mikos, of the Maryland State Department of Education, presented information regarding how the Maryland State Department of Education defines information technology careers.
- Pat Arnold, of the Department of Labor, Licensing and Regulation, provided an overview of existing data resources and their limitations.

September 13, 2005

- Ruta Sevo, Ph.D., Program Director of Research on Gender in Science and Technology at the National Science Foundation, provided a thorough explanation of the issues surrounding women and information technology. Dr. Sevo’s presentation included a detailed summary of factors that deter women from pursuing information technology throughout life, supporting data, best practices, national resources and how the decline of women in information technology will affect the workforce.

A number of presenters provided data and analysis on the current state of women and information technology. This information illustrated educational trends, insinuated causes for these trends and predicted the long term results of such trends. Ultimately, this information provided a starting point for the Task Force. It is important to discuss the current state of women and information technology before progressing further in this report.

Current State of Women and Information Technology

Despite increasing gender parity in information technology use, women are still severely under-represented in the IT workforce.¹ Today, women earn approximately one-quarter of the bachelor-level Information and Computer Science degrees awarded by US academic institutions, a decline from a peak of 35.8 percent in 1984.^{2,3} Concurrently, the US Department of Labor has reported that seven of the ten fastest growing occupations are IT related and significant percentages of highly skilled IT employees are nearing retirement.^{4,5} The concern for many businesses is what will happen when the trends of increasing demand for IT workers and decreasing participation of women in the IT workforce converge. If women were represented in the IT workforce in percentages equal to their total workforce participation, this would help address future IT staffing shortages and benefit the nation's interests.⁶ Thus, identifying the factors that lead individuals, especially women, into or away from IT careers is vital.

Current IT outreach efforts have not significantly increased enrollment of girls in the courses required to pursue IT careers, most notably in the mathematically rigorous computer science curriculum. In 2002, the Advanced Placement (AP) assessment for Computer Science recorded the lowest female participation rate of any AP discipline, with girls accounting for only 11% of the test takers for the advanced exam. Of perhaps even greater concern is that this percentage is down from 14% just a few years before.⁷ In secondary schools across the nation, a repeated pattern plays out: a further increase in boys' confidence, status, and expertise in computing and a decline in the interest and confidence of girls.

In Maryland, the limited data that is available reflects the national trends. The December 5, 2004 issue of the Baltimore Sun declared on page one that "Defense hiring in Maryland soars..." with "No end in sight." Yet, while jobs in engineering and IT are booming, female enrollment remains at or below 20% in most computer science programs offered at Maryland colleges and universities.⁸ Coppin State and Morgan State Universities are the exceptions, averaging 50% enrollment of women in their computer science programs. The Task Force agreed this is an area of interest and in need of further study.

¹ Women as Proportion of S&E workforce, by Broad Occupation. National Science Board, *Science and Engineering Indicators*, 2002.

² America's New Deficit: The Shortage of Information Technology Workers. Office of Technology Policy, US Department of Commerce. <http://www.ta.doc.gov/reports/itsw/itsw.pdf> p.24.

³ Physics Trends: Bachelor's Degrees Earned by Women, National Center for Education Statistics: Digest of Education Statistics. <http://www.aip.org/statistics>

⁴ United States Department of Labor, Top Ten Fastest Growing Occupations, 2000-10. Bureau of Labor Statistics, 2003.

⁵ Affirmative Opportunity Needed to Fill Science and Technology Gap. Office of Public Programs, American Association for the Advancement of Science, May 27, 2003.

⁶ Enhancing the Diversity of the Science and Engineering Workforce to Sustain America's Leadership in the 21st Century. *Executive Summary of the 2000 Biennial Report to Congress*. Committee on Equal Opportunities in Science and Engineering.

⁷ College Board website: <http://www.collegeboard.com/student/testing/ap/about.html>.

⁸ MHEC Enrollment Information System

The IT education pipeline in Maryland is also of concern. AP College Central, Maryland 2002 Data reported the following Advanced Placement percentages for test takers: Computer Science A – Girls 75 (13%), Boys 524 (87%); Computer Science AB– Girls 63 (15%), Boys 359 (85%). Advanced Placement tests often serve as an indicator of both an interest in college and an interest in career areas. Initial data collected from high schools in four counties in Maryland by the Center for Women and IT suggest enrollment of girls in rigorous elective IT classes is between 5% and 15%. This needs to be confirmed by a more rigorous review of the data.

