

# **Report to the 2008 Legislature:**

Efforts to Support Emerging Growth Industries

**Pursuant to  
Hawaii Revised Statutes §201-19  
Act 148, SLH 2007**



**Department of Business, Economic Development and Tourism**

**December 2007**



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## I. Introduction

On June 7, 2007 Governor Linda Lingle signed Senate Bill 709 into Law as Act 148 (SLH 2007). Act 148 requires the Department of Business, Economic Development and Tourism (DBEDT) to conduct extensive research into emerging growth industries in the state and explore the issues and support needs upon which these growth industries depend. Among the elements of Act 148 is the requirement to provide before each legislative session “*a written performance report on the impact of activities of the department and attached agencies that demonstrate their efforts to support, promote, and facilitate the expansion and long-term viability of emerging growth industries including those identified [in the act].*” The emerging growth industries identified were; Ocean Science and Technology, Biotechnology and Life Sciences, Astronomy, Technology and Information Services, Film and Creative Media, Diversified Agriculture, Aquaculture, and Specialty Tourism. The act encouraged the inclusion of additional emerging industries as were deemed appropriate. This report is the first by the department under that provision of Act 148.

The department appreciates the wisdom and commitment by the Legislature and Governor in enacting Act 148. Hawaii has entered a new era of global economic competition in which technology and digital communications are changing how regions grow and what product and service specialties they can or should have. Moreover, Hawaii’s major source of economic activity, tourism, has matured. It is more challenging to grow the industry and more difficult to accommodate that growth with limited resources. Hawaii needs to better explore its alternatives for future economic activity in light of these conditions and the direction and resources provided under Act 148 elevates that effort to a major priority.

This report represents a first effort to envision, organize and assemble information relevant to the purposes of this reporting requirement. Because Act 148 became effective at the mid point of 2007, a reporting system to generate program impact information by emerging industry sector was not in place. Such a system will be implemented for 2008. In lieu of such a system, this first report utilizes the next-best information available on program activities that can be related to the target industries. That information has been taken from annual reports by the department and the agencies, the programs’ yearly activity plans, and a brief survey of programs to highlight particularly significant activities in the emerging industries.

It is envisioned that the ultimate purpose of this report should be to inform the legislature and stakeholders about how the efforts of the department are making a difference in facilitating growth of emerging growth industries. That requires looking at both the activities of the programs and metrics of change in the emerging industries. Unfortunately, while those metrics on emerging industries are the subject of other research under Act 148, results could not be completed before the delivery of this first report. Consequently, this year’s report primarily focuses on providing an inventory of program actions that target or support specific emerging growth activity and available metrics. The development industry metrics and a reporting system for program impacts by those

industries will permit the next report to provide more insight into how program activities are impacting emerging industries.

It is also a purpose of this report to provide some context to the subject of emerging industry development. Over the last several years a number of efforts to better understand Hawaii's economic situation and options have provided a valuable framework for an evolving development strategy. In particular, they have helped show how economic development, workforce development and education must work together to provide a firm basis for Hawaii's economic future in the 21st century. Emerging industry development certainly plays an important role in that framework. But there are also a number of more systemic issues that determine the effectiveness of that development, such as the size and skill level of the emerging workforce, availability of workforce housing, the ability to engage the global economy and the capacity of our infrastructure. These issues and more are being addressed by Hawaii's emerging *Innovation Initiative*, involving all stakeholders in the public sector, business community, non-profit sector and the public.

We hope this report provides some valuable understanding of DBEDT programs and their relationship to both emerging industries and overall economic development priorities. As the first effort in an annual series, the department invites comments and recommendations on how this report can be improved in the future to better address the needs of the Legislature and stakeholders.

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## II. Hawaii's Economic Transformation Strategy

Act 148 and the State's emerging Innovation Initiative are important complements. The Innovation Initiative takes a systemic approach to economic development, integrating the roles of economic development, workforce development and education. This approach is consistent with recommendations by such organizations as the National Governors Association and mirrors efforts at the Federal level to ensure major programs of the Department of Commerce, Department of Labor and Department of Education are working together.

Act 148 focuses on improving our understanding the specific economic activities that can be the vehicles for innovation and economic development. It recognizes that solid research and analyses are the basis for good decisions and policy about how public sector development assistance should be applied to create a more competitive economy.

Before looking specifically at how DBEDT programs are addressing the needs of emerging growth activity, it is useful to briefly review the economic challenges facing Hawaii, the framework of the Innovation Initiative, and the current priorities of the department under that initiative. A more detailed discussion of these topics can be found on the department's website at: <http://www.hawaii.gov/dbedt/innovation/>.

### Problems and Issues Compelling Change in Approach:

Hawaii faces a number of challenges if it is to compete effectively in the more global and technology-driven economy of the 21<sup>st</sup> century. According to recent studies that have looked at the performance of Hawaii's economy, there are several, core problem areas that are of concern:

- Per capita income (inflation adjusted) in the state has been growing slower than the national average for several decades. Data from the U.S. Bureau of Economic Analysis show that Hawaii moved from 7<sup>th</sup> best to 24<sup>th</sup> best in the national ranking for per capita income between 1980 and 2001. Hawaii's ranking improved to 19<sup>th</sup> by 2006, thanks to the strong economy. But this is still far from its top ten ranking or better during the 1980s and early 1990s.
- Hawaii's economy depends heavily on relatively lower-wage service industries, especially related to the visitor industry. According to the Department of Labor and Industrial Relations (DLIR), the largest occupations in Hawaii by number of jobs are retail salespersons, wait staff, general office clerks, cashiers, janitors and maids. Hawaii's relatively low-wage structure is made worse by a higher cost of living, particularly the cost of housing.
- The State Workforce Development Council (WDC) reports that in several important areas of the economy there are growing workforce shortages, including teachers, health care workers and law enforcement officers. Beyond this, the increased use of new technologies in traditional industries and the spread of information technology throughout the economy have accelerated the demand for a broad range of workers with the technical skills needed to keep the new economy moving forward.
- Despite Labor shortages in key skill areas and a low unemployment rate, Hawaii currently enjoys a particularly low unemployment rate, below 3 percent. Yet

- according to the 2007 Report Card for the States, Hawaii ranks 39<sup>th</sup> highest in the nation in regards to the number of involuntary, part-time workers (part-time workers who want and are available to work full time, but are unable to because of some inability to find full-time work).
- Indeed, Hawaii has a fairly well-educated workforce overall compared to other states, ranking 17<sup>th</sup> best in workforce educational attainment. Yet according to the National Center for Educational Statistics, the state currently has a lower percentage of its 9<sup>th</sup> graders making it through to post secondary education and college degrees than nationally. This seeming contradiction is because the incumbent workforce is better educated on average than the generation of workers entering the workforce. Hawaii is one of the few states in which this is the case and it is troubling.
  - Retirements over the next several decades will create labor shortages affecting the ability to fill positions in many areas, particularly the critical sectors of education, healthcare, public safety and technology. In 2005 the population 65 years and over was about 13 percent of the population in the State. In only 4 years (2012) the first boomers hit the current full, social security retirement age of 66. According to DBEDT Long Run Projects, the population 65 years and over will grow by nearly 90 percent between 2005 and 2030, compared with just 28 percent for the population as a whole. The 65 years and over group is expected to rise from its 13 percent share of population in 2005 to 20 percent by 2030. In addition to the gap this will leave in the experienced workforce, this imbalance in the size of the older population will present significant challenges for the health care and social services industry as well.
  - DLIR's Research and Statistics Office forecasts that economic growth from 2004 to 2014 that will create a demand for nearly 24,000 new jobs per year. Roughly 40 percent of all openings over the 2004 to 2014 period will be trained on-the-job. This means that the balance of openings (60 percent) will likely require some formal post-secondary education or training. About 24 percent of those opening will require completion of formal academic programs at the university or community college level.

Some of these challenges are common to many states and some are not. Regardless, the National Governors Association (NGA) concluded in a 2007 report that public policy can effectively address the economic and workforce needs of states. NGA outlines a progressive, innovation-oriented public policy framework designed to foster success in the new global economy.

