



2004 Annual Report

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Maryland Technology Development Corporation (TEDCO)

2004 Annual Report

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Maryland Technology Development Corporation (TEDCO) 2004 Report

Overview

In 1999 TEDCO was no more than a promise: that a “public instrumentality” – independent of the State but accountable to it – focused exclusively on transferring and commercializing the research of the State’s universities and federal labs, could make a tangible contribution to Maryland’s economy. It consisted solely of a “piece of paper” – its enabling legislation – a highly credible Board of Directors, a single employee, a seed grant of \$642,000 from the Department of Business and Economic Development, and a desk at 217 E. Redwood Street.

Today, five years later, TEDCO has exceeded the hope of its sponsors. Under the guidance of a committed Board of Directors, and with strong support from elected officials at all levels of government, TEDCO’s program activity will exceed \$10,500,000 in the current fiscal year. From one employee, it now has 10 employees, who boast 10 masters degrees, 3 doctorates, and over 120 years of relevant experience.

Although TEDCO’s budget has been modest – when compared to other States – and its programs have been targeted to the earliest stages of technology development, its investments are already showing signs of maturation.

In July 2004 *Entrepreneur Magazine* ranked TEDCO as the **nation’s** #1 source for investments in early stage companies. TEDCO seed investments of \$1,400,000 in 23 companies have stimulated \$35,000,000 in follow-on funding. Of 8 companies that have progressed sufficiently, 5 are repaying their funding.

Even in the early stages of technology development – university conducted R&D – TEDCO’s awards have shown promising results. Of 24 completed projects, 9 have already resulted in license agreements with companies, and in a direct contribution to the Maryland economy, 8 of those companies are in-State, and 7 are start-ups. Even greater impacts are expected as these technologies are presented to the private sector.

TEDCO’s incubation support program is also demonstrating an impact. On September 2, the Silver Spring Innovation Center celebrated its opening. This 20,000 sq. ft. facility – part of the area’s redevelopment program – was over 60% pre-leased before opening. Currently under renovation is 10,000 sq. ft. at Hood College – the Frederick Innovative Technology Center – central to Frederick County’s strategy to leverage the resources at Ft. Detrick. The facility is expected to open in mid-November. Renovated wet labs at the techcenter@UMBC have been in operation for nearly a year, and TEDCO is receiving advance royalty payments from this facility; and the Emerging Technology Center@Johns Hopkins Eastern is beginning to attract tenants. These four projects generated over \$9,000,000 in matching funds, nearly a 3:1 times return of TEDCO’s investment.

TEDCO is currently completing a \$200,000 pilot program from EDA to connect incubator companies with sources of capital, is awaiting a contract from the SBA for a \$495,000 program to support business incubation in southern Maryland and the Eastern Shore, and expects to

receive an award of \$80,000 from the SBA to encourage federal R&D applications from companies working through Western Maryland's incubation programs.

TEDCO established the first systematic, statewide initiative to access federal laboratories for business development. To date, TEDCO has signed special technology transfer agreements with 11 federal facilities, and has organized 20 technology showcases, attracting over 3,000 entrepreneurs, investors, and scientists.

TEDCO's path-breaking initiatives with federal laboratories have been tangibly recognized with federal funding for technology development programs. In July, the Aberdeen Technology Transfer Initiative was launched with a \$965,000 award and in September TEDCO was awarded a \$1,258,000 contract for the continuation of the NAVAIR Technology Commercialization Initiative at Pax River. In October, TEDCO will be submitting a proposal for the \$1,000,000 appropriated in the FY2005 Defense Appropriation budget for an Army Technology Transfer Initiative at Ft. Detrick, and will be submitting a \$965,000 proposal at the invitation of the National Security Agency to create a tech insertion program.

To date, TEDCO has been instrumental in securing 19 federal and non-State awards from 13 organizations, totaling \$8 million for Maryland companies, universities, and programs, supporting technology transfer, business incubation, and broadband assessments.

TEDCO's programs have been noted by the Governor's Commission on the Development of Advanced Technology Business, which specifically endorsed increased funding for TEDCO's seed and pre-seed technology development programs, support of the State's incubator network with capital and operating funds for best practices, and the encouragement of entrepreneurial initiatives and technology transfer with universities.

After extended discussions throughout the year, the Department of Budget and Management and TEDCO identified specific, tangible and measurable performance goals through FY2007. These metrics have been incorporated into the TEDCO's Managing For Results submission to DBM, which will track outcomes in Technology Transfer, Technology Development, Technology Commercialization, Technology Business Formation, Technology Funding, Technology Employment, and Technology Diversification.

TEDCO receives strong bi-partisan support from the Governor's Administration and the General Assembly; as a result, TEDCO's FY05 State appropriation reached a record \$7,967,000. This is an excellent step toward the State's long term goal of having technology development programs competitive with surrounding States. For example, Pennsylvania's Ben Franklin Partnership regularly receives \$30 million annually; if TEDCO were funded at an equivalent per-capita level, its budget would exceed \$12 million.

Most important to the success of the program has been the leadership of the members of the Board of Directors. That has always been the bedrock of the organization, and the basis for its continuing performance.

MARYLAND TECHNOLOGY DEVELOPMENT CORPORATION

Federal Technology Transfer Projects



July 2004

I. Introduction

The Maryland Technology Development Corporation (TEDCO) was created by the Maryland General Assembly in 1998 to “(1) Assist in transferring to the private sector and commercializing the results and products of scientific research and development conducted by colleges and universities; (2) Assist in the commercialization of technology developed in the private sector; and (3) foster the commercialization of research and development...to create and sustain businesses throughout all regions of the State” and “to promote entrepreneurship and the creation of jobs in technology-related industry by establishing and operating effective incubators throughout the State that provide adequate physical space designed, and programs intended, to increase or accelerate business success in the field of technology.”

In FY2000 the initial TEDCO Board of Directors was appointed, received a seed grant of \$642,000 from the Maryland Department of Business and Economic Development, and hired as its first employee, an Executive Director, to build the organization. Operational activities began in FY2001; at the beginning of FY2005 the organization has 10 technically trained professionals, and overall programmatic responsibilities exceeding \$10 million.

During this start-up period, TEDCO has developed nationally recognized programs that facilitate the technology development, transfer, and commercialization process. Among its singular accomplishments is the development of linkages with the numerous federal research facilities in Maryland; the attraction of \$8 million in federal grants from such agencies as the National Science Foundation, NASA, Economic Development Administration, the U.S. Navy, the U.S. Army and the Small Business Administration; the creation of innovative seed funding programs to fill gaps in the technology transfer process; and the establishment of formal partnerships with sources of early stage private capital. TEDCO has focused attention on the information technology needs of under-served regions of the State; and developed the State’s first comprehensive business incubation program.

TEDCO has also served as a source of independent information on the status of the State’s technology activities, commissioning studies benchmarking Maryland’s resources, identifying gaps, and assessing the State’s programs. The organization has generated hundreds of positive news articles about the State’s efforts to promote its technology sector.

In the July 2004 *Entrepreneur Magazine* ranked TEDCO #1 nationally for the largest number of investments in start-up/seed or early stage companies. We believe that TEDCO has played a role in Maryland’s new prominence and that with continued support from the State the Corporation can continue to make a tangible contribution. The following annual report to the Administration and General Assembly outlines TEDCO’s programs.

II. Board of Directors

The Corporation, a “body politic and corporate and constituted as a public instrumentality of the State,” is governed by a 15 member Board, appointed by the Governor with the approval of the Senate. TEDCO Board members represent the nonprofit research sector (2 representatives), venture capital financing (2), experience in technology-based businesses (5), the general public (3), colleges or universities (2), and the Secretary of Business and Economic Development. All are leaders in their sectors and represent major geographic regions of the State.

During FY2004, the Board met on the following dates, generally for three hours.

July 10, 2003
September 11, 2003
November 6, 2003
January 24 2003
March 11, 2004
May 13, 2004

Governor Robert L. Ehrlich appointed three individuals to the Board for terms commencing July 1, 2004: Aaron Kazi (The Canton Group), John Cayhill (Carter, Ledyard & Milburn, LLP), and Robert Russell (Delmarva Online), replacing Christine Copple (ASM Resources), William Hanna, and James Burns (Entremed). Secretary Melissaratos was named Chair of the Board’s Nominating and Policy Committee, and at the September 9, 2004 Annual Meeting of the Board of Directors, the Committee recommended and the Directors elected Beverly Byron as Chair, Frank Adams as Vice Chair, Eugene DeLoatch as Secretary, and William Snyder as Treasurer. At that meeting, Aaron Kazi was appointed to the Finance and Audit Committee, John Cahill was appointed to the Technology Transfer Technical Advisory Committee, and Robert Russell was appointed to the Small Business Incubation Technical Advisory Committee. Following is a list of the Directors of the Corporation:

TEDCO Chair
Hon. Beverly B. Byron
Byron Butcher Associates

John F. Cahill, Esq.
Counsel
Carter, Ledyard & Milburn, LLP

Aris Melissaratos
Secretary, Department of Business
& Economic Development

TEDCO Vice Chair
Frank A. Adams
President & CEO
Grotech Capital Group

Monty L. Deel
President
GST Protocol Services, Inc.