To date, there has been extensive research investigating factors that influence girls' involvement with IT such as parents, peers, teachers, socioeconomic class, role models, regional economics, or the girls themselves. The Center for Women and IT is working with researchers to conduct a major National Science Foundation study to investigate the impact of technology itself on girls' versus boys' self-efficacy. But efforts to correct the challenges have not been systematically effective or sustainable and the small pockets of efforts nationally have not been enough to affect the large scale attitude changes needed to reverse the trends in girls' participation. Therefore, the Task Force is faced with the challenge of finding new and/or more expansive efforts for engaging girls' interests outside the traditional models.

Course of Action

Focus I: Defining IT

Given the multiple definitions that currently exist to define information technology, the first priority of the Task Force was to build consensus around the term. IT can be interpreted broadly or narrowly, and it cuts across all industry sectors. Without a clear definition, quantifying the number of women in information technology careers or trending the number of women entering information technology professions over time would be impossible to determine.

The Task Force researched alternative definitions of information technology before agreeing on a definition. The Task Force appreciated the thorough work completed by the Maryland State Department of Education (MSDE) in collaboration with business and industry representatives in its effort to achieve a clear and consistent definition of IT. The Task Force therefore adopted the MSDE career profiles outlined in MSDE’s “Red Book.”

Career Cluster 2
BUSINESS MANAGEMENT AND FINANCE

CORE AREA 1: BUSINESS MANAGEMENT SERVICES

PATHWAY: INFORMATION SYSTEMS

Supplying business services to all major industry sectors.

- Provide telecommunications, data and computer support services, and overall e-commerce support.

SAMPLE CAREER OPTIONS		
REQUIRES LESS THAN FOUR-YEAR COLLEGE DEGREE	REQUIRES FOUR-YEAR COLLEGE DEGREE	REQUIRES MORE THAN FOUR-YEAR COLLEGE DEGREE
<ul style="list-style-type: none">• Computer Support Specialist• Database Administration Associate• Network Administrator	<ul style="list-style-type: none">• Human Resources Information Systems Specialist or Manager• Systems Engineer• Network Security Analyst• Software Applications Quality Assurance Specialist• Database Knowledge Architect	<ul style="list-style-type: none">• Chief Information Officer

Career Cluster 8

INFORMATION TECHNOLOGY

PATHWAY: SOFTWARE ENGINEERING/DEVELOPMENT

Designing, developing, and testing software solutions to meet customer needs. Expertise required in project management, programming languages, database design, security systems, and website development.

SAMPLE CAREER OPTIONS

REQUIRES LESS THAN FOUR-YEAR COLLEGE DEGREE	REQUIRES FOUR-YEAR COLLEGE DEGREE	REQUIRES MORE THAN FOUR-YEAR COLLEGE DEGREE
<ul style="list-style-type: none"> • Web Designer/ Developer • Webmaster • Database Analyst • Database Tester • Data Analyst • Documentation Specialist • Software Applications Specialist 	<ul style="list-style-type: none"> • Software Architect • Lead Programmer • Project Manager • Software Applications Quality Assurance Specialist • Software Applications Engineer • Application Integrator 	<ul style="list-style-type: none"> • Business Analyst • Software Architect • Network Analyst • Operating Systems Designer/Engineer • Information Systems Architect

PATHWAY: SOFTWARE OPERATIONS

Installing, deploying, maintaining, and supporting software systems, including databases, software programs and packages, Web products, and security systems. Expertise required in project management.

- Monitor and manage software performance.
- Provide training and assistance to software users.

SAMPLE CAREER OPTIONS

REQUIRES LESS THAN FOUR-YEAR COLLEGE DEGREE	REQUIRES FOUR-YEAR COLLEGE DEGREE	REQUIRES MORE THAN FOUR-YEAR COLLEGE DEGREE
<ul style="list-style-type: none"> • Applications Trainer • Web Administrator • Information Systems Administrator • Applications Support Specialist • Database Support Analyst • Call Center Support Representative 	<ul style="list-style-type: none"> • Operations Manager • Database Administrator • Operations Systems Analyst • Senior Database Administrator • Database Security Expert • Help Desk Product Support Engineer • Technical Support Engineer 	<ul style="list-style-type: none"> • Project Manager • Operations Manager • Operations Systems Analyst

PATHWAY: HARDWARE ENGINEERING/DEVELOPMENT

Designing, developing, and testing new hardware technologies and products to meet customer needs. Expertise required in project management.

