

Catching the Global Economic Wave

Expanding Hawaii's Economy Through Human Capital & Innovation



“...we need to begin focusing on human development—the kind of development that recognizes our future economic success depends upon innovation and new ideas, of which there is an unlimited supply...”

***Governor Linda Lingle
December 4, 2006***

Innovation



What is Innovation?

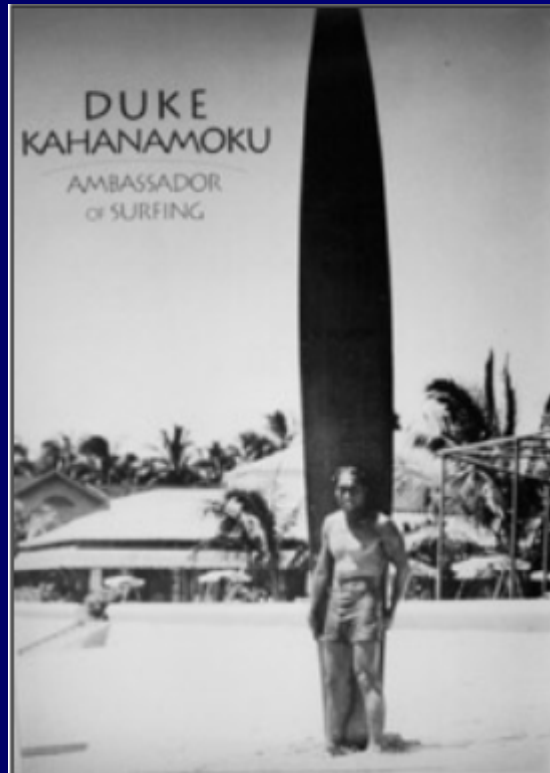
Innovation is the dynamic process whereby –

- Hawaii creates and introduces new ideas and new approaches to accomplish tasks
- Ideas are created, nurtured and turned into products or services that add value, revenues and income
- Hawaii's networks of knowledge, activity, assets and human capital are linked to create and apply inventions, ideas and insights into new processes, products and services that capture market share

Without innovation, our sugar and pineapple industries could not have survived facing hostile trade practices on a high-cost, isolated and distant mid-Pacific land mass



What is Innovation?



What is Innovation?



Why Innovation?

Innovation is the basis of “sustainability”.

Innovation is the basis of “economic diversification”.

Innovation will grow Hawaii’s traditional industries with increased productivity and lead to higher-paying jobs.

Innovation will increase Hawaii’s standard of living through steady growth in productivity.

Innovation will enable Hawaii to catch the Global Economic Wave.



National Priority

*“**Innovation** and entrepreneurship are the drivers of wealth and prosperity ... the twin engines for creation and global deployment of high-value products and services”*

-- Report of the Strengthening America's Communities Advisory Committee,
U.S. Department of Commerce

*“That vitality [of the U.S. economy is derived in large part from the productivity of well-trained people and the steady stream of **innovations** they produce. Without high-quality, knowledge-intensive jobs and the **innovative** enterprises ... our economy will suffer and our people will face a lower standard of living.”*

-- Rising above the Gathering Storm,
The National Academy of Science,
National Academy of Engineering, Institute of Medicine, and National Research Council



Results of an Innovation Economy



Results of an Innovation Economy

By the year 2020, Hawaii will achieve:

- Increase in **standard of living**, measured by average wage. In 2005, Hawaii's average wage was \$37,092, ranking below the U.S. average and 26th among all the states. 2020 target: 10% above U.S. average and ranking among the top 20 states.
- Increase **number of high wage jobs**, benchmarked by \$50,000 wage level. In 2005, the percentage of full-time workers making more than \$50,000 was less than 30%. 2020 target: Increase to 50% number of workers earning inflation-adjusted \$50,000.



Results of an Innovation Economy

- By 2020, percentage of **population 25 years or above with at least a Bachelor's degree** increase to 30% and ranking among the top 15 states in the nation.
- In 2006, only 32% of **secondary school graduates in post-secondary education by age 19**, as compared to 53% among top states. 2020 target: Increase to 60%.
- **By 2020, decrease in remediation** needed for Hawaii's secondary school graduates enrolled in post secondary education by 50 %.
- In 2006, Hawaii had 3.6% of its **25-to-49 year olds enrolled in part-time post-secondary education**, compared with the top States at 5.1%. 2020 target: Triple Hawaii's percentage.