The framework identifies nine key policy areas states need to address in order to be positioned to experience strong growth, particularly growth in per-capita income. These are:

1. Align incentives behind innovation economy fundamentals
2. Co-invest in an infrastructure for innovation
3. Co-invest in the skills of the workforce
4. Cultivate entrepreneurship
5. Support industry clusters
6. Reduce business cost without reducing the standard of living



7. Help boost productivity
8. Reorganize economic development efforts
9. Enlist federal help

### **Transformation through Innovation:**

For more than half a century, the primary force driving Hawaii's economy has been tourism. Tourism will likely remain a large component of Hawaii's economy in the foreseeable future. However, given the competitive nature of global tourism and the impact it has on Hawaii's resources, it will not guarantee long-term economic prosperity. NGA and other studies show that in order for Hawaii to move forward it must harness the power of innovation and expand the range of goods and services it offers. It is stressed that innovation --particularly innovation derived through universities, R&D investments, scientists, engineers, and entrepreneurial drive -- is increasingly what drives competitive success. These findings, as well as Hawaii's own studies and assessments, suggest that Hawaii must restructure priorities, reduce its dependence on land development, and refocus efforts to develop its people and their skills as its principal natural resources and economic drivers of the economy.

Taking into account the challenges facing Hawaii and the results of the various studies, the 2007 Legislature and Administration enacted several components of the *Hawaii Innovation Initiative*. The initiative lays a solid foundation to foster improved educational performance, workforce development capacity, and infrastructure investment to accelerate development of economic opportunities, including emerging growth industries. The elements include:

- **Innovation in Education:** Recognizes the importance of science, technology, engineering and mathematics (STEM) skills for an innovation economy and establishes STEM academies; programs of contextual learning; experiential learning opportunities for students; more opportunities for teacher development; and improved educational and industry needs alignment.
- **Innovation in Economic Development:** Hawaii needs to make investments in infrastructure to support a range of technology, digital media and other emerging industries and entrepreneurial development; support key growth activities, accelerate university technology transfer; develop new venture capital sources; promote alternate energy development; and stimulate workforce housing development.
- **Innovation in Workforce Development:** As an important complement to STEM education, it is also vital that Hawaii support economic transformation with new and better workforce and training tools such as Lifelong Learning Accounts; attracting back skilled, former residents into the shrinking labor pool; developing rapid response custom training capability; improving labor market information; and better aligning workforce and economic development efforts.
- **Establishing a More Global Orientation:** Thanks to better transportation, communications and particularly the internet, Hawaii competes more than ever in a

global market place. In order to establish global ties for innovation and to explore new markets, the State is expanding its international ties through the state Office of International Affairs; providing high school students throughout the region with overseas learning opportunities; and expanding support for the increased export of goods and services.

### **Innovation Initiative in Practice: Addressing Education, Economy, Workforce & Global Outreach:**

Since the 2007 legislative session, the department has been addressing these elements with partner agencies and stakeholders, and through the activities of its divisions and attached agencies. Currently, DBEDT divisions and attached agencies are actively supporting the innovation initiative and assistance to emerging growth industry, through a variety of programs and partnerships.

#### **1. Education:**

DBEDT has initiated several programs to help foster STEM education throughout Hawaii.

- DBEDT in partnership with the DOE was awarded a prestigious, Bill and Melinda Gates Foundation grant for STEM education through the National Governors Association in July, 2007. Among other things, the implementation of the grant will develop a database to track students through Hawaii's STEM academies and post secondary education, in order to effectively evaluate the effectiveness of the program.
- The Hawaii Strategic Development Corporation (HSDC) has provided financial sponsorship to the First Lego League, which assisted the program to expand from 24 schools to 64 schools over the past year. On December 1, 2008, 564 students participated in the statewide competition.
- Strategic Industries Division (SID) is supporting programs designed to supplement the current education system and offer students and teachers added programs/tools to raise the standards of STEM education. The division is helping implement STEM academies, partnering with DOE to implement the NGA STEM grant project noted above, and partnering with the University of Hawaii's Office of Technology Transfer to establish a secondary and post-secondary internship program that will expand opportunities for students to experience work environments in the private sector related to their field of study.
- The Strategic Marketing and Support Division (SMSD) is coordinating the planning, organizing, and implementing of the FIRST (For Inspiration and Recognition of Science and Technology) Hawaii Regional Robotics Competition. From March 27-29, 2008 at the Stan Sheriff Center, University of Hawaii at Manoa, 38 high school teams are expected to participate, with 26 of them from Hawaii.

## 2. Innovation in Economic Development:

In order for emerging industries to flourish, they must have the infrastructure and financial resources to take root. DBEDT is helping to establish that foundation in a number of ways

- HSDC has advised digital media companies seeking financing for their digital media storage and sharing businesses. Working with these companies, HSDC has advised entrepreneurs how to restructure their business plans and investment marketing to better attract venture capital.
- HSDC has initiated the development of a collaborative network of organizations involved in entrepreneurial assistance. Often emerging company CEO's do not know where to turn for assistance and are confused by the "alphabet soup" of service providers. This collaborative network is developing a map of organizations to guide entrepreneurs on how to find business planning assistance, product development expertise, equity financing, etc.
- HSDC has been working closely with the UH Office of Technology Transfer and Economic Development and non-profit economic development agencies to assist companies licensing UH technologies. Assistance is provided to these companies in the areas of business planning, marketing, and introductions to potential investors.
- HSDC continues to develop local and national networks to link entrepreneurs and venture capital firms. Through its introductions, co-investment opportunities are being developed between investment groups based on both sides of the Pacific to consider Hawaii investments. HSDC has also leveraged its public investment capital with private investors through a new commitment to a fund specializing in early stage companies.
- HSDC is working with DBEDT to implement the \$10 million Hydrogen Investment Capital Special Fund which will identify new sources of energy production that can support hydrogen development on the big island. HSDC is also working with bio-fuel companies and assisting in linking them to investment sources in Hawaii and in Silicon Valley.
- The Aloha Tower Development Corporation (ATDC) and the Department of Transportation, Harbors Division, have formed a partnership for the development of Honolulu Harbor infrastructure projects on an expedited basis to meet the critical demand for harbor expansion and upgrades. The Legislature recognized the progress made under the joint effort and formally authorized the partnership by the adoption of Act 127, SLH 2007.
- Critical to ATDC is the completion of the new Kapalama Container Terminal development plan which features advances in technology and sustainability such

as high efficiency gates, solar photovoltaic systems and cold ironing to reduce ship emissions.

- The Hawaii Center for Advanced Transportation Technologies (HCATT) programs support investment in infrastructure and promotion of alternative energy development. Through the partnership between the State and the Air Force, HCATT has taken a leading role in pursuit of the hydrogen-based economy by being the first to establish hydrogen infrastructure to support fueling of fuel cell powered vehicles. The introduction of the hydrogen production and fueling station and the fuel cell vehicles put into operation at Hickam AFB represent firsts within both the State and the DOD, and set the stage for expansion of hydrogen programs to support the recently established renewable hydrogen economy initiative.

### **3. Innovation in Workforce Development:**

Hawaii is faced with the challenge of developing a workforce that drives growth and prosperity in an increasingly global and competitive marketplace. Our current system is lagging in its ability to produce people who are prepared for entry into the workforce and for post-secondary education. This translates to an individual's ability to close the cost-of-living gap concerning basic needs such as housing and food. Despite reasonably good economic performance and low unemployment rates over the last few years; several recent economic and workforce performance audits have identified troubling conditions (noted in the beginning of this section) that suggest long-term difficulties for the region.

To address these needs DBEDT's Divisions and attached agencies supported activities and legislation in the 2007 Legislative Session to create program and structural changes that would better serve the needs of Hawaii's workforce. Legislation focused on establishment of Life Long Learning Accounts (LiLAs), efforts to encourage the return of former residents with vital skills needed in Hawaii's economy, realignment of workforce development programs, and expanded rapid response, custom training to support business development and expansion. While these efforts did not, for the most part, advance through the legislative process, they focused legislative attention on a complex but vital aspect of economic development that has not been addressed comprehensively in the past.

