

## Appendix C: Economic Opportunity Testing and Outreach

These opportunities were identified and tested through outreach to the agencies, institutions, and businesses that research and develop the products for the commercial market. Outreach was conducted by researching and identifying sample prospective companies, then contacting the companies by telephone and e-mail for discussion of their R&D activities and key factors affecting their site selection process. Various findings from this outreach are summarized below.

### Agricultural Research & Bio-Technologies

The following agriculture-oriented companies and associations were contacted in order to collect information on research & technology development capacity, and to test opportunities for expansion or new development of R&D into Queen Anne's County and the Wye Mills area. Particular focus was paid to companies generating poultry-related research, because of the competitiveness of the Eastern Shore for poultry production.

- **BASF.** BASF is a multi-national company producing chemicals, plastics, oil & gas, agricultural products, and performance products. The company's agricultural products division, based in Mt. Olive, New Jersey, produces herbicides, insecticides, and fungicides mainly for increasing crop yield. The agricultural products division markets these products in more than 170 countries and has two R&D facilities located at Research Triangle Park (RTP) in North Carolina and at Limburgerhof, Germany.

Outreach focused on the company's Agricultural Processing Group and its Plant Sciences Group, with R&D conducted in both cases by scientists located at the company's RTP research facilities. BASF also conducts field research at two locations in the U.S.: Fuquay, North Carolina (not far from RTP) and at Dinuba, California. The latter facility is located near Fresno within the Central Valley, one of the most productive agricultural regions of the world. Several large food companies have headquarters or major production facilities in Dinuba. According to representatives of the company's R&D division, there are no plans to expand, add to, or relocate any of the company's research or product development facilities in the foreseeable future, and it is unlikely that any product development facilities would be located on Maryland's Eastern Shore.

- **Cobb-Vantress.** Cobb-Vantress, based in Siloam Springs, Arkansas, is a company focused on research and development for the production of broiler (poultry) breeding stock. The company claims to have the largest broiler breeding capacity of any company in the world. C-V was founded in Massachusetts and for many years had major operations on the east coast, including Maryland. However, the company merged with Tyson Foods in 1985 and thereafter shifted all of its breeding and R&D operations to the Midwest to be closer to Tyson's corporate headquarters in Springdale, Arkansas. Today, the company has R&D operations in Missouri, Kentucky, and Oklahoma and has no plans or interest in expanding back to the east coast or away from Tyson's primary production base.
- **Perdue Farms.** While Tyson has focused its operations on the Midwest, Perdue is largest on the east coast and has major operations in the Delmarva Peninsula. Perdue is one of the largest poultry producers in the country and is also among the 100 largest international food companies. With published sales approaching \$3.0 billion, Perdue is also one of the largest private, family-owned companies in the world.

Perdue has already shown interest in investing in research and development on the Eastern Shore. The company has been providing \$5,000 research scholarships (for Food Science and Technology) to doctoral students at the University of Maryland Eastern Shore for several years. The UMES Center for Food Science & Technology is focused on research programs to ensure the safety, quality, and availability of poultry, seafood, produce, and small farm animals on the Eastern Shore.

Perdue purchased Helvoet Pharma's 22,000 square-foot facility at 2110 Industrial Parkway in Salisbury, Maryland, for use as a poultry research & development center. This Perdue Innovation Center includes consumer test kitchens, product development labs, and a USDA-approved pilot plant. The consumer is invited to watch food demonstrations in the facility's test kitchens. One of the executive chefs at Perdue's test kitchen graduated with a two-year degree from St. Mary's County Technical Center before attending the Culinary Institute of America.

The facility benefited from Wicomico County's Enterprise Zone, which also incorporates portions of Salisbury. Given that the company is already making a major investment in R&D in the region, it is unlikely that Perdue will seek additional facilities in the near term. However, there are long-term opportunities for further expansion of this activity into Queen Anne's County. In particular, there may be long-term supplier and spin-off opportunities associated with the Salisbury location.

