FREDERICK COUNTY
HIGHER EDUCATION NEEDS ASSESSMENT

EXECUTIVE SUMMARY

Submitted to:

MHEC
MARYLAND HIGHER EDUCATION COMMISSION

and the

FREDERICK REGIONAL HIGHER EDUCATION ADVISORY BOARD

Submitted by:

MGT OF AMERICA, INC.

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Frederick County Higher Education Needs Assessment

Executive Summary

In accordance with Chapter 375 of the Acts of 2013 (House Bill 527, entitled "Frederick Regional Higher Education Advisory Board") and funding provided in the fiscal 2014 budget, the Maryland Higher Education Commission (MHEC), on behalf of the Frederick Regional Higher Education Advisory Board, engaged MGT of America, Inc., a national education planning and research firm, to conduct a study of higher education needs and capacity in the local region. This document provides a brief summary of study findings.

MHEC on behalf of the Frederick Advisory Board, defined a scope of work for the needs assessment to determine the following:

- Need for postsecondary education programs at all levels (associate through doctoral degrees);
- Existing availability of programs locally;
- Potential for a local higher education center to support joint commercial/federal – university graduate programs;
- Contribution of such a center to statewide economic, workforce and education priorities;
- "Best practices" derived from similar regional centers in Maryland (described in the full report).

The report data, findings and conclusions are intended to inform planning decisions of MHEC and the Advisory Board related to potential development of a regional higher education center in Frederick County.

STUDY CONCLUSIONS

Community and business leaders recognize that in order to continue to grow and expand, the skilled workforce must keep pace. Currently, there is concern that:

- The local pipeline of available workers with appropriate skill sets and credentials does not achieve the depth and breadth needed for the future, especially in STEM-related disciplines.
- Efforts to grow and maintain a local pipeline to support workforce needs, must continue to expand opportunities and pathways.
- The local higher education institutions do not have the resources to meet all of the identified local needs.
- Current courses and degree programs of need are not always easily accessible or affordable to local residents and employees in Frederick County.
- A lack of such higher education options may prove detrimental in the long-run to existing employers in terms of retention or expansion, and attracting new business to the County.

Particular education programming of need that should be explored for a new regional higher education center in Frederick County include the following. Programs on this list were selected due to the quantity of potential employment need, the lack of local access, and /or the unique discipline specialty and credential identified as needed by local employers.

Graduate Level Programs:

- Biotechnology, Biomedical Science, and Bioinformatics Specialties (advanced master's and doctorate)
- Educational Administration, Curriculum, Assessment (doctorate)
- Informational Technology, Computer and Network Systems, Telecommunications (master's)
- Engineering Specialties (master's) - Civil , Biomedical, Structural, Wireless RF
- Business Management and Operations with emphasis on one or two prolific local industry sectors (master's)

Baccalaureate Level Programs:

- Computer Systems, Networks, Telecommunications
- Cyber Security
- Business Communications
- Biomedical Lab Technology
- Nursing BSN
- General Bachelor's Degree Completion Option

Two-Year/Associate Degree Programs:

- Engineering and Bioscience Technology

UNMET PROGRAM NEEDS

Whether potential demand for needed education and training opportunities in Frederick County is derived from employer survey data, or extrapolated from projected annual job openings, several things are most evident.

- There are no local doctoral level **education programs** for administrators, curriculum, and evaluation/assessment specialists.

- **Biological Science** and a host of related science research specialties make up a significant portion of identified need at the graduate degree level **including Ph.D.'s** and to a lesser extent, at the 4-year degree level. Although there are two masters level degrees offered by local institutions, the advanced specialty concentrations, technical infrastructure, and the institutional credentials are critical missing elements in meeting local needs. Specialty areas of most interest include:

  - **Biomedical sciences, biochemistry, biophysics, bioinformatics, biomathematics, immunology, biotechnology, cellular biology, and medical scientists.**

- A second dominant cluster of need crossing both baccalaureate and graduate levels involves **technology** related disciplines and jobs centered around:

  - **Computer and information sciences, programming, software development, systems analysis, networking, telecommunications, cybersecurity, and management information systems**.