### **4. Establishing a More Global Orientation:**

Despite Hawaii's strategic location between the world's two largest economies, and the world's fastest growing economy, Hawaii has not participated in this global expansion. However, given its close proximity to Japan, China and other Asian countries, there is a significant untapped opportunity to grow this sector of Hawaii's economy.

- With the Legislature's support DBEDT is establishing the Office of International Affairs to help expand Hawaii's international ties and relationships with foreign governments, agencies, and companies in markets outside of Hawaii.

- DBEDT has enlisted the services of the Pacific Asian Affairs Council (PAAC) to develop programs that would establish global linkages with markets outside of Hawaii to promote and attract education and training. The activities of the PAAC focus on the development of business, trade and education linkages and opportunities to promote the growth of such areas as student exchange programs.

## IV. Program Impacts on Emerging Growth Industries

Act 148 identifies a number of specific emerging growth industries for the focus of research and analysis. These are; Ocean Science and Technology, Biotechnology and Life Sciences, Astronomy, Technology and Information Services, Film and Creative Media, Diversified Agriculture, Aquaculture, and Specialty Tourism. In addition the act encourages the inclusion of additional emerging industries as appropriate.

This section describes how the program activities of DBEDT and its attached agencies are working to support, promote, and facilitate the expansion and viability of the industries identified in Act 148. Future reports will add to the inventory of emerging growth industries as concurrent research and stakeholder input validates them as viable candidates.

As indicated in the introduction, a reporting system specifically tailored to isolating program information by emerging growth industry was not in place for this first report. That system is in the process of being developed. Therefore, the best information available from existing reports has been combined to provide a picture of what is being done to address the development needs of these industries. In addition to the activities that relate specifically to the emerging industries of Act 148, a large number of program activities support these industries indirectly. The nature of that assistance is contained in the first part of this section dealing with comprehensive support.

This report is intended to contribute to a strategic understanding of how DBEDT programs impact emerging industries, rather than overload readers with narrative on program details. However, that detail is readily available. Nearly all of the information in this section is available in published form elsewhere. Much of it is derived from the annual, Yearly Activity Plans of DBEDT programs, which can be reviewed at <http://www.hawaii.gov/dbedt/programs/>. This report also uses information from the DBEDT and individual annual reports, which can be reviewed at: <http://www.hawaii.gov/dbedt/main/about/annual>.

An effort has been made to minimize redundancy in the following sections by listing only the activities of a given DBEDT program that are directly relevant to a given emerging industry. For instance, activities that benefit an industry indirectly have been consolidated into a single section on comprehensive support activities, instead of repeating them in each industry's section. Still, a program activity may often directly address more than one industry. Therefore, some redundancy is difficult to avoid.

A description of DBEDT core and attached agency programs is provided in Appendix A. Acronyms used in the following sections are explained in Appendix B.

## Comprehensive Support for Economic Growth and Development

While many of the activities engaged in by DBEDT and attached agencies are focused directly on assistance to emerging growth industries, many other activities of the divisions and agencies are addressing more comprehensive issues of infrastructure, marketing, resource availability, and other support. The following sections identify activities that provide comprehensive support. Activities that target the growth of specific emerging growth industries are presented in the subsequent sections.

### ACTIONS UNDERTAKEN AND IN-PROGRESS:

#### Comprehensive Business Support

- Increasing level of international activity as source of high skilled jobs through the Global Links program. Seeking to involve 15 firms in new export activity, 30 firms into increased export sales and achieving an increase in overall Hawaii exports by \$16 million per year. **SMSD**
- Establishing international links to local companies in environmental, tourism, planning and development, life science, defense contracting & diversified agriculture. **SMSD**
- Seeking to increase investment in Hawaii by foreign firms (Global Initiatives). Targeting 10 international visits to Hawaii focusing on target industries **SMSD**
- Promoting exports by providing Trade Zone status to export oriented activities that need to import intermediate goods. Currently there are 13 sites on the islands of Oahu, Maui, and Hawaii that have received FTZ designation. Of the 13 sites, three general-purpose zones and four special-purpose sub-zones are active. **FTZ**
- Promoting Energy efficiency through the adoption of efficiency technologies/practices and accelerate the adoption of renewable energy technologies. **SID**
- Coordinating implementation of the Energy for Tomorrow (ETF) program. **SID**
- Developing comprehensive data and information on the economy for decision-making. **READ**
- Developing baseline data & trends for emerging growth industries and analyzing issues related to growth industries and economic development **READ**
- Developing an on-line, data warehouse for more effective information delivery. **READ**
- Increasing world links among students and teachers to improve future workforce links. **SMSD**
- Seeking to achieve economic viable in community-based business and community economic self sufficiency by providing technical assistance, capacity building,



- grants & loans through the CBED revolving fund. Expected to add 61 new businesses, 151 expanded businesses to portfolio in FY 2008.
- Working with state and county agencies to provide incentives such as Gross Excise Tax exemptions & services for businesses to locate and expand in economically depressed areas of the state (EZ) **SMSD**
  - Providing small business a bigger voice in the regulations issued by state and local governments (SBRRB). More than 260 regulations reviewed by the board from Mid 2002 to end of 2006 **SMSD**
  - Developing advanced transportation technologies and successfully managing demonstration projects featuring commercial vehicles using hydrogen fuel cell technology. (HCATT). **HCATT**

### Maintaining the Health and Economic Contribution of Tourism

- Managing Hawaii tourism in a manner that addresses Hawaii's economic goals, cultural values, preservation of natural resources, community desires and visitor industry needs. **HTA**

### Support for Planning and Infrastructure Development

- Evaluating strategic, long term planning issues. **OP**
- Coordinating and provide leadership for the Leeward Coast Initiative involving the targeting of projects to address systemic issues underlying homelessness and economic underperformance of the region. **OP**
- Coordinating update of the Comprehensive Economic Development Strategy (CEDS) for counties and the State, which is used to evaluate projects for EDA funding. **OP**
- Securing an Enterprise license that will permit a broader range of agencies to use and contribute data to the State Geographical Information System (GIS) system for planning and development **OP**
- Reviewing and evaluating development proposals for their impact on Hawaii and recommending improvements to the land regulatory system. **OP**
- Implementing with DOT, major harbor improvements at Kapalama and other critical ports. **ATDC**
- Redeveloping Kakaako. Over \$200 million invested by State so far in Kakaako has resulted in over \$2 billion in investment by private sector. **HCDA**
- Implementing the Kalaeloa Master Plan to encourage business development to support new business and jobs in region. **HCDA**
- Facilitating and developing workforce and affordable housing that will support jobs and other social goals. **HHFDC**
- Facilitating the retention of affordable housing that would otherwise leave the market. **HHFDC**



- 
- Develop or retain about 6,400 units by 2012. To date, HHFDC has successfully facilitated the delivery of 566 affordable rentals **HHFDC**
  - Improve land use and permitting process to encourage desirable private housing development. **HHFDC**
  - Supporting implementation of Act 183 (2005) and proceeding with the UH/DURP Important Agricultural Lands (IAL) mapping project. **LUC**
  - Proposing updates to the State Land Use Law, Rural Districts and associated regulations to bring clarity, certainty and consistency to land use regulation. **LUC**
  - Participating in reform of State land use legislation. **LUC**

## Ocean Science & Technology

Ocean Science & Technology is a specialty area of the technology sector. It includes science and technology development activity that either takes place in or is focused on the nature of the Ocean and its resources. For that reason the sector overlaps a number of other science and technology activities presented in later sections of this report.