SAMPLE CAREER OPTIONS

REQUIRES LESS THAN FOUR-YEAR COLLEGE DEGREE	REQUIRES FOUR-YEAR COLLEGE DEGREE
<ul style="list-style-type: none"> • Network Technician 	<ul style="list-style-type: none"> • Operations Manager • Computer Designer • Computer Engineer • Mechanical Engineer • Circuit Designer • Chip Designer • Network Engineer

PATHWAY: HARDWARE OPERATIONS

Installing, configuring, maintaining, and supporting computer and network hardware to ensure secure and reliable system performance. Expertise required in project management.

SAMPLE CAREER OPTIONS	
REQUIRES LESS THAN FOUR-YEAR COLLEGE DEGREE	REQUIRES FOUR-YEAR COLLEGE DEGREE
<ul style="list-style-type: none"> • Computer Technician • Network Technician • Cabling Technician • Help Desk Technician • Call Center Support Representative 	<ul style="list-style-type: none"> • Operations Manager • Network Administrator • Project Manager • Technical Editor • Technical Writer • Customer Service Representative • Help Desk Product Support Engineer

PATHWAY: SYSTEMS

Designing, implementing, and supporting computer network systems—both hardware and software—to ensure that systems meet business and user requirements. Expertise required in configuration management and project management.

- Plan and manage system development projects.
- Maintain system documentation.
- Control system access and maintain system security.
- Troubleshoot system performance problems.

SAMPLE CAREER OPTIONS		
REQUIRES LESS THAN FOUR-YEAR COLLEGE DEGREE	REQUIRES FOUR-YEAR COLLEGE DEGREE	REQUIRES MORE THAN FOUR-YEAR COLLEGE DEGREE
<ul style="list-style-type: none"> • Information System Administrator 	<ul style="list-style-type: none"> • Systems Analyst • Operations Systems Engineer • Network Engineer • Systems Test Engineer • Security Specialist 	<ul style="list-style-type: none"> • Systems Architect • Systems Engineer • Operations System Engineer • Security Analyst • Operations System Program Manager

Maryland Career Clusters, Maryland State Department of Education, 2003. Pages 11, 36-37.

Focus 2: Defining the Areas of Impact

Once information technology was defined, the Task Force began addressing the specific tasks mandated in the legislation by breaking into four workgroups. This step occurred at the July 18, 2005 meeting. Each workgroup will study the issues relating to the declining involvement of girls and women in information technology at four points along the educational and career pathway, including the causes and impact of this decline in Maryland and recommended solutions to address the decline. The workgroups and their focuses are as follows:

Primary and Secondary School Education

- This group will focus on what deters girls from information technology in primary and secondary education, how to increase girls' interest in information technology, and how to establish a supportive school environment for girls and boys interested in pursuing information technology.

University Education

- This group will focus on what causes young women to select out of or leave IT majors and determine what can be done to recruit and retain these women. Efforts in this area that support women will also benefit men.

Joining the Workforce

- This group will focus on issues affecting women once they have joined the IT workforce. Recruitment and retention of a diverse IT workforce is a challenge for many employers in Maryland, particularly those with federal contracts or subcontractors of federally-funded organizations.

Advancement in the Workplace

- This group will focus on the issues faced by women who are working in the IT field and want to advance in their workplace. They will determine what difficulties women face and why (i.e. lack of mentors, family/personal responsibilities, etc.).

The goal of each workgroup is to identify Maryland-based challenges and effective practices to increase girls' and women's participation and leadership in information technology courses and professions. The current lack of disaggregated data for distinguishing national issues from state issues was seen by the Task Force as a major challenge for making recommendations that can be evaluated longitudinally.

Focus 3: Application to the Legislation

The following applications of the legislation were undertaken during the first full year since the passage of the legislation.

- Studying the issues relating to the declining involvement of girls and women in information technology;
 - The national issues are clearly understood by the Task Force.
 - Statewide data is missing in the following areas.
 - Any data on women's advancement in IT in Maryland.
 - Current participation rates of women in IT businesses in Maryland.
 - Other than the students enrolled in IT career and technology education pathway programs, data are not readily available by gender for other high school IT courses.
- Studying the impact this decline has on the overall technology literacy of Maryland's workforce;
 - MSDE defines technology literacy as "the ability of an individual, working independently and with others, to responsibly, appropriately and effectively use technology tools to access, manage, integrate, evaluate, create and communicate information." MSDE is also currently investigating ways to determine the acquisition of technology literacy skills using a tool kit and other means for demonstrating competence. There is currently a discussion within MSDE on how to understand trend data to determine changes over time. The Task Force welcomes the opportunity to both gather information from MSDE and to provide input in the development of this process to ensure gender is incorporated in the process.