- Need for **STEM programs** and relevant positions appear on the lists for mathematics, statistics, and several engineering disciplines such as civil and electrical.

- Numerous **allied heath** related disciplines and occupations appear on the graduate and baccalaureate program needs lists that may prove more difficult to address due to the complexities and costs associated with such programs, accreditation and certification requirements, and the impacts these factors have on program capacity.

- There is a significant and continuing need for **nurses** as projected by position openings. Required credentialing is trending toward a **BSN** for a portion of those positions.

- Traditional undergraduate programs routinely in demand such as teacher education and business (business, management, accounting, finance and HR) are well represented in the needs analysis. Local institutions have made strides in addressing such needs at the appropriate education level.

- Finally, reported need for training and education also focused on **basic skills** such as communications, writing, English, math, organizational skills, team building, problem solving, and leadership, and transverse each level of post-secondary education. These may well be integrated into other academic disciplines, or the focus of corporate and continuing education curriculum.

RECOMMENDATIONS FOR ADVISORY BOARD CONSIDERATION

The following key issues are recommended for consideration by the Frederick Advisory Board as they seek to establish a Regional Higher Education Center in Frederick County.

1. It will be critical to carefully determine and clearly define the primary mission of the Center as it will drive expectations and, ultimately, results. Who will be the primary audience for the programs they wish to deliver? Non-traditional working adults, traditional age high school and community college students? Current employees seeking specialized or advanced post-baccalaureate degrees and training?

2. The three local higher education institutions and the local school system should have continued involvement in the planning and implementation of the Center. They should not be replaced in their current and future efforts to provide access to needed educational opportunities and to contribute to the local pipeline by the new RHEC and its future partners. Under most scenarios, program duplication or introduction of programs competing with existing local institutions or partners should be avoided, if at all possible. However, when warranted, meeting local education needs through other options may be required.

3. The governance model and operational plan for the Center should be carefully crafted to provide input and collaboration among all of the public and private partners involved that must support this endeavor at start-up through build-out.

4. “Build it and they will come” is not a good strategic plan. A collaborative and targeted effort will be required of all partners in terms of resources, marketing, and program selection and delivery.

5. A physical presence (facility) for the Center will be necessary as a tangible acknowledgement of its existence. This should be a place that can be readily identified as the face of the Center and a location that is easily accessible to its intended target audiences. The Center should focus on access. That does not imply that courses and programs must all be delivered at the same site. It

is also assumed that some significant portion of programs associated with the Center may be delivered online or through a distributed format.

6. Careful program selection and delivery will be key to the initial success or failure of the Center and its growth going forward. Programs must respond to documented needs, and be accessible and delivered in a manner appropriate for the intended students and the discipline. They should provide a credential that is valuable to both the recipient, their career path goals, and their respective employer. Affordability and convenience will be key. The initial programming choices and the education partners selected for participation will be critical. For advanced masters and doctoral degree programs in STEM disciplines, attracting a recognized, quality partner institution may require leveraging related local talent, community and employer assets, and offering collaborative research opportunities for existing faculty at the desired partner institution.

PROCESS AND SUPPORTING DOCUMENTATION

MARKET REVIEW

Frederick County is well positioned to continue to maintain relatively low unemployment, grow its diverse business/industry mix, support the presence of extensive federal and military activities, and match or surpass the educational attainment levels of the state and progress towards achieving Year 2025 goals.

Advantages that currently exist in Frederick County which will help further this quest include:

- Several key industry clusters (bioscience and technology) with significant employment capacity that rely heavily on STEM educated workers. These jobs typically provide a good living wage base.
- A significant mix of public and private sector resources among local business and industry.
- A longstanding presence of the US Army at Ft. Detrick, along with a plethora of operations from the Department of Defense and other federal agencies.
- An impressive talent pool of leading research scientists and support staff, as well as cutting edge research lab and testing facilities and equipment, unlike that found in many other communities of this size.
- Three long-standing local higher education entities fully engaged in the community, offering an array of degree programs and training opportunities.
- A supportive and forward-thinking group of local elected officials, economic development professionals, and business leaders.
- Projected growth in high school enrollment beyond 2017 and an upward trending graduation rate well above the state rate.
- College-going age cohorts growing faster than the respective state population growth rate, and college participation rate for 18-24 year olds that exceeds the state by several percentage points.
- Educational attainment of those 25 and older achieving a four-year degree or higher is nearly identical when comparing Frederick to the Maryland. The County is slightly higher for baccalaureate achievement (highest level attained), yet slightly lower for graduate degree completion.
- The local unemployment rate continues to decline since 2010, and remains a full percentage point below the state rate.