### **Benchmark Information:**

2005: \$164 million in Revenues among companies (down from \$176 mil. In 2004)

2001 to 2005: 24%

Development of additional benchmarks underway

### ACTIONS UNDERTAKEN AND IN-PROGRESS:

#### Research and Analysis

- Developing baseline data & trends for Ocean Science and Technology. **READ**
- Analyzing issues related to Ocean Science and Technology growth and development. **READ**
- Developing capacity for research and analysis into economic development issues and growth industries including Ocean Science and Technology. **READ**
- Working with the Hawaii Science and Technology Council to develop Science & Tech industry directory and profile including information on Ocean Science and Technology. **READ**

#### Industry Development & Liaison

- Providing export assistance, raising the profile of the industry and promoting UH-Industry partnerships. **SID**
- Helping to implement Science, Technology, Engineering and Math (STEM) education and & internship programs from 2007 Legislature and the NGA STEM Grant. **SID**
- Increasing UH-Industry collaboration through the Experimental Program to Stimulate Competitive Research program (EPSCoR). **SID**
- Participating in trade shows with the goal of adding 10 to 15 new companies, resulting in \$2 million additional sales in following 12 months. **SID**
- Working with READ, HTDC, other agencies and industry organizations to analyze and understand the development potential and needs of biotechnology and life science. **SID**

## Enterprise Development

- Developing and will manage wet-lab space in the Kakaako Life Science center. **HTDC**
- Construction and occupancy of the Life Sciences Incubation and Innovation Center in 2-6 years. **HTDC**
- Moving beyond providing facilities for tech start up companies to building tech communities at the Manoa Innovation Center, Maui Research and Technology Center, and the Hawaii Innovation Center at Hilo. **HTDC**
- Seeking to maintain high, 75% company success rate for 5 year survival. **HTDC**
- Seeking to increase number of companies achieving IPO or comparable event past graduation. **HTDC**
- Providing training and strategic management training through the Manufacturing Extension Partnership (MEP). **HTDC**
- Increasing the number of Hawaii manufacturing's utilizing best practices in manufacturing techniques (MEP). **HTDC**
- Assessing and providing technical assistance to high technology manufacturing firms with the help of National Institute of Standards and Technology (MEP). **HTDC**
- Providing matching seed funds to Hawaii tech start up programs under the federal Small Business Innovation Research (SBIR) awards and Small Business Technology Transfer (STTR) awards programs. (See companies below) **HTDC**
- Increased inventory of successful tech companies, increasing the number of jobs, income and tax revenues for Hawaii. **HTDC**
- Seeking to increase commercial success from one of every 25 phase II SBIR awards to one of every 15 awards. Teaming SBIR with MEP program to help achieve this. **HTDC**

### **SBIR funding of Companies related to Ocean Science and Technology**

Navatek Ltd.

Navatek researches, designs and constructs high-tech ships.

Neptune Technologies, Inc.

Neptune Technologies develops and manufactures marine electronics.

Neugenesis

Oceantek

Oceantek specializes in ocean engineering.

OCEES (Ocean Engineering and Energy Systems) International, Inc.

OCEES is intent on commercializing its integrated, multi-product

Ocean Thermal Energy Conversion (OTEC) systems worldwide.

OCEES is involved in every aspect of development from marketing, design, construction to operation.

Hawaii Kai Salts

Hawaii Kai Salts performs research and development in the commercial production and processing of sea salt.

Innovative Technical Solutions (NovaSol)

NovaSol does engineering research and development, specializing in advanced optical sensors and precision pointing systems, high speed computing and data analysis.

Makai Ocean Engineering, Inc.

## Financial and Infrastructure Resources

- Developing a thriving venture capital sector serving Hawaii companies as indicated by the amount of investment by VCs and the success of the companies. **HSDC**
- Providing a conduit of venture capital to Hawaii startup firms, including Ocean Science & Technology **HSDC**
- Establish the Hawaii Technology Enterprise Network (HiTEN) to assist startups in commercializing their research and presenting well thought-out business plans to investors. **HSDC**
- Strengthening the entrepreneurial climate of Hawaii and managerial capability of early stage companies. **HSDC**
- Implementing the legislatively established dual-use fund to better fund research in Ocean Sciences. **HSDC**
- Promoting the use of deep-sea water to support new economic activity, especially research and development that results in new products. **NELHA**
- Developing the “NELHA” Brand as a unique marketing asset. **NELHA**

## Biotechnology & Life Science

The Biotechnology and Life Sciences sector includes biotechnology, pharmaceuticals, biomedical technologies, and other cellular and sub-cellular based research and development. Seed corn research has become the largest single sub-sector of biotechnology and life science. However, the difficulty of isolating data on biotechnology and life science from other technology, health care, educational and government activity may be obscuring the growth outside of seed corn research. Identifying all elements of this sector is a major priority for research.

### Benchmark Information (partial):

2006: Agricultural Bio Tech and Medicinal/Pharmaceutical Mfg. 1,367 Jobs

2001 to 2006 Growth: 34%

Development of additional benchmarks underway

### ACTIONS UNDERTAKEN AND IN-PROGRESS:

#### Research and Analysis

- Developing baseline data & trends for biotechnology and life sciences. **READ**
- Analyzing issues related to growth and development of biotechnology and life sciences. **READ**
- Working with the Hawaii Science and Technology Council to develop Science & Tech industry directory and profile including information on biotechnology and life sciences. **READ**

#### Industry Development & Liaison

- Providing export assistance, raise profile of biotechnology and life sciences industry. **SID**
- Helping to implement STEM education and & internship programs from 2007 Legislature and the NGA STEM Grant to increase supply of skilled labor to biotechnology and life sciences industry. **SID**
- Increasing UH-Industry collaboration through the Experimental Program to Stimulate Competitive Research program (EPSCoR). **SID**
- Participating in industry trade shows with the goal of 10 to 15 new companies in trade shows. **SID**
- Working with READ, HTDC, other agencies and Industry organizations to analyze and understand the development potential and needs of biotechnology and life science. **SID**

## Enterprise Development

- Seeking to increasing number of companies achieving IPO or comparable event past graduation from incubation. **HTDC**
- Seeking to maintain high, 75% company success rate for 5 year survival past graduation. **HTDC**
- Providing matching seed funds to Hawaii tech start up programs under the federal Small Business Innovation Research (SBIR) awards and Small Business Technology Transfer (STTR) awards programs. (See companies below) **HTDC**
- Seeking to increase commercial success for phase II Small Business Innovation Research (SBIR) Assistance awards. Teaming with MEP program to help achieve this. **HTDC**
- Provide training and strategic management training through the Manufacturing Extension Partnership (MEP). **HTDC**
- Providing assessment and technical assistance to high tech manufacturing firms (MEP) with the help of National Institute of Standards and Technology. **HTDC**
- Seeking to increase the number of Hawaii mfg's utilizing best practices in manufacturing techniques (MEP). **HTDC**

### *SBIR funding of Biotech Companies*

Kuehnle AgroSystems Co.

Kuehnle AgroSystems specializes in biotechnology.

Moana BioProducts

Hawaii Biotech, Inc.

Hawaii Biotech creates, develops and markets products and services to improve human health through biotechnological research.

Oceanit

Oceanit does business in biotechnology, information technology, Environmental and Industrial Technology and Solutions, including engineering, scientific and technical consulting service.

Synthetic Technology Corporation

Synthetic Technology Corporation specializes in biotechnology.

## Infrastructure and Financial Resources

- Developing and will manage wet-lab space in the Kakaako Life Science center. **HTDC**
- Construction and occupancy of the Life Sciences Incubation and Innovation Center in 2-6 years. **HTDC**
- Providing a conduit of venture capital to Hawaii startup firms. **HSDC**

- Strengthening the entrepreneurial climate of Hawaii and managerial capability of early stage companies. **HSDC**
- Establishing the Hawaii Technology Enterprise Network (HiTEN) to assist startups in commercializing their research and presenting well thought-out business plans to investors. **HSDC**

## Astronomy, Aerospace & Space Science

According to estimates by Enterprise Honolulu, Hawaii's astronomy industry employed 796 people in 2006 and generated \$145 million in annual revenues. The space sciences industry is driven by the market opportunity created by defense space situational awareness system from the Air Force on top of Mt. Haleakala on the Island of Maui. Hawaii's development of the astronomy, aerospace and space science sector has helping to drive global innovation in optics and photonics, modeling and simulation, and precision mechanics.

### Benchmark Information:

Benchmarks are being developed.