Theodore O. Poehler, Ph.D
Vice Provost for Research
Johns Hopkins University

TEDCO Treasurer
William R. Snyder

William W. Destler, Ph.D
Provost and Senior Vice President
University of Maryland College
Park

Robert Russell
President
Delmarva Online

TEDCO Secretary
Eugene M. DeLoatch, Ph.D
Dean, School of Engineering
Morgan State University

Aaron H. Kazi
Managing Partner
The Canton Group

Steve Walker
President
Steve Walker Associates, Inc.

Gregory V. Billups
President & CEO
Systems, Maintenance &
Technology, Inc.

Richard C. (Mike) Lewin

Anthony C. Wisniewski, Esq.
Senior Director/State Policy
Counsel
Pharmaceutical Research and
Manufacturers of America

The Governor's Commission on the Development of Advanced Technology Business ("Pappas Commission") was created "to develop and submit to the Governor specific recommendations for the further growth of Maryland's technology economy." The Commission's Report, issued in January 2004, contained several recommendations specifically endorsing TEDCO's activities, including increased funding for TEDCO seed and pre-seed technology development programs, support of the State's incubator network with capital and operating funds for best practices, and the encouragement of entrepreneurial initiatives and technology transfer with universities.

In July 2004, the Board of Directors initiated a Strategic Planning process, reviewing lessons learned to identify strengths, weaknesses, and opportunities, and began to prepare a 3-year strategic plan. In September, the Board determined that TEDCO has learned what it takes to turn Maryland's research resources into economically productive business: concentrating its efforts on the robust tech development sector, focusing on seed stage activities, and leveraging existing resources.

A new role for TEDCO is emerging: to build upon its strengths as an effective technology transfer and development organization to become the State's leading source of seed capital and commercialization assistance for technology related industry. This new role for TEDCO reflects the strategic direction suggested by the Pappas Commission, which in its September 2004 Update, proposed that TEDCO focus more attention on promoting entrepreneurship.

III. Management and Administration

Personnel and Operations

In August 1999, TEDCO's Board of Directors announced the hiring of Phillip A. Singerman, Ph.D, as the Corporation's Executive Director. Dr. Singerman served from 1995-1999 as Assistant Secretary for Economic Development for the U.S. Department of Commerce, and from 1983-1995 as President/CEO of the Ben Franklin Partnership Technology Center of Southeastern Pennsylvania.

As FY2005 begins, TEDCO has ten full-time state funded positions, who collectively hold ten master degrees, three doctorates, and over 120 years of experience in technology and economic development. Staff expertise includes technology transfer, biotechnology, military and federal laboratory commercialization, information technology, entrepreneurial development, minority business assistance, association management, and public administration:

- Morgan Allyn, *Program Manager, Federal Research Funding**
- Timothy Copney, *Executive Assistant*
- Steve Fritz, Ph.D, *Director, Technology Transfer*
- David M. Houle, *Program Manager, E-Commerce*
- Ronald W. Kaese, *Senior Program Manager, Federal Laboratories*
- Roberta L. Melton, *Technology Programs Coordinator*
- Linda Saffer, Ph.D *Technology Analysis Specialist*
- Heidi Sheppard, *Program Manager, Incubator Programs*

- Phillip A. Singerman, Ph.D, *Executive Director*
- Renée M. Winsky, *Deputy Executive Director*

* Replaced by Henry Ahn, *Program Manager, Technology Funding Programs* (August 2004).

TEDCO has not created a top heavy internal administrative infrastructure, instead it utilizes cost effective outside professional firms to provide specialized administrative services. Consequently, TEDCO's FY2004 G&A expenses were 6.3% of total operating expenses. In 2004, TEDCO continued its cost-conscious approach to management, reducing its rent to the prior year level and freezing it for three years, and reducing the cost of its medical benefits.

Administaff, Inc., a Professional Employer Organization, manages TEDCO's human resources functions, including payroll services and the provision of health benefits. Through this arrangement TEDCO is provided with a full range of professional human resources services at a low cost to the organization. Other specialized professional service providers include:

- BDO Seidman, *Audit Firm*
- The Canton Group, *Website Development Services*
- Maryland Attorney General's Office, *Legal Counsel*
- Rubino & McGeehin, *Professional Accounting Firm*
- Towson University RESI, *Website Hosting Services*

TEDCO is identified as DBED's specialized technology transfer entity, and the two organizations collaborate on a wide variety of activities. TEDCO's Executive Director attends DBED's senior management meetings, and DBED's Deputy Secretary serves as TEDCO's primary liaison with the Administration.

Advisory Committees

Policy recommendations and program oversight are provided by Technology Advisory Committees, which are comprised of experts representing the private sector, educational and research institutions, and federal agencies. The Technology Transfer Technical Advisory Committee now includes:

- Gregory Billups, Systems, Maintenance & Technology, *Co-Chair*
- Theodore Poehler, Ph.D, Johns Hopkins University, *Co-Chair*
- Scott Bass, Graduate School, University of Maryland, Baltimore County
- Jack Cahill, Esq., Carter, Ledyard & Milburn, LLP
- Robert Charles, Walter Reed Army Institute of Research, Fort Detrick
- Nariman Favardin, School of Engineering, University of Maryland, College Park
- Ron Hawkins, Technology Extension Service Northeast Office
- J. Mike Hayes, Maryland Department of Business and Economic Development
- Robert Kavetsky, Naval Surface Warfare Center, Indian Head
- Steven Linberg, Chiesi Pharmaceuticals, Inc.
- C. Warren Mullins, Battelle Memorial Institute

- Alethea Pounds, School of Engineering, Morgan State University
- Michael Reischman, National Science Foundation
- Don Spero, Dingman Center for Entrepreneurship, University of Maryland
- Steve Walker, Steve Walker Associates
- John C. Weiss III, University of Maryland Baltimore

The Committee met on August 14, 2003, December 11, 2003, and April 8, 2004.

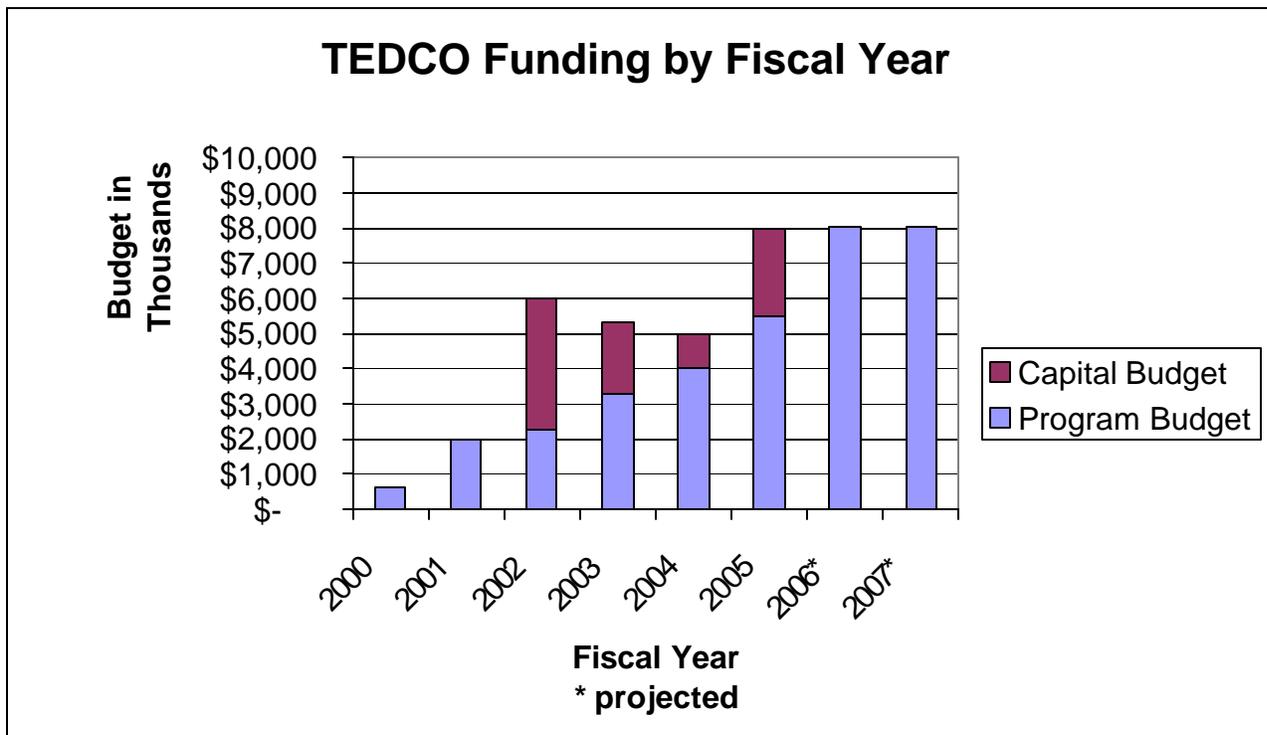
The Technical Advisory Committee on Small Business Incubation includes:

- Monty Deel, GST Protocol Services, Inc., *Chair*
- Robert Brennan, Maryland Economic Development Corporation
- David W. Edgerley, Montgomery County Department of Economic Development
- Dan Healey, Maryland Department of Business and Economic Development
- Patricia Larabee, Facility Logix
- Brian Merritt, American Express Tax and Business Services
- Hans Meyer, formerly with Maryland Economic Development Corporation
- Neal E. Noyes, U.S. Department of Commerce, Economic Development Administration
- Eric Orlinsky, Saul Ewing, LLC
- Robert Russell, Delmarva Online

The Committee met on October 24, 2003, February 26, 2004, and May 6, 2004.

IV. Financial History

In FY2004, TEDCO became a direct grantee from the State’s General Fund Budget. TEDCO’s appropriation included \$4 million in operations and \$1 million in capital funding. As a result of this grant relationship with the State, TEDCO and the Department of Budget and Management held a series of meetings in order to evaluate available data and identify quantifiable metrics for TEDCO’s programs. The goals and metrics that were developed form the basis of TEDCO’s budgeting and strategic planning process moving forward. These meetings also led to the development of a draft Performance Agreement between the TEDCO and DBM. Although the form for implementing the agreement will be held in abeyance, the substance remains intact. The metrics developed have been incorporated into TEDCO’s Managing For Results submission for the FY2006 budget process.



TEDCO has developed detailed policies and procedures to ensure that all funds are properly controlled, and financial statements are reviewed by TEDCO’s Finance and Audit Committee. TEDCO has retained the services of Rubino & McGeehin as its accounting advisor and the services of BDO Seidman to serve as independent auditor.

At the Board’s request in 2003 BDO Seidman reviewed the Corporation’s financial governance to ensure that it was in compliance with Sarbanes-Oxley, and in September 2004 BDO Seidman met with the Finance and Audit Committee to present the FY2004 audited financial statements. For the fifth consecutive year TEDCO’s financial statements received an unqualified (“clean”) opinion, and for the second consecutive year there were no management recommendations from the auditors.

V. Innovative Seed Funding for Technology Transfer and Development

University Patent Support Program

After discussions with the university technology managers during FY2003, TEDCO set aside \$500,000 – 25% of TEDCO’s FY2004 program budget – for a program designed to increase the number of first patent applications on university technology. Governor Ehrlich formally announced the new program in October 2003. This program is at the national forefront for State efforts to support university generated intellectual property.

In FY2004 TEDCO allocated \$433,000 among university campuses to support new patent applications under this program, including Johns Hopkins University; Johns Hopkins University-Applied Physics Lab; University of Maryland Baltimore; University of Maryland Baltimore County; University of Maryland Biotechnology Institute; and University of Maryland College Park. The remainder was reserved for support of later stage prosecution of exemplary patent applications. As of September 30, 2004 the universities had been reimbursed for 88 new patent applications and one foreign national stage application for a platform technology.

An example of a patent supported under this program is the JHU exemplary patent for which TEDCO paid one half of the cost of foreign national stage filings on “Using Porous Lubricated Nozzles to Prevent Nozzle Wear in Abrasive Water Jets.” This allowed the university to continue to prosecute international patent applications while negotiating a license agreement with LubriJet, a small Maryland business owned by the inventor. LubriJet has meanwhile won a phase 2 SBIR award from the National Science Foundation for \$500,000 to pursue commercialization of the technology.

University Technology Development Fund (UTDF)

The University Technology Development Fund provides initial awards up to \$50,000 to support development of university-owned intellectual property to make it more valuable to a licensee. It is explicitly intended to be used by university technology licensing offices to enhance the value of their portfolio. Development work is done by university inventors. It differs from the Maryland Industrial Partnerships program (MIPS) – which provides a subsidy for companies in Maryland that wish to access the expertise of University System faculty and students – by (1) working with all public and private educational institutions in the State, (2) focusing solely on the development of technology, and (3) providing development funding to universities prior to identification of a technology collaboration partner to make technologies more attractive to licensees. Participating universities include, Johns Hopkins University; Johns Hopkins University-Applied Physics Lab; Morgan State University; University of Maryland Baltimore; University of Maryland Baltimore County; University of Maryland Biotechnology Institute; University of Maryland College Park; and Uniformed Services University Health Systems.

The following table lists the summary statistics for the University Technology Development Fund during FY2004.

| Category | Number of Proposals | Total Funds Requested |
|------------------------------|----------------------------|------------------------------|
| Total Received | 18 | \$888,435 |
| Approved for initial funding | 15 | \$749,315 |

The objective of the UTDF program is to provide funds for pre-commercial development of university technologies to enhance the likelihood that they would be licensed. These projects are the earliest stages in the technology development process, and often take several years to realize any commercial outcomes. As of July 31, 2004, 24 UTDF projects have been completed. Of these 24 projects, 9 have been licensed, 8 to Maryland companies. Seven of the 8 Maryland companies are startup companies, and three of these have gone on to receive Maryland Technology Transfer Fund (MTTF) awards to initiate commercialization. In addition, three ongoing projects have already been licensed, all of them to Maryland startup companies. One of these companies has received MTTF funding as well and another pending project has received a commitment of corporate funding from a Maryland company that has not yet licensed the technology.

An example of the UTDF program is an award made to Johns Hopkins University in FY2002. The title of the project was “Reactive Joining Technology”. This project was completed and the technology licensed to a spin-off company named Reactive Nanotechnologies, Inc., now RNT, Inc. RNT subsequently won an MTTF award to begin commercializing the technology. The company has raised significant funding from a variety of sources and been very successful in commercializing this technology (see below under MTTF).

A second example of a UTDF technology is an award made in FY2004 to the University of Maryland Baltimore. This technology, as well as a portfolio of over twenty related patents, has been licensed to Alba Therapeutics, which also won an MTTF award and support from the DBED Challenge program. Alba is currently negotiating with the venture capital community to continue funding the project.

Maryland Technology Transfer Fund (MTTF)

The Maryland Technology Transfer Fund provides initial non-equity investments of up to \$50,000 per company to defray the costs of initial transfer of technology from or co-development of technology with universities and federal laboratories in Maryland. It differs from the DBED Challenge and Enterprise programs in three ways: (1) MTTF is conceptually located at an earlier stage than DBED’s Challenge program, and serves as a “farm team” for this later stage fund; (2) MTTF is appropriate for technology development projects that are economically viable but do not have the scope for a venture capital investment; and (3) MTTF only invests at companies partnering with federal laboratories or universities, thereby capitalizing on the prior federal and university research investments and infrastructure. Partnering federal laboratories and universities include, Aberdeen Proving Ground; Ft. Detrick; Hood College; Johns Hopkins University; Johns Hopkins University-Applied Physics Lab; Morgan State University; National Geospatial Intelligence Agency; National Institute of Standards and Technology; National

Institutes of Health; National Naval Medical Center; National Security Agency; Naval Air Warfare Center – Patuxent River; Naval Surface Warfare Center – Indian Head; Navy Research Laboratory; University of Maryland, Baltimore; University of Maryland Baltimore County; and University of Maryland, College Park.

The following table lists the summary statistics for the Maryland Technology Transfer Fund during FY2004.

| Category | Number of Proposals | Funds Requested |
|-----------------------------------|----------------------------|------------------------|
| Total Received | 32 | \$1,575,000 |
| Approved for initial funding | 25 | \$1,220,000 |
| Approved for continuation funding | 2 | \$ 100,000 |

The objective of the MTTF program is to seed the initiation of new technology transfer projects that will go on to become self-sustaining, i.e., be able to raise funding from non-State sources to continue their projects to a successful commercialization. The 23 MTTF companies that have finished their funded projects, with a total TEDCO investment of \$1.4 million, have collectively raised \$35 million in downstream funding from a mixture of venture and angel investors, government Small Business Innovation Research (SBIR) and Advanced Technology Program (ATP) research grants, private placements, and product sales.