STAKEHOLDER INPUT

Input from local employers, community leaders, and others knowledgeable about the market is critical in order to have a complete assessment of the region. An online survey was utilized to assess higher education needs of local employers. In addition, qualitative stakeholder interviews were conducted with:

- Employer representatives
- Local education administrators
- Community leaders

- Frederick Regional Higher Education Advisory Board members

KEY ISSUES AND CONCERNS

- "Job critical" is to provide a highly skilled workforce that supports local employer needs and contributes to the economic well-being of Frederick County. To that end, a regional higher education center is the desired catalyst.
- The need is for expanded opportunities for local postsecondary education and training, with emphasis on access, convenience, and affordability.
- Local need crosses many disciplines and educational levels, but areas of acute need are STEM related programs, especially advanced graduate degree options.
- Local institutions should remain a part of any solution, and are recognized for their efforts to respond to local needs given their core missions. Program duplication or displacement of current local programs is not a desired outcome.
- It is preferred that advanced masters and doctoral programs in science and technology be offered through a recognized research university.
- Frederick County has a remarkable collection of highly specialized private and public sector personnel talent and physical assets that may help to attract advanced degree educational partners to a regional center.
- To support and grow a local pipeline to STEM education and thus high-paying job opportunities, continued collaboration between the school system, higher education partners, employers, and community leaders is imperative. A regional center could help to facilitate such partnerships.

EMPLOYER NEEDS (FROM SURVEY)

- Nearly 75% of responding employers expect their organization to grow within the next five years.
- Three-quarters indicated that they have difficulty (at least occasionally) filling open positions.
- Lack of qualified applicants was a primary reason.
- Several broad academic categories were identified as disciplines in which current or future employees will likely need training and programs. These included business, education, health care, information technology, engineering, and the sciences.
- Graduate program needs were more prevalent.
- Employers noted a number of fields in which needed training/education is not available locally; specific engineering fields, IT and cyber security, and biomedical/biotechnology/microbiology disciplines.

PROJECTED OCCUPATIONAL OPENINGS

One measure that may assist planners in identifying needed postsecondary education programs and training for the local area is future job growth as depicted by projected occupational openings in Frederick County through year 2020 (**Exhibits 1-3**). Occupational groupings by typical education level required are summarized below along with the approximate number of total openings expected during

the current decade. Occupations in **bold type** indicate areas where local programming is not readily available.

Graduate Level (masters, advanced master, doctorate):

- **Biological and Medical Scientists (700)**
- **Healthcare Services Professionals (625)**
- **Educational Administrators Pk-12 (325)**
- Postsecondary Teachers (150)

Baccalaureate Degree Level:

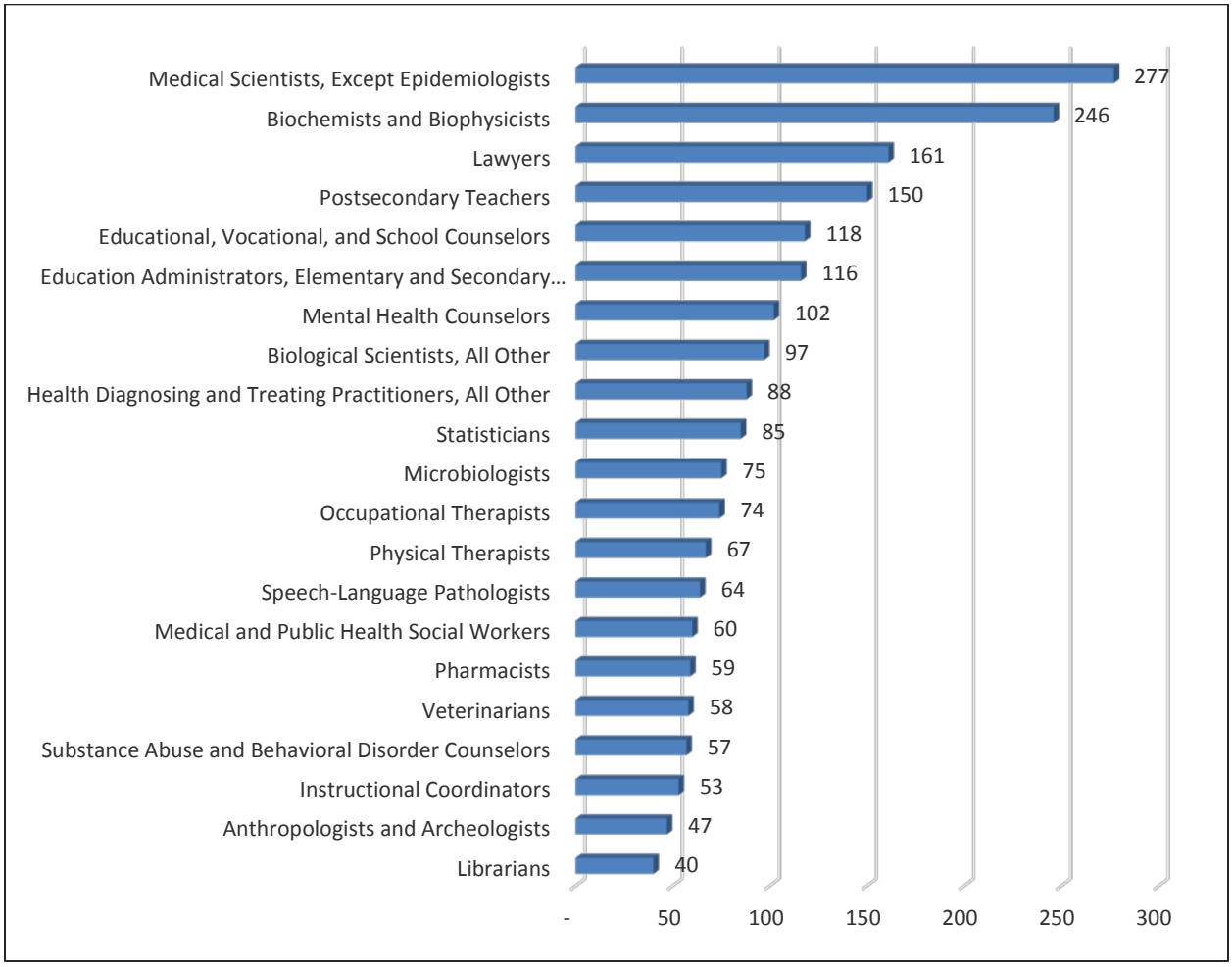
- **Civil Engineers (1,000)**
- Business, Management, Finance and Administrative Specialists (4,000)
- **Information Technology and Security, Computer/Network Systems and Software (2,700)***
- Pk-12 Teachers and Training Specialists (1,500)
- Nurses** (900)

Associate/Certificate Degree Level:

- Nurses** (900)
- Other Health Care Technicians (700)
- **Engineering Technicians (500)**
- Life, Physical and Social Science Technicians (350)