- **Elanco Animal Health.** Elanco, a division of Eli Lilly & Company of Indianapolis, is a research company that develops products to enhance the health and productivity of animals including poultry. Such products include pharmaceuticals such as Apralan, Coban, Hygromix, Micotil, and Maxiban. Elanco's research and development is conducted at the division's headquarters in Greenfield, Indiana. These facilities have housed the company's Animal Health Laboratory since 1954. The company's Executive Vice President for Science & Technology suggested that there is very little likelihood that Lilly or Elanco will expand its animal product R&D operations to the east coast in the future.
- **Hy-Line, International.** Hy-Line is one of the oldest poultry (hen) breeders, using genetics starting in 1936 to improve hybridization and egg-laying productivity. The company's production facilities are located throughout the country, including Iowa, California, Washington, Texas, Georgia, Indiana, and Pennsylvania. The company's R&D laboratory is located in Dallas Center, Iowa, near the company's headquarters. While the company has production facilities in Elizabethtown, Pennsylvania, there is no plan to relocate or expand R&D capacity to the east coast, according to the Director of Research & Development.
- **Allen Family Foods.** Allen is a large poultry breeder, processor, and exporter headquartered in Seaford, Delaware. The company claims to employ 3,000 people in Delaware, Maryland, and North Carolina, and is processing 2.5 million birds per week into 10 million pounds of finished product. The company operates hatcheries, feed mills, and processing plants. There is also a farming division that produces feed grains and almost 30 grow-out farms, and oversees a network of 500 independent growing out farms. Hatcheries are located in Dagsboro, Delaware and Hurlock, Maryland. Processing plants are located in Codova, Maryland, Harbeson, Delaware, and in Hurlock.

Allen Family Foods (AFF) does not operate an R&D facility, per se, but rather a Quality Assurance (QA) Laboratory, located at the Cordova, Maryland plant. The QA lab conducts

chemical and microbiological tests. Birds are tested to assess nutritional content, shelf-life, color, and other consumer preference factors. Plant cleanliness and sanitary conditions are also monitored. QA also staffs the company's hatchery and feed operations.

Allen participates in broader R&D and testing efforts, many of which are sponsored or encouraged by the U.S. Poultry & Egg Association, the National Chicken Council (NCC), and the Delmarva Poultry Industry (DPI). Because of AFF's investment in the Delmarva region, Queen Anne's County is strategically placed to capture future growth in the company's R&D activity, which may include participation in broader regional efforts. The County should consider a broader marketing effort focused on building a long-term relationship with poultry companies like AFF in the DPI region.

- **Other Companies Contacted.** Initial contacts were made with a number of other agriculture-related companies that have R&D components and a possible market or investment interest in poultry and other food products generated on the Eastern Shore. These companies include:
  - **Merck & Company.** Based in Whitehouse Station, NJ. Merck is one of the world's largest pharmaceutical companies and produces health products for poultry and other farm animals. R&D is based at the company's massive Boston Research Laboratory, but the company also has R&D facilities in Rahway (NJ), West Point (PA), Seattle (WA), and San Francisco (CA).
  - **IDEXX Laboratories.** IDEXX develops poultry testing kits along with other diagnostic, detection, and health safety products for the animal industry, along with quality assurance products for the water and dairy industries. The company is headquartered in Westbrook, Maine but does have a technology representative in Glen Burnie, Maryland.
  - **Novus, International.** Novus is an animal nutrition company that produces animal supplements, feed ingredients, and preservatives. The company conducts research and product development at its International Research Center located near the company's headquarters in St. Charles, Missouri.
  - **Sunrise Farms.** Sunrise Farms is a Catskill, New York-based poultry company, similar to Allen Family Foods.
  - **Synbiotics Corporation.** Synbiotics is a full-service, Kansas City-based animal health company that began as a research and development firm serving the veterinary market. Today, the company develops, manufactures, and markets various veterinary diagnostics, vaccines, and other animal health products. R&D is dispersed to the company's various offices in Kansas City (MO), San Diego (CA), Rome (NY), and Lyon (France).
  - **Abbott Laboratories.** Abbott Labs, based in Abbott Park, Illinois, is another global pharmaceutical company with a large animal health division. The company provides perioperative and diagnostic health care products for the veterinary market. Products include animal health diagnostics, as well as IV solutions, anesthesia products, and other vet critical care products. Abbot conducts R&D at various locations, including Worcester (MA), Parsippany (NJ), Lake County (IL), Santa Clara (CA), Austin (TX), and Columbus (OH). Contact was only made through the Licensing Division.