MTTF awards have payback requirements in the event of company revenue. Each company owes TEDCO a modest share of gross revenue capped at two times the award for a five year period beginning one year after completion of the award. Of eight companies that have progressed sufficiently, five are repaying their funding.

An example of an MTTF-funded company is Chesapeake PERL, a company currently in the Technology Advancement Program incubator at the University of Maryland. Chesapeake PERL licensed technology from the University of Maryland for using insect larvae as a high purity protein production system in lieu of the typical bacterial systems used to manufacture proteins for the biotech industry. The MTTF award made to Chesapeake PERL provided local matching funds for a \$2.0 million Advanced Technology Program (ATP) grant made by the National Institute of Standards and Technology. The MTTF-funded project also helped the company secure a recent Series A-2 venture capital investment of \$1.16 million dollars. Chesapeake PERL is currently selling protein to several customers and is developing new products based on proteins licensed from other university research projects.

Performance Assessment

The Department of Budget and Management established performance targets for outcomes that TEDCO will deliver in FY2005-FY2007 based on investments made in FY2005. These targets include R&D project progress against the milestones and plans set out in the company/university proposals for funding. TEDCO has engaged RTI International, a prestigious economic development and technology transfer consulting firm based in Research Triangle Park, North Carolina, to conduct an independent assessment of commercialization progress on 40 completed projects. The results of this assessment will be used to guide TEDCO in its methods for

determining progress toward commercialization. The final report will be submitted in October 2004.

TEDCO Ventures

TEDCO Ventures is a collaborative activity of TEDCO and Toucan Capital. TEDCO provides technology intelligence for companies and university research projects for Toucan and refers potential investment opportunities to Toucan. Operationally, the technology transfer team meets periodically with the Toucan associates and the Associate Director of the DBED Venture Financing Group.

Toucan Capital II has far exceeded its promise to Maryland. The Fund received its license and funding commitment from the Small Business Administration in FY2002, allowing it to leverage the State's \$4 million investment into a \$120 million pool of capital. Toucan focuses on technology development investment opportunities – particularly technologies emerging from universities and federal laboratories – that have the potential for major market penetration and venture capital returns. TEDCO works closely with Toucan, connecting them with university faculty and research administrators, and with researchers at federal laboratories. Toucan's first three investments in Maryland were facilitated by TEDCO, and one was a result of TEDCO's University Technology Development Fund.

As of September 30, 2004 Toucan has invested a total of \$62 million; \$31 million of this total has been invested in seven Maryland companies. With these investments Toucan has already exceeded its original commitment to invest \$12 million in the state by more than 2 ½ times.

New Markets Growth Fund (NMGF)

The Dingman Center for Entrepreneurship at the University of Maryland, College Park received a 3-year \$250,000 grant from the Federal Home Loan Bank of Atlanta (FHLBA) in support of the center's New Markets Growth Fund (NMGF). TEDCO played a critical role in securing this grant. The NMGF, which will make \$20 million in venture capital available to small businesses in economically distressed regions in Maryland, Virginia, and the District of Columbia, is part of the New Markets Venture Capital program administered by the U.S. Small Business Administration.

The FHLBA grant will be used to provide technical assistance to start-up companies that receive venture capital from the NMGF and will also provide for technical assistance to technology entrepreneurs who have potential for investments. A focus will be placed on companies transferring technology from universities in the City of Baltimore and Prince George's County, particularly on those companies working with HBCUs. TEDCO will work with the Dingman Center to evaluate the need for technical assistance and in selected cases provide the technical assistance. In FY2004 TEDCO provided technical assistance to Chesapeake PERL, a women owned firm in UMCP's TAP incubator, and Owen Software, a minority owned firm at the Maryland Technology Development Center in Shady Grove.

Cigarette Restitution Fund

Pursuant to legislation passed by the General Assembly in 2000, the State of Maryland provided grants for cancer research to the University of Maryland Medical Group (UMMG) and Johns Hopkins University School of Medicine (JHMI) from the Cigarette Restitution Fund. The emphasis was on developing new diagnostics and therapies for cancer and moving them expeditiously to the clinic. The Maryland Department of Health and Mental Hygiene, the Department of Business and Economic Development, and TEDCO were directed to enter into Memoranda of Understanding with the two universities on intellectual property and technology commercialization. TEDCO has taken the lead in developing the State's approach. During the past year the three state agencies have met with UMB and JHU researchers and administrators to review progress made with the CRFP grants and to remain current on technology transfer activities. No intellectual property associated with the Cigarette Restitution Fund has been reported by either campus at the end of FY2004.

Both UMMG and JHMI met with the advisory committee twice during FY2004, most recently on April 27 with JHMI and on May 10 with UMMG. In addition, on November 13, 2003 JHMI sponsored a technology commercialization symposium for faculty members at both institutions engaged in tobacco fund-related research. The symposium focused on successful examples of technology commercialization at both campuses. A presentation was made on the process of technology commercialization and the use of TEDCO funding programs to initiate technology development programs.

VI. Federal Laboratory Technology Insertion and Commercialization Programs

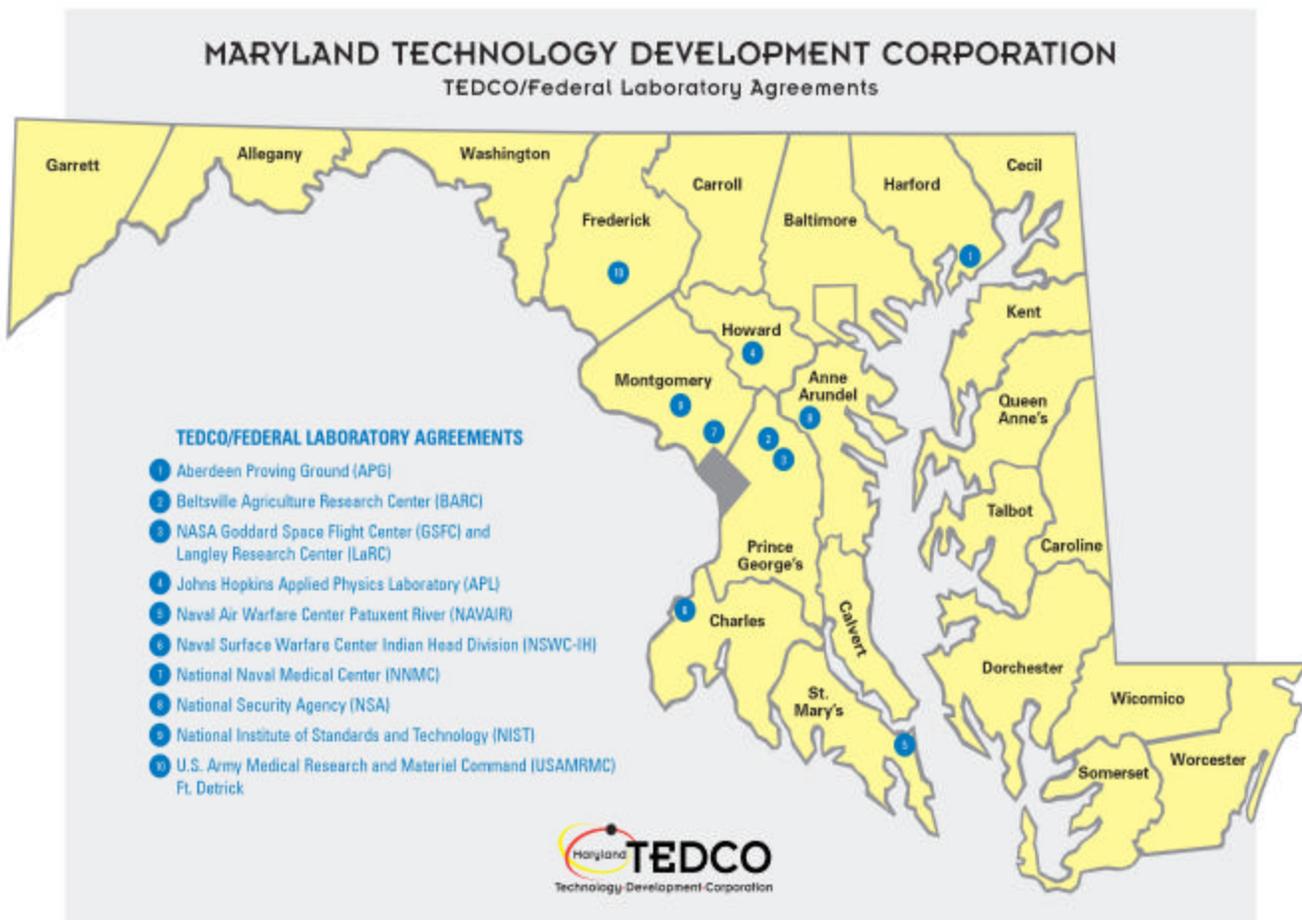
Federal Lab Partnership Agreements

Maryland is uniquely well suited to understand the technology, resources and knowledge available in the nation's federal laboratories because of their concentration in Maryland – more than 50 major facilities – such as NIH, NIST, NASA-Goddard, Naval Surface/Naval Air Warfare Centers, and the Army Research Lab. Annually these labs conduct over \$10 billion of intramural research, twice as much as in any other State. TEDCO sponsors technology showcases at the federal laboratories to help the labs showcase their available intellectual property and ongoing research activities to potential licensees and/or collaborators. These technology showcases provide the Maryland business community with a clear understanding of the technology available at federal labs in the state.

