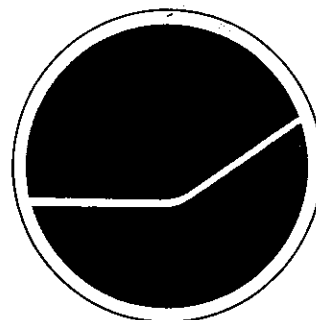


# HAWAII STATE AIRPORT SYSTEM PLAN

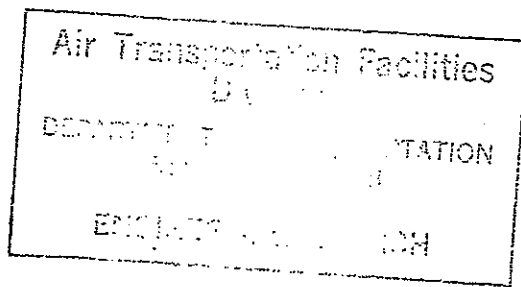
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
AIRPORTS DIVISION  
HONOLULU INTERNATIONAL AIRPORT  
HONOLULU, HAWAII 96819

## VOLUME I SUMMARY



AIRPORTS DIVISION  
DEPARTMENT OF TRANSPORTATION  
STATE OF HAWAII

3.013



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
AIRPORTS DIVISION  
HONOLULU INTERNATIONAL AIRPORT  
HONOLULU, HAWAII 96819

**VOLUME I**  
**SUMMARY REPORT**  
**HAWAII STATE AIRPORT SYSTEM PLAN**

Prepared by:  
Kentron Hawaii, Ltd.  
233 Keawe Street  
Honolulu, Hawaii 96813

The preparation of this document was financed in part through a Planning Grant from the Federal Aviation Administration as provided under Section 13 of the Airport and Airway Development Act of 1970. The contents of this report reflect the view of Kentron Hawaii, Ltd. who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this report by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the proposed development is environmentally acceptable in accordance with the Public Laws 91-190, 91-258, and/or 90-495.

Sponsored by:  
Airports Division  
State of Hawaii  
Department of Transportation  
Honolulu, Hawaii 96813

November 1976

## FOREWORD

Hawaii's State Airport System Plan (HASP) is a plan for developing and maintaining a system of airports that will meet the needs of the people of Hawaii for the next two decades. When approved, it will become a part of the State of Hawaii Transportation Plan where it is closely coordinated with state land and sea transportation planning.

The HASP also responds to Federal requirements. Under Section 12 of the Airport and Airway Development Act of 1970, as amended, the FAA is directed to prepare and publish the National Airport System Plan (NASP) for the development of public airports in the United States. In preparing the NASP, the FAA must consult with state agencies to insure that the NASP reflects planning conducted at state and local levels. The Hawaii State Airport System Plan thus facilitates development of the Pacific Region segment of the National Airport System Plan. Only developments at airports included in the NASP are eligible for Federal funding participation under the Airport Development Aid Program (ADAP).

The Hawaii State Airport System Plan has been prepared for the State Department of Transportation by Kentron Hawaii, Ltd., a consultant, under State Project Number G-24 and FAA Planning Grant Project Number S-15-0015-01. The Federal grant funds are made available for airport system planning as authorized by Section 13 of the Airport and Airway Development Act of 1970 as amended.

The HASP identifies aviation facilities required to meet state social, economic and environmental goals. It establishes the general location and characteristics of new airports and the nature of expansion of existing ones. It recommends timing, provides estimated costs of developments and suggests areas where policy decisions may be needed in order to optimize the system. The first five years or short-range needs are covered in detail to assist in generating the Multi-Year Program and Financial Plan in the state's budget cycle. The intermediate or mid-range (1982-1986) and long-range (1987-1996) periods are examined in less detail because many

of these requirements depend upon policy decision yet to be made and because needs in the more distant future cannot be as clearly seen.

This Summary Report gives an overview of the HASP and the most important factors leading to the selected airport system. It is intended for the concerned citizen who may not have time for, nor interest in, technical detail.

For those responsible for airport system development, and for others who need technical detail, Volume II, the Technical Supplement is recommended. It is available in limited numbers from the Airports Division, Department of Transportation, State of Hawaii, Honolulu International Airport, Honolulu, Hawaii 96819.

## CONTENTS OF THE PLAN

	<u>Page</u>
<u>SECTION I — AVIATION IN HAWAII TODAY</u>	4
<p>This section discusses the formation of today's airport system including current programs and goals, how it relates to the National Airport System, what some of the outside forces are that shape our state system including the legal controls. It then describes today's system.</p>	
<u>SECTION II — PLANNING FOR THE FUTURE</u>	17
<p>The future social and economic needs of Hawaii and how the airport system can meet these needs are discussed. Data resources and assumptions that must be made for sensible planning are discussed; forecasts of air travel demand are summarized along with airport selection criteria. Alternative approaches to future system development are then discussed.</p>	
<u>SECTION III — AIRPORTS FOR TOMORROW</u>	36
<p>This section presents the recommended system plan including locations of airports, the types needed, their approximate costs, priorities and how they might be funded. It emphasizes that drastic changes in the present system are unwarranted, and largely unwanted. It provides, however, some suggestions for several areas of growth, should they be desired by the people of Hawaii as future social and economic changes occur.</p>	
<u>SECTION IV — COORDINATION WITH OTHER PLANS</u>	54
<p>The other plans with which the airport system planning must mesh, some of which are now being updated, are outlined briefly together with their status. Agencies which provided inputs and data for the HASP and otherwise coordinated its formation are also presented.</p>	
<u>SECTION V — AVIATION'S PLACE IN HAWAII TOMORROW</u>	57
<p>This short section presents some of the most important factors which will concern airport development in future planning and how they may affect the system in the continual planning process.</p>	
<u>SECTION VI — RECOMMENDED ACTIONS</u>	60
<p>This final section summarizes conveniently the actions recommended as a result of this study. It identifies some pertinent authority, suggesting responsible agencies and desirable timing for implementing the recommendations should they be adopted.</p>	

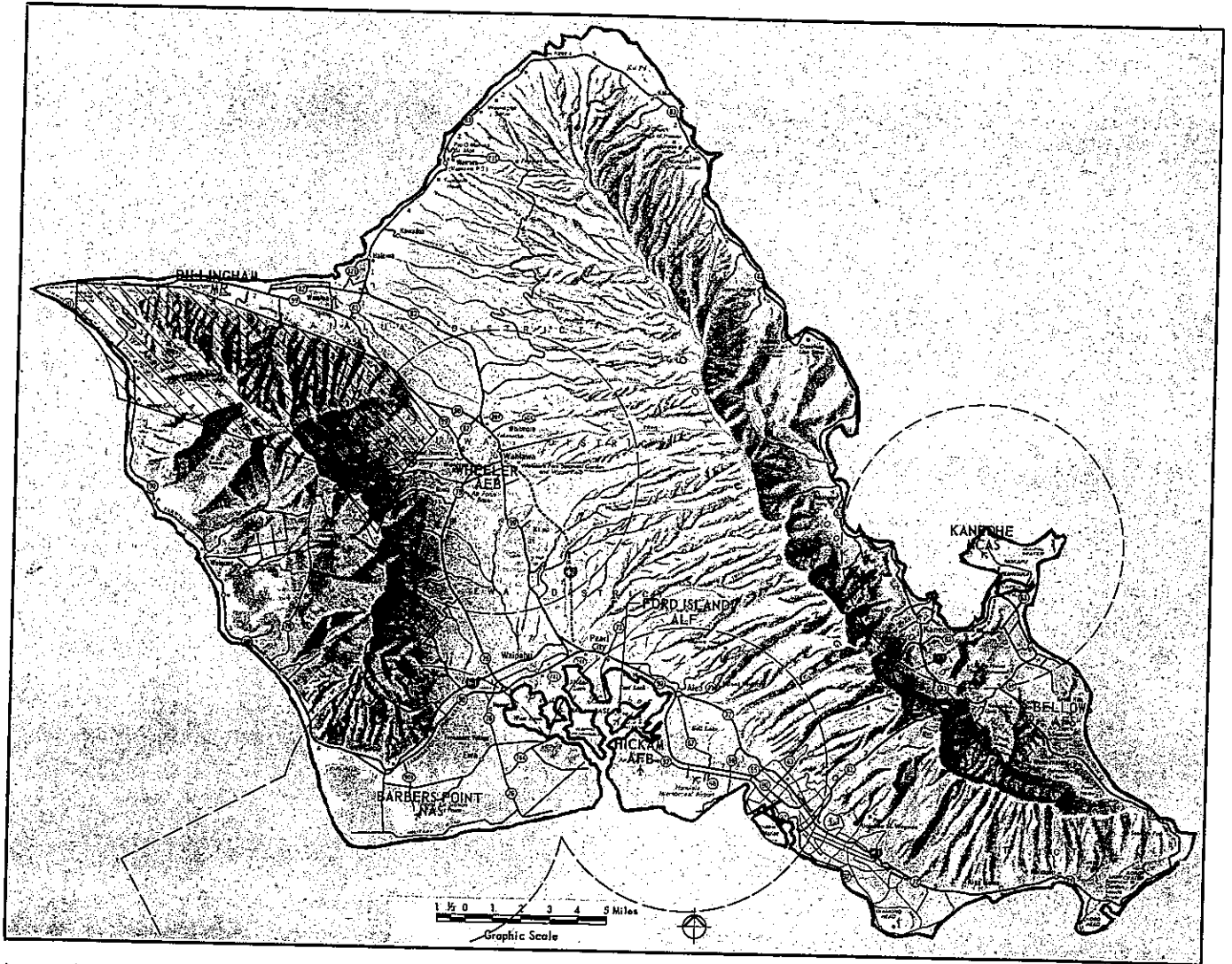
## SECTION I—AVIATION IN HAWAII TODAY

### FORCES SHAPING HAWAII'S AIRPORT SYSTEM

Four major factors have influenced formation of Hawaii's airport system today — the nature of the land, military needs, tourism and remote location.