### ACTIONS UNDERTAKEN AND IN-PROGRESS:

#### Research and Analysis

- Developing baseline data & trends for the astronomy, aerospace and space science sector. **READ**
- Analyzing issues related to growth and economic development potential of the sector. **READ**
- Working with the Strategic Industries Division, Technology and Aerospace programs and Hawaii Science and Technology Council to develop information and analysis of the sector and add to the HSTC industry directory and profile. **READ**
- Conducting an assessment of current status and future potential (Office of Aerospace Development). **SID**
- Working with READ, HTDC, other agencies and Industry organizations to analyze and understand the development potential and needs of astronomy, aerospace and space science. **SID**

#### Industry Development & Liaison

- Developing Office of Aerospace Development Serve as a facilitator of growth in the aerospace sector. **SID**
- Establishing the Aerospace Advisory Board. **SID**
- Establishing the Pacific International Space Center for Exploration Systems (PISCES). **SID**
- Seeking a Commercial Space port license for Honolulu International Airport for space plane launches. **SID**
- Supporting implementation of STEM initiatives: Acts 111 and 271 (SLH 2007) and a STEM grant from National Governors Association in order to expand workforce for astronomy, aerospace and space science. **SID**



## Enterprise Development

- Providing matching seed funds to Hawaii tech start up programs under the federal Small Business Innovation Research (SBIR) awards and Small Business Technology Transfer (STTR) awards programs. **HTDC**
- Providing assessment and technical assistance to high technology manufacturing firms related to astronomy, aerospace and space science with the help of National Institute of Standards and Technology. **HTDC**
- Providing training and strategic management training related to astronomy, aerospace and space science through the Manufacturing Extension Partnership (MEP). **HTDC**
- Increasing the number of Hawaii's technology manufacturers utilizing best practices in manufacturing techniques. **HTDC**
- Increasing the commercial success of phase II SBIR companies related to astronomy, aerospace and space science by teaming SBIR and MEP programs **HTDC**

## Financial and Infrastructure Resources

- Providing a conduit of venture capital to Hawaii startup firms commercializing new technologies, including astronomy, aerospace and space science. **HSDC**
- Improving the entrepreneurial climate of Hawaii and managerial capability of early stage companies. **HSDC**
- Establishing the Hawaii Technology Enterprise Network (HiTEN) to assist startups in commercializing their research through collaboration and integration of efforts among entrepreneurial support organizations. **HSDC**
- Implementing the legislatively established dual-use follow-on fund to provide R&D commercialization financing for defense-related companies. Providing \$5 million of new funding for companies. **HSDC**

## Technology & Information Services

The category of Technology and Information Services is very broad, involving about 14,700 paid employees in 2006. It includes all technology and information development and implies the use and implementation of technology to improve the productivity of the economy. In both concept and sources of data this category is integral with other emerging growth areas discussed in this report such as Astronomy, Ocean Science and Technology, and Biotechnology/Life Science.

In the area of information services, Hawaii in 2006 had about 9,900 paid employees engaged in computer software and programming, computer systems design and related services, and internet infrastructure and services.

Discussed below are programs with the strongest interest in the Technology and Information Services sector. The direct or indirect interest of other programs was noted in the section on overall support for emerging growth industries.

### Benchmark Information:

- 2006: All technology activity by DBEDT measure; 14,700 jobs
- 2001-2006 Growth: 9%
- 2006: Information Services (included in above); 9,900 jobs
- 2001-2006 Growth: 3%

### ACTIONS UNDERTAKEN AND IN-PROGRESS:

#### Research and Analysis

- Refining baseline data & trends for Technology and Information Services. **READ**
- Analyzing issues related to Technology and Information Services growth and development. **READ**
- Working with the Strategic Industries Division, High Technology Development Corporation (HTDC) Hawaii Science and Technology Council (HSTC) and other stakeholders to develop information and analysis of the sector and add to the HSTC industry directory and profile. **READ**

#### Industry Development & Liaison

- Moving beyond providing facilities for tech start up companies to building tech communities at the Manoa Innovation Center, Maui Research and Technology Center, and the Hawaii Innovation Center at Hilo. **HTDC**
- Providing export assistance, raising profile of industry, and encouraging UH-Industry partnerships. **SID**
- Supporting implementation of STEM initiatives: Acts 111 and 271 of the 2007 legislature, and the STEM grant from the National Governors Association. **SID**
- Increasing UH-Industry collaboration through the Experimental Program to Stimulate Competitive Research (EPSCoR). **SID**

- Developing advanced transportation technologies for both military and commercial applications. Successfully managing several demonstration projects featuring commercial vehicles using hydrogen fuel cell technology **HTDC**
- Working with READ, HTDC, other agencies and industry organizations to analyze and understand the development potential and needs of Technology and Information Services. **SID**

## Enterprise Development

- Providing matching seed funds to Hawaii tech start up programs under the federal Small Business Innovation Research (SBIR) awards and Small Business Technology Transfer (STTR) awards programs. As of June 2007, 76 companies have been awarded SBIR funding, with 285 phase I and II awards totaling over \$66 million. These awards have cost the State \$4.4 million in matching grants. For every state dollar invested, Hawaii companies have attracted \$15 in federal funds. In 2006, phase I awards were increased by 100% to 27. New companies also increased 100% from 4 to 8. However, phase II awards fell from 6 in 2005 to 5 in 2006. **HTDC**
- Seeking to maintain high, 75% company success rate for 5 year survival. **HTDC**
- Seeking to increase commercial success from one for every 25 phase II awards to one for every 15 phase II awards. Team with MEP program to help achieve this. **HTDC**
- Seeking to increase number of companies achieving IPO or comparable event past graduation. **HTDC**
- Providing assessment and technical assistance to high tech manufacturing firms with the help of National Institute of Standards and Technology (MEP). **HTDC**
- Providing training and strategic management training through the Manufacturing Extension Partnership (MEP). **HTDC**
- Increasing number of Hawaii manufacturers utilizing best practices in manufacturing techniques. **HTDC**

### SBIR Awards Supporting Technology and Information Services Companies

Database Associates

Detection Limit Technology

Ergo Linguistic Technologies

Ergo Linguistics developed technologies for natural language processing.

Hoku Scientific

Hoku Scientific is developing proprietary fuel cell technology with distinct advantages over existing designs, which will enable fuel cells to compete with conventional solutions for the future of the energy market.

Hokupa'a Technologies, Inc.

Development of advanced protocols for broadband wireless Internet access.

InkiTiki Corporation

InkiTiki Corporation researches and develops advanced software technologies.

**Kolaka No'Eau Incorporated (KNI)**

Technology-based solutions in simulation, systems, and software.

**World Health Innovations, Inc.**

High technology research and development, such as lidar detector systems, and software products.

**Multipath Systems, Inc.**

Multipath Systems develops electronic travel aids for the blind in real, virtual and cyber space.

**ORINCON Hawaii**

ORINCON designs, develops and evaluates signal processing, communication, navigation, artificial intelligence and tracking systems for a range of Department of Defense customers.

**Pacific Island Technology, Inc.**

Pacific Island Technology designs, develops and applies remote sensing instrumentation and geophysical field studies.

**Science & Technology International (STI)**

STI Industries is a world leader of optical imaging systems developed for a wide array of applications including medical, environmental and national defense.

**Systems Technology Associates****Structural Solutions**

Cable design software

## Financial and Infrastructure Resources

- Providing a conduit of venture capital to Hawaii startup firms, particularly those commercializing new technologies in the dual use, clean tech, life sciences, and digital media sectors. **HSDC**
- Improving the entrepreneurial climate of Hawaii and managerial capability of early stage companies. **HSDC**
- Establishing the Hawaii Technology Enterprise Network (HiTEN) to assist startups in commercializing their research through collaboration and integration of efforts among entrepreneurial support organizations. Six companies initially supported by the network. **HSDC**
- Implementing the legislatively established, dual-use follow-on fund to provide R&D commercialization financing for defense-related and ocean sciences companies. Provide \$5 million of new funding for companies. **HSDC**

## Film and Creative Media

Film and Creative Media includes traditional film & television production, the emerging digital media sector (video games, computer animation and dynamic web design) and the recording industry, mainly music. In 2004, spending on film and television production was \$164 million with an economic affect of \$262 million. Film and creative media are a central part of Hawaii's creative sector.