To date, TEDCO has signed a Memorandum of Understanding or other agreement with each of the following facilities:

- Aberdeen Proving Grounds Science & Technology Board, Aberdeen, MD
Includes Army Research Center, Adelphi, MD
- Johns Hopkins University-Applied Physics Laboratory, Laurel, MD
- NASA Mid-Atlantic Technology Transfer Center
Prime Contractor: Technology Commercialization Center, Langley, VA

- National Institute of Standards and Technology, Gaithersburg, MD
- National Security Agency, Ft. Meade, MD
- Naval Air Warfare Center Aircraft Division, NAS Patuxent River, MD
- Naval Medical Research Center, Bethesda, MD
- Naval Surface Warfare Center, Carderock Division, Carderock, MD (inactive)
- Naval Surface Warfare Center, Indian Head Division, Indian Head, MD
- US Army Medical Research and Materiel Command, Fort Detrick, MD
- USDA Beltsville Agricultural Research Center, Beltsville, MD



A continuation Memorandum of Understanding was signed in September 2003 between TEDCO and the Johns Hopkins University Applied Physics Laboratory (APL). APL is a research and development division of Johns Hopkins University, supports the Department of Defense, NASA and other Government agencies through innovative applied research, technical development, and problem solving. Located on 360 acres in Laurel, the Laboratory employs approximately 3,350 engineers, scientists, and supporting staff in a broad range of disciplines.

A Memorandum of Understanding was signed in December 2003 between TEDCO and the National Institute of Standards and Technology (NIST) in Gaithersburg. NIST is within the U.S.

Department of Commerce's Technology Administration with a mission to develop and promote measurement, standards, and technology to enhance productivity, facilitate trade, and improve the quality of life. NIST is a global leader in measurement and enabling technology.

A Partnership Intermediary Agreement was signed in June 2004 between TEDCO and the U.S. Army Medical Research and Materiel Command (USAMRMC) at Fort Detrick. USAMRMC is the Army's medical materiel developer and logistician and operates six medical research laboratories and institutes, including the U.S. Army Medical Research Institute of Infectious Diseases, the U.S. Army Medical Research Institute of Chemical Defense and the Walter Reed Army Institute of Research all of which are Command's with Maryland-based facilities.

Federal Lab Technology Showcases

From August 2000 through September 2004, TEDCO organized 20 technology showcases attracting over 3,000 entrepreneurs, investors, scientists, and economic development professionals. In FY2004, TEDCO sponsored five events; the Technology Council of Maryland and Greater Baltimore Technology Council provided administrative support to these programs.

Johns Hopkins University Applied Physics Lab, "Applications for New Communications Technology," September 4, 2003, 214 attendees

APL is a research and development division of the Johns Hopkins University that supports the Department of Defense, NASA and other Government agencies through innovative applied research, technical development, and problem solving. Located on 360 acres in Laurel, Maryland, the Laboratory employs approximately 3,350 engineers, scientists, and supporting staff in a broad range of disciplines. The APL showcase featured wireless communications and signal management technologies.

National Security Agency, "Information Assurance and Security: Partnering with the Community," November 12, 2003, 319 attendees

This showcase featured technologies developed by NSA, the National Institute of Standards and Technology (NIST), Johns Hopkins University Information Security Institute (ISI) and the University of Maryland College Park. The NSA showcase featured research at NSA on magnetics, photonic polymers, nanotechnology, microelectronics and high-speed security solutions; and at all four institutions on Operating System and Application Software and Analysis, Authentication and Authorization

Army Research Lab, "Providing a Competitive Advantage Through Innovative Nanotechnology," February 3, 2004, 178 attendees

ARL constitutes the largest source of science and technology research and development in the Army. It is the Army's corporate laboratory. The mission is to provide innovative science, technology and analyses to assure America's

military supremacy. The ARL showcase focused on Nano and MEMS technology.

Lower Shore, “Technology Applications for the Business Community: Biological, Environmental, and Space Science,” March 23, 2004, 130 attendees

This showcase featured technologies developed by Salisbury University, University of Maryland Eastern Shore, University of Maryland Center for Environmental Science, USDA Beltsville Agricultural Research Center, and NASA Wallops Flight Facility. The Lower Shore showcase featured research on marine and agricultural environmental technologies, biological research facilities and capabilities available for collaboration, and space related research.

Aberdeen Proving Ground, “Robotic and Automotive Technologies for the Marketplace,” June 3, 2004, 171 attendees

APG is a very diverse installation with over 60 tenant organizations and nearly 20 of them performing research and/or development activities. This showcase featured presentations from Aberdeen Testing Center (ATC), Army Materiel Systems Analysis Agency (AMSAA), Army Research Laboratory (ARL), Development Test Command (DTC), and Edgewood Chemical and Biological Center (ECBC). Major themes for the technologies were Automotive and Robotic Technology and Testing, Automotive Materials, Technology and Data Analysis, and Instrumentation.

Federal Laboratory Partnership Program (FLPP)

The Federal Laboratory Partnership Program (FLPP) provides a subsidy of up to \$20,000 for companies that collaborate in a formal agreement with a federal lab with which TEDCO has an established partnership. The program provided funding conceptually similar to the Maryland Industrial Partnerships program (MIPS) for collaborations with University System of Maryland institutions but is restricted to collaborations between companies and the federal government. Projects have been funded under the program involving collaborations with 6 federal labs Aberdeen Proving Ground; Johns Hopkins University Applied Physics Lab; Beltsville Agricultural Research Center; Naval Surface Warfare Center – Carderock; NASA Langley Research Center, and Naval Surface Warfare Center – Indian Head.

The following table lists the summary statistics for the Federal Laboratory Partnership Program through September 30, 2004.

| Category | Number of Proposals | Total Funds Requested |
|-----------------------------|---------------------|-----------------------|
| Total Received | 12 | \$237,366 |
| Approved for funding | 7 | \$140,000 |

Pharad, LLC, located in Baltimore, has developed ‘disruptive’ ultra broadband technology for the wireless industry. This technology significantly reduces the cost and complexity of ultra

broadband, high capacity wireless networks. The Pharad solution is based on two novel approaches: the development of extremely broadband and multi-band conformal antennas not previously available, and the design of cost-effective architectures for broadband wireless networks. Applications include a wireless operator provisioning multiple services, a single software defined radio requiring ultra broadband antennas, or ultra broadband radio systems for the military and aviation sectors. The company has completed a NAVAIR SBIR Phase I. This collaboration will test the Pharad antenna in the NAVAIR Anechoic Chamber under a Test Services Agreement.

20/20 GeneSystems, Inc., located in the Maryland Technology Development Center incubator in Rockville, in collaboration with the Edgewood Chemical Biological Center (ECBC), Aberdeen Proving Ground, has identified 12 candidate biomarker proteins that have altered expression in the brain following exposure to low levels of Chemical Warfare Agents (CWA). ECBC has provided pre- and post-treatment hair samples from pigs exposed to low doses of sarin vapor to 20/20 for a small-scale proof of principle experiment. 20/20 has successfully detected total proteins and structural proteins in those samples using Layered Expression Scanning (LES) technology. This project is designed to develop a rapid, accurate test to determine whether an individual has been exposed to low level organophosphate nerve agent.

NAVAIR Technology Commercialization Initiative (NTCI)

The NAVAIR Technology Commercialization Initiative was a collaboration of TEDCO and The Patuxent Partnership to commercialize technology from the Naval Air Warfare Center Aircraft Division (NAWCAD) at NAS Patuxent River. The program was funded at \$800,000 from 2002 through 2004. The NTCI provided funding for grants of \$50,000 to selected companies developing technology in cooperation with NAWCAD either for *spin-out* (licensing and commercialization of technology invented at the NAWCAD) or *spin-in* (adaptation of company technology to meet the needs of NAVAIR).