- First, nature has strongly influenced the need for airports, their locations and their numbers. The need is great because rough seas discourage inter-island passenger travel by ship, leaving air as the only alternative. Suitable locations are limited because most of Hawaii's land is mountainous and rugged. Airports are few because the islands are small and each can be well served by a single major airport in most cases.
- Second, the military led aviation development in early years and as a result military requirements have absorbed most of the land and airspace suitable for air operations (Figure 1). Moreover, as long as Hawaii remains the chief U.S. military base in the Pacific, change is unlikely.
- Third, tourism, as the most important single economic force in the State, largely establishes air travel demands which influence both the size and to some extent the location of airports.
- Finally, as a remote island State, Hawaii's border communities cannot make use of airports in adjoining states (Figure 2); therefore, her airport system must independently meet all air transportation needs of the people, and unique relationships are necessary between land, sea and air transportation modes

A more detailed assessment of the unusual combination of forces shaping Hawaii's airport system and their specific impacts are shown in Table 1. The situation is unlike that in any other state.



Legend:



Air Traffic Areas and Control Zones



Restricted Area

Figure 1  
 MILITARY AIR FACILITIES  
 AND AIRSPACE ON OAHU

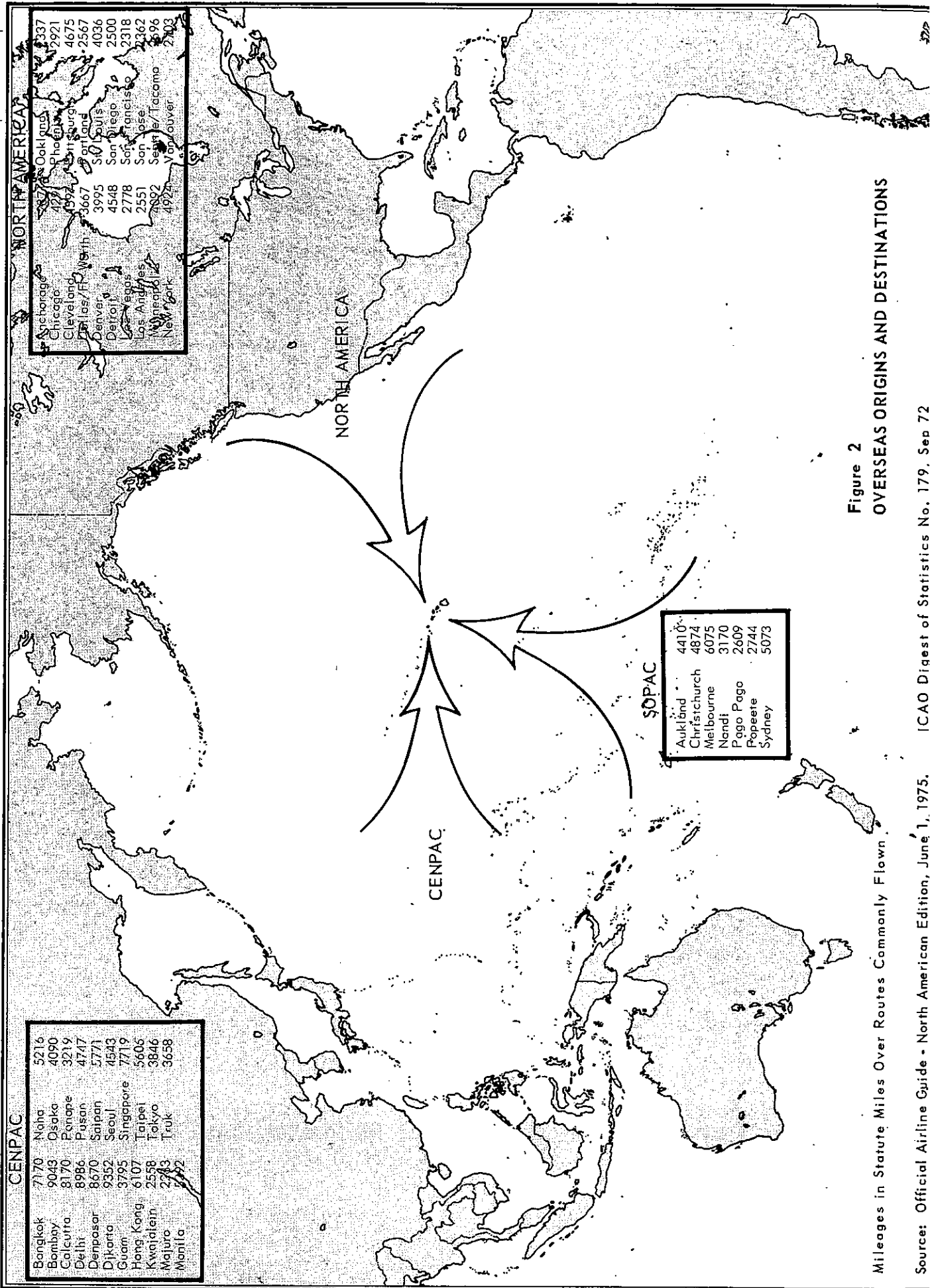


Figure 2  
OVERSEAS ORIGINS AND DESTINATIONS



Table 1. FORCES SHAPING HAWAII'S AIRPORT SYSTEM

	THE FORCES	THEIR RESULT	HOW THEY AFFECT THE AIRPORT SYSTEM
NATURAL	<p>Rugged topography</p> <p>Rough ocean separates population</p> <p>Good weather prevails</p> <p>"Mid-Pacific" location</p> <p>Natural environmental beauty</p> <p>Small land areas</p>	<p>Competition for flat coastal lands</p> <p>Surface travel slow and often unpleasant</p> <p>Flying safe and unhindered</p> <p>Airports in adjacent states do not serve Hawaii's people</p> <p>Visitors are attracted by the natural environment</p> <p>Short distances to airports on each island</p>	<p>Few airport sites are available</p> <p>Air is primary passenger transportation mode</p> <p>Frequent, reliable air schedules can be maintained</p> <p>Strong net of feeder airports for remote communities</p> <p>Desirable to hold airports to minimum to protect environment</p> <p>Few airports are required to serve the people</p>
SOCIO-ECONOMIC	<p>Population massed near Honolulu and county seats</p> <p>Most consumer goods are imported</p> <p>Tourism and services to federal government dominate economy</p> <p>Cost of living in Hawaii outweighs prevailing high family income levels</p> <p>Waikiki and Honolulu are most frequent visitor destinations</p> <p>Most major military facilities are near Honolulu</p> <p>Honolulu is state's social, governmental and business capital</p> <p>Honolulu is population center for the state</p>	<p>Well placed air carrier airports serve all major population centers</p> <p>Air cargo flow tends to be unbalanced</p> <p>They must be well served to assure healthy state economy</p> <p>Resident discretionary spending is minimal</p> <p>Oahu receives greatest portion of visitor traffic</p> <p>Oahu receives greatest portion of military passenger traffic and much land is devoted to military use</p> <p>Resident travel converges on Oahu</p> <p>Urban land requirements are high</p>	<p>Growth of existing airports preferable to establishment of new ones</p> <p>Cargo operations largely satisfied by passenger carriers</p> <p>Airport system shaped to respond in large part to tourism and military needs</p> <p>Resident air travel somewhat curtailed</p> <p>Oahu has the greatest air traffic demand and least room for airport development of the islands in the state</p>
TECHNOLOGICAL	<p>Large overseas aircraft require large passenger loads to be profitable</p> <p>Airports capable of supporting overseas flights require more sophisticated facilities</p> <p>Overseas flights need an alternate airport in case destination airports are unusable</p>	<p>Overseas carriers could not afford regular schedules to Neighbor Islands</p> <p>Overseas airports are more expensive to build, maintain and operate</p> <p>One Neighbor Island overseas airport can be justified on an operational basis</p>	<p>Additional overseas airports are difficult to justify</p> <p>Additional overseas airports would increase cost of developing, maintaining and operating the airport system</p> <p>General Lyman Field was developed to provide adequate capability for large overseas aircraft</p>

Because over 99 percent of all travel to the State and between the islands is by air, Hawaii has today, for its size, one of the finest air transportation systems in the United States. Overseas carriers enter the State at two locations which also serve as inter-island air terminals. Each inhabited island except Niihau, which is being preserved in its near natural state as a Hawaiian cultural sanctuary, is served by certificated carriers. Each major population center has an air carrier airport nearby. Commuter airlines serve the more isolated urban and tourist complexes and increase the frequency of service at major airports. As a result air carrier service is readily accessible to almost everyone in the State.

#### **CURRENT PROGRAMS AND GOALS**

Current airport development programs give priority to upgrading the airports in order of their importance to the people of Hawaii and the Nation. Emphasis is on increased safety and service. Over the past ten years, the visitor industry grew so rapidly that steady expansion and improvement of airports were necessary. The Department of Transportation established a goal for upgrading the entire system beginning with Honolulu and Hilo (General Lyman) which as overseas terminals are most critical to the State. Priorities were then given to Kahului, which is the second busiest civil airport in the State, and to building a new airport, Ke-ahole, to support the rapid urban and resort growth on the Kona Coast of the Big Island - Hawaii.