Next Steps

As the Task Force spent its first year identifying the national and statewide challenges that deter women from information technology courses and careers, the Task Force will spend its second year addressing further the first two tasks and the remaining tasks set forth by the legislation. The tentative meeting calendar for such discussions among the whole Task Force follows. All meetings will last from 10:00am until 12:00pm. Unless noted, locations are yet to be determined.

- November 8, 2005 at Constellation Energy in Baltimore City.
- February 14, 2006.
- April 25, 2006.
- June 13, 2006.
- September 12, 2006.

Workgroups will meet independently at dates and locations chosen by each individual workgroup.

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HOUSE BILL 1538

Unofficial Copy
Session
P1

2004 Regular
4r3232
CF SB 917

By: **Delegates Cryor, Amedori, Aumann, Barkley, Bates, Benson, Bobo, Boschert, Boutin, Bozman, Bromwell, Bronrott, Cadden, Cane, Cardin, Carter, V. Clagett, Cluster, Conroy, C. Davis, DeBoy, Donoghue, Doory, Dumais, Dwyer, Eckardt, Elmore, Feldman, Franchot, Frank, Frush, Fulton, Gilleland, Goldwater, Goodwin, Gutierrez, Haddaway, Harrison, Healey, Heller, Hennessy, Hixson, Hogan, Holmes, Howard, Hurson, James, Jameson, Jones, Kach, Kaiser, Kelley, King, Kirk, Krebs, Krysiak, Lee, Leopold, Love, Madaleno, Mandel, Marriott, McComas, McConkey, McIntosh, McKee, Menes, Minnick, Moe, Montgomery, Murray, Nathan-Pulliam, O'Donnell, Owings, Paige, Parker, Parrott, Patterson, Petzold, Ramirez, Rosenberg, Rudolph, Shank, Simmons, Smigiel, Sophocleus, Stern, Stocksdales, Taylor, V. Turner, Vaughn, Walkup, Weldon, and Zirkin**

Rules suspended
Introduced and read first time: March 11, 2004
Assigned to: Rules and Executive Nominations

Re-referred to: Economic Matters, March 15, 2004

Committee Report: Favorable
House action: Adopted
Read second time: March 28, 2004

CHAPTER _____

- 1 AN ACT concerning
- 2 **Task Force on the Status of Women and Information Technology**
- 3 FOR the purpose of establishing a Task Force on the Status of Women and
- 4 Information Technology; providing for the membership, purposes, and staffing of
- 5 the Task Force; requiring the Task Force to report to certain persons by a certain
- 6 date; providing for the termination of this Act; and generally relating to the Task
- 7 Force on the Status of Women and Information Technology.
- 8 BY adding to
- 9 Article - State Government
- 10 Section 9-801 to be under the new subtitle "Subtitle 8. Task Force on the Status
- 11 of Women and Information Technology"
- 12 Annotated Code of Maryland

1 (1999 Replacement Volume and 2003 Supplement)

2 SECTION 1. BE IT ENACTED BY THE GENERAL ASSEMBLY OF
3 MARYLAND, That the Laws of Maryland read as follows:

4 **Article - State Government**

5 SUBTITLE 8. TASK FORCE ON THE STATUS OF WOMEN AND
INFORMATION
6 TECHNOLOGY.

7 9-801.

8 (A) THERE IS A TASK FORCE ON THE STATUS OF WOMEN AND INFORMATION
9 TECHNOLOGY.

10 (B) THE TASK FORCE CONSISTS OF THE FOLLOWING MEMBERS:

11 (1) ONE MEMBER FROM THE SENATE OF MARYLAND, APPOINTED BY
12 THE PRESIDENT OF THE SENATE;

13 (2) ONE MEMBER FROM THE HOUSE OF DELEGATES, APPOINTED BY THE
14 SPEAKER OF THE HOUSE;

15 (3) TWO MEMBERS OF THE WOMEN LEGISLATORS OF MARYLAND, ONE
16 TO BE APPOINTED BY THE PRESIDENT OF THE SENATE AND ONE TO BE APPOINTED
17 BY THE SPEAKER OF THE HOUSE;

18 (4) THE DEPUTY SECRETARY OF BUSINESS AND ECONOMIC
19 DEVELOPMENT, OR THE DEPUTY SECRETARY'S DESIGNEE;