The following table lists the summary statistics for the NAVAIR Technology Commercialization Initiative projects through September 30, 2004.

| Category | Number of Proposals | Total NTCI Cost |
|-----------------|----------------------------|------------------------|
| Submitted | 22 | \$1,100,000 |
| Approved | 10 | \$ 500,000 |

A \$1,500,000 appropriation in the FY2004 federal defense budget has led to a contract with NAVAIR to continue the NTCI program as a technology insertion program for NAVAIR. The continuation of NTCI is focused solely on spin-in projects and will provide a larger pre-commercialization fund for an eighteen month funding period. The revised program will make initial awards of approximately \$75,000 to companies that propose to develop or demonstrate technology that matches the needs of NAVAIR as expressed by the Navy. TEDCO's proposal for \$1,258,000 was approved by NAVAIR on September 24, 2004.

Aberdeen Technology Transfer Initiative (ATTI)

In May 2004 Senators Mikulski and Sarbanes and Representative Ruppertsberger announced that the U. S. government had appropriated \$1,000,000 to create the Aberdeen Technology Transfer Initiative (ATTI) patterned after the successful NAVAIR Technology Commercialization Initiative. TEDCO's partner in this endeavor is the Aberdeen Proving Ground Science & Technology (APG S&T) Board's Business Development Office (BDO).

Nearly two-thirds of the total funding, \$650,000 will be used to provide grants to 13 businesses identified to work with Aberdeen Proving Ground collaborators with an emphasis on technologies to meet Army needs (Spin-In). The remaining funding will be utilized by the BDO and TEDCO to provide outreach, due diligence, tech transfer assistance, and program management. A sub-contract to TEDCO was signed July 1, 2004 with the APG BDO.

Several companies are preparing ATTI applications, and two awards are pending. The pending awards are to: BSCO, Inc., of Harford County MD for the design and delivery of a prototype fire Micro-Suppression system to the U.S. Army Aberdeen Test Center (ATC) for testing and demonstration; and Phoenix S&T, Inc., of Cecil County MD for research and development of an automated nanospray system with nozzles, and integrated reservoirs for sample storage, to be used with a mass spectrometer to analyze molecules for drug discovery and clinical cancer diagnostics. The product will be used by the chemical and biological weapon agent defense program at Soldiers' Biological and Chemical Command (SBCCOM) at Edgewood, APG for modeling the effect of weather on dispersed chemicals.

Fort Detrick Technology Transfer Initiative

In 2004, TEDCO initiated the creation of the Ft. Detrick Technology Transfer Initiative with the Frederick County Office of Economic Development (OED). This initiative was designed to allow TEDCO to find and provide seed funding to companies developing cutting-edge technologies that matched Army defined technology needs. In July 2004, Senators Mikulski and Sarbanes and Representative Bartlett announced that the Ft. Detrick project was appropriated \$1,000,000 in the FY2005 Defense Appropriations Bill. In August, TEDCO and OED met with staff members from the Fort Detrick technology transfer staff and representatives of U.S. Army Medical Research Acquisition Activity (USAMRAA) to discuss implementation. USAMRAA directed TEDCO and OED to apply through a Ft. Detrick Broad Agency Announcement (BAA) requesting new technologies to provide solutions to medical problems of importance to the American warfighter at home and abroad. It is anticipated that this initiative will be underway by the end of 2005.

NASA Technology Transfer

As part of TEDCO's partnership with the NASA Mid-Atlantic Regional Technology Transfer Center (RTTC), TEDCO has done extensive outreach to Maryland companies to connect them with technology commercialization opportunities from NASA. TEDCO participated in six major events including, Naval-Industry Partnership Conference (August 2003), Maryland Technology Showcase (December 2003), Mid-Atlantic Venture Association (MAVA) Capital Connections

(June 2004), Defense Medical & Procurement Conference (June 2004), Maryland Economic Development Association (June 2004), and Mid-Atlantic Federal Lab Consortium (September 2004). TEDCO also provided staff support to two events at the request of the NASA Mid-Atlantic RTTC: TechTrends 2004 and SensorsGov conferences.

At NASA-Goddard's request TEDCO supported a joint effort with Goddard, University of Maryland, and TEDCO to identify barriers and opportunities to technology transfer at Goddard; this led to the Goddard "VC Boot Camp" event with TEDCO serving on a funding panel. There have been two "Next Steps" meetings with three more planned. The Lower Shore Technology Showcase featured NASA Goddard's Wallops Flight Facility. TEDCO is also supporting the planning for a fall NASA Nano2004 technology showcase.

Since July 2003 TEDCO has offered NASA 17 technology *spin-in* prospects and 10 patent licensing prospects; three of which are still being pursued, involving technologies at both Goddard and Langley. Funding has also been provided to enable collaboration between Mobitrum, Corp. and NASA Goddard.

Special actions in support of NASA include serving on the Mid-Atlantic Institute for Space & Technology (MIST) Board of Directors and Working Group; planning a meeting between the Goddard Chief Technologist and Maryland businesses; a survey of businesses interested in Langley's Electro-Magnetic research capabilities; and serving on the planning committees for the Goddard "VC Boot Camp," TCM events on "How to do Business with NASA," and the NASA Nano2004 Conference.

National Security Agency Technology Transfer Initiative (NSA-Tech)

TEDCO has been actively working with the National Security Agency (NSA) since TEDCO's inception. TEDCO sponsored the first NSA technology showcase in 2001, which attracted over 300 attendees. In December 2002, TEDCO and NSA signed a Memorandum of Understanding to work together to assist technology commercialization. This was the first technology transfer agreement NSA had signed with any States' organization. (DBED signed a similar agreement in June 2004) Two MTTF awards have been made to small businesses collaborating with NSA on technology transfer.

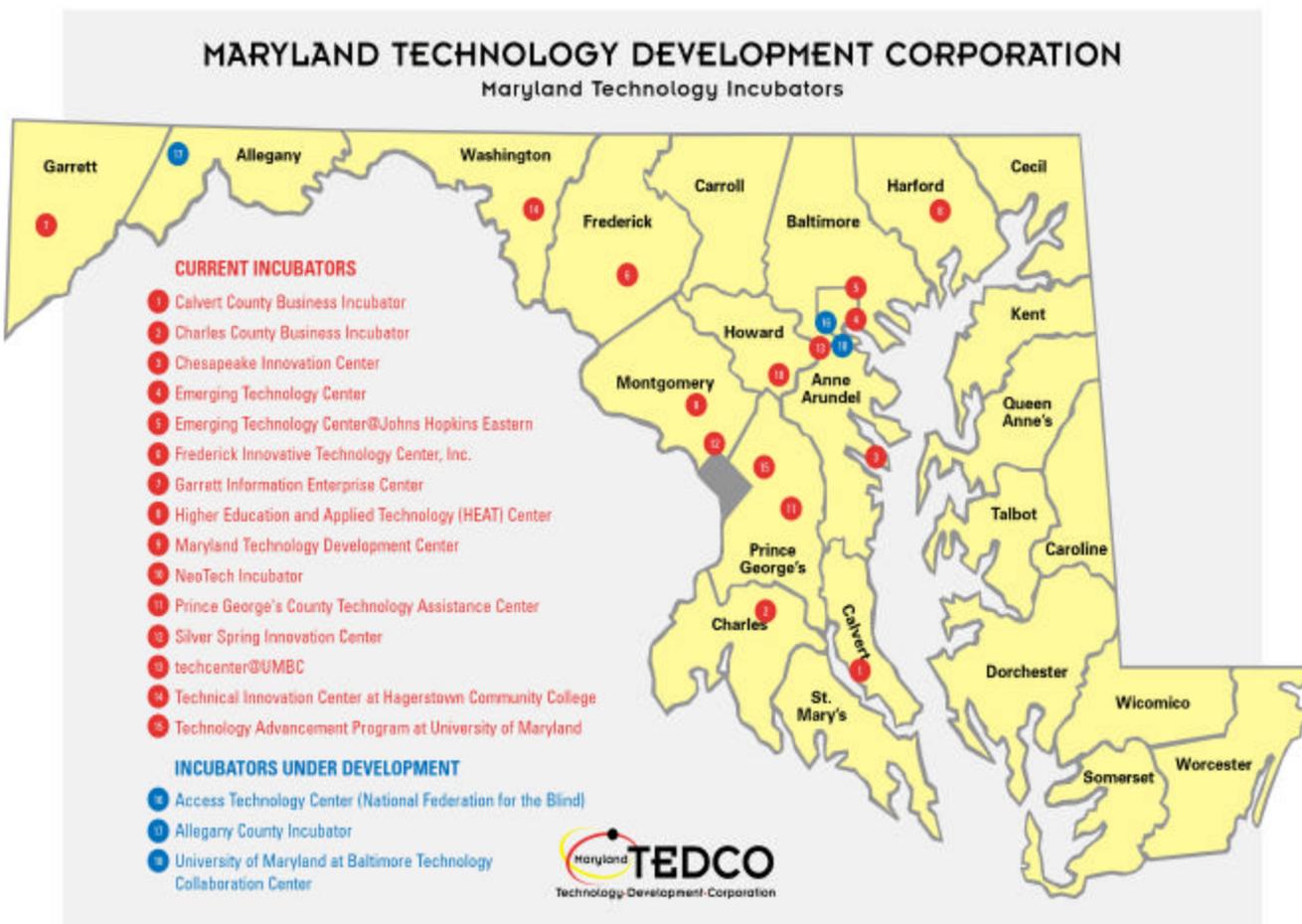
In September 2004, NSA announced a Broad Agency Announcement on seeking proposals for Advanced Research in Innovative Technologies and invited TEDCO to prepare a technology insertion initiative for NSA. TEDCO responded on September 17 with a white paper and was cleared to submit a full proposal due October 8 for \$965,000. Awards under the BAA will be announced by the end of October 2004.