Next major airport developments are scheduled for Lihue and Molokai, both of which currently have important operational limitations for jet carriers. Plans for an additional runway at Lihue are well along, and a new or realigned runway is being studied for Molokai. These developments will improve both airports by reducing environmental disturbances and permitting installation of precision approach equipment to assist pilots in landing aircraft.

#### **LEGAL CONTROLS AND IMPLICATIONS**

The State Department of Transportation is responsible for development and adminis-

tration of the state airport system. The statutes and session laws provide the Department of Transportation ample authority for carrying out these responsibilities, but there is increasing complexity in coordinating airport activities with other state and federal agencies.

The most challenging problems center today on environmental issues which are complicating airport development and operation worldwide. On the mainland United States a typical case is the supersonic transport controversy in which a Federal Aviation Administration (FAA) decision for a six-month trial of supersonic aircraft operations is challenged by local authorities at Kennedy and Dulles Airports. In Hawaii, the State Department of Transportation, the Office of Environmental Quality Control, the Federal Aviation Administration, the Land Use Commission, the system users and the local communities all become involved in airport development and expansion decisions. Airport development lead times therefore become very long and it is more important than ever before that:

- Future airport needs be identified as soon as possible
- Sites be selected and set aside early
- Appropriate controls be established to preserve these future airport sites until they are needed
- Community planners be aware of and consider airport impacts on community planning.

These steps will help assure that the future transportation needs of the people of Hawaii can be met without community crises and without destroying the fragile environment upon which Hawaii's lifestyle and economy depend.

This plan, therefore, identifies locations where airports will someday be required even though they are not needed during this 20-year planning period. Property should be set aside for these sites now, so that they can be considered in county and community development plans. In this way, the few future airports which may be required will fit into the community rather than being imposed on it, and many objectionable environmental effects can be avoided.

The plan also recognizes that airports can be an important factor in encouraging community development. On the Island of Maui, the Kaanapali Airport has served a unique role in the growth of one of the state's most important resort areas by permitting direct flights to the destination area. The recently commissioned community airport at Princeville on the Island of Kauai, well buffered from noise-sensitive areas, is a similar step to encourage community growth. Provisions for select private developments of this type under careful control are an important option within this plan.

The Hawaii State Airport System Plan first addresses the unique needs and desires of the people of this state — then the requirements of the National Airport System Plan. In this respect, recommended airports may not all meet basic FAA criteria for inclusion in the National Airport System Plan, and thus would not be eligible for Federal funding. Recognizing that transportation needs of all states are not the same and cannot be conformed to an inflexible system, the FAA will accept airports for the National Airport System Plan which do not meet basic criteria provided they are justified separately. This may be necessary in the future for one or more of Hawaii's airports.

## **THE STATE AIRPORT SYSTEM 1975**

### **Airport Locations**

Under the influence of the factors shown in Table 1, Hawaii's airport system consists of 11 public airports, three airports operated with the military (which are called "joint use") and three significant private airports, one of which is just becoming operational. In addition, there are five military airfields which do not contribute significantly to state transportation, but strongly influence the location and activity of the public and joint-use facilities because of conflicting land and airspace use requirements. A number of private airstrips used primarily by the plantations neither contribute to nor disturb the state system. In most cases, these agricultural airstrips are not suitable for routine public use.

One of the objectives of the National Airport System is to provide communities having a reasonable demand for air transportation with reasonable access to the air transportation system. Reasonable access is said to exist when there is a NASP airport within 30 minutes surface travel from the heart of a community's business district. In Hawaii where air is the chief mode of transportation between islands, every community has a need for air transportation. Such access is now provided for almost all communities of any size. A notable exception to this is the Island of Oahu where a mass transit system is planned and where there is strong opposition to additional airport development.

The locations of Hawaii's most important airports are shown in Figure 3. The airports are well located convenient to the centers of population and are served by good roads. The major airports are also close to Hawaii's most important harbor facilities and are therefore closely integrated into the statewide multi-modal transportation network.

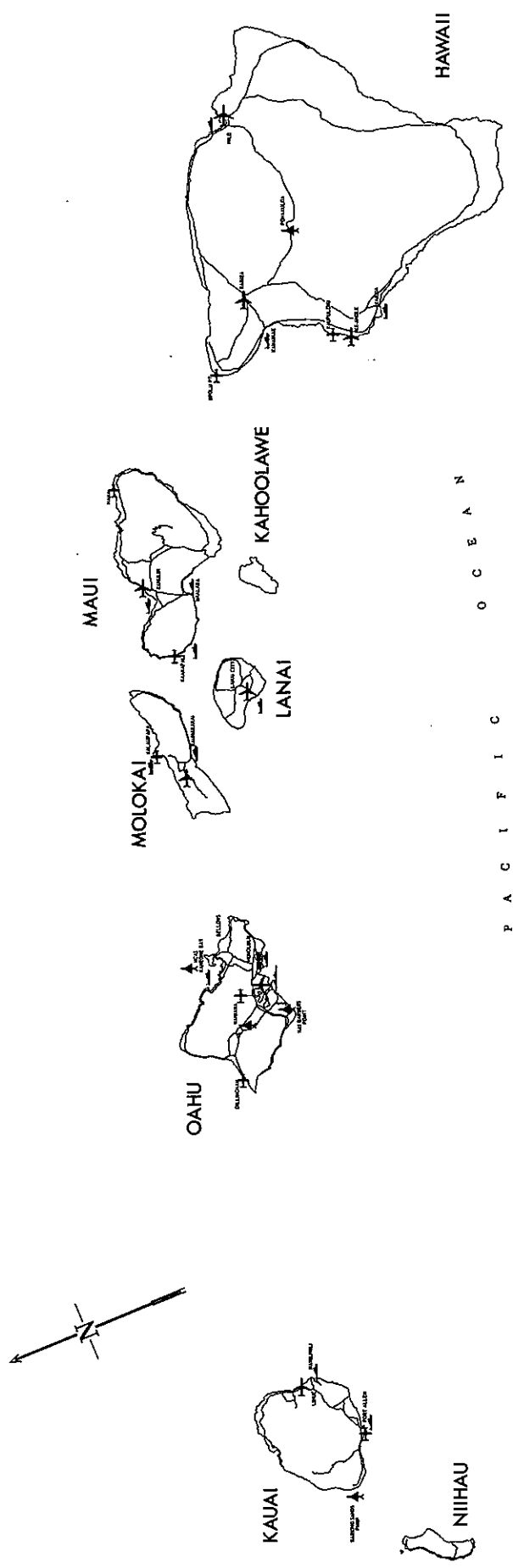
#### **Airport Facilities**

Two kinds of facilities are important at airports. The "airside" facilities are generally operational in nature and are needed to move aircraft safely and rapidly on the ground and in the air. The "landside" facilities are concerned mainly with moving the passengers from their aircraft into the surface transportation system to reach homes, hotels and business places. Some of the more important facilities available at each airport are shown in Table 2.



*Hawaii's airports  
convenient to cities  
and harbors . . . .*

*Kahului, Maui, its  
airport and harbor*



LEGEND:








-  Overseas Airport
-  Inter-Island Airport
-  Military Airbase
-  General Aviation/Feeder Airport
-  Military Naval Base
-  Commercial Harbor
-  Helipad