### Benchmark Information:

2006: Provisional benchmark; 1,235 jobs (however, jobs peaked at 1587 in 2004)

2001 to 2006 growth: 14%

Development of additional benchmarks underway

### ACTIONS UNDERTAKEN AND IN-PROGRESS:

#### Research and Analysis

- Develop baseline data & trends for Film and Creative Media. **READ**
- Analyze issues related to growth and development of Film and Creative Media. **READ**
- Working with the Creative Industries Division to better understand and measure the industry, and support the efforts of that division to further develop of the Film and Creative Media sector. **READ**

#### Industry Enterprise and Infrastructure Development

- Seeking to exceed \$100 million in production value yearly and \$300 million by FY 2013. **CID**
- Facilitating film local and off shore production by streamlining permits, providing facilities and administering funding/incentive (Act 88) programs. **CID**
- Will process about 800 permits for filming (FY 08). **CID**
- Will process about 150 tax credit applications (FY 08). **CID**
- Conducting education outreach to local film makers. **CID**
- Increasing maintenance of Diamond Head Studio. **CID**
- Seeking to facilitate two additional professional sound stages and two professional post-production houses in the state. **CID**
- Supporting the Music Entertainment Learning Experience (MELE) program at Honolulu Community College, affiliated with Belmont University of Nashville. **CID**
- Promoting development of new businesses & activity involved in artistry, design, aesthetic value & cultural enterprise – digital media (apart from film), Visual arts, performing arts, applied arts and literary arts. **CID**

## Diversified Agriculture

Diversified agriculture includes a multitude of agricultural growing and processing activities. Even elements of the formerly dominant plantation crops of sugar and pineapple have potential roles to play in this emerging sector of Agribusiness in Hawaii. Coffee, macadamia nuts, papaya, tropical flowers and a range of processing and packaging of agricultural products fall into this sector.

The primary responsibility for development of this industry lies with the Hawaii Department of Agriculture (DOA). However, DBEDT collaborates with DOA on the mutual goal of encouraging additional economic activity and productive use of Hawaii's resources. In addition, several DBEDT programs have direct impact on agricultural activity.

### Benchmark Information:

2006: 13,312 wage and salary jobs in agriculture and food processing

2001 to 2006 change: -7%

Development of additional benchmarks underway

### ACTIONS UNDERTAKEN AND IN-PROGRESS:

#### Research and Analysis

- Developing baseline data & trends for growth industries including Diversified Agriculture. **READ**
- Analyzing issues related to growth and development of Diversified Agriculture. **READ**
- Working with the Hawaii Department of Agriculture to develop an updated measure of diversified agriculture. **READ**
- Building a broad range of data in a spatial (geographical) format to permit synthesis of information bearing on issues related to agriculture development that is best seen in a geographical context. (GIS). **OP**

#### Enterprise Development & Financial Resources

- Providing technical assistance, capacity building, grants, loans and support to rural communities through the Community Based Economic Development (CBED) Program's revolving fund (companies listed below). **SMSD**
- Providing matching seed funds to Hawaii agricultural start ups under the federal Small Business Innovation Research (SBIR) awards and Small Business Technology Transfer (STTR) awards programs (See companies below). **HTDC**
- Helping rural communities develop projects through the Enterprise Zone (EZ) program, which provides state and county incentives such as GET exemptions & services for businesses to locate and expand in economically depressed areas of the

state.

**SMSD**

- Helping small & medium size companies, including those in agriculture, to establish international links and compete in world markets through the Global Links program.

**SMSD**

### **SBIR Grants Supporting Diversified Agricultural Companies**

Hawaii Agriculture Research Incorporated

Research and development of new and traditional crops grown in Hawaii.  
Research and development with botanical extracts from plants grown in Hawaii, with emphasis on economically important botanical products.

Hawaii Taro Growers Hui

Hawaiian Vanilla Company, Inc.

Hawaiian Vanilla Company cultivates, propagates and manufactures all its products from Hawaiian-grown vanilla.

Jo Ann Johnston & Co.

Jo Ann Johnston & Co. specializes in agricultural marketing.

Kini Po-Po Creations, Inc.

Kini Po-Po Creations manufactures, distributes and markets Hawaiian-grown products to tourist-related retailers. Kini Po-Po is also a certified nursery, commercial grower and marketer of certified organic herbal teas in Hawaii.

Kona Cinder and Soil

W.T. Haraguchi Farm, Inc.

Pacific Paradise Orchids

Production and marketing of potted orchid plants.

### **Examples of CBED Loan & Grant Projects Assisted in Recent Years**

Rural Community Assistance Corp

Plan, organize, and conduct a statewide community-based economic development-training institute to improve the capacity of fledgling and established non-profit organizations. The institute consisted of on-island workshops and an overall training conference bringing in community representatives statewide. It also included a needs assessment survey and plans for follow-up projects.

Hawaii Organic Farmers Association

Proposed an educational training and information manual in tropical/organic agricultural research and training and post harvest treatment that could start and sustain organic communities and its members.

Ke Kua'aina Hanauna Hou

Limu production and processing, training, establishment of a community packing and processing facility, and development of a cooperative marketing effort for a network of agriculture/aquaculture related businesses.

Hawaiian Farmers of Hanalei



- Planning and feasibility analysis of specific projects with emphasis on kalo production and processing, microenterprise.
- Lanai Community Development Corporation  
Planning and feasibility analysis of a microenterprise development program to support LCDC community marketplace, aquaculture, and community farming projects.
- Laulima Kuha‘o  
Develop a farm plan for up to 100 acres of State Agricultural Park lands on Lanai to include boosting community membership and establishing a farmer's market.
- Hui Ulu Mea Ai  
Continue to develop its business incubator service in Waiahole as a mean of generating additional opportunities and support for the local businesses in this community. Develop an operating procedure and policy manual for the management of a community-based food-processing incubator for use by other shared-use kitchens.
- Kokua Country Foods Cooperative  
Relocation and expansion of Kokua Market, a consumer cooperative store. Loan funds used in purchasing equipment and other material for the new store.
- Waiialua Farmer's Cooperative  
Planning and feasibility analysis for the development of an economic development project for this community of Waiialua's displaced sugar worker community. Concepts include open market development, diversified agricultural products, and business and technical training activities.
- Hale Ku‘ai Cooperative  
Planning and feasibility analysis of specific economic ventures that support the production and sale of native Hawaiian products.
- North Shore Country Market  
Development of a permanent community-controlled open market for the North Shore community. Activities include site location, planning, and member training.
- Ka‘ili‘ula Ohana Corp.  
Development of community-supported agriculture (subscription farming) projects in the Ka‘u area that integrate sustainable agriculture, aquaculture, and bioenergy conversion. Establishment of a microenterprise development program for businesses related to agriculture, agroforestry, and recycling.

### Infrastructure Resources

- Evaluating and considering recommendations for improvement of land use regulatory system, including agricultural lands. **OP**
- Participating in reform of State land use legislation. **LUC**
- Coordinating update of the Comprehensive Economic Development Strategy for counties and State that is used to evaluate projects for EDA funding including support of agricultural projects. **OP**



- Supporting implementation of Act 183 (2005) and proceed with the UH/DURP Important Agricultural Lands (IAL) mapping project. **LUC**
- Proposing updates to the State Land Use Law, Rural Districts and associated regulations to bring clarity, certainty and consistency to land use regulation. **LUC**

## Aquaculture

The lead agency for Aquaculture development is the Hawaii Department of Agriculture (DOA). DBEDT supports that department's efforts with its research, the grant activities of HTDC and the infrastructure of NELHA. According to the DOA's Aquaculture Development Program, Hawaii aquaculture industry is comprised of two major sectors. The first is Commercial Production, with value of sales of \$21 million in 2006. Research and Technology Transfer (i.e., research, training, training, professional conferences, degree education and consulting services) is the second sector and was valued at \$12 million in 2003.