The TEDCO initiative proposes outreach to find companies with technology that meets the needs expressed by NSA and a commercialization grant program to provide seed funding for technology development, prototyping and demonstration by companies to help NSA make decisions on acquisition of the technology.

VII. Business Incubation and Entrepreneurial Development

Incubator Development Fund

This program is designed to support the development of new technology-oriented incubators around the state. From FY2002 through FY2005 the State appropriated a total of \$9.25 million in PAYGO and General Obligation Bond funds. (In FY2004, \$250,000 was reprogrammed for a University of Maryland Biotechnology Institute (UMBI) Maryland/Israel project.)



To date four projects have been funded at \$3.2 million, leveraging over \$9 million, and a fifth facility has received a \$1 million commitment.

Emerging Technology Center@Johns Hopkins Eastern (\$1,000,000)

This facility houses information technology companies and is located in the distressed area of Baltimore. The building is an old high school that has been renovated as office space. Four bottom floors are currently being used by Johns Hopkins University administration and the top floor (45,000 square feet) has been

renovated to be used as a technology business incubator. This is part of a \$6.7 million project, including over \$1 million in EDA funds. Currently, the incubator is 11% occupied.

techcenter@umbc (\$775,000)

The techcenter@umbc renovated Building B, which is located behind their current incubator facility. It added approximately 19,200 square feet to their current facility and increased their wet lab space by 9,000 square feet. Currently, the incubator is 95% occupied.

Silver Spring Innovation Center (\$1,000,000)

This 19,900 square foot facility had its grand opening in September 2004. It is located at East West Highway and Blair Mill Road in Silver Spring's Enterprise Zone. This is part of a \$3.3 million project that will house information technology companies. It is approximately 65% occupied.

Frederick Innovation Technology Center (\$425,000)

The Frederick Innovative Technology Center, Inc. (FITCI) is located at Hood College. It is designed to support the development of information technology and bioscience entrepreneurs in Frederick County. It is the first phase of a County-wide incubator initiative that would operate for at least the first five years at Hood College. A second, longer term phase of the County's incubator initiative would likely be a purpose-built facility located at Fort Detrick in Frederick. The project is also receiving \$425,000 from DBED and \$100,000 per year for 5 years from Frederick County.

University of Maryland, Baltimore (\$1,000,000)

The University of Maryland, Baltimore has submitted a proposal for \$1,000,000 to build an incubator facility as part of their new Research Park. The TEDCO Board has approved the proposal.

Facility Feasibility Studies

In order to identify appropriate opportunities for the creation of new incubator facilities, in 2001 TEDCO initiated a formal program to sponsor independent, professional studies of the feasibility of potential incubator projects. Each study was sponsored by a local government, university, or non-profit corporation, and provided at least 1:1 cash match. Twelve studies were commissioned. TEDCO investments of \$298,500 were matched by \$398,677. In March 2004, TEDCO approved funding for a feasibility study in partnership with Allegany County's Office of Economic Development and Frostburg State University. TEDCO has recently received a proposal from Baltimore County and Towson University to determine the feasibility of an incubator with an international focus. The proposal will be reviewed by the Business Incubation Advisory Committee later this fall.

TEDCO is working with 8 communities and organizations that have expressed serious interest in further development of incubator facilities; in addition to Allegany County/Frostburg University

and Baltimore County/Towson University, these include Prince George's County, East Baltimore – Johns Hopkins, the University of Maryland College Park, the Chesapeake Innovation Center (Annapolis), the Montgomery County Science and Technology Park, and the Eastern Shore. TEDCO anticipates that all the remaining incubator development funds will be committed by the end of FY2006.

Federally Funded Pilot Program: Technology-Led Development through Business Incubation

For FY2004 TEDCO received a \$200,000 grant from the U.S. Economic Development Administration (EDA) to provide additional support for technology business incubators throughout Maryland. TEDCO and DBED matched the grant with \$200,000 in state funds. The 18 month, \$400,000 project supports the expansion of best practices of incubators. The grant includes using funds for an entrepreneurship training program, technology and market assessments, intensive business assistance, a monthly newsletter for the Maryland Business Incubation Association, and access to capital sources through sponsorships of events.

One successful component of the project is the SmartAccelerator Entrepreneurial Training Course developed by the Alex Brown Center at UMBC. This two and a half day course includes lectures by seasoned entrepreneurs, discussions with investment community leaders, and presentation readiness training to assist entrepreneurs in their quest for financing. Courses are held in incubator facilities and focus on the incubator tenants as the attendees; however, other entrepreneurs have attended. Three SmartAccelerator courses have been offered. The first was held in Hagerstown in October 2003 and had 17 attendees. The second had a biotech focus and was held in Montgomery County in March 2004. There were 23 attendees. The third was held in Prince George's County in May 2004 and had 30 attendees. The fourth course will be offered in Baltimore in November 2004 and will have a biotech focus.

The business assistance program engaged over 130 companies from 12 incubators in Maryland. The intensive business assistance portion of the grant provided incubator managers with funds to contract with outside consultants to provide intensive consultation to a particular company. In one instance, an incubator company received accounting services that allowed them to obtain a \$3 million investment. In another instance, a company was assisted with their market analysis and customer contracting relationships, which has resulted in company sales of \$250,000, company growth, and the ability to hire additional staff. Market assessment funds were used by one company to hire a consultant to determine the market opportunities for their product. The assessment provided an estimate of the size, needs and opportunities existing in their market and as a result, relevant commercial contacts were made by the company.

Technology Incubation Innovation Fund

As a follow-on to this successful program, TEDCO is submitting a proposal for \$250,000 to the Economic Development Administration (EDA) for the creation of a "Technology Incubation Innovation Fund." TEDCO would match that amount with \$250,000. This fund would provide small working capital loans of \$25,000 to \$50,000 to incubator companies located in EDA eligible areas such as Western MD, Eastern Shore and Baltimore City.

Maryland Business Incubation Association (MBIA)

The MBIA, supported by TEDCO, has succeeded in winning the bid to host the 2005 International Convention of the National Business Incubation Association in the City of Baltimore in May 2005.

2004 Maryland Incubator Companies of the Year

The Maryland Incubator Company of the Year Award is a major initiative to connect companies to private investors. Initiated by TEDCO in 2001 with co-sponsorship by Saul Ewing, LLC and American Express Tax and Business Services, and supported by MBIA, this first in the nation state award program recognizes incubator tenants and graduates that have excelled.

A unique aspect of the program is the selection committee, comprised of representatives from private venture and public investment programs, which reviews all applications and determines the winners, thus enabling the incubator companies exposure to the investment community.

In its fourth year, the Incubator Company of the Year award ceremony was held on June 16, 2004 at the Center Club in Baltimore. Other sponsors this year included DBED and the *Baltimore Business Journal*. There were approximately 150 attendees to the event. A senior official from DBED was the Master of Ceremonies. Twenty-three applications were received and six winners were honored. The 2004 winners were:

- Agentsmith, Inc., located in the Emerging Technology Center in Baltimore, Category: Information Technology Company
- Telecontinuity, Inc., located in the Maryland Technology Development Center in Rockville, Category: Technology Service Company
- Advanced Vision Therapies, Inc., located in the Maryland Technology Development Center in Rockville, Category: Technology Transfer Company
- BDMetrics, Inc., located in the techcenter@UMBC, Category: New Incubator Company
- PharmAthene, Inc., located in the Chesapeake Innovation Center in Annapolis, Category: Life Science Company
- Syntonics, Inc., once located in the Neotech Incubator in Columbia, Category: Graduate Company

Maryland Technology Partnership for Innovation (MTPI)

The Maryland Technology Partnership for Innovation is a federally funded collaborative effort to connect businesses in distressed areas of the state with the resources resident in federal laboratories. Announced in October 2000, this project is funded by the National Science Foundation's (NSF) highly competitive Partnerships for Innovation program; it was one of 24 projects nationwide and the only one funded in Maryland the first year of the program. TEDCO's cash match of \$60,000 yielded \$600,000 in federal funds, a 10 times return.