Figure 3  
STATE OF HAWAII  
TRANSPORTATION FACILITIES

Table 2. SUMMARY OF AIRPORT CHARACTERISTICS

AIRPORT AND LOCATION	OPERATIONAL FACILITIES AND CAPABILITIES										AIRPORT SERVICES					USERS			DEMAND DATA		CLASSIFICATION AND PLANS													
	ELEVATION (FEET)	RUNWAY (FEET)	NAVIGATION AIDS	TRAFFIC CONTROL	APPROACH AIDS	INSTRUMENT APPROACH	BEACON OBSTRUCTION LIGHTS	SIGNAL LIGHTS	WIND INDICATOR	AIRPORT MARKING	WIND VELOCITY	PASSENGER TERMINAL (NO FT)	BOARDING GATES	CARGO AREA (NO FT)	FUEL	MAINTENANCE	APRON AND HAULAGE	PARKING	MEALS	TRANSPORTATION	INTERNATIONAL AND OVERSEAS	INTERLAND	2ND LEVEL	COMPUTER	2ND LEVEL	GENERAL AVIATION	MILITARY	PRACTICAL ANNUAL CAPACITY (THOUS)	FT 75 OPERATIONS ANNUAL (THOUS)	PASSENGERS ANNUAL (THOUS)	BASED GENERAL AVIATION AIRCRAFT	LAYOUT	MASTER PLAN	FUNCTIONAL CODE
HONOLULU INTERNATIONAL AIRPORT HONOLULU, HAWAII (SEE NOTE)	13	12,000 X 200 4,500 X 150 3,200 X 150 3,200 X 150	ILS VORTAC VOR DF	ATCT AIR	WIND RAIL	YES YES	IRL/YES YES (L)	YES (L)	YES (L)	YES (L)	YES/YES	0	61,000	YES	YES	PAVED BITUM	3,500	YES	YES	YES	X	X	X	X	X	X	24	304	10,478	121	X	X	J	P2
GENERAL LYNN AIRPORT HONOLULU, HAWAII	27	1,800 X 150 5,200 X 150	ILS VORTAC	ATCT	WIND RAIL	YES/YES	IRL/YES YES (L)	YES (L)	YES (L)	YES/YES	48,000	7	20,000	YES	YES	PAVED BITUM	710	YES	YES	YES	0	X	X	X	X	146	47	1,327	17	X	X	N	S1	
KANOE AIRPORT KANOE, HAWAII	57	4,700 X 150 4,700 X 150	ILS VORTAC RBN DF	ATCT AIR	WIND RAIL	YES/YES	IRL/YES YES (L)	YES (L)	YES (L)	YES/YES	40,000	8	12,000	YES	YES	PAVED BITUM	814	YES	YES	YES	X	X	X	X	X	100	77	2,000	18	X	X	U	P3	
LIHUA AIRPORT LIHUA, HAWAII	148	4,800 X 150 5,000 X 150	VORTAC DF	ATCT	WIND RAIL	YES/YES	IRL/YES YES (L)	YES (L)	YES (L)	YES/YES	37,000	6	3,400	YES	YES	PAVED BITUM	542	YES	YES	YES	X	X	X	X	X	116	54	1,079	11	X	X	M	S1	
KEANOE AIRPORT KEANOE, HAWAII	41	4,500 X 150 4,500 X 150	VORTAC ILS	ATCT	WIND RAIL	YES/YES	IRL/YES YES (L)	YES (L)	YES (L)	YES/YES	110,000	10	3,300	YES	NO	PAVED BITUM	384	SHADOWS	YES	YES	X	X	X	X	X	116	40	809	15	X	X	S	S1	
MOLOKAI AIRPORT MOLOKAI, HAWAII	65	4,700 X 150 3,111 X 100	VORTAC DF	NO	WIND RAIL	YES/YES	IRL/NO YES (L)	YES (L)	YES (L)	YES/YES	13,000	3	1,000	NO	NO	PAVED BITUM	75	SHADOWS	YES	YES	X	X	X	X	X	70	31	131	6	X	X	M	S1	
KAUNAOA AIRPORT KAUNAOA, HAWAII	2,471	5,300 X 100 5,000 X 150	VOR VORTAC	NO	WIND RAIL	YES/YES	IRL/NO YES (L)	YES (L)	YES (L)	YES/YES	11,000	2	1,000	NO	NO	PAVED BITUM	78	NO	YES	YES	X	X	X	X	(RIGHTS)	50	1	14	1	X	X	M	P3	
LAHAI AIRPORT LAHAI, HAWAII	1,310	5,000 X 150	VORTAC	NO	WIND RAIL	YES/YES	IRL/NO YES (L)	YES (L)	YES (L)	YES/YES	3,400	2	1,000	NO	NO	PAVED BITUM	79	NO	YES	YES	X	X	X	X	(RIGHTS)	50	15	41	1	X	X	N	P3	
KALAPUAPA AIRPORT KALAPUAPA, HAWAII	77	3,400 X 100	NO	NO	WIND RAIL	YES/NO	IRL/NO YES (L)	YES (L)	YES (L)	YES/NO	2,100	2	1,400	NO	NO	PAVED BITUM	22	NO	NO	NO	X	X	X	X	(RIGHTS)	50	8	14	1	X	X	N	P3	
KAUNAOA AIRPORT KAUNAOA, HAWAII	24	2,740 X 150	NO	NO	WIND RAIL	YES/NO	IRL/NO YES (L)	YES (L)	YES (L)	YES/NO	1,300	1	NO	NO	NO	TURF	11	NO	NO	NO	X	X	X	X	(RIGHTS)	50	4	4	6	X	X	M	P3	
DIKEA AIRPORT DIKEA, HAWAII	14	3,300 X 75	VORTAC	NO	WIND RAIL	YES/NO	IRL/YES YES (L)	YES (L)	YES (L)	YES/NO	219	1	NO	NO	NO	PAVED BITUM	UNIMPROVED	NO	NO	NO	X	X	X	X	(RIGHTS)	50	2	2	0	X	X	N	P3	
PORT ALLEN AIRPORT PORT ALLEN, HAWAII	24	2,300 X 40	VOR	NO	WIND RAIL	NO	NO	YES	YES	YES/NO	600	0	NO	NO	NO	PAVED BITUM	UNIMPROVED	NO	NO	NO	X	X	X	X	(RIGHTS)	50	2	105	6	X	X	N	P1	
OLEIYAN AIRPORT OLEIYAN, HAWAII	15	3,000 X 100	NO	UNCOM	NO	NO	NO	YES	YES	YES/NO	1,200	10	NO	YES	NO	PAVED BITUM	NO	NO	NO	X	X	X	X	(RIGHTS)	315	132	105	18	NO	NO	N.A.	N.A.		
FRED ISLAND AIRPORT FRED ISLAND, HAWAII	18	4,000 X 100	NO	UNCOM	NO	NO	NO	YES	YES	YES/NO	N.A.	N.A.	N.A.	NO	NO	N.A.	NO	NO	NO	X	X	X	X	(RIGHTS)	315	143	105	6	NO	NO	N.A.	N.A.		

LEGEND:  
 ILS INSTRUMENT LANDING SYSTEM  
 VOR VERY HIGH FREQUENCY OMNI RANGE  
 TACAN TACTICAL AIR NAVIGATION SYSTEM  
 VORTAC VOR AND TACAN (SEE ABOVE)  
 RBN NON-DIRECTIONAL RADIO BEACON  
 DF DIRECTIONAL FINDING  
 RAIL RUNWAY END IDENTIFIER LIGHTS  
 BEIL BEACON END IDENTIFIER LIGHTS  
 HALLS HAZARD LIGHT SYSTEM  
 HALLS ALIGNMENT INDICATOR LIGHTS  
 HALLS WITH RAIL  
 HIGH INTENSITY RUNWAY LIGHTS  
 MEDIUM INTENSITY RUNWAY LIGHTS  
 T TUNNELS  
 C CONVENTIONAL HANGARS  
 ATCT AIR TRAFFIC CONTROL TOWER  
 UNCOM UNIMPROVED  
 (RIGHTS) MILITARY HALL JAWING RIGHTS BUT NO SIGNIFICANT MILITARY TRAFFIC PLANNED FOR INTERNATIONAL USE

NOTE: HONOLULU INTERNATIONAL AIRPORT  
 AIR PASSENGER TOTAL  
 12,000 X 200 FEET

NOTE: HONOLULU INTERNATIONAL AIRPORT  
 AIR PASSENGER TOTAL  
 12,000 X 200 FEET

NOTE: HONOLULU INTERNATIONAL AIRPORT  
 AIR PASSENGER TOTAL  
 12,000 X 200 FEET

NOTE: HONOLULU INTERNATIONAL AIRPORT  
 AIR PASSENGER TOTAL  
 12,000 X 200 FEET

NOTE: HONOLULU INTERNATIONAL AIRPORT  
 AIR PASSENGER TOTAL  
 12,000 X 200 FEET

DATA SOURCES:  
 (1) STATE OF HAWAII AIRPORT DIRECTORY AND FLIGHT SAFETY MANUAL (RTS)  
 (2) 500 FLIGHT INFORMATION PUBLICATION (INTERNALLY 19 JUNE 71)  
 (3) AIRPORT DIRECTORY (INTERNALLY 19 JUNE 71)  
 (4) FAA MASTER AIRPORT RECORDS, FORM 5000, 1970  
 (5) AIRPORT DATA SUMMARY, F.A.A. 1972  
 (6) SURVEY OF DISTRICT AIRPORT SUPERINTENDENTS



## SECTION II—PLANNING FOR THE FUTURE

The planning sequence involved first a review of all data resources. Based upon analyses of the data available, assumptions were then made relative to future forces acting on aviation. Criteria for selection of airports to meet future requirements were established with attention to FAA criteria developed for the National Airport System Plan. Forecasts of air transportation demand were then made and special considerations affecting Hawaii's airport needs were evaluated. Lastly, broad alternative system approaches were assessed and a preferred approach selected.

### DATA RESOURCES

Hawaii's social and economic trends and estimates for the future are well documented by the State Departments of Planning and Economic Development and of Transportation. These resources are supplemented in many areas by private studies, particularly those of Hawaii's banking industry. Airport technical requirements are established in detail by the FAA and their priorities are often influenced by the Air Transport Association. These resources provided the framework for estimates of future air transportation needs. Because the preponderance of Hawaii's air passengers are tourists, an additional very important resource was the wealth of analytical data provided by the Hawaii Visitors Bureau.

Much of the future growth of Hawaii will be directed by the state and county general plans. These plans were therefore important resource documents, but because many are in some stage of revision it was necessary to supplement them by discussions with government officials.

In four important areas, there were no satisfactory sources of information. Surveys were therefore conducted to:

- Determine air travelers' views of Hawaii's airport system
- Find out what aircraft operators' views and needs are

- See how the system was meeting the needs of individual businesses
- Establish, where historical data were not available, patterns of system use by aircraft operators.

Conclusions drawn from survey responses and their meaning in terms of airport needs are provided in Table 3.