- **ADM.** Archer Daniels Midland is one of the world's largest agricultural processing companies, based in Decatur, Illinois. ADM has manufacturing, distribution, and sales operations in 40 U.S. states and worldwide. The company has developed a sophisticated range of "technology-based" agricultural products that now includes corn-based ethanol, in addition to various crop-based products. In general, the company takes crops and "processes them" into food ingredients, animal feed ingredients, renewable fuels, and naturally-derived alternatives to industrial chemicals. The company has a Poultry Feed Production division with research headed by the Director of Nutrition in Decatur, Illinois.
- **Pilgrim's Pride.** Based in Pittsburg, Texas, Pilgrim's Pride is the country's second-largest poultry producers, generating 2.5 billion pounds of chicken and 8.5 billion pounds of turkey per year. The company operates feed mills, hatcheries, grow-out facilities, processing plants, and distribution centers. Research and development operations are concentrated at the company's headquarters in Texas.
- **Others.** Other companies contacted include Jones-Hamilton, Roche (animal vitamin division has been sold to DSM), Braes Feed Ingredients, Hubbard ISA, Hendrix Genetics, and others.
- **Industry Organizations.** Several organizations and agencies were also contacted to discuss opportunities for Queen Anne's County and for the college-area business park. Among these were Delmarva Poultry Industry, Inc. (DPI) and the Maryland Agricultural & Resource-Based Industry Development Corporation (MARBIDCO). DPI is a non-profit association focused on assisting in the growth of the broiler chicken industry in Delaware, Maryland's Eastern Shore, and the Eastern Shore of Virginia. DPI members include 1,400 family chicken farms, plus five poultry companies (and over 1,000 employees) producing chickens, suppliers, and interested non-poultry businesses.
- **MARBIDCO** is a relatively new quasi-public agency established in 2004 to assist in the economic development of Maryland's seafood, agriculture, and forestry industries. MARBIDCO works on developing agri-industry and markets, supporting commercialization of agri-processes and technologies, and providing non-traditional capital and credit for agriculture and resource-based investment.

## Marine Products

The Eastern Shore has attracted a fair share of marine products manufacturers, as well as companies designing and producing precision tools, electronics, and machinery in support of the marine industry. Recently, Silverton Marine Corporation announced development of a new manufacturing plant to employ over 200 people in Talbot County.

There are opportunities to attract companies engaged in the development of new products and materials to support this important industry. Among the target product and service opportunities associated with this sector are engine testing & development, enclosure materials (e.g., acrylics, co-polyester, and vinyl) testing & product development, fabrics product testing, and marine fuel & chemicals product development.

Several companies that produce these materials were contacted, along with boat builders such as Luhr's that are located in the region. Key materials development firms include EZ2CY, Genesis, and others contacted for this assessment. In general, these companies conduct product

development and testing at water locations near their manufacturing facilities. These opportunities would be limited at the Chesapeake College without access to water, which is available in multiple sites at other locations in Queen Anne's County and on the Eastern Shore.

## **Marine Biotechnology**

Research into marine biotechnologies is driven by academic institutions, with the University of Maryland at the forefront of research internationally. Clearly, it is critical to determine the current and future prospects for expansion of programs at the University of Maryland Biotechnology Institute, with a particular focus on the Center of Marine Biotechnology (COMB). Such research can help drive applications in the commercial sector and attract private companies with an interest. Outreach in this area therefore focused on COMB and possible private affiliations including aquaculture and seafood companies, as well as on companies that provide compounds (e.g., vaccines, hormones, antibiotics) in support of these industries. Queen Anne's County and the site are viewed as potentially competitive for these industries because of their strategic location between the Chesapeake Bay and the Atlantic Ocean, near an important biological resource and a large seafood industry.

- **Center of Marine Biotechnology (COMB).** The University of Maryland Biotechnology Institute (UMBI) includes four major research centers: the Center for Advanced Research in Biotechnology (CARB), the Center for Biosystems Research (CBR), the Medical Biotechnology Center (MBC), and the Center of Marine Biotechnology (COMB). These centers are engaged in biotech research, and are also meant as tools for economic development through the development of new product applications.

COMB generates basic research on the molecular biology and genetics of marine/estuarine animals, as well as on environmental degradation and remediation, microbial processes and products. The center develops education programs for Maryland schools based on its research. COMB also examines the applications of its research for improving and enhancing marine production, and towards remediation of problems caused by pollution and health hazards. According to COMB literature, such applications include:

- Methods for improving fisheries and aquaculture production
- Technologies for early detection of harmful algae, toxins, and other environmental pathogens & health hazards
- Novel approaches for environmental cleanup and restoration
- New, marine-based compounds (e.g., pharmaceuticals)
- Industrial applications for microbial products

COMB has been particularly involved with research to assist Maryland's blue crabs, an important marine animal and driver for the state's well-known seafood industry. Other key research areas include re-circulating marine aquaculture, marine functional genomics, marine environmental technology, marine natural products, microbial & extremophile processes, and fisheries & aquaculture biotechnology.