Results of an Innovation Economy

- In 2005 Hawaii **GDP per worker was \$64,694**, or 9% below U.S. average and 32nd among all the states. 2020 target: 5% above U.S. average and ranking among the top 25 states.
- In 2005, Hawaii's **global competitiveness, measured by merchandise exports per worker** was \$2,131, as compared to the US average of \$8,099. 2020 target: Triple Hawaii's exports per worker.
- Using 2006 as a base, hold growth in **use of natural resources** to one-half the growth rate of productivity.
- Increase % **contribution of technology to GDP growth**.
- Create 5 nationally recognized **"centers of excellence"** in innovation areas natural to Hawaii.



A Policy Framework

for a

Multi-Year Effort



10 Key Policy Elements

I. Graduates from Hawaii's secondary education system with strong science, technology, engineering, math, problem-solving and creativity skills

II. Deploy innovation facilities and state funding to develop innovation capacity

III. Regulatory and tax environment that rewards productivity

IV. A higher education system that drives human capital development and innovation

V. High-skilled workforce based on individual choice and employer needs to encourage lifetime learning and skill building



10 Key Plan Elements

VI. An environment that encourages risk-taking, creativity and the acceptability of “standing out”

VII. Links to innovation and creativity centers in the Asia-Pacific region that encourage the flow of people, products and ideas

VIII. Broader access to technology tools

IX. Quality assurance and accountability measures, consistent with best practices as set out by credible local and national experts

X. Government leading innovation by example



Graduates from Hawaii's secondary education system with strong science, technology, engineering, math, problem-solving and creativity skills.

A. Science and Technology Academies to increase STEM competencies; based on existing best practices

FIRST Academy

Fostering **I**nspiration and **R**elevance from **S**cience & **T**echnology
For grades 6 - 10, a "pre-academy" program will offer hands-on, project-based and relevant STEM learning.

HiEST Academy

Hawaii **E**xcellence through **S**cience & **T**echnology
Starting in grade 9 to grade 12, a formal academy will extend the FIRST Academy by offering a standards-based STEM curriculum, taught by or with the assistance of UH community college instructors.



FIRST Academy

In “contextual learning”, current successful programs exist in Hawaii, but are undertaken on a voluntarily and ad-hoc basis.

These programs have achieved notable results in nurturing student interest and improving student achievement in math and science.

Upper elementary to middle-school student exposure to STEM through roll-out of contextual/project-based learning – robotics, spatial/GPS, wireless, space, ocean science.



Science and Technology Training “Preparing our Kids for Their Future”

“Ultimately, it’s about building a future for our keiki...”



Science and Technology Training “Preparing our Kids for Their Future”



HiEST Academy

Grade 9 to grade 12, a formal academy will extend the FIRST Academy by offering a standards-based STEM curriculum, taught by or with the assistance of UH community college instructors.



Students taking this curriculum will earn both high-school and community college credit, thus preparing them for post-secondary education.

The program will continue to have an experiential learning component.



Results for Science and Technology Academies

For the **14 initial schools**, specific metrics include:

1. 16,000 students a year participating in FIRST Academy programs (assuming 75% of 6th to 10th graders participate) impacting approximately 25% of all DOE students in 6th to 10th grades.
2. 1,000 high school seniors graduating from the HiEST Academy, about 9% of the average 11,000 annual graduates.
3. 20% of HiEST Graduates (about 200 per year) entering UH engineering school, resulting in an increase in engineering majors by 400 at the end of four years. This would boost majors in the program by about 60%.
4. 75% of HiEST Academy graduates entering the workforce in a STEM area of work at the end of post-secondary training.
5. Less than 1% remediation rate requirement required for HiEST Academy graduates entering college or the workforce.
6. 95% of HiEST Academy graduates entering post secondary training and 80% of those completing a degree or certificate program within six years.



Graduates from Hawaii's secondary education system with strong science, technology, engineering, math, problem-solving and creativity skills.

Business/Education Internships

Public/private partnership to institutionalize and significantly expand business internship and mentoring programs for high school students.

Improve students' understanding of career choices and significantly increase the number of secondary school graduates entering the labor force with "work-ready" skills.

Create opportunity for Hawaii businesses to develop a relationship with potential employees to help keep them in Hawaii or bring them back after college for their adult careers.



