
Report to the Legislature

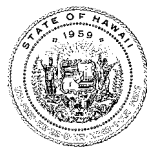
Progress on the Study:

Planning for Sustainable Tourism in Hawaii



Department of Business, Economic Development & Tourism

January 2002



CONTENTS

I. INTRODUCTION	3
II SUSTAINABLE TOURISM AND CARRYING CAPACITY CONCEPT	4
III THE STUDY	4
Background	4
Study Area.....	5
Objectives.....	5
Study Approach.....	6
IV STUDY ADMINISTRATION	7
Tasks.....	7
Background Infrastructure & Environmental Overview Assessment.....	8
Public Information and Cultural Impact Component.....	12
Economic and Environmental Modeling Project	13
V. TIMETABLE FOR STUDY.....	14
Timetable: Sustainable Tourism Study	14

I. INTRODUCTION

Act 259 of the 2001 Legislature requested the Department of Business, Economic Development and Tourism (DBEDT) to conduct a study on Hawaii's capacity to sustain future growth in tourism. The impetus for the study came from the strength of Hawaii's visitor industry in 2000. The nearly 7 million visitors and prospects for future growth brought back concerns of earlier years about the impact of increasing numbers of visitors on our environment, infrastructure and standard of living. The tragic events of September 11, 2001 have led to a sharp drop in visitors and to some, have lessened the concerns that led to the request for such a study. However, DBEDT has continued to move forward on this study, even though our need to respond to the events of September 11th slowed progress.

The State has grappled with the question of "carrying capacity" for decades. Clearly there is no simple answer to the question, but just as clearly, there is a need for a thorough look at the issues involved. The goal of this study is to provide an information database and an analysis of potential consequences of future tourism growth. The results will be used as a planning tool to help the State develop a strategy to ensure that growth is managed in a way that the quality of life of residents and the quality of the visitor experience remain high.

The analysis is designed to examine the impact of visitors on the economy, the natural environment, the cultural fabric, and the State's physical infrastructure. The analysis will reflect the interconnected nature of these factors. For example, few would dispute that Hawaii's success as a visitor destination rests to a large degree on the natural beauty of the islands and the superior physical infrastructure. The spending of visitors helps to pay for the protection of the natural environment and infrastructure. At the same time, population growth and increasing pressure from visitors can negatively impact the environment and put stress on existing infrastructure. Identification of the linkages and feed back mechanisms between economic, environmental, and social variables is a key component of the study.

The study will identify when bottlenecks or pressure points are likely to be reached and suggest, to the degree possible, mitigating measures. Thus the approach is not to try to set a magic number that is a so-called "optimal" number of visitors. Instead, the analysis will incorporate complex and dynamic changes, which can affect the capacity of the State to handle more visitors, including increasing investments on infrastructure, changes in technology, changes in tastes, and natural ecological resilience.

The study will involve developing a model to simulate conditions of tourism development and population growth through time. It will identify unwanted impacts, develop measurable indicators for elements contributing to these impacts and develop management strategies to eliminate or mitigate the negative impacts. Several scenarios will be included to represent potential future conditions.

The Sustainable Tourism Study will be divided into three basic parts:

- Infrastructure and Environmental Overview Assessment
- Economic and Environmental Assessment Modeling Project, and
- The Public Input and Cultural Impact Component.

II SUSTAINABLE TOURISM AND CARRYING CAPACITY CONCEPT

The goal of the sustain tourism is study is to develop a planning tool. Its goal is not to make assumptions and determinations of the impact of a particular project on the environment and economy at one point in time, but rather to look at dynamic and changing relationships. As pointed out in Arrow, et. al. (1995), “carrying capacities in nature are not fixed, static, or simple relations. They are contingent on technology, preferences, and the structure of production and consumption. They are also contingent on the ever-changing state of interactions between the physical and biotic environment.” He further points the need to look at ecological resilience and to insure that resilience is maintained.

Following this line of thinking, most recent studies on “carrying capacity” do not try to set a magic number that is a so-called optimal number of visitors. Several factors including seasonality and distribution across the State must be considered. Waikiki, where part of the attraction is the exciting urban experience, can obviously handle more crowds than other areas without negatively impacting the experience. Further, while in the short run, carrying capacity is largely related to the basic infrastructure already in place, in the longer term, changes in technology and increases in infrastructure can affect the carrying capacity. Changes in visitor type, activity levels, and needs can also change the impact. Therefore, the study is not to find a predetermined maximum number of visitors, but a strategy to ensure that growth is managed in a way that the quality of life of residents and the quality of the visitor experience remains high.