20 (5) THE DEPUTY SECRETARY OF LABOR, LICENSING, AND REGULATION,
21 OR THE DEPUTY SECRETARY'S DESIGNEE;

22 (6) THE DEPUTY SECRETARY FOR THE MARYLAND HIGHER EDUCATION
23 COMMISSION, OR THE DEPUTY SECRETARY'S DESIGNEE;

24 (7) THE ASSISTANT STATE SUPERINTENDENT FOR THE DIVISION OF
25 CAREER TECHNOLOGY AND ADULT LEARNING, STATE DEPARTMENT OF EDUCATION,
26 OR THE ASSISTANT STATE SUPERINTENDENT'S DESIGNEE;

27 (8) THE DIRECTOR FOR THE CENTER FOR WOMEN AND INFORMATION
28 TECHNOLOGY, OR THE DIRECTOR'S DESIGNEE;

29 (9) ONE MEMBER FROM THE MARYLAND COMMISSION FOR WOMEN,
30 APPOINTED BY THE GOVERNOR; AND

31 (10) THE FOLLOWING MEMBERS APPOINTED BY THE GOVERNOR:

32 (I) ONE BUSINESS ENTREPRENEUR WHO IS THE CHIEF EXECUTIVE
33 OFFICER OF AN INFORMATION TECHNOLOGY COMPANY;

1 (II) TWO INFORMATION TECHNOLOGY BUSINESS PROFESSIONALS,
2 AT LEAST ONE OF WHOM IS A WOMAN;

3 (III) ONE HUMAN RESOURCES REPRESENTATIVE FROM A MAJOR
4 CORPORATION WHO HIRES INFORMATION TECHNOLOGY WORKERS;

5 (IV) ONE REPRESENTATIVE OF A LOCAL EDUCATIONAL AGENCY
6 THAT REPRESENTS TECHNOLOGY EDUCATION;

7 (V) ONE REPRESENTATIVE OF A COMMUNITY COLLEGE
8 INFORMATION TECHNOLOGY PROGRAM;

9 (VI) ONE REPRESENTATIVE OF A 4-YEAR EDUCATIONAL
10 INSTITUTION INFORMATION TECHNOLOGY PROGRAM;

11 (VII) ONE SECONDARY SCHOOL TEACHER; AND

12 (VIII) TWO COLLEGE STUDENTS MAJORING IN INFORMATION
13 TECHNOLOGY, PREFERABLY WOMEN.

14 (C) EACH MEMBER OF THE TASK FORCE SHALL BE APPOINTED ON OR BEFORE
15 AUGUST 1, 2004.

16 (D) TO THE EXTENT PRACTICABLE, APPOINTMENTS TO THE TASK FORCE
17 SHALL BE MADE TO ENSURE REGIONAL, ECONOMIC, ETHNIC, AND GENDER
18 DIVERSITY ON THE TASK FORCE.

19 (E) THE GOVERNOR SHALL DESIGNATE THE CHAIRMAN OF THE TASK FORCE.

20 (F) THE TASK FORCE SHALL ELECT A VICE CHAIRMAN FROM AMONG ITS
21 MEMBERS.

22 (G) THE CHAIRMAN OF THE TASK FORCE MAY:

23 (1) ESTABLISH COMMITTEES FOR THE PURPOSE OF COMPLETING THE
24 DUTIES OF THE TASK FORCE; AND

25 (2) APPOINT INDIVIDUALS WHO ARE NOT MEMBERS OF THE TASK FORCE
26 TO SERVE ON EACH COMMITTEE.

27 (H) THE DEPARTMENT OF BUSINESS AND ECONOMIC DEVELOPMENT SHALL
28 PROVIDE STAFF SUPPORT TO THE TASK FORCE.

29 (I) A MEMBER OF THE TASK FORCE MAY NOT RECEIVE COMPENSATION FOR
30 SERVING ON THE TASK FORCE, BUT IS ENTITLED TO REIMBURSEMENT FOR
31 EXPENSES UNDER THE STANDARD STATE TRAVEL REGULATIONS, AS PROVIDED IN
32 THE STATE BUDGET.