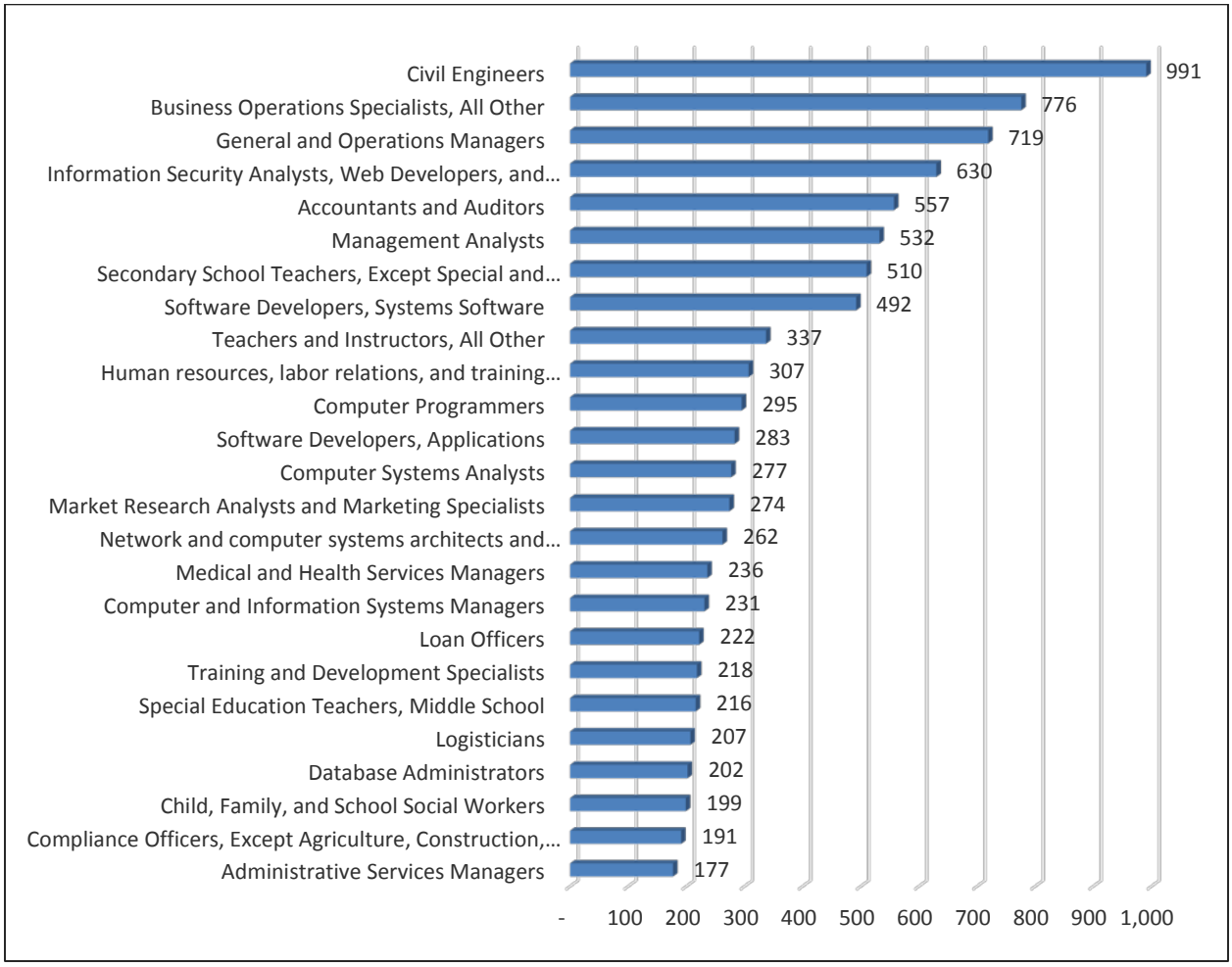
** Some specialty disciplines at the Bachelor's degree level are not readily available locally.*
*** Based on input from healthcare employers, the projected openings in the nursing profession were evenly divided between a BSN and 2-year associate degree level.*

EXHIBIT 1
PROJECTED OPENINGS AMONG DETAILED OCCUPATIONAL CATEGORIES REQUIRING
A GRADUATE DEGREE IN FREDERICK COUNTY, 2010 THROUGH 2020