III THE STUDY

Background

In *Ke Kumu: Strategic Directions for Hawaii’s Visitor Industry* (1999), the Hawaii Tourism Authority (HTA) states, “...As an island state, Hawaii faces a natural constraint on development and use of its resources. Future resident and visitor population growth and economic development will require more coordinated planning than has occurred in the past in order to create the right balance between achieving economic objectives and sustaining Hawaii’s natural and cultural resources.” In their first strategic plan, the HTA clearly recognized the concerns that are to be addressed by this study.

Hawaii had a record 6.97 million visitors in 2000. Hotel occupancy rates for the year were at nearly 80 percent, with occupancy at 90 percent in the peak periods. The Department of Business, Economic Development & Tourism and the HTA’s Strategic

Planning and Accountability Committee began discussions on how best to deal with the supply issues of tourism development. Even if the stated strategy of the HTA is to promote growth in visitor expenditures rather than visitor arrivals, the committee recognized that Hawaii could not continue to market and push demand for Hawaii vacations without making sure that we have a good product to sell. DBEDT was asked to take the lead to conduct the study, which was part of the Executive FY2002 budget.

This issue is not new for Hawaii. In 1975, a steering committee appointed by the Governor produced a report "An Approach for Developing, Assessing, and Utilizing Carrying Capacity Concepts and Criteria for Growth Management." The report examined the issues that should be considered in such a study but did not attempt to conduct a carrying capacity study. Even at this time the emphasis was not on determining the maximum or optimum number of visitors but to develop a methodology and procedures "which will allow us to anticipate overload problems." The recommended approach was to "identify thresholds beyond which growth can be tolerated only if paired with major public investments."

The lawsuit by the Sierra Club to require an environmental impact statement for the State's marketing effort has further spurred interest in evaluating the impact of visitors on our environment, infrastructure, and our standard of living.

Study Area

The study will look at statewide issues and also focus on the four Hawaiian Islands, where the bulk of visitor activity occurs, Oahu, Hawaii, Maui, and Kauai. The two other populated islands -- Lanai and Molokai -- will be included to the degree that data permit.

Objectives

1. To examine sustainable tourism development in Hawaii based on various scenarios that consider the quality of life of residents and the quality of the visitor experience.
2. Effectively include input from residents through a public involvement and peer-review study component.
3. Define requirements, responses, and limiting factors for key natural resources and physical infrastructure.
4. Identify mitigating measures or technological changes that can be taken to avoid or negate the limiting factors.
5. Identify relationships that link the impact of visitors and residents on infrastructure, the environment and the economy, as well as inter-linkages between the infrastructure, the environment and the economy.
6. Develop an analytical tool for objective assessment and projection of the outcomes of different scenarios, including different levels of visitor growth and uses of alternative mitigating measures.

7. Develop a tool to conduct policy analysis and planning for sustainable tourism with particular emphasis on the role of economic planning.

Study Approach

1. Conduct a critical review of methods of approaching sustainable tourism, including carrying capacity analysis, limits of acceptable change, maximum acceptable risk, etc., and, where appropriate, suggestions for adaptations to the Hawaii case.
2. Conduct an inventory of selected facilities to establish baseline data.
3. Collect data. Data requirements include the historical condition of natural resources and the nature of risks facing them, especially those exacerbated by tourist numbers. Similarly, information on the changing nature of pollution, solid and toxic wastes, traffic congestion, and other environmental spillovers from economic activity will be required. The Hawaii State input-output table will capture the economic interactions among producers, households, and tourists. The responsiveness of labor migration, tourism flows, and other demand and supply elasticities are needed. Policy parameters, such as the taxation framework would be collected.
4. Develop a dynamic general equilibrium model of Hawaii. The model will link Hawaii's economy, infrastructure, and environment to determine appropriate policy responses. The model will integrate the social and scientific systems into a consistent framework to inform policy and planning for the State. It will also provide recommendations for specific policy measures given different assumptions of visitor and resident growth.
5. Rather than take existing policies and government expenditures as given, the study must represent appropriate policy responses to increased pressure from visitors and residents, including infrastructure — such as roads and airports, water treatment and sewage, waste management and recycling, fire prevention, park expansion and maintenance, and public utilities management. Other policy variables include zoning, building codes, tourist education, and the regulation and licensing of specific activities (e.g. hiking, biking, kayaking, etc.). Management strategies may also include restoration, (e.g. replanting and prevention, monitoring cargo and passenger arrivals, and preservation programs for reefs and forest habitats).
6. The study must also articulate the linkages and pathways between tourism and Hawaii's economy and environment. These include impacts on natural resource systems, such as watersheds and other water resources, forest and marine ecosystems, beaches and coral reefs, and on air, water, waste heat pollution, congestion, noise, and invasion and expansion of alien species.
7. The economy/environment model will encompass the environmental impacts of major concern. It must be dynamic in nature, in order to represent the evolution of stocks of capital, natural capital, population, and environmental quality. The