33 (J) THE TASK FORCE SHALL:

1 (1) STUDY THE ISSUES RELATING TO THE DECLINING INVOLVEMENT OF
2 GIRLS AND WOMEN IN INFORMATION TECHNOLOGY;

3 (2) STUDY THE IMPACT THIS DECLINE HAS ON THE OVERALL
4 TECHNOLOGY LITERACY OF MARYLAND'S WORKFORCE;

5 (3) STUDY THE IMPACT OF THIS DECLINE ON THE FUTURE OF THE
6 INFORMATION TECHNOLOGY WORKFORCE IN MARYLAND;

7 (4) CREATE AWARENESS THROUGHOUT THE STATE ON THE ISSUE OF
8 WOMEN AND INFORMATION TECHNOLOGY AND THE FINDINGS OF THIS TASK FORCE;

9 (5) IDENTIFY AND EXAMINE EXISTING PROGRAMS AND SERVICES, LAWS,
10 AND REGULATIONS WITH RESPECT TO IDENTIFYING PRACTICES THAT BEST
11 ADDRESS THE ISSUE IN EDUCATION AND WORKFORCE DEVELOPMENT;

12 (6) INVESTIGATE STRATEGIES TO ADDRESS THE CHALLENGES THAT
13 WILL BETTER MEET THE STATE'S WORKFORCE DEMANDS IN ALL CAREER AREAS
14 WHERE TECHNOLOGY IS USED;

15 (7) DEVELOP A STATEWIDE COMPREHENSIVE WOMEN AND
16 INFORMATION TECHNOLOGY PLAN AND STRATEGIES FOR PLAN IMPLEMENTATION
17 AND PUBLIC PROMOTION OF THE PLAN; AND

18 (8) FACILITATE COORDINATION AND COMMUNICATION AMONG STATE
19 AND LOCAL AGENCIES AND ORGANIZATIONS REGARDING ACHIEVING THE GOALS OF
20 THE PLAN.

21 (K) THE TASK FORCE SHALL PRESENT AN ANNUAL REPORT ON ITS FINDINGS
22 AND RECOMMENDATIONS TO THE GOVERNOR AND, IN ACCORDANCE WITH § 2-1246
23 OF THE STATE GOVERNMENT ARTICLE, THE GENERAL ASSEMBLY, ON OR BEFORE
24 OCTOBER 1 OF EACH YEAR BEGINNING OCTOBER 1, 2004.

25 SECTION 2. AND BE IT FURTHER ENACTED, That this Act shall take effect
26 July 1, 2004. It shall remain effective for a period of 5 years and, at the end of June
27 30, 2009, with no further action required by the General Assembly, this Act shall be
28 abrogated and of no further force and effect.

**TASK FORCE ON THE STATUS OF WOMEN AND
INFORMATION TECHNOLOGY**

ROSTER

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Task Force on the Status of Women and Information Technology -- Minutes

January 11, 2004 Meeting

- I. **Introduction of Chairperson and Task Force Members**
 - *Attendance:* Jim Clements, Linda Gooden, Shelley Johnson, Marilyn Martin, Ovetta Moore, Claudia Morrell, Kathy Oliver, Beth Perlman, Jeff Shuman, Donna Stevenson, Carol Walter

- II. **Review of Issues Facing Women and Information Technology**
 - Claudia Morrell gave a presentation on the issues and challenges facing women in information technology, and on the underlying causes of these challenges.

- III. **Task Force Business**
 - *Frequency of Meetings:* Every 4 to 6 weeks for the first few meetings
 - *Preferred Time and Location of Meetings:* 9:00am at rotating locations
 - *Election of a Vice Chair:* Claudia Morrell elected
 - *Suggest Two, Preferably Female, College Students Majoring in Information Technology for Appointment to the Task Force:* Linda Gooden volunteered to find a student attending UMCP with a possible community college background and Donna Stevenson volunteered to find a student attending Morgan State. After committees are formed, more students may be invited to participate in the Task Force.

- IV. **Develop Goals**
 - *Main Objective:* Increase the number of women enrolling in IT programs and prepare them for their first job.
 - *Prior to Developing Goals, the Task Force Chose to Gather Data and the Following Assignments Were Made:*
 - Kathy Oliver: Prepare a presentation on the situation in K-12 education and how it links into higher education
 - Claudia Morrell: Prepare a summary of best programs and resources, primarily using the NSF report
 - Jeff Shuman: Collect data from corporations, including the number of openings, the hiring rate and starting salary
 - Linda Gooden, Beth Perlman, Donna Stevenson and Ovetta Moore will assist

- Carol Walter: Coordinate state agencies and collect state data including employment trends
 - Jim Clements: Collect university data including IT majors offered, enrollment in IT majors, graduation rate, and diversity
→ Claudia Morrell will assist
 - Everyone: If you are familiar with programs that encourage women to pursue information technology studies and careers, please be prepared to discuss the program and its effectiveness.
- Please send a copy of collected data to Elissa Prichep. She will serve as the central repository.
 - Once data is collected, it will be assigned to an analyst to interpret. The analyst must determine the economic impact of the dearth of women in IT and compare the intellectual products of universities with the needs of businesses. Additional analytical needs may be determined in the future.