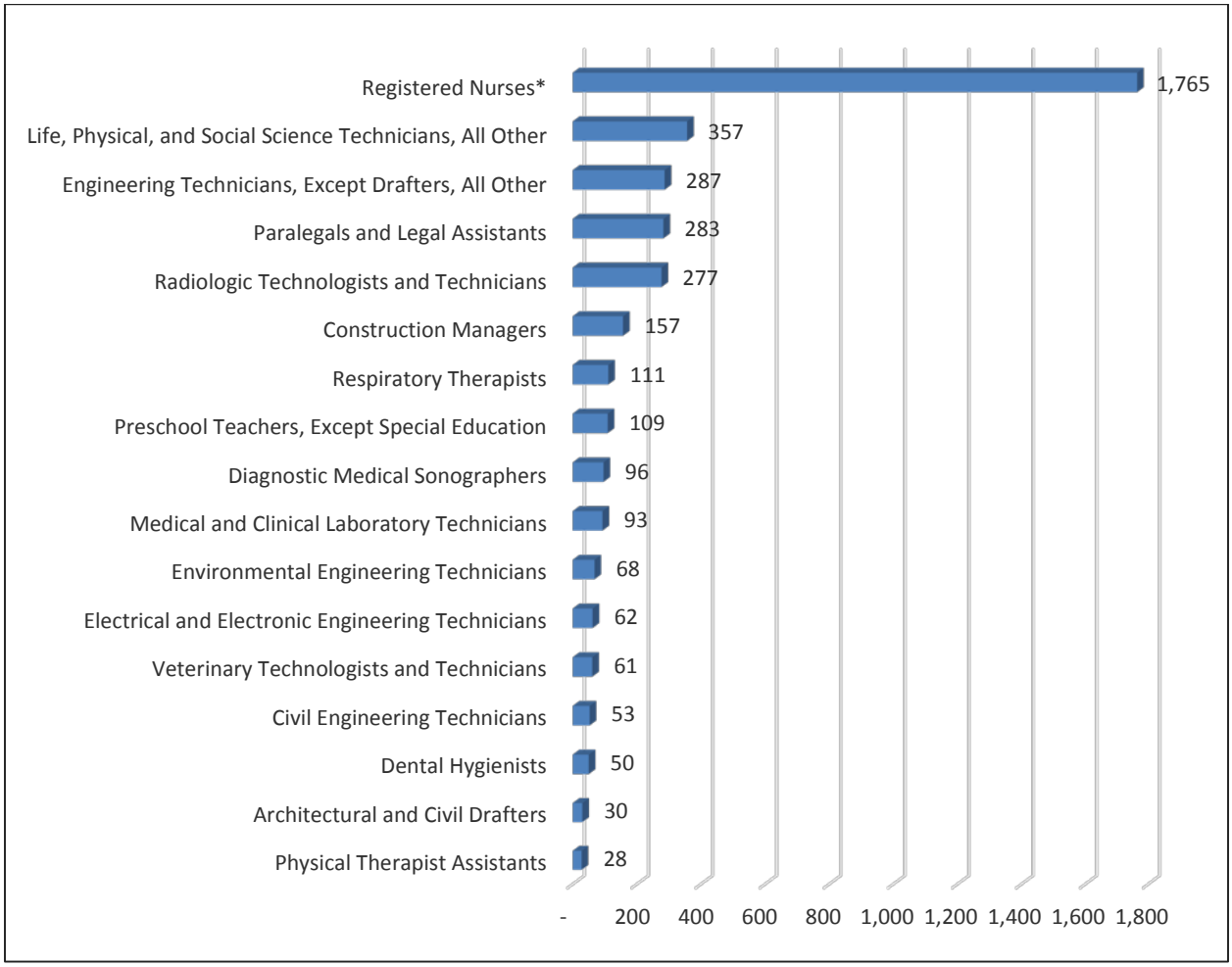
Source: Maryland Department of Labor Licensing and Regulation, 2014.

EXHIBIT 2
PROJECTED OPENINGS AMONG DETAILED OCCUPATIONAL CATEGORIES REQUIRING
A BACHELOR'S DEGREE IN FREDERICK COUNTY, 2010 THROUGH 2020



Source: Maryland Department of Labor Licensing and Regulation, 2014.

EXHIBIT 3
PROJECTED OPENINGS AMONG DETAILED OCCUPATIONAL CATEGORIES REQUIRING AN ASSOCIATE DEGREE IN FREDERICK COUNTY, 2010 THROUGH 2020



Source: Maryland Department of Labor Licensing and Regulation, 2014.

GAP ANALYSIS

Estimated local education and training needs for 4-year and graduate program levels using detailed USDOE discipline descriptors and based on employer survey responses follow in **Exhibits 4 and 5**. This predicted need covers the next 3 to 5 years, includes current and future employees of each responding firm or entity, and applies to degree completion as well as specific training and continuing education.