impact of tourism promotion activities on number of tourists will also be included.

8. The study will include analysis at the statewide level, as well as for the individual islands to the degree possible.
9. The simulations will provide key economic and environmental indicators for each case for a specific planning horizon, e.g. 10 to 30 years. Indicators will include number and destination of tourists, labor supply (wages, population), shadow prices of natural resources, other prices, demand for the services of natural resources, income distribution, and resident quality of life.
10. An assessment of infrastructure needs and policy responses to maintain the quality of life of residents and the quality of the visitor experience will be included.
11. Recommendations for specific policy reforms and changes in planning procedures will be included (e.g. land-use and zoning instruments, regulation, user-charges, hotel room tax, quarantine procedures, rapid-response capability for alien-species control, and other conservation policies).

IV STUDY ADMINISTRATION

The administration and management of the study will utilize a team approach. The Executive Oversight Committee will include Dr. Seiji Naya (Director, Department of Business, Economic Development & Tourism), Mr. David Blane (Director, Office of Planning), and Mr. Gary Baldwin (Chair, Hawaii Tourism Authority Strategic Planning and Accountability Committee). A Working Committee will be led by Dr. Pearl Imada Iboshi (DBEDT, Research and Economic Analysis Division), and include Ms. Mary Lou Kobayashi (Office of Planning), Ms. Caroline Yap (Hawaii Tourism Authority), Winfred Pong (Hawaii Tourism Authority) and Mr. Robert Shore (DBEDT, Research and Economic Analysis Division). In addition, other members with expertise in the various aspects of the study issues from DBEDT and related agencies will be included. An advisory committee comprised of state and local government officials from each county will be set up to provide support and advice to the working committee.

Tasks

The Working Committee will oversee the conduct of the study, the progress of contractors and provisions for public and technical coordination workshops, advisory groups as needed, ensure that the final carrying capacity analysis model meets the study requirements, and oversee the writing of the final report.

- Task 1. Conduct a baseline assessment of physical and natural infrastructure
- Task 2. Begin public information, modeling and scenario development, and data collection for the social category

- Task 3. Conduct Coordination Workshops
- Task 4. Coordinate public and agency input through public and technical workshops
- Task 5. Coordinate peer review process
- Task 6. Prepare Final Report

Background Infrastructure & Environmental Overview Assessment

The purpose of the Infrastructure Overview Assessment is to conduct an inventory of selected public and private infrastructure as well as environmental features to establish baseline data and to identify constraints and opportunities throughout the State to the year 2020. This study will provide information to feed into island models that link economic factors, infrastructure, and the environment.

1. The background assessment will provide the status of public and private infrastructure as well as environmental features that are impacted by visitors for the major inhabited Hawaiian Islands (Hawaii, Kauai, Lanai, Maui, Molokai, and Oahu). The analysis for each issue will go down to the county regional level, with particular emphasis on visitor-related areas. Data will be transferable to the State's geographic information system (GIS).

This study shall include a review and summary of the most current public and private documents available. Particular attention should be placed on individual county documents. The study should identify what information is unavailable that may require further study. No original research is anticipated as part of the Infrastructure Overview Assessment.