Table 3. SUMMARY OF SURVEY RESULTS

SURVEY	CONCLUSION	ESTIMATED EFFECT ON STATE AVIATION
Island Business	<p>More firms foresee expansion to Maui than to any other island.</p> <p>New businesses planned for Molokai represent a greater percentage increase in activity than can be foreseen for other islands.</p> <p>Less new business activity is planned for Kauai than the other islands.</p> <p>Rates are the most significant factors in selection of the mode of cargo transportation by most companies, followed by in-transit times.</p> <p>Airports are conveniently located in terms of time and distance to most businesses on each island (within 10 miles and 30 minutes driving).</p> <p>Most firms do not foresee dramatic increases in business for the next five years.</p> <p>Most businesses planning new locations on the neighbor islands have sales between \$1M and \$10M annually.</p>	<p>Kahului will continue to experience a higher growth rate than the other major airports.</p> <p>Molokai passenger and cargo traffic will rise as the economic recession subsides.</p> <p>The rapid growth of passenger traffic to Lihue will soften somewhat.</p> <p>An inter-island ferry system providing short transit times and frequent schedules would probably reduce inter-island air cargo tonnages unless air cargo rates can be held down.</p> <p>No need for additional airports as indicated at this time.</p> <p>Slower economic growth is probable with accompanying slower growth of air activity.</p> <p>New investments in neighbor island growth backed by moderate size firms will have stabilizing effect on economy of the islands.</p>
General Aviation Pilot	<p>Rising fuel prices have had an adverse effect on general aviation flying.</p> <p>Most general aviation flying is business-related.</p> <p>There is little interest in Port Allen or Upolu as destination areas.</p> <p>Hanalei District (Kauai), Ka'u District (Hawaii) and the Puna District (Hawaii) all were of more interest as destinations than some areas served by airports.</p> <p>Imposition of general aviation landing fees at state airports would reduce general aviation activity measurably for minimum fees and substantially for fees over \$5.</p> <p>A significant number of pilots now not owning aircraft expect to buy one within five years. The aircraft planned are generally four-passenger, single-engine, conventionally powered and under 5000 pounds gross weight.</p> <p>98% of the responding pilots live within 60 minutes driving time of an airport - and most within 30 minutes.</p> <p>Pilots' desires in airport facilities were strongly aviation-oriented with few interested in frills.</p>	<p>Forecast fuel price increases will result in further curtailments of pleasure flying.</p> <p>Will assure that substantial flying continues even with increasing fuel costs.</p> <p>Should be given low priority but retained for emergency use and community air taxi service.</p> <p>Possible candidates for new airport sites should the stimulation of general aviation be desired.</p> <p>General reluctance for pilots to support airport system directly.</p> <p>General aviation traffic will increase, but with no substantial change in the general configuration and type of equipment now used in the islands.</p> <p>Airports generally convenient.</p> <p>General aviation airports should be oriented to provide the basic flying needs. Minimum money, if any, should be spent on non-necessities. Fuel, tie-downs, maintenance and flight planning facilities are primary requirements.</p>
Inter-Island Air Travel	<p>Visitors constitute 67% of the inter-island passenger traffic, military and their dependents about 2%, civilian residents make up the remainder.</p> <p>Baggage handling is the area of concern most often believed to require improvement.</p> <p>Only 2% of the resident respondents were interested in an airport closer to their homes, and only 2% were interested in airports at more locations.</p>	<p>Visitor traffic is the principal demand generator for the airport system.</p> <p>Terminal design should emphasize improvement of the baggage handling function.</p> <p>Reflects at least an apathy toward new airports and possibly antipathy. Indicates general satisfaction with convenience of air transportation.</p>

Collectively, these data resources provided probably the most detailed and up-to-date evaluation of airport system requirements ever made by the state.

### **PLANNING ASSUMPTIONS**

A number of assumptions were necessary before a sensible system plan could be written. Such things as the effects of energy availability, worldwide economic recession and recovery, airline regulatory practices, economic growth, attractiveness of Hawaii in relation to other tourist destination areas, the amount of federal spending, population growth, technological development and the capability to achieve Hawaii's growth objectives all influence the type, number and location of airports required for the future.

Assumptions made and their estimated impact on airport system planning are shown in Table 4.

### **CRITERIA USED FOR AIRPORT SELECTION**

Because federal funding for state airports is made available to achieve the National Airport System Plan (NASP) objectives, it is important that Hawaii's airport planning be included in the NASP. For this reason, National Airport System criteria contained in FAA Order 5090.3 dated August of 1971 were followed as fundamental guidelines in developing Hawaii's plan.

NASP criteria are intended to assure the public of reasonable access to air transportation without developing airports that are unnecessary or overly elaborate. In general the FAA favors highly active airports at a minimum number of locations because of increased economy of operation and efficiency in use of airspace; however, they specifically recognize and provide for the unique nature of states such as Alaska and Hawaii where air is the principal mode of transportation and exceptions may be required.

Table 4. IMPACT OF FACTORS AFFECTING AERONAUTICAL ACTIVITY

AREA OF IMPACT	SUMMARY OF SITUATION	ANTICIPATED RESULT	EFFECT ON STATE AVIATION
Economic	New inflation cycle	No adverse impact on tourism except for fixed income retirees	Rising wages keep pace with rising prices - tourism stays healthy - decrease in fixed income retiree travel.
	Slower economic growth worldwide	Slowed growth of tourism	Tourism continues to grow, but at slower rate. Air passenger growth rate slows.
	Hawaii - Gateway to Pacific	More influential economic role	Hawaiian capital and business management becomes more influential in Pacific basin. Boost for Hawaiian economy - positive influence on Hawaiian living standards. Increase in local air passenger and cargo traffic.
	Hawaii's economy will follow "slowed growth" trend	State economy remains healthy but grows at slower rate	Provides a general stabilizing effect on economy. Fewer "fast bucks", more effort spent on "how to improve Hawaii as a place to live". Enhances probability that air or water ferry systems will be successfully implemented.
Population Trends	Population growth will continue to slow in the United States	Generally smaller families in the U.S.	Long-term moderation of visitor industry growth, partly offset by more freedom and discretionary income.
	Earlier retirements will continue	More leisure time for travel	More recent retirees traveling - possibly spending less per capita. Positive impact on tour group and economy class travel.
	Geographic center of population in U.S. is moving westward - 1/3 of Hawaii visitors come from west U.S. states	Western U.S. tourist market stays strong	More traffic and possibly new direct routes from western U.S.
	Growth of Hawaii's population will be slowed to near 2% annual increase	Improved employment rate and better wages as job market improves	Better standard of living for Hawaiian people. More resident air travel.
Fuel Resources	Higher rate of population growth will be sought for neighbor islands than for Oahu	Some success as new industrial and agricultural bases are achieved and tourist facilities are completed	Positive effect on inter-island air freight and passenger traffic.
	Airlines will pass fuel price increases to public	Air fares will increase	Increasing auto fuel costs also impact consumer to at least some extent as air fare increases. Air vacations should remain competitive. No significant adverse effect.
	Administrative controls of petroleum resources are possible during the period	Government will support healthy aviation industry	Fuel allocations or administrative controls applied to air carriers will not constrain continued operations and reasonable growth. Management of fuel programs by carriers may spell the difference between profit and loss.
Carrier Competition	Rising fuel costs will impact general aviation activity more than air carrier activity	Some pleasure flyers will curtail their flying. Business aviation will not be affected. Flight instruction costs will rise. Possible emergence of "Volksplane"	General aviation growth will slow somewhat. Facilities may not be required until later in the planning periods.
	New international routes	Opens new tourist markets	Diversification in tourist market will generally strengthen the industry minimizing the effect of localized national troubles. Air traffic will grow on more stable base.
	New direct routes from mid-west U.S.	Improves ease of getting to Hawaii	Generally broadens air passenger base and strengthens market.

Table 4. (Continuation)

AREA OF IMPACT	SUMMARY OF SITUATION	ANTICIPATED RESULT	EFFECT ON STATE AVIATION
Carrier Competition	<p>Hawaii will remain a preferred destination area</p> <p>Airline regulation will be eased</p> <p>Supersonic transports will serve Hawaii by early 1980s</p>	<p>Will attract adequate air service</p> <p>More competition for preferred routes</p> <p>Some domestic carriers will lose passengers; new markets will open</p>	<p>The tourist market will not suffer from insufficient passenger space. Inter-island traffic will remain strong.</p> <p>Hawaii travelers will be assured of competitive air fares.</p> <p>New markets will strengthen the tourist base and assure inter-island carriers of continued strong activity. Domestic carrier traffic could suffer on some routes.</p>
Tourism	<p>More rapid growth in foreign tourist markets</p> <p>Closer link with Japanese tourist market</p> <p>Increased public attraction to exotic and wilderness areas</p> <p>Distribution and growth of visitor-oriented developments ultimately affect visitor choices of destination</p>	<p>Increased percentage of foreign tourists</p> <p>Possible redistribution of overseas traffic with more to Hilo</p> <p>Hawaii remains preferred destination</p> <p>Distribution of larger share of tourist business to Neighbor Islands probable</p>	<p>New inter-island travel desire-lines and travel patterns may emerge.</p> <p>Hilo may assume meaningful role as overseas airport by early 1980s.</p> <p>Continued healthy tourist base during period.</p> <p>Increased inter-island air traffic.</p>
Agricultural & Industrial Development	<p>New agriculture bases will be found</p> <p>A broadened industrial base will be achieved</p>	<p>Substantial agricultural lands will be retained</p> <p>Less dependency on tourism</p>	<p>Retention of substantial areas of agriculture preserves attractiveness as tourist destination.</p> <p>Stabilized and strengthened business base - possible increase in business sector of general aviation.</p>
Military Activity	<p>Loss of Asian bases increases Hawaii's military importance</p> <p>Forward operating bases will be developed in Micronesia</p>	<p>Military spending will remain strong in Hawaii</p> <p>Military air traffic will build slowly. Military freight and passengers transiting Hawaii</p>	<p>Availability of government property for new airports not likely except as currently offered (Bellows Field).</p> <p>Military aircraft operations, passenger movement and air cargo handling will remain significant.</p>
Leisure Time	<p>Available leisure time will continue to increase</p>	<p>Tourism will continue to flourish</p>	<p>Air passenger growth can be expected.</p>
Competition With Surface Modes	<p>An effective mass transit system will be established on Oahu</p> <p>An inter-island ferry system will be developed which will lower costs of inter-island transportation (measured in constant dollars)</p> <p>Evolutional changes in aircraft, applying new technologies, will make air transportation costs more competitive with surface modes</p> <p>Aircraft will become environmentally less objectionable as evolutional developments are applied</p> <p>Air traffic control capabilities will keep pace with air traffic growth</p>	<p>Advantages of STOL airport system minimized</p> <p>Family trips to neighbor islands will be within reach of more people</p> <p>Air freight costs will become more competitive with surface freight</p> <p>Public objection to new airport operations will diminish</p> <p>High density traffic problems in Oahu vicinity will remain manageable</p>	<p>Moderately successful mass transit together with public resistance to airport developments preclude STOL port network for Oahu.</p> <p>Together with inter-island hydrofoil service will absorb small segment of air passenger market, principally vacationing families and those opposed to flying.</p> <p>An increase in air carriers' share of cargo traffic by late 1980s.</p> <p>Expansion of some essential airports will be more acceptable to public.</p> <p>Moderately increased traffic flow at Honolulu can be accommodated.</p>

This is important because Hawaii's need to stimulate Neighbor Island economic growth is largely dependent on continued efficient air transportation. Deviations from NASP criteria for certain of Hawaii's airports to aid in this vitally needed growth are therefore most important, specifically to assure continued air carrier service to each major island and areas where growth is sought, such as Kohala on the Island of Hawaii.