Task Force on the Status of Women and Information Technology

April 27, 2005 – 9:00 a.m.
MDOT Headquarters, Suite 3

I. Administrative Issues

- Attendance: Those who do not attend a minimum of 50% of meetings will jeopardize their membership to the Task Force.
- Review of Travel Reimbursement Policy.
- Reminder that Financial Disclosure Forms were Due May 2, 2005.

II. Presentations (handouts with each presentation)

- Kathy Oliver: *Career Technology Education (CTE) Pathway Programs in IT*
 - Discussion of IT programs and outcomes at the secondary level.
 - Data on Female enrollment in CTE IT Programs showed greatest percent increase in the data processing technician program and greatest percent decrease in the computer and information science program.
 - Kathy said the TF, if interested, could help increase the number of schools participating in CTE programs and could encourage students to complete a full CTE program instead of selected coursework.

- Claudia Morrell: *Addressing the Issues*
 - Posted data on AP enrollment in IT courses in four MD counties. Women were a small minority of enrollees.
 - Discussed reasonable goal for female enrollment in IT classes of all education levels and the best ways to achieve this goal.
 - The policy implication of schools moving away from technology courses to concentrate on reading and math was discussed.
- Carol Walter: *Education, Occupation and Industry Data* (presentation not finished; will continue discussion of data at next meeting)
 - Presented raw data and discussed the limitations of census data and codes data.
 - Discussed how to define IT and what codes should be included in an IT data search. This discussion will continue at the next meeting.

III. Other Business

- NSF Program Solicitation - Broadening Participation in Computing
 - <http://www.nsf.gov/pubs/2005/nsf05562/nsf05562.htm>
 - Reviewed and briefly discussed possible participation in this program.
- Task Force Membership
 - Student Members—Nominations and Regulations
 - Selin Mariadhas was appointed to the TF.

→ Michelle McClearn was nominated to join the TF.

Nomination was put on hold until regs are formulated.

→ Beth, Claudia and Lisa will formulate regulations on the type of student that should be nominated. These will be presented for discussion and approval at the next meeting.

- Suggestion that membership include graduate students and new workers in the IT field.
- Next meeting date will be in mid-June.

Task Force on the Status of Women and Information Technology

July 18, 2005 – 9:00 a.m.
DBM Headquarters, Room 164

I. Task Force Vacancies

- Jeff Shuman has resigned. Nominations for the roll of “one human resources representative from a major corporation who hires information technology workers” should be sent to Elissa Prichep by July 22. Name, position and contact information are needed.
- Two Student Members are needed.
 - Student members must be majoring in Computer Science, Information Systems, Electrical Engineering or Computer Engineering and must be a sophomore or junior.
 - Jim Clements and Donna Stevenson volunteered to find student members.

II. Review the Mission of the Task Force

- The mission of the Task Force is spelled out in the last page of the Task Force legislation. This document is in your binder. Please review it.

III. Discussion Topics

- Pat Mikos provided information on how MSDE defines information technology careers (see Career Clusters Booklet, pages 11, 35-37). These

definitions were adopted by the TF. Pat agreed to assist working groups 1 and 2 in their missions.

- Pat Arnold explained the data available to the TF and its limitations. Industry sector data, while updated frequently, does not breakdown by gender and will not incorporate IT occupations housed in non-IT sectors. Occupational data, on the other hand, will provide data on IT occupations across industries and can be broken down by gender, but it is updated infrequently. Trends are harder to find in occupational data than in industry sector data. Pat agreed to provide data to the TF and assist work groups in their search for data.

IV. Break Into Working Groups *(see working group document)*

- Work groups elected chairs, began identifying challenges and planned for interim meetings.
- Initial Thoughts
 - Work Group 1: Finding reliable data will be difficult. The primary and secondary school level would be well served by a systemic approach to IT across the state and increased partnerships between school IT programs and businesses, for example.
 - Work Group 2: Plan to look at university program enrollment trends and MHEC data as well as national best practices for program policies/requirements.