### Benchmark Information:

2006: \$21.3 million in commercial production; (down from \$28.4 mil. in 2005)

2001 to 2006: -4.2%

Development of additional benchmarks underway

Commercial Products Being Grown	Active Research Underway
Abalone (red, and Japanese,	Deepwater snappers
Aquatic snails	Groupers (various species)
Carp	Halibut
Catfish	Jacks (various species)
Freshwater ornamental fish and aquatic plants (various species)	Live rock
Broodstock and juvenile shrimp	Marine ornamental fish (various species)
Freshwater prawns	Marine ornamental invertebrates (various species)
Giant clams	Sable fish
Japanese Flounder	Sturgeon (various species)
Kahala (amberjack)	
Lobster	
Marine ornamental fish and plants	
Marine ornamental invertebrates	
Marine shrimp for food <i>i</i>	
Microalgae	
Milkfish	
Moi (Pacific threadfin)	
Mullet	
Seahorses	
Seaweed or sea vegetables	
Seed clams)	
Seed oysters and clams	
Seed pearl oysters	
Tilapia	

Source: DOA Web Site: <http://www.hawaii.gov/hdoa/adp/products>

## ACTIONS UNDERTAKEN AND IN-PROGRESS:

### Research and Analysis

- Developing baseline data & trends for growth industries including Aquaculture. **READ**
- Analyzing issues related to growth industries such as Aquaculture. **READ**
- Work in 2008 with the Aquaculture Development Program of the Department of Agriculture, DBEDT's HTDC and SMSD to refine benchmark data and identify key issues related to growth and development of this activity. **READ**

### Enterprise Development, Financial and Infrastructure Resources

- Providing matching seed funds to Hawaii technology start up programs under the Federal Small Business Innovation Research (SBIR) awards and Small Business Technology Transfer (STTR) awards programs. **HTDC**
- Promoting the use of deep-sea water to support new economic activity, especially research and development that results in new products. **NELHA**

#### **SBIR Awards Supporting Aquaculture**

##### Amorient Aquafarm, Incorporation

Amorient Aquafarm grows prawns, shrimp and other seafood in a controlled environment.

##### Aquaculture Technology

Aquaculture Technology specializes in aquaculture and biotechnology.

##### Aquatic Farms

Aquatic Farms conducts genetic research on aquatic species and production management technologies.

##### Big Island Abalone Corporation

Big Island Abalone Corporation is an aquaculture farm focusing on commercial production of abalone (a marine snail) for the world market.

##### Black Pearls, Inc.

Black Pearls develops new technology for pearl farming and commercial pearl farming for Hawaii, Asia, Australia and the South Pacific.

##### BOKE Farms

specializes in aquaculture.

##### Cates International, Inc.

Offshore aquaculture farm, producer of high value finfish for restaurant and retail customers.

##### Hawaii Aquaculture Company

##### Hawaii Fish Company

Hawaii Fish Company specializes in aquaculture.

##### High Health Aquaculture, Inc.

High Health Aquaculture breeds and grows the world's most diverse

collection of SPF shrimp broodstock for worldwide distribution from its biosecure facility located on the Island of Hawaii.

Mangrove Tropicals, Inc.

Mangrove Tropicals specializes in marine ornamental aquaculture.

Royal Hawaiian Sea Farms

Royal Hawaiian Sea Farms specializes in commercial aquaculture, performing research in the cultivation of sea cucumbers, opihi and warm water abalone.

Twenty 20 companies in the pre-commercial, commercial and research categories are currently engaged in aquaculture related activities at the Keahole Point facilities.

**PRE-COMMERCIAL**

Hawaii Deep Ocean Water, Inc.

Moana Technologies, Inc.

Pacific Ocean Ventures Llc

Pacific Planktonics

**COMMERCIAL**

Big Island Abalone Corporation

Black Pearls, Inc.

Cyanotech Corporation

Deep Seawater International, Inc.

Enzamin Usa, Inc.

Hawaii Deep Marine, Inc.

High Health Aquaculture, Inc.

Indo-Pacific Sea Farms, Inc.

Kona Bay Marine Resources, Inc.

Kona Cold Lobsters, Ltd.

Mera Pharmaceuticals, Inc.

Ocean Rider, Inc.

Royal Hawaiian Sea Farms, Inc.

Taylor Shellfish - Kona

Uwajima Fisheries, Inc.

**RESEARCH**

The Oceanic Institute

## Specialty (Niche) Tourism

Specialty or Niche tourism represents an effort to diversify the visitor industry while respecting the goal of increasing the value of tourism to Hawaii, but not necessarily the number of tourists. Niche tourism focuses on activities and visitors that can help fill in seasonal or cyclical lows in tourist activity or provide higher than average return per visitor. Niche tourism activities appeal to the interests of certain visitors rather than geographical or socio-economic visitor markets.

### **Benchmark Visitor Counts for selected major niche markets 2006 and growth from 2005 to 2006 (by air only except for cruise market. Rounded to nearest 1000):**

Cruise	416,000 (31%)
Honeymoon/Weddings:	637,000 (11%)
Conventions:	318,000 (-12%)
Sports events	114,000 (na)
Cultural events:	44,000 (na)

Development of additional benchmarks underway

### ACTIONS UNDERTAKEN AND IN-PROGRESS:

#### Research and Analysis

- Working with HTA to analyzing issues related to identification, growth and development and baseline data for Niche Tourism. **READ**

#### Industry Development & Liaison

- Developing sustainable growth marketing programs (business destination, vertical markets, sports events). **HTA**
- Diversifying and enriching the tourism product for the benefit of visitors and residents. **HTA**
- Funded implementation of county tourism strategic plans to help identify and develop niche segments that are appropriate to each county and island.

## APPENDIX A

### Description of DBEDT Core Programs and Attached Agencies

#### *Divisions*

##### **Strategic Marketing & Support Division (BED 100)**

The Strategic Marketing & Support Division (SMSD), promotes industry development and economic diversification in Hawaii by supporting existing and emerging industries, attracting new investment and businesses that can create more skilled, quality jobs in the state, and work to increase exports of Hawaii products and services. Business support provides new and existing businesses direct loans, licensing and permit information and referral, business advocacy, planning and coordination of programs and projects aimed at specific business sectors or economically-distressed areas (including rural areas and areas affected by natural disaster); and to promote the statewide economic development of the film and video industry in Hawaii.

##### **Creative Industries Division BED (105)**

The Creative Industries Division promotes the development and growth of Hawaii's Creative Economy, whose primary and core sector consists of Copyright Based Industries, with a focus on businesses that create/design exportable products and services and depend on the protection of their Intellectual Property in order to market to a global community. IP protection is a crucial base to profitability and survival. These are the core businesses that contribute to our economy with job creation and tax revenue.

This cluster is comprised of producers and service providers in film, video and digital media production, commercial and applied design firms and diverse range of creative (visual and performing) and cultural businesses in Hawaii. Surrounding this core sector are a great variety of arts and cultural organizations, service organizations, educational institutions, foundations, community groups and a variety of individual artisans.

##### **Foreign-Trade Zone Division (BED 107)**

The Foreign-Trade Zone Division (FTZ) administers the federal grant issued to Hawaii in 1965 by the Foreign-Trade Zones Board in Washington D.C. FTZ's mission is to increase the amount of international trading activity in Hawaii, to encourage value-added activities, stimulate capital investment and generate employment opportunities by using the federal trade development program to reduce the costs associated with international trade. There are currently 13 sites on the islands of Oahu, Maui, and Hawaii that have received FTZ designation. Of the 13 sites, three general-purpose zones and four special-purpose subzones are active. The Foreign-Trade Zone Division is responsible for ensuring that U.S. Customs and Foreign-Trade Zones Board regulations are followed at these sites.

**Strategic Industries Division (BED 120)**

Strategic Industries Division's (SID) mission is to support statewide economic efficiency, productivity, development and diversification by promoting, attracting and facilitating the development of Hawaii Technology-based industries which engage in the sustainable development of Hawaii's energy, environmental, ocean, recyclable, and technological resources.

**Research & Economic Analysis Division (BED 130)**

The Research & Economic Analysis Division (READ), works to enhance and contribute to the economic development of the State by providing analyses and policy recommendations on economic issues. READ provides economic forecasts that contribute to long-term statewide planning and infrastructure needs assessment, and also conducts and reports on basic research into the economy of the state. These functions are conducted by collecting compiling, interpreting and publishing data and statistics on all aspects of business activity, the economy and demographic characteristics of the State. READ also developed and maintains a statewide statistical reporting system.