COMB facilities, located at Columbus Center on Baltimore's Inner Harbor, include the aquaculture & fisheries research facility, BASLab, extremophile scale-up facility, and a reading room.

COMB is involved with research relating to improvements to fish reproduction and administration of compounds in aquaculture. These efforts, along with the center's research into re-circulating marine aquaculture systems, could generate opportunities for off-site aquaculture facilities aimed at growing high-densities of commercially-important fish. Such facilities could be located in non-traditional settings such as rural inland environments like the Wye Mills area. A research facility of this type could generate opportunities for attracting commercial hatcheries as well as companies that produce compounds (vaccines, hormones, antibiotics, etc) relating to aquaculture. COMB already operates a large off-site blue crab hatchery.

The Wye Mills area could be competitive for such a facility because of the site's location in the middle of the Delmarva Peninsula, between the Chesapeake Bay and the Atlantic, plus proximity to COMB's Baltimore research facilities, a large regional work force, and central location with access to the large east-coast market. These assets have been explored with COMB researchers and with the Senior Technology Licensing Officer for the UMBI Office of Research & Development.

- **Aquaculture Companies.** Much of the country's aquaculture industry is concentrated in the south (Mississippi, Louisiana) and west. Several aquaculture companies are located on Maryland's Eastern Shore, including Marinetics and Yankee Horse (Cambridge), Hydro Aquatics Technologies (Princess Anne), and Pacific East Aquaculture (Mardela Springs). Bluewaters International is located in Bethesda. These Maryland operations are comparatively small, with 3 to 8 employees each. By comparison, Clear Springs Foods located in Buhl, Idaho, has 431 employees (according to Manta). The largest such companies on the east coast are typically located either in Maine (Connors Brothers, Great Eastern Mussels) or North Carolina (Carolina Classics, Townsends). In discussions with several of these companies, it was determined that the presence of a research facility (i.e. a COMB re-circulating marine aquaculture facility) would not in itself attract investment at the site. However, the technologies will be useful for them in consideration of any expansion of their lines.

The biggest issue for aquaculture companies and entrepreneurs is Maryland's unusually strict regulatory process, which seeks to limit the introduction of antibiotics, chemicals, and other un-natural farming methods often associated with aquaculture. The State has recently taken moves to encourage aquaculture and reduce red-tape. The key opportunity may relate to R&D associated with natural processes that can act as alternatives to such methods.

- **Seafood Companies.** Maryland was at one time one of the world's major crab and seafood producers. The state has lost this claim mainly due to pollution in the Chesapeake Bay which has helped to greatly harm and reduce crab and oyster yields. Nevertheless, Maryland still has more than 70 seafood processing plants, and a number of seafood companies are headquartered on the Eastern Shore or in Baltimore, including Russell Hall (Hooper's Island), J.M. Clayton (Cambridge), Kool Ice & Seafood (Cambridge), Chincoteague Seafood (Parsonsburg), Martin's (Jessup), Skipjack Seafood (Salisbury), and others focusing on the region's well-known but endangered crabbing and shellfish industry. Many of these companies employ scientists in their Quality Control divisions to oversee and manage product quality, hygiene, and health factors. Such activity can include product testing, evaluation, hazard analysis & control, grading, and monitoring. However, they are typically

not engaged in major research or development activities, which tend to be concentrated at the University of Maryland and other academic institutions.

Several of the large seafood companies in the Mid-Atlantic were identified and contacted to assess their research & development capacity and needs. Among the companies were Cape May Foods (Millville, NJ), Snows / Doxsee (Cape May, NJ), Inter-Ocean Products (Bethesda, MD), Great American Line (Murrysville, PA), Hillard Bloom Packing (Port Norris, NJ), and others. These large companies tend to have some research & development capacity. For example, Castleberry's (brand name for Snows / Doxsee), has on-site research & development and quality control at its two manufacturing facilities in New Jersey.

## **Health Care & Nursing Technologies**

One concept for development includes medical office, laboratories, med-technical services, and health care facilities. This concept was driven in large measure by a proposal for Shore Health System to expand and relocate its Easton Memorial Hospital facility close to the Queen Anne's County line. This proposal, combined with the presence of a regional nursing training program at the college and of a large base of trained Queen Anne's County workers helped lend support to the concept.