The subsequent charts also indicate if that particular discipline is not available through the three local colleges. Disciplines listed and estimated numbers of employees to be served, are reflective of the type and size of firms responding to the survey from the target sample. Numbers associated with each reported program discipline represent a cumulative estimate of employees who might need that particular training or program within the time horizon. An employee may be in need of education and training in more than one discipline, and therefore would be counted separately for each.

EXHIBIT 4
LOCAL NEEDS REQUIRING GRADUATE LEVEL EDUCATION/TRAINING

Graduate Level Education/Training			
Academic Disciplines		Number of Current and Future Employees Needing Training as Indicated by Employer Survey	Program Not Available at This Level in the Local Market
Non-Education Professions			
Business	Accounting and Related Services	46	
	Business Administration, Management and Operations	30	
	Business Operations Support and Assistant Services	15	
	Business Corporate Communications	14	X
	Human Resources Management and Services	14	
	Business Commerce	20	X
	Business Managerial Economics	13	X
	Finance and Financial Management Services	10	
Healthcare	Nursing	27	
Information Technology and Computer Systems	Computer and Information Sciences	43	
	Computer Programming	35	X
	Computer Systems Networking and Telecommunications	34	X
	Computer/Information Technology Admin. and Management	30	
	Computer Systems Analysis	18	X
	Management Information Systems and Services	15	
Science	Microbiological Sciences and Immunology	75	
	Biochemistry, Biophysics and Molecular Biology	54	X
	Cell/Cellular Biology and Anatomical Sciences	44	X
	Biological and Biomedical Sciences	31	
	Biology	30	
	Biology Technician Biotechnology Laboratory Technician	28	
	Biotechnology	25	
	Clinical/Medical Laboratory Science and Allied Professions	22	X
	Physiology, Pathology and Related Sciences	21	X
	Biomathematics and Bioinformatics	19	X
	Chemistry	11	X
	Ecology, Evolution, Systematics, and Population Biology	11	X
	Zoology/Animal Biology	11	X
	Plant Sciences	10	X
Other	Veterinary Medicine (DVM)	40	X
	Basic Skills	20	
	Agriculture	15	X

Highlighted cells indicate that no program is available at this level locally.

EXHIBIT 5
LOCAL NEEDS REQUIRING BACHELOR'S LEVEL EDUCATION/TRAINING

Bachelor's Level Education/Training			
Academic Disciplines		**Number of Current and Future Employees Needing Training as Indicated by Employer Survey**	**Program Not Available at This Level in the Local Market**
Business	Business Administration, Management and Operations	348	
	Business Commerce	310	X
	Accounting and Related Services	157	
	Business Operations Support and Assistant Services	76	
	Business Corporate Communications	72	X
	Business Managerial Economics	48	
	Human Resources Management and Services	47	
	Finance and Financial Management Services	33	
Education	Teaching Assistants/Aides*	205	
Healthcare	Biological and Biomedical Sciences	41	
	Nursing	21	
	Clinical/Medical Laboratory Science and Allied Professions	15	X
	Pharmacology and Toxicology	11	X
Information Technology and Computer Systems	Computer and Information Sciences	53	
	Computer Systems Networking and Telecommunications	35	X
	Management Information Systems and Services	32	
	Communications Technology Technician	29	X
	Computer Programming	24	X
	Computer/Information Technology Administration and Management	19	
	Biomathematics and Bioinformatics	12	X
Science	Biology Technician Biotechnology Laboratory Technician	310	
	Microbiological Sciences and Immunology	72	
	Biology	71	
	Biochemistry, Biophysics and Molecular Biology	66	
	Biotechnology	34	
	Cell/Cellular Biology and Anatomical Sciences	27	X
	Physiology, Pathology and Related Sciences	21	X
	Plant Sciences	10	X
Other	Basic Skills	48	
	Data Processing	13	X
	Veterinary Biomedical and Clinical Sciences	12	X

Highlighted cells indicate that no program is available at this level locally.

*Note: All needs in this category are accounted for by the Frederick County Public School System.