### **FORECASTS OF DEMAND**

Airport activity is measured and forecast in terms of aircraft operations, or the combined number of landings and takeoffs at an airport. This activity is created by three "demand generators" — the number of passengers, the amount of cargo and the amount of mail to be carried.

The state and the FAA maintain records of these demand generators and the resulting number of operations at the larger airports such as Honolulu, General Lyman, Ke-ahole, Lihue and Kahului. At the smaller airports, information is recorded in less detail and, for the least active airports such as Port Allen and Upolu, may be of negligible value.

The best available historical data were collected for each airport and trends were computed using linear regression mathematical techniques. Projections were made based upon both the full range of historical data and upon the data for the most recent years, providing a band of activity within which future levels would most probably fall.

Analyses of social, economic and technical factors were then completed and the mathematical projections were adjusted where necessary depending upon results of these analyses. For example, a somewhat slower growth of tourism is expected throughout the state over the coming years; thus, inter-island passenger traffic will not increase as rapidly as in the past few years. However, Maui where business and tourist facilities are being rapidly expanded should expect a somewhat higher

growth rate in passenger traffic than Kauai where a more moderate expansion is underway. These kinds of factors were considered in adjusting the mathematical projections slightly to achieve the final forecasts.

In many cases estimated new trends countered each other, resulting in little or no adjustment to the mathematical projections. For example, increases in expected air cargo shipments could be accommodated with few additional flights because new aircraft such as the DC-9-50, recently introduced for inter-island use, have a larger cargo capacity beneath passenger compartments. Therefore, the passenger flights provide a capability for carrying more cargo without major changes in air freight schedules.

Following these techniques, forecasts were made for all major airports in terms of passengers, cargo, mail and aircraft operations. Airport requirements in this plan were based upon the high-range forecasts in order to illuminate all areas where development might be required. These forecasts for primary airports are shown in Table 5.

Table 5. OVERSEAS AIRPORT - HAWAII'S PRIMARY AIRPORTS

AIRPORT	COUNTY	FORECASTS				
		YEAR (Calendar)	PASSENGERS (Millions)	CARGO (Tons x 1000)	AIR MAIL (Tons x 1000)	OPERATIONS (1000s)
Honolulu International	Honolulu	1975	11.0	115.0	31.3	320
		1980	14.7 <sup>3.7</sup>	153.5	37.5	340
		1985	18.5 <sup>3.8</sup>	191.0	43.8	360
		1995	26.0 <sup>7.5</sup>	266.0	56.3	400
General Lyman	Hawaii	1975	1.5 <sup>.5</sup>	33.0	3.0	50.0
		1980	2.0 <sup>.4</sup>	43.0	3.9	58.8
		1985	2.4 <sup>.4</sup>	53.0	4.8	67.5
		1995	3.3 <sup>.9</sup>	73.0	6.6	85.0

Hawaii's primary airports are those serving overseas flights — Honolulu International on Oahu and General Lyman Field on Hawaii — which link this island state with the rest of the world.

Hawaii's secondary airports (Table 6) are those served by major inter-island air carriers. These airports at Kahului, Lihue, Ke-ahole, Molokai, Lanai and Waimea-Kohala are essential to sustain the other inhabited islands or, as in the case of Waimea-Kohala, to support a relatively remote region where development is urgently sought.

Table 6. MAJOR INTER-ISLAND AIRPORTS — HAWAII'S SECONDARY AIRPORTS

AIRPORT	ISLAND	FORECASTS		
		YEAR (Calendar)	PASSENGERS (1000s)	OPERATIONS (1000s)
Kahului	Maui	1975	2,250 <sup>425</sup>	80.0
		1980	2,875	93.8
		1985	3,500 <sup>625</sup>	107.5
		1995	4,750 <sup>1250</sup>	135.0
Lihue	Kauai	1975	2,050	60.0
		1980	2,650 <sup>600</sup>	72.5
		1985	3,250 <sup>600</sup>	85.0
		1995	4,450 <sup>1200</sup>	110.0
Ke-ahole	Hawaii	1975	900	44.0
		1980	1,275 <sup>375</sup>	53.0
		1985	1,650 <sup>575</sup>	62.0
		1995	2,400 <sup>750</sup>	80.0
Molokai	Molokai	1975	132	33.0
		1980	140 <sup>5</sup>	44.0
		1985	170 <sup>30</sup>	55.0
		1995	260 <sup>90</sup>	100.0
Lanai	Lanai	1975	43 <sup>10.2</sup>	14.0
		1980	53.8	15.5
		1985	64.5 <sup>10.7</sup>	17.0
		1995	86.0 <sup>21.5</sup>	20.0
Waimea-Kohala	Hawaii	1975	100	8.6
		1980	115 <sup>15</sup>	10.8
		1985	130 <sup>15</sup>	13.1
		1995	160 <sup>30</sup>	17.5
Kaanapali (Private)	Maui	1975	65.0	12.0
		1980	92.5 <sup>27.5</sup>	17.4
		1985	120 <sup>57.5</sup>	22.8
		1995	175 <sup>15</sup>	33.6



There is much less data on which to project activity at the smaller airports. In many cases no records have been kept and flight plan analyses were used as the best available basis for estimating the activity, as shown in Table 7.

Table 7. HAWAII'S FEEDER AIRPORTS

AIRPORT	ISLAND	FORECAST	
		YEAR (Calendar)	OPERATIONS (1000s)
Upolu	Hawaii	1975	1.9
		1980	2.6
		1985	3.2
		1995	4.5
Hana	Maui	1975	8.0
		1980	8.6
		1985	9.2
		1995	10.4
Kalaupapa	Molokai	1975	4.3
		1980	6.8
		1985	9.3
		1995	14.2
Port Allen	Kauai	1975	1.0
		1980	1.3
		1985	1.6
		1995	2.3

#### SPECIAL CONSIDERATIONS

Modern Hawaii has grown largely as a result of air transportation, which, having brought every country in the world within a few hours of the Islands, is responsible for Hawaii's largest industry — tourism. In addition, Hawaii is a benefactor from military spending — Hawaii's second largest industry, much of which centers on aviation. It is, therefore, not possible to separate aviation from social and economic growth of Hawaii.

The people of Hawaii are also personally dependent upon aviation. They need it socially to maintain ties with family and friends. They use it for recreation and to exercise governmental controls. They depend upon it economically in order to attract and conduct business.

#### **Land Requirements vs. Resources**

While aviation is vital to Hawaii, it can also be a burden. Some compromises are required. For example, even a small airport requires as much flat land as 200 to 300 homes. Flat land is at a premium in the state, and what there is, is also needed for agriculture as the state seeks to strengthen its agricultural base. Air transportation requirements must therefore be met with the fewest possible airports.

While airports must be within a reasonable distance of communities they serve, they are noisy and require special protective zoning in order to provide satisfactory noise buffer zones. Buffer zones can consume more land than the airport, again making it desirable to carefully limit the number of airports when availability of land is a factor. It is fortunate, therefore, that efficiency and cost effectiveness favor a few high activity airports rather than many with light traffic. Typically, Honolulu International Airport (Table 8) accommodated 34 percent of all traffic at Hawaii's civil and joint-use airports in 1974, and virtually supported the entire state system in terms of revenue. Therefore, when an airport is needed in the future sufficient land should be purchased to accommodate the maximum development foreseeable. Zoning and land use decisions should then provide a substantial noise buffer zone around the airports and under probable flight paths. Such land may have to be set aside years in advance of airport development. The zoning should anticipate urban encroachment. It must assure only compatible activities near the airport so that when development or expansion of an airport is undertaken it will not meet with resentment from home owners who have built nearby in intervening years. These issues are of particular importance:

- On Oahu where a reliever airport is to be sited;

- In Maui County where Kahului Airport activity is still growing rapidly, is expected to reach 60 percent of its capacity within this planning period and where airport noise complaints are commonplace. Here also Kaanapali Airport, in a noise sensitive, high property value resort area, may ultimately be closed or restricted diverting much of its activity to Kahului;
- In Hawaii County, where it is expected an airport may ultimately be established in the Ka'u district to bring air service to that remote region, and where property could currently be obtained and adequately zoned at modest cost.

Table 8. AERONAUTICAL ACTIVITY AT CIVIL AND JOINT-USE AIRPORTS (By Percent of Total 1974)

AIRPORT	AIRCRAFT OPERATIONS 1974	PERCENT OF TOTAL OPERATIONS
Honolulu	305,724	34.3
Ford Island	143,054*	16.0
Dillingham	131,976*	14.8
Kahului	75,186	8.4
Lihue	55,810	6.3
General Lyman	47,715	5.4
Ke-ahole	39,862	4.5
Molokai	30,828	3.5
Lanai	12,840	1.4
Waimea-Kohala	8,560	.9+
Hana	7,852	.9-
Kalaupapa	3,776	.4
Upolu	1,756	.2
Port Allen	1,674	.2-
Kaanapali (Private)	21,600	2.4
Kaupulehu (Private)	1,986	.2
TOTAL	890,199	99.8 (due to rounding)

NOTE: \*General aviation and military aircraft only.