MTPI Partners:

- Morgan State University (lead institution)
- TEDCO
- Prince George's County Economic Development Corporation
- Emerging Technology Center in the City of Baltimore
- Chesapeake Bay Region Technical Center of Excellence
- University of Baltimore Center for Technology Commercialization

In September 2003 the MTPI received a new three-year, \$600,000 award from NSF, representing a 10 times return on TEDCO's new cash match of \$60,000. MTPI now works with the technology incubators and business schools in Maryland – including the Dingman Center at College Park and BEACON at Salisbury University – to provide customized business and technical assistance to companies; support new product creation; assist companies in attracting private capital; and create collaboration strategies between businesses and federal laboratories.

The new project includes venture capital partners who review the company applications for funding. The venture capital partners include: Toucan Capital, New Markets Growth Fund, DBED, and Meridian Management Group. Companies that have established research collaborations with a federal laboratory and are located in one of the designated geographic areas are eligible for assistance. The three-year project has approved seven business assistance projects in the first year.

ACTiVATE Program: Achieving the Commercialization of Technology in Ventures through Applied Training for Entrepreneurs

The ACTiVATE Program at the University of Maryland Baltimore County is funded by the National Science Foundation's Partnership For Innovation Program. An award of \$600,000 was announced in summer 2004; TEDCO provided the local cash match of \$60,000, yielding a 10 times return for the State.

The primary goal of the ACTiVATE Program is to create a systematic model for increasing the commercialization of technology innovations from universities by training entrepreneurs to create technology-based, start-up companies. The model will be validated by introducing 90 mid-career women to the basics of entrepreneurship and by commercializing university technologies through the creation of 6 to 9 new companies during the programs first three years. UMBC will be the lead institution for the ACTiVATE Program through interdepartmental partnerships involving its Office of Technology Development, Center for Women and Information Technology, Alex. Brown Center for Entrepreneurship, and techcenter@UMBC. The ACTiVATE Program will also involve key partnerships with state development agencies, including TEDCO, which has established a specialized capability for the evaluation of technologies.

Rural Business Incubation Initiative

The Rural Business Incubation Initiative is a new program that is expected to begin in October 2004. It is a multi-year project funded by a U.S. Small Business Administration grant of

\$494,739. TEDCO is partnering with the College of Southern Maryland's (CSM) Corporate and Community Training Institute (formerly the Economic and Community Development Institute), and the University of Maryland Eastern Shore's (UMES) Rural Development Center. The purpose of the project is to enhance the technology commercialization activities in frequently overlooked regions of the State. The program will work with incubator and incubation type companies to provide technical and business assistance at no cost and to encourage technology commercialization activities between the private sector and federal laboratories and higher education institutions. Companies can receive individual business assistance as well as help in identifying critical technology available in universities and federal laboratories important to their business. The program will also assist entrepreneurs looking for technology commercialization opportunities. The partners will work with local economic development officials in identifying and assessing the needs of current incubators as well as future incubators. TEDCO submitted a proposal in Spring 2004, and expects to receive an award notification in October 2004.

Maryland Minority Small Business Innovation Research (SBIR) Initiative

TEDCO's Maryland Minority Small Business Innovation Research (SBIR) Initiative, funded by the Small Business Administration's Federal and State Partnership (FAST) Program through December 2003, was designed to increase the participation of small businesses, particularly minority and women owned businesses, and Maryland's research-capable historically black colleges and universities (HBCUs) in the SBIR/STTR programs. The Initiative provided customized, targeted training and technical assistance to the HBCU partner's and to small businesses participating in the project.

The Initiative was funded in FY2002 by a \$125,000 grant, which was matched by a \$75,000 cash contribution from TEDCO and other contributions of \$100,000 from the partners. In FY2003 funding from the SBA was \$100,000, which was matched by \$75,000 from TEDCO and additional in-kind contributions from other partners.

Mountain Maryland Small Business Innovation Research (SBIR) Initiative

During FY2004, TEDCO prepared and submitted a new application to the Small Business Administration's Federal and State Partnership (FAST) Program for the Mountain Maryland SBIR Initiative. The primary goal of the new program is to increase the number of SBIR/STTR applications from the non-SBIR competitive communities of "Mountain Maryland," the State's economically distressed Appalachian region.

TEDCO will partner with Garrett (College) Information Enterprise Center (GIEC), the Allegany Business Center at Frostburg State University (ABC@FSU), and the Hagerstown (Community College) Technical Innovation Center. TEDCO has requested \$80,000 for the project. This will be matched with \$42,000 in cash from TEDCO and \$46,000 in in-kind support from project partners.

VIII. Broadband Deployment

***eReadiness Maryland* and Broadband in Rural Maryland**

eReadiness Maryland: Assessing our Digital Opportunities concluded on February 1, 2003 with a final report to the General Assembly. *eReadiness Maryland* was the first comprehensive study to determine information technology readiness amongst Maryland's businesses and households, and sought to identify areas of the State that needed additional telecom infrastructure.

As a result of the project findings, metrics and the continued interest of an engaged group of business and economic development officials from the State's rural areas, TEDCO undertook a number of follow-on projects with the respective regional councils during FY2004.

Western Maryland

The Tri-County Council for Western Maryland, in cooperation with TEDCO, contracted TLA Associates to conduct an infrastructure investment study that built upon the findings of *eReadiness Maryland*. The full study was completed in February 2004, and includes an Executive Summary and Investment Abstract. Next steps include pursuing a Point of Presence (POP) for Cumberland and expanding the scope of the USDA-funded fiber-ring currently being engineered by Allegheny Communications Connect in the Town of Oakland (Garrett County) to ensure that it ultimately connects to Allegany County and beyond. TEDCO secured funding from the Appalachian Regional Commission and the U.S. Economic Development Administration for the project entitled, "Improving Access to Broadband Infrastructure in Mountain Maryland – Investment Requirements to Cross the Economic Divide." TEDCO's \$25,000 commitment leveraged \$50,000 in federal funds.

October 2, 2003, the Rural Utilities Service Community-Oriented Connectivity Broadband Program of the U.S. Department of Agriculture awarded \$1,140,772 to the town of Oakland (Garrett County) to finance the "Oakland Community Connectivity Broadband Project." In partnership with Allegheny Communications Connect (Greensburg, PA) the town will offer high-speed Internet access that will greatly improve the information infrastructure in the area and provide an anchor for further development in the region. This new communications "point-of-presence" in Oakland will provide affordable, world-class Internet access to an underserved region. TEDCO was the sole State sponsor of the grant application and committed \$25,000 match to the effort and continues to monitor progress.

Eastern Shore

The Tri-County Councils of the Lower and MidShore Region's, in cooperation with TEDCO, commissioned TLA Associates to conduct an infrastructure investment study that built upon the findings of *eReadiness Maryland*. The full study was completed in March 2004, and includes an Executive Summary and Investment Abstract. The regional councils, including the newly formed Upper Shore Regional Council are currently in discussions with a number of possible broadband backbone providers based upon the findings of the TLA project. A number of entities supported

this project, including TEDCO, DBED, the three Regional Councils, and the U.S. Department of Agriculture. The total cost was \$117,000, of which TEDCO contributed \$15,000.

Southern Maryland

Southern Maryland completed its aggregation demand survey for communications services and presented the results in December 2003. The questionnaire was developed in cooperation with TEDCO in an effort to ensure that the data collected would be qualitatively similar to the projects in Western and Eastern Maryland.

Task Force on Broadband Communications Deployment in Underserved Rural Areas

TEDCO's broadband related projects have had a direct impact on the Task Force on Broadband Communications Deployment in Underserved Rural Areas, created by the General Assembly. The Task Force has conducted five meetings since its inception. The Task Force concept was a primary recommendation in TEDCO's eReadiness final report.

The Task Force is made up of 20 members representing the General Assembly, Administration, regional and rural economic development, local government officials, and public sector technical experts. A Panel of Advisors is identified in the legislation in order to provide private sector input and expertise. As directed in the enabling legislation, the Task Force is staffed by TEDCO, with support from DBED, DBM and the Rural Maryland Council.

The Task Force met on September 18, 2003, October 9, 2003, November 5, 2003, January 6, 2004, and June 1, 2004. Topics included network.Maryland, *eReadiness Maryland*, the SAILOR network, regulatory issues in Maryland, regional infrastructure studies, and homeland security.

Official reports from the Task Force were disseminated on December 1, 2003 and March 15, 2004, as required by statute. The first, a preliminary report, was submitted to Governor Ehrlich, the Senate President, Speaker of the House, and selected members of the General Assembly. Progress and Action Steps were highlighted in the report, as well as a working framework developed in Task Force meetings. The second, an interim report, provided updates to the preliminary report.