- Work Group 3: Finding data will prove extremely difficult. Reviewing business surveys, talking to individual businesses and searching for trends is a good place to start.
- Work Group 4: Finding data to identify trends and support hypotheses will be this group's biggest challenge. Perhaps big search firms can provide some information.

V. Other Business

- Next Task Force meeting will be on September 13 from 9:00-11:00am at Constellation Energy.
- At the next meeting, work groups will report on their findings and the TF will discuss the annual report due to the Governor and General Assembly.

Task Force on the Status of Women and Information Technology—Meeting Minutes

September 13, 2005 – 9:00 a.m.
Constellation Energy

I. Introduction of Ruta Sevo, Ph.D., Program Director, Research on Gender in Science and Engineering, National Science Foundation.

II. Dr. Sevo's Presentation

- Dr. Sevo's presentation included a detailed summary of factors that deter women from pursuing information technology, supporting data, best practices, national resources and how the decline of women in information technology will affect the workforce.
- Please email Elissa if you want a copy of Dr. Sevo's PowerPoint.

III. Workgroup Presentations and Feedback

- Workgroup leaders voiced concerns about a lack of participation from workgroup members.
- General Feedback on Data Needs
 - Data is not continuous across time (i.e. primary school to college). This makes trends difficult to determine.
 - Corporate statistics and retention data are needed. Workgroup 4 will pick up this research where Jeff Shuman left off.
 - Dr. Cornick will look up data on majors by HEGIS code.
- Presentation of Workgroup 2 -- University Education

- Provided a draft report that presented data on university enrollment and graduation numbers. The computer science data revealed that women are under represented in the IT field and that their numbers are declining overall, but also showed a surprising trend of HBCUs to have 50% women. Dr. Sevo explained this is not unusual. In addition, more data is needed for community colleges. Also, we need computer engineering and information systems data as well.
- Listed a variety of social, cultural, workplace and educational problems that result in the low percentage of women entering or staying in IT professions.
- Addressed the need for results over continuous analysis of the same problems.
- Presentation of Working Group 3 -- Joining the Workforce
 - Provided a PowerPoint that addressed problems surrounding:
 - How women access jobs in the IT field through preparation (i.e. education, certification).
 - How work environment and compensation may deter women from entering the IT field.
 - How women progress through an IT organization, where there is a high depreciation rate for skills.
 - Listed data needed to uncover where and why the problems occur.

IV. Annual Report

- The TF report is due to the Governor and General Assembly on October 1.
- It was determined that the report should reflect:
 - The accomplishments the TF has made as they pertain to the goals mandated in the legislation
 - Information or data that is helpful and information or data that is unavailable.
 - A definition of information technology.

V. Organizational Planning

- A discussion developed regarding the long term planning of the TF and how to most efficiently use the workgroups to reach the goals mandated in the legislation.
- A request was made for an outline that reflects the strategy of the TF.

VI. Calendar

- The next TF meeting will be on November 8 from 10:00 am to noon at Constellation Energy.
- Meetings will follow approximately every 2 months at rotating locations.

Women in Science and Engineering: Sources

Last updated: June 9, 2005, r. sevo, nsf

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<http://www.bsu.edu/dpi/article/0,1894,37197-5018-12717,00.html>

<http://gseweb.harvard.edu/~hepg/gurin.html>

<http://www.umich.edu/~urel/admissions/research/>

<http://www.aaup.org/Issues/AffirmativeAction/>

<http://www.ala.org/ala/acrl/acrlpubs/crlnews/backissues2000/september4/diversityweb.htm>

Rich web sites that cross all the topics and provide overviews of issues/resources

Anita Borg Institute: <http://www.anitaborg.org/> women in computing technology, women & design

Assessing Women in Engineering <http://www.engr.psu.edu/awe/> evaluation of women in engineering programs, biblio

American Association for University Women www.aauw.org many research publications, summaries

Association for Women in Science: <http://www.awis.org/> prof association for women in sci; national chapters

Gender and Science Digital Library <http://gsdl.edc.org/> center for diversity; database of projects & resources

National Institution for Women in Trade, Technology and Science <http://www.iwitts.com/>
nontraditional careers info

Science, Gender and Afterschool <http://www.afterschool.org/sga/>– a community of
practice for community programs

University of Maryland Baltimore County, Center for Women in Technology:
<http://www.umbc.edu/cwit/>

Wellesley College – Computer Science:
<http://cs.wellesley.edu/~cs/Resources/cswomen.html>

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