***Attached Agencies*****Land Use Commission (BED 103, Statewide Land Use management)**

The Land Use Commission works with the State Legislature, County Planning Departments, interest groups and landowners to define constitutionally mandated standards and criteria for protecting important agricultural lands in the State of Hawaii. The Commission also engages the county planning departments in enhancing and clarifying the special permit process in the Agricultural Land Use District.

The Land Use Commission is also working to establishing data warehouses with the county planning departments with respect to storage and retrieval of land use data; and developing cooperative memorandum-of-understanding with the University of Hawaii Department of Urban and Regional Planning with respect to planning practicum and faculty consultation.

**Hawaii Tourism Authority (BED 113, Tourism)**

The Hawaii Tourism Authority (HTA) is the lead tourism agency responsible for creating a vision and developing a long-range plan for tourism for the State of Hawaii. The HTA is composed of a thirteen-member board of directors to oversee the Tourism Special Fund, create a vision for tourism, and administer tourism development from a statewide perspective.

The HTA's tourism strategic plan, titled *Ke Kumu*, provides a framework for bringing together the common goals for the good of Hawaii and its people, and also serves to guide the HTA in fulfilling its leadership role as steward of Hawaii's tourism industry. Seven initiatives are identified to achieve HTA's overall goal of increased visitor expenditures - a combination of spending per day, length-of-stay, and visitor arrivals.

Tourism funds will be expended according to a plan with specific goals and measures of accountability that will help the agency achieve its mission - To manage the strategic growth of Hawaii's visitor industry in a manner consistent with the economic goals, cultural values, preservation of natural resources, and community interests of the people of Hawaii.

### **High Technology Development Corporation (BED 143)**

The High Technology Development Corporation (HTDC) works to facilitate the growth and development of the commercial high technology industry in Hawaii. HTDC's functions include developing, managing, and assisting technology centers statewide; create business opportunities for the growth of technology companies and industry; market and promote Hawaii's technology assets; and provide support needed by Hawaii's technology industry.

HTDC assists in developing, managing, and operating technology centers statewide, including the Manoa Innovation Center, Maui Research & Technology Center and the West Kauai Technology and Visitor Center. These sites serve as high technology company incubation facilities to ease the transition from start up ventures to full fledged, independent commercial enterprises.

### **Office of Planning (BED 144, Statewide Planning and Coordination)**

The Office of Planning works to maintain an overall framework to guide the development of the State through a continuous process of comprehensive, long-range, and strategic planning to meet the physical, economic, and social needs of Hawaii's people, and provide for the wise use of Hawaii's resources in a coordinated, efficient, and economical manner - including the conservation of natural, environmental, recreational, scenic, historic, and other limited and irreplaceable resources which are required for future generations.

The Office of Planning's 3 main objectives are: 1) fix responsibility and accountability to successfully carry out statewide programs, policies and priorities; 2) improve the efficiency and effectiveness of the operations of the executive branch; and 3) Ensure comprehensive planning and coordination to enhance the quality of life of the people of Hawaii.

### **Hawaii Strategic Development Corporation (BED 145)**

The Hawaii Strategic Development Authority's (HSDC) mission is to develop a sustainable venture capital industry in Hawaii which will stimulate the growth of viable new businesses. HSDC works to diversify the state's economy by commercializing emerging technologies and providing skilled employment opportunities for citizenry.

Near-term objectives are to develop venture capital investment funds in Hawaii which will attract external sources of private investment; to establish a fund of funds to raise capital for Hawaii venture funds, to expand the business infrastructure supporting the venture industry and the growth of emerging companies; and to assist entrepreneurial development through focused conferences and seminars.

### **Natural Energy Laboratory of Hawaii Authority (BED 146)**



The mission of NELHA is to participate in the development and diversification of the economy of Hawaii by providing resources and facilities for energy and ocean related research, education, and commercial activities in an environmentally sound and culturally sensitive manner. This is achieved through managing, operating, marketing and leasing that provide sites and resources for the development of research and commercial businesses and technologies that utilize the natural resources available such as cold deep seawater, warm surface seawater, and high solar energy. Facilities are located at Keahole Point in Kona and in Puna, both on the Island of Hawaii.

NELHA at Keahole Point is the only location in the world, which consistently pumps large quantities of warm and cold seawater ashore for use in aquaculture, marine biotechnology, and other related technologies. NELHA serves as the laboratory for research and development, as an incubator facility for developing innovative, new technologies and businesses, and as a base for commercial operations that utilize or are related to the use of the cold and warm seawater and other resources available.

### **Hawaii Community Development Authority (BED 150)**

The Hawaii Community Development Authority (HCDA) works to stimulate the economic development of specific community districts by planning and implementing community development programs and facilitating capital investments. HCDA's main objectives are: 1) plan and implement capital improvement projects to upgrade infrastructure and develop public facilities to meet Hawaii's economic and recreational needs, and 2) implement long term planning initiatives to support residential development in a mixed-use community.

### **Aloha Tower Development Corporation (BED 151)**

The Aloha Tower Development Corporation (ATDC) was mandated to redevelop an area of land surrounding the Aloha Tower in order to strengthen the international economic base of the community in trade activities, to enhance the beautification of the waterfront; in conjunction with the Department of Transportation, to better serve modern maritime uses; and to provide for public access and use of the waterfront property. The objective of the corporation is to enhance and strengthen Hawaii's economy by facilitating and providing redevelopment opportunities in the Aloha Tower Complex for private capital investments as well as through the formation of public-private partnerships, and to encourage redevelopment to take place in an orderly and incremental fashion.

### **Hawaii Housing Finance and Development Corporation (BED 160)**

The Hawai'i Housing Finance and Development Corporation (HHFDC) was created in 2006 and is administratively attached to the Department of Business, Economic Development, and Tourism (DBEDT) as part of the strategic objective to create workforce and affordable housing for a skilled labor force.

The HHFDC manages assets of approximately \$729 million, of which \$436 million is attributable to the issuance of tax-exempt bonds. To date, HHFDC has successfully facilitated the delivery of 566 affordable rentals and plans to deliver 6,227 workforce or affordable units over the next five years.

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## APPENDIX B

### Acronyms Used in this Report

<b>ATDC</b>	<b>Aloha Tower Development Corporation (BED 151)</b>
CBED	Community Based Economic Development (SMSD)
<b>CID</b>	<b>Creative Industries Division BED (105)</b>
DBEDT	Department of Business, Economic Development and Tourism
DOA	Department of Agriculture
EZ	Enterprise Zone (SMSD)
<b>FTZ</b>	<b>Foreign-Trade Zone Division (BED 107)</b>
GIS	Geographical Information System (OP)
HCATT	Hawaii Center for Advanced Transportation Technologies (HTDC)
<b>HCDA</b>	<b>Hawaii Community Development Authority (BED 150)</b>
<b>HHFDC</b>	<b>Hawaii Housing Finance and Development Corporation (BED 160)</b>
<b>HSDC</b>	<b>Hawaii Strategic Development Corporation (BED 145)</b>
HSTC	Hawaii Science & Technology Council
<b>HTA</b>	<b>Hawaii Tourism Authority (BED 113)</b>
<b>HTDC</b>	<b>High Technology Development Corporation (BED 143)</b>
LUC	Land Use Commission (BED 103)
<b>NELHA</b>	<b>Natural Energy Laboratory of Hawaii Authority (BED 146)</b>
IPO	Initial Public (stock) Offering
OAD	Office of Aerospace Development (SID)
<b>OP</b>	<b>Office of Planning (BED 144)</b>
PISCES	Pacific International Space Center for Exploration Systems (SID)
<b>READ</b>	<b>Research &amp; Economic Analysis Division (BED 130)</b>
SBIR	Small Business Innovation Research grant & assistance program (HTDC)
SBRRB	Small Business Regulatory Review Board (SMSD)
<b>SID</b>	<b>Strategic Industries Division (BED 120)</b>
<b>SMSD</b>	<b>Strategic Marketing &amp; Support Division (BED 100)</b>
STB	Science & Technology Branch (SID)
STTR	Small Business Technology Transfer grant and assistance program (HTDC)