2. The analysis of public infrastructure shall include the current condition of infrastructure as it pertains to terrestrial water supply quality and quantity, sewage, storm water, solid waste disposal, road, airports, harbors, parks facilities, and police, fire, and emergency services as defined below.
 - a. Terrestrial water supply quality and quantity shall include: the present capacity, present usage; existing problems, issues, and opportunities; future and planned usage; future and planned requirements or changes; and anticipated costs for the future; and problems, issues, and opportunities associated with meeting such cost requirements. The analysis of both the current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.

- b. Sewage analysis shall include: the present capacity, present usage; existing problems, issues, and opportunities; future and planned usage; future and planned requirements or changes; and anticipated costs for the future; and problems, issues, and opportunities associated with meeting such cost requirements. The analysis of both the current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.
- c. Solid Waste Disposal analysis shall include: the present capacity, present usage; existing problems, issues, and opportunities; future and planned usage; future and planned requirements or changes; and anticipated costs for the future; and problems, issues, and opportunities associated with meeting such cost requirements. The analysis of both the current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.
- d. Storm water analysis shall include: the present capacity, present usage; existing problems, issues, and opportunities; future and planned usage; future and planned requirements or changes; and anticipated costs for the future; and problems, issues, and opportunities associated with meeting such cost requirements. The analysis of both the current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.
- e. Roads analysis shall include: the present capacity, present usage; existing problems, issues, and opportunities; future and planned usage; future and planned requirements or changes; and anticipated costs for the future; and problems, issues, and opportunities associated with meeting such cost requirements. The analysis of both the current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.
- f. Airports analysis shall include: the present capacity, present usage; existing problems, issues, and opportunities; future and planned usage; future and planned requirements or changes; and anticipated costs for the future; and problems, issues, and opportunities associated with meeting such cost requirements. The analysis of both the current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.
- g. Harbors analysis shall include: the present capacity, present usage; existing problems, issues, and opportunities; future and planned usage; future and

- planned requirements or changes; and anticipated costs for the future; and problems, issues, and opportunities associated with meeting such cost requirements. The analysis of both the current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.
- h. Parks facilities analysis shall include: the present capacity, present usage; existing problems, issues, and opportunities; future and planned usage; future and planned requirements or changes; and anticipated costs for the future; and problems, issues, and opportunities associated with meeting such cost requirements. The analysis of both the current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.
 - i. Police, fire and emergency services analysis shall include: the present capacity, present usage; existing problems, issues, and opportunities; future and planned usage; future and planned requirements or changes; and anticipated costs for the future; and problems, issues, and opportunities associated with meeting such cost requirements. The analysis of both the current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.
3. The analysis of private infrastructure shall include visitor accommodations (including hotels, timeshare units, and bed & breakfasts), private transportation (buses, trolleys, taxis), sewer systems, and energy systems as defined below:
 - a. Visitor Accommodation analysis shall include: the present capacity, present usage; average age of properties, the existing problems, limitations, and opportunities; future and planned usage; future and planned requirements or changes; and anticipated costs for the future. The analysis of both the current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.
 - b. Private Transportation analysis shall include: the present capacity, present usage; the existing problems, limitations, and opportunities; future and planned usage; future and planned requirements or changes; and anticipated costs for the future. The analysis of both the current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.

- c. Energy systems analysis shall include: the present capacity, present usage; the existing problems, limitations, and opportunities; future and planned usage; future and planned requirements or changes; and anticipated costs for the future. The analysis of both the current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.
 - d. Sewer systems analysis shall include: the present capacity, present usage; the existing problems, limitations, and opportunities; future and planned usage; future and planned requirements or changes; and anticipated costs for the future. The analysis of both the current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.
4. The analysis of environmental features shall include coastal water quality, marine ecosystems health, air quality, forests and green space, invasive species, beach erosion, and other natural and scenic resources:
- a. Coastal water quality analysis shall include: the present situation, existing problems, limitations, and opportunities, future and planned projects to address problems or limitations, and anticipated costs of those projects. The analysis of both the current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.
 - b. Marine ecosystems health analysis shall include: the present situation, existing problems, limitations, and opportunities, future and planned projects to address problems or limitations, and anticipated costs of those projects. The analysis of both the current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.
 - c. Forestry/Green Space analysis shall include: existing problems, limitations, and opportunities, future and planned projects to address problems or limitations, and anticipated costs of those projects. The analysis of both the current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.
 - d. Air quality analysis shall include: the present situation, existing problems, limitations, and opportunities, future and planned projects to address problems or limitations, and anticipated costs of those projects. The analysis of both the

current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.