Airports attract additional commercial enterprises creating pressures for commercial zoning and developments in the vicinity. These are generally businesses which either support or make extensive use of the airport. These developments must also be provided for in land use and zoning policies well in advance of airport developmen

Airports create surface traffic often requiring expensive property acquisition in order to accommodate highway reconstruction or new road nets to relieve traffic congestion as airport activity increases. If highway needs are foreseen and taken into account in conjunction with airport siting or expansion plans, the highway configuration can be optimized and land can be acquired before prices are driven up as the area develops.

#### Aviation Growth and Its Effects

General aviation has grown quite slowly in Hawaii compared with other states, as evidenced by the aircraft registered per unit of population (see Table 9). This is probably due in large part to the highly efficient air carrier and commuter air taxi services to most destinations. Aircraft owners and operators, however, believe the industry should be stimulated by a number of new small general aviation airports. Although Hawaii is searching for ways to expand the economic base, it is possible that the benefits from unconstrained growth of aviation would be outweighed by increasing land requirements and saturation of usable airspace, particularly on the Island of Oahu.

Table 9. SUMMARY DATA ON HAWAII-BASED AIRCRAFT

YEAR	AIRCRAFT		AIRCRAFT PER 10,000 POPULATION	
	REGISTERED	ACTIVE	REGISTERED	ACTIVE
1968	378	210	5.14	2.86
1969	408	261	5.44	3.48
1970	312	271	4.03	3.50
1971	368	280**	4.62	3.52*
1972	381	291	4.67	3.57
1973	386	300**	4.59	3.50
1974	430	322**	5.08	3.81**

SOURCE: FAA Census of Civil Aircraft (Various)

NOTES: \*Computed using DPED population data.  
\*\*Estimated based upon percentage of total.

The concentration of aircraft on Oahu, which constitutes Honolulu County, is illustrated in Table 10 and is a factor in current concern over traffic density at Honolulu International Airport. Military controlled and restricted airspace of about 200 square miles at the surface further constrains flights over Oahu and effectively increases civil air traffic density even more than is indicated by Table 10.

Table 10. ACTIVE CIVIL AIRCRAFT IN THE UNITED STATES PER 1000 SQUARE MILES AND 10,000 POPULATION (1973)

STATE OR AREA	AIRCRAFT PER 1000 SQUARE MILES	AIRCRAFT PER 10,000 POPULATION
Island of Oahu	563.2	4.9*
Hawaii (State Average)	45.1	3.5
California	126.5	9.7
Alaska	5.7	101.3
New England (Total)	83.5	4.6
Eastern States (Total)	113.0	4.1
Central States (Total)	39.6	9.8
Southwest States (Total)	37.8	9.9
Western States (Total)	63.5	10.5
United States (Total)	43.2	7.4

SOURCE: FAA Census of Civil Aircraft  
December 3, 1973.

NOTE: \*Calculated

#### General Aviation

The need for a dynamic general aviation industry as an element of Hawaii's economic base should be carefully studied considering its benefits to the economy and life of the people of Hawaii as well as its impact on land and airspace resources and on environment and energy supplies. An optimum growth policy should be determined before a decision is made to enter into development of additional general aviation facilities beyond the planned reliever airport for Honolulu.

With respect to development of new facilities, the airport system has been self-supporting to date. Much of the burden of financing the system has been absorbed by the airlines through use fees and fuel taxes. These costs are eventually passed on to the air traveler. A needed reliever airport for Honolulu International is strongly supported by the air carriers and would justifiably be funded the same way. Extensive expansion of the airport system, however, could adversely affect the air carriers' ability to absorb the cost without prohibitive fare increases.

It is estimated (Table 11) that, with even modest stimulation, Hawaii's aircraft population will almost double by 1995 reaching about 825 aircraft, thereby increasing traffic density substantially in the narrow strips of airspace along the coasts and valleys that accommodate most island flying.

Table 11. PROJECTED GENERAL AVIATION AIRCRAFT INVENTORIES BY AIRPORT (Medium Growth Rate)

AIRPORT		1975	1980	1985	1995
Honolulu & Reliever		344	426	494	657
Dillingham		20	25	29	39
General Lyman		17	20	23	30
Ke-ahole		6	8	10	15
Waimea-Kohala		1	1	2	2
Upolu		0	0	1	1
Kahului		18	22	27	36
Molokai		6	7	9	10
Lanai		2	2	2	4
Hana		1	1	1	2
Kalaupapa		0	0	0	0
Lihue		15	18	21	28
Port Allen		0	0	1	1
State Totals	Medium Growth Rate (a)	430	530	620	825
	Low Growth Rate (b)		470	500	600
	High Growth Rate (c)		530	694	1356

Assumptions: (a) Development of modest general aviation (G/A) facilities  
 (b) No stimulus to G/A  
 (c) Development of G/A facilities and introduction of "Volkspiane" type low-cost aircraft in 1980

### Helicopter Aviation

Helicopter aviation makes a unique contribution to Hawaii and has special characteristics that need separate consideration. Helicopters are used in increasing numbers throughout the world for law enforcement, fire, rescue and other governmental functions. They are used in Hawaii for these same purposes plus other important functions which include agricultural operations, air tours, resort taxi service and transportation to remote wilderness areas. As their use expands they also create public irritants chiefly associated with noise. Because they provide direct access to quiet remote areas and to the heart of densely populated urban areas, the noise results in public concern.

The important contributions to Hawaii made by helicopters can be retained and extended if facilities and air routes having minimum impact on the public are established. A joint state/county/FAA effort, beginning in Kauai County where the density of helicopter operations is most keenly felt, should be conducted to develop recommended policies and patterns of growth for helicopter operations throughout the state.

### Short Take-Off and Land (STOL) Aircraft

Short take-off and land or STOL aircraft are finding increased usefulness in many states, particularly between large closely located cities and between such cities and their outlying communities. A principal advantage of interest in Hawaii is that STOL ports require less land than other fixed-wing airports. Unfortunately, the craft are currently so noisy that FAA has established special noise standards for them. In Hawaii, where air transportation is already available within a short drive of almost all population centers, STOL would offer little advantage over current transportation systems

except possibly on Oahu. However, on Oahu the commitment to future surface mass transit already seems more cost-effective and useful to the traveling public.

### Private Airports

In a few localities where developments are planned, the existing airport system could be improved somewhat by a small general utility airport to support community general aviation activity and to provide an air taxi link with the air transportation net. A long established example is Kaanapali Airport which serves Lahaina and the Kaanapali resort area. The Princeville-Hanalei Airport is a similar development. Both airports are located slightly under an hour's drive from air carrier airports and therefore near the limits of what can be considered reasonable driving time. There are important differences between the two airports. Kaanapali is situated in a dense resort development and high sensitivity noise area in the midst of valuable resort property with minimum noise buffering from the adjacent resorts. Princeville which was conceived more recently is well buffered by agricultural and conservation lands, the effects of its noise are well isolated and the potential for injury to persons on the ground in the event of an accident is minimized. Such privately operated airports as these are a valuable adjunct to the state airport system provided they are developed as an integral part of the community, observing good safety and environmental practices. They might be encouraged, if deemed desirable, by special tax policies or by state or county assistance.

### Airports as Socio-Economic Development Vehicles

Transportation systems are not an end in themselves but are intended to meet the needs of the people of a society. For socio-economic development of an area, communications and



transportation systems are needed to support and encourage the development and must usually precede it. This is particularly important in Hawaii today where Neighbor Island growth is sought. Communities selected for future growth must have good access to air transportation. In the past, suggestions have been made to withdraw air carrier service from Lanai and Waimea-Kohala airports and revert them to general aviation. These proposals should be reviewed carefully in view of planned developments in both areas, the state goal of enhancing growth of the Neighbor Islands, and the reliance on air transportation for the life of the islands. Detailed cost-benefit studies are recommended before discontinuance of carrier service is contemplated further for either airport.

#### The Inter-Island Ferry

An inter-island ferry system is a long-established hope for Hawaii and can be achieved during this planning period, possibly by the late 1980s. The ever present need to make inter-island travel affordable on a regular basis for all of Hawaii's people is a justifiable goal and is the underlying motive for such a ferry.

While new technology has brought the hydrofoil, semi-submerged platforms and other new vessel concepts to ocean travel, most current inter-island travel is time-constrained -- even that of vacationing tourists. It is unlikely that a ferry system will seriously impact that kind of air travel demand. If state goals are met for low-cost inter-island travel by ferry, it is more likely to open new passenger markets than to degrade those now providing the bulk of the air travelers. It is also probable that selected ferry terminals will be within the existing harbor structure which already corresponds closely with major airport terminal locations. Therefore, neither airport locations

nor intermodal transportation interface points are expected to be affected by the ferry system.

Some of the foregoing considerations require policy decisions at state and county levels in close coordination with the FAA in order to optimize airport system development to best serve the people of Hawaii. To give latitude for such decisions, options for airport system growth in three of the foregoing areas are presented as part of this plan.

The broad concepts discussed in the foregoing paragraphs together with the planning assumptions, selection criteria and demand forecasts also discussed in this section provide the basis for examining alternative system configurations.