Internships & Mentoring

Results:

Baseline: Actual number of student internships for 2005 and 2006.

2007: Increase internships by 5% over baseline

2008: Increase internships by 15% over baseline.



Align STEM Interests

Undergraduate school tuition waivers for STEM graduates

- Extends pipeline to post-secondary training
- Involves parents in education and career decisions

Additional training for STEM teachers

Incentives to attract STEM teachers





Deploy facilities and state funding to build innovation capacity to develop products and services that are globally competitive.

Hawaii Innovation Council

- Identify and quantify existing public resources dedicated to innovation
- Monitor implementation and results
- Follow-up and additional initiatives of multi-year effort

Continue to invest in facilities

- Asia Pacific International Research Center
- Digital Media Center
- MELE

ERS to create \$100 million professionally managed equity fund





Deploy innovation facilities and state funding to build innovation capacity to develop products and services that are globally competitive.

Continue to invest in facilities:

Asia Pacific International Research Center in Kaka'ako

HTDC commits to a 10-year "master lease"

99,000 square feet

Results:

Provides currently non-existent wet-lab incubation space

Replaces space being lost at the Manoa Innovation Center

Wet lab space for 3 to 5 currently in-state biotech companies

Incubation space for up to 15 – 20 technology companies

1,000 high-paying technology jobs in Kaka'ako





Deploy innovation facilities and state funding to develop products and services that are globally competitive.

Continue to invest in facilities

Local Digital Media CGI facility

Digital media computer-generated imagery (CGI) facility acting as a catalyst, incubator and aggregator for the development of a local digital media sector

Music Enterprise Learning Experience (MELE)

Partnership with “Nashville” focused on artists creativity and the business and technology of music





Deploy innovation facilities and state funding to develop products and services that are globally competitive.

\$100 million professionally managed ERS fund focused on Hawaii-related opportunities

- The “Hawaii Innovation Fund” taken off the table (“tax advice”)
- Mandate for ERS to allocate \$100 million to Hawaii-related VC or PE
- Select a Hawaii-focused fund-of-funds manager
- Same prudence and return criteria as other “alternative investments”





Regulatory and tax environment that rewards productivity.

DBEDT, DCCA, DLIR, and DoTAX best practices that support innovation and productivity; identify specific tax and regulatory environment measures that can be moved forward.

“Small business procurement preference”: Passed by the Procurement Policy Board; being implemented by DBEDT.

“Innovation sector” preference for state contracts:

- I.T.
- Energy
- Services



IV

A higher education system that drives human capital development and innovation.

Endowed Chair Matching fund

**Public-Private University Research
Commercialization Partnership**

On the “cutting room floor”:

- Entrepreneur-in-Residence
- Increase University accountability for state goals



IV

A higher education system that drives human capital development and innovation.

Results will be measured against the 2006 baseline in terms of:

- Patents filed
- Commercialization partnerships formed
- Spin-offs formed, and
- Additional royalty revenues to UH
- Endowed chairs in STEM areas



V

High-skilled workforce based on individual choice and employer needs to encourage lifetime learning and skill building.

Rapid Response Training Program to provide custom training for incumbent workers and industries

**Goal: FY08 1,500 trained
FY09 2000 trained**

Portable "Life-long Learning Accounts" (LiLAs)

Merge Workforce Development Programs with DBEDT



V

High-skilled workforce based on individual choice and employer needs to encourage lifetime learning and skill building.

Comprehensive Kamaaina Come Home program - creating a "brain gain" with the following goals:

- FY08 and FY09: 3 to 5 mainland recruitment events per year.
- End FY08: Completion of comprehensive database of (i) all high school graduating seniors and (ii) current out-of-state graduates.
- FY09: Integrate DLIR's HIRENET portal with Kamaaina database; deploy HIRENET as method to match Hawaii employer needs with Kamaaina skills and interests.
- Over 5 years increase "brain gain" over the 2005 baseline.



V

High-skilled workforce based on individual choice and employer needs to encourage lifetime learning and skill building.

On the “cutting room floor”:

More extensive use of the federal H1-B and other visa programs to attract highly-skilled technical labor to Hawaii from Asia Pacific countries

DBEDT to employ Washington, D.C.-based experts (a practice used by states with the highest number of visas obtained), conduct education workshops in Hawaii and assist Hawaii private and public sector entities to apply in a timely manner for these visas.