- **Chesapeake College.** Working under the assumption that the hospital is not being relocated to a site near Chesapeake College, other options for health care and nursing technology development were explored. In this context, the best opportunities were determined to relate to development of the nursing program at the college. Several opportunities for the college and associated spin-off are discussed below.
- **Robotics & Software Development.** Maryland's community colleges have in the past received federal grants supporting faculty efforts to write software and programs for robotic equipment used in nursing. Such equipment includes automated medical dispensing systems, IV pumps, and medical administration systems. Grants were released to the Higher Education Commission (HEC) for this purpose and also for other program development needs and professional development. Unfortunately, most of the HEC grants were generated previously through earmarks such as through Senator Mikulski's office. Congress has taken steps to reduce the number of earmarks approved. The Maryland Hospital Association (MHA) has also provided multi-year matching grants, but not for R&D purposes.
- **Nursing Information Technologies.** Various new diagnostic and communication technologies are being developed to assist the nursing profession with the collection and dispensation of information such as through
  - Scheduling systems & software
  - Mobile systems & patient communications software
  - Automated messaging systems
  - Clinical decision support (CDS) systems
  - Documentation systems
  - Telenursing (home health care & gerontology)

- **Software Companies.** Maryland has attracted a large number of medical and health care software development companies, thanks to such institutions as the National Institutes of Health (NIH) in Bethesda and Johns Hopkins University in Baltimore. Few of these companies have been recruited to the Eastern Shore, however, even though parts of Queen Anne's County are located within a short drive of those institutions.

If Chesapeake College were to attract regular grant funding in support of robotics or nursing information technologies, there may be spin-off opportunities for software developers who would work closely with faculty and students to test new products. Ideally, if a new SHS hospital or medical center were actually developed nearby, then there could be applied testing associated with the college and the hospital. Companies contacted include American Health Care Software (Burlington, VT), Educational Innovations ó inventors of nursing drug & dosage calculations software (Adelaide, AUS), and ADL Data (Hawthorne, NY), among others. The locations for these companies were generally chosen based on lifestyle decisions by their management. Since development of the software is integral to the company's product, R&D is performed at the company's headquarters and is not likely to be disengaged to a separate location. Thus, opportunities for attracting these companies relates more to lifestyle incentives (such as Chesapeake Bay waterfront locations) and even more to the establishment of a local entrepreneurial base of software developers.

- **Bio-Science Companies.** Bio-science research tends to locate closer to research institutions, although there are biotech manufacturing facilities that locate in regular industrial parks. For example, Cambrex Bio-Science has announced plans to open a bio-tech manufacturing plant in Northwood Industrial Park on the Eastern Shore. Cambrex provides products in support of pharmaceutical development and manufacturing. Montgomery College, one of Chesapeake College's sister institutions, is developing a Bio-Sciences Center. The facility will serve primarily as a training center with apprenticeship programs for laboratory work connected to private and public research institutions based in Montgomery County. Clearly, the concentration of NIH-related bio-technology firms in the I-270 Corridor has helped generate an opportunity for this type of facility that may not exist as yet in parts of Queen Anne's County.

## Information Technology

The Eastern Shore has attracted a growing number of information technology firms and services. Few of these companies are actually developing or even testing new technologies, and many are merely business service companies including call centers that use technology in providing their administrative support function. Nevertheless, they are easier to attract to rural communities that lack a major research institution but that have lifestyle and amenity-based appeal within a short commute to major metropolitan areas. Chesapeake College is pursuing technology programming in coordination with the higher education center. There may be opportunities to link the college's training programs to incentives for attracting outsourcing, call center, and technical service operations.

- **IT Businesses.** Examples of call center and IT businesses that have located recently on the Eastern Shore include the following. Several of these businesses were contacted primarily to discuss the factors that influenced their decision to locate facilities on the Eastern Shore. Queen Anne's County businesses were not contacted at this stage.

- **Hospital Billing & Collection Services (HBCS)**, with a 28,000 square foot receivables management operations center employing 175 in Salisbury;
- **The Knowland Group**, an internet database company in the hospitality industry that has opened an operations & call center.
- **Ameriscan**, a Global Positioning Services (GPS) company, recently began operations in Wicomico County's incubator
- **Callidus, LLC**, a company started by Salisbury University students, develops and distributed software for the sleep lab industry
- **NavTrak**, a naval information technology firm based in Salisbury
- **MARITA**. The Mid-Atlantic Region Information Technology Association (MARITA) represents the interests of IT companies on the Eastern Shore including Queen Anne's County. The organization "creates synergy through interaction of Business, Government, and Education" to promote IT business development in the region.
- **TEDCO**. Maryland Technology Development Corporation (TEDCO) is promoting information technology business development within the state. Most recently, TEDCO supported development of a 35,000 square-foot incubator in Dorchester County's business and technology park.