- e. Beach erosion analysis shall include: existing problems, limitations, and opportunities, future and planned projects to address problems or limitations, and anticipated costs of those projects. The analysis of both the current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.
- f. Invasive species analysis shall include: the present situation, existing problems, limitations, and opportunities, future and planned projects to address problems or limitations, and anticipated costs of those projects. The analysis of both the current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.
- g. Other appropriate natural and scenic resources analysis shall include: existing problems, limitations, and opportunities, future and planned projects to address problems or limitations, and anticipated costs of those projects. The analysis of both the current and future situation shall highlight to the degree possible the visitor impact as compared to resident impact. All major assumptions (especially population, job, and visitor growth estimates) used to determine the future requirements should be specified.

Public Information and Cultural Impact Component

Public information will be a significant and integral part of the report. While the infrastructure and economic assessment components will be strictly science-driven, due to the widespread public, political, and business interest, a diligent effort will be made to provide a rigorous public information program. The primary objectives of the public information program are:

- Inform residents and stakeholders throughout the course of the study, and
- Obtain information and input from the public.

The purpose of the Public Input and Cultural Impact Component (“Public Input Component”) is to gather information from government agencies, policy makers, the business community, and the general public regarding actual and perceived impacts of the tourism industry on the State’s public and private infrastructure systems, environmental resources, and cultures. The Public Input study should utilize information being gathered in Part I, Background Infrastructure and Environmental Overview Assessment (“Infrastructure Assessment”) and provide useful information for Part II

Economic and Environmental Assessment Modeling Project (“Modeling Project”). The Public Input Component will be conducted concurrently with the Infrastructure Study and Modeling Study.

1. The effort will include an extensive public outreach process covering the major inhabited Hawaiian Islands (Hawaii, Kauai, Lanai, Maui, Molokai, and Oahu) that may include but not be limited to: public meetings, focus groups, web sites and surveys, newsletters, and media spots.
2. An extensive public outreach process will be conducted involving the contractors of the Part I Infrastructure Assessment and Part II Modeling Project. This should include developing a common understanding of the overall Sustainable Tourism Study and its components, development of concepts to convey to the public, and coordinating, scheduling and appearance of DBEDT and HTA representatives and contractors at public outreach events where appropriate.
3. The study will obtain public input on the impacts of visitor industry growth and development. The public will be provided the opportunity to comment on issues of concern to them including but not limited to socio-cultural, economic, environmental, infrastructure impacts. Efforts will also be made to obtain input on Native Hawaiian issues.

Economic and Environmental Modeling Project

This component of the study entails modeling the impact of changes in the level and composition of tourism on the environment, economy, and infrastructure of Hawaii. The simulations will provide key indicators for the next 20-30 years.

1. Ecosystems component — Stimulate the impact on relevant Hawaii ecosystems of changes in the level and composition of visitors and residents.
2. Macroeconomic component — Estimate the social costs and benefits of tourism, and evaluate associated environmental and infrastructure policies, using a dynamic computable general equilibrium model of Hawaii’s economy.
3. Demographic component — Model the population trends and demographic characteristics of Hawaii residents to capture the potential impacts on the standard of living from changes in tourism.
4. Land-use and infrastructure component — Construct a GIS model to estimate the potential for tourism development subject to various constraints including available land, land suitability, zoning, infrastructure requirements, and other factors.

The Modeling Project will integrate the social and scientific systems into a consistent framework to inform policy and planning for the State. Recommendations for specific

policy measures given different assumptions of visitor and resident growth will be developed.

V. TIMETABLE FOR STUDY

Timetable: Sustainable Tourism Study	
Solicit proposals for Baseline Infrastructure Study	September 2001 -- December 2001
Conduct baseline study	January 2002 -- June 2002
Solicit proposals for public input and economic/environmental modeling	February 2002
Conduct Public Information and Cultural Impact Component	April 2002 -- December 2003
Conduct modeling project	April 2002 -- December 2003
Integration of findings, development of recommendations and Completion of Study	December 2003