#### **ALTERNATIVE APPROACHES TO THE SYSTEM**

Of many alternatives and combinations of alternatives for the future airport system, six were selected as being most applicable:

Number 1 exploited every advantage offered by aviation for reducing travel times to and between island destinations, resulting in new overseas destination airports on each major island supported by general aviation, STOL and helicopter networks. It was rejected because of the costs, land requirements and adverse environmental impacts.

Number 2 eliminated little used airfields and provided minimum facilities required to support the present level of development of each island. It was rejected despite cost and environmental advantages because it would accommodate no growth and would, more than ever, focus all socio-economic development on Oahu; therefore, it did not support state growth objectives.

Number 3 was strongly tourist oriented with the view that most of the state's air passengers are tourists and this is Hawaii's biggest business. It provided extensive capability for direct flight to the tourist destination areas. It was rejected because of environmental impacts and because it did not support resident needs — particularly state and county neighbor island growth objectives.

Number 4 recognized the efficiency of the present system, provided options for expanding it selectively in the future if

warranted by demand and by changes in state policy and availability of funds. This alternative was the least expensive, had the greatest flexibility and created the least confusion to present social and economic structures.

Number 5 was strongly oriented to controlled growth concepts and developed a new system structure as needed to meet emerging controlled growth concepts. It would be achievable in the future by slight redirection of growth of alternative Number 4, but since controlled growth has not been defined or accepted in depth is premature as a system approach.

Number 6 was an option for decentralizing Honolulu Airport and its related industrial complex to Molokai while maintaining the City of Honolulu as the socio-economic center of the state with STOL service direct to Oahu destination points. The implications of such a move in terms of cost, business and political impacts were cause for rejection.

Considering the implications of the foregoing major alternatives for airport system growth, the selected system is based upon alternative Number 4, with a number of control points at which requirements, funding and growth policies can be re-examined and validated or redirected as necessary. This plan is discussed in the following section.

## SECTION III—AIRPORTS FOR TOMORROW

### GUIDING PRINCIPLES

Hawaii's Airport System Plan recognizes several important factors:

- The present system of airports is excellent and currently serves Hawaii exceedingly well. Only the Ka'u district of the Island of Hawaii does not have reasonably available service.
- Unnecessary expansion of the system would consume precious land resources and degrade the environment for residents and tourists alike.
- Heavy air traffic and an undesirable mix of large and small aircraft at Honolulu International warrant development of reliever facilities on Oahu.
- The limited amount of land in Hawaii which can be adapted for airport use and the rapid growth of population make it important to set aside land and provide protective zoning for future airports near Naalehu in the Ka'u district, Island of Hawaii, and Kahului/Wailuku on Maui even though airports will not be required there until after this 20-year planning period.
- Remote communities which desire and can plan, as a part of community development, small airports which will have no adverse environmental impact on neighboring communities should be encouraged to do so when the development enhances the overall state system. A typical case is the Hanalei/Princeville Airport development which provides an air facility convenient to communities on Kauai's north shore.
- Regardless of current conditions, social and economic growth may rapidly change the need, nature and capability of funding the airport system. The basic system therefore should be simple with identifiable growth options which can be initiated or rejected as conditions change.
- The need to encourage economic and social growth in the Neighbor Islands makes it very important that each major island and such communities as Kohala on the Island of Hawaii continue to be served by air carriers unless shown to be unwarranted by in-depth cost-benefit analyses.

## FEATURES OF THE PLAN

The basic system plan is simple and austere. It maintains the present system structure almost without change. It supports general aviation facilities for Oahu, now being planned in a separate study and recommends improvements to existing airports as needed to meet requirements of safety, efficiency and convenience. In this respect, it responds to operational needs identified by the State, the FAA, the air carriers and the aircraft operators of Hawaii. It also responds to needs identified by air travelers — both residents and tourists — who use the system. Finally, it identifies the need to purchase land for ultimately establishing a new airport in the Ka'u district on the Island of Hawaii and for expansion of the Kahului Airport or a possible new public airport on the Island of Maui where it is anticipated Kaanapali Airport may ultimately be closed as resort development continues. These purchases are precautionary to assure that land is available to meet future requirements.

The plan then recognizes that the State needs flexibility to respond to new social and economic pressures that may arise. It therefore suggests three options for airport system growth if, as conditions change in the future, it appears desirable.

- First, it provides an option for small community and tourist destination airports as a part of remote area developments where jointly desired by the State, county and the community. It recommends, however, that the state assure adequate safety and environmental standards for any such airports and that the airports be planned as a part of, funded by and not imposed upon the community.
- Second, it provides an option for establishing several small airstrips for general aviation in remote recreation areas. These airfields, which would enable air taxis and private pilots to fly passengers to some wilderness camping and vacation sites, would provide a way for the State to stimulate the growth of general aviation. This option would first require a determination by the State that stimulation of general aviation is an objective of State planning.
- Third, an option is presented for developing, under county sponsorship and in conjunction with the State and FAA, a helicopter route and heliport system structure to encourage, direct and control the development of helicopter transportation to the optimum benefit of the people of Hawaii. This

option involves economic plans of the counties and the State and would require a major policy decision before implementation could be considered. Nonetheless, in the face of the growing helicopter operations in the state, the option should be carefully considered to provide needed facilities, to assure that helicopters do not simultaneously become a nuisance, and to provide the best possible transportation to residents and tourists with a minimum investment in land resources.

Taken together, these options for airport system development provide the State a number of levels of investment which can be undertaken without losing the benefit of system-wide planning. In addition, within each of these options there are decision points where system development can be adjusted depending upon the outcome of initial investments or sudden changes in need or economic health of the state. The basic plan, the growth options and the decision points are shown in Table 12.

The plan for the next 20 years is estimated to cost \$291.5 million. It would maintain a simple effective system of airports by:

1. Upgrading existing facilities as necessary to accommodate growing demand, improve safety and accommodate new equipment — cost: \$267.2 million
2. Providing relief for air traffic congestion at Honolulu — cost: \$21.9 million
3. Assuring availability of suitable land for airports needed in later planning periods — cost: \$2.4 million
4. Identifying areas where policy decisions are required relative to the future of aviation in Hawaii's social and economic growth
5. Providing flexibility for additional system growth in specific areas should it be warranted by new growth policy.

On Oahu, almost \$143 million would be required at Honolulu to complete reef runway taxiways, construct a new inter-island terminal and complete construction of facilities for the growing fleet of wide-body overseas carriers. About another \$22 million would provide reliever airport facilities to accommodate light aircraft currently based at Honolulu.

Table 12. SYSTEM DESCRIPTION

OPTION	SIGNIFICANT FEATURES	AIRPORT	CHECK POINTS	SUB-OPTIONS
<p>Basic System</p> <p>State Airports (See Note 1) (Meets or exceeds FAA objectives for availability and adequacy of air transportation)</p>	<p>Builds adequate system on existing base at minimum cost</p> <p>Accommodates over 99% of total passenger traffic to and from Hawaii</p> <p>Direct flights between principal business and population centers</p> <p>Provides scheduled air service within 30 minute drive of all major population centers</p> <p>Provides air carrier airport within 1 hour drive of over 97% of state population</p> <p>Provides ground options for scheduled service within 30 minutes of all people of Hawaii</p>	<p>Honolulu International General Lyman Kahului Lihue Keolu Mahele Lanai Waimea-Kohala Honolulu/Princetonville (Private - See Note 3)</p> <p>Kalaupapa Hona Upolu Port Allen Kaunapali (Private) New CA No. 1 (Sited in OGAMPS) New CA No. 2 (Sited in OGAMPS) Dillingham</p>	<p>Develops single reliever for Honolulu and determines facilities before final plans to additional Oahu general aviation facilities.</p> <p>1) Effectiveness of airport in relieving Honolulu congestion</p> <p>2) Effect of new airport on general aviation growth</p> <p>Verify growth and need before opening growth options</p> <p>Evaluate Kahului expansion vs. New Maui airport in master planning study to determine optimum solution prior to land purchase</p>	<p>Institute growth options as needed including those developed in OGAMPS and Kahului growth studies</p> <p>Delay siting and land acquisition for new airports until requirement materializes</p> <p>Develop Honolulu/South Point or community rather than state airports - see Growth Option 1</p>
<p>Growth Option I</p> <p>Community and Destination Area Sites - Private Airports (Not required, but provides a basis for expansion beyond Basic System state/county/community)</p>	<p>Requires policy decision relative to community airport concept</p> <p>Requires establishment of state safety and environmental standards</p> <p>Requires close state/county/community cooperation</p> <p>Communities and/or developers share costs and administration responsibilities</p> <p>Provides capability for air service direct to remote destination areas or newly developing communities</p>	<p>Kaunapali (Private) Kahului (W. Kahului) Lahaina (Maui) Kihei (Maui) Paia (Maui)</p> <p>Or others as determined on case by case basis</p>	<p>Determination of state position relative to encouraging community airport development</p> <p>Determination of state position relative to cost sharing by counties and developers/communities</p> <p>Establishment of safety and environmental standards</p> <p>Joint state/county mediation of community needs and plans on case-by-case basis</p>	<p>State develop community airports</p> <p>State share costs of community airports</p> <p>State establish standards and approve siting and construction (Recommended course)</p> <p>No community airports be permitted</p>
<p>Growth Option II</p> <p>General Aviation Recreational Airfields (Not required; provides basis for encouraging growth of general aviation if not established as state goal)</p>	<p>Requires policy determination by state on general aviation growth objectives</p> <p>Requires study of most suitable facilities in line with established goals</p> <p>Provides general aviation airfields in selected recreational areas to encourage increased flight activity</p> <p>Begins with establishing recreational oriented improvements to existing airfields that are easily adaptable and inexpensive</p> <p>Provides notice of check points against which to weigh effectiveness of each succeeding development</p> <p>Provides sub-options for funding</p>	<p