DBEDT to utilize other temporary skilled worker programs established by bilateral treaties, such as the 10,500 E-3 visas available to Australian citizens in specialty occupations and 10,000 visas available for citizens of Singapore and Chile.

Goal: 75 H1-Bs, 25 E-3s by 2009



VI

An environment that encourages risk-taking, creativity and the acceptability of “standing out”.

On the “cutting room floor”:

Center for Creative Entrepreneurship (CCE)

Business Plan Competitions

Creativity Competitions

Junior Achievement

Speakers Bureau



VI

An environment that encourages risk-taking, creativity and the acceptability of "standing out".

| | FY08 | FY09 | 5 years |
|----------------------------|------------|------------|-----------|
| Results: | | | |
| Business Plan Competitions | 12 schools | 30 schools | Statewide |
| Creativity Competitions | start-up | 20 schools | Statewide |
| Speakers' Bureau | 12 schools | 30 schools | Statewide |



VI

An environment that encourages risk-taking, creativity and the acceptability of “standing out”.

Financial Literacy (being funded by DCCA)

Preparing Hawaii’s students and consumers to make informed life decisions based on sound economic principles will involve a 4-part program:

- Training the Trainers

- Community workshops

- Annual financial literacy/consumer education Expo

- Consumer education through the media



VI Results for Financial Literacy Initiative

Short term results:

30 teachers at 30 schools trained by year end 2007, with at least 1500 students demonstrating increased understanding of basic economics concepts by year end 2008 (measured by HEEC survey).

Longer term results will be measured by the:

- Number of teachers engaged in economics-integrated classes in schools.
- Number of teachers acting as resources or mentors for other teachers/staff in their school or district.
- Number of schools (public, private, charter, home-schooled students) participating.
- Number of businesses mentors and participants participating.
- Amount of private-sector funding.
- Change in score on economic and financial literacy survey.
- Number of consumer education activities/events.



VII

Links to innovation and creativity centers in the Asia-Pacific region that encourage the flow of people, products and ideas.

Realign the legislatively-mandated Office of International Affairs (OIA) to focus on links with innovation centers of the Asia Pacific region

Proactively attract notable international conferences and events to Hawaii

Develop and implement an International Educational Links program



VII

Results for Innovation and Creativity Centers

| FY08 | FY09 |
|---|---|
| <ul style="list-style-type: none">▪ Hawaii international NGO partnership created▪ Inventory completed▪ Launch web/info portal▪ 7 schools in International Education Links Program▪ 1st High School International Leaders Program; 14 students participating▪ Planning for "Geneva of the Pacific" program | <ul style="list-style-type: none">▪ 10 additional schools in International Education Links Program▪ First 2 high school study abroad programs▪ Additional 20 students in International Leaders Program▪ 1st annual International Expo▪ "Geneva of the Pacific" program |



VIII

Broader access to technology tools.

Implement with private providers near-ubiquitous wireless high-speed service on all islands

Start with under-served areas such as Leeward Coast

Free internet access at all State facilities



IX

Quality assurance and accountability measures, consistent with best practices as set out by credible local and national experts.

Reorganize one of DBEDT's current branches under the Research and Analysis Division

Produce research and metrics which will help measure Hawaii's progress toward "innovation", .e.g., increasing global competitiveness and improved quality of life for its citizens

Tracking information not now collected, including

- Cost-Benefit for current government incentives
- R&D activities across all industries
- IP creation, including patents filed
- Availability of capital
- Impact on the quality of life
- Commute times
- Percentage of green space in communities
- Availability of health care services



X

Government leading innovation by example.

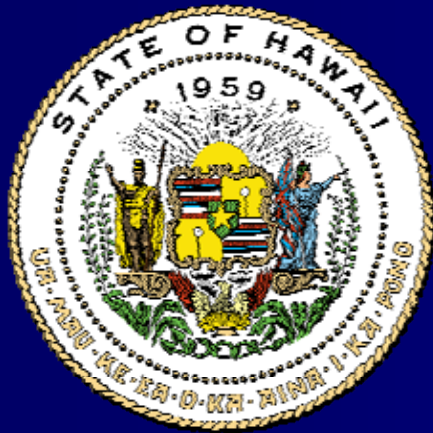
All state permits on line by 2010

Appoint Cabinet-level Chief Information Officer (CIO)

**Upgrade government back-office functions to
paperless digital system**



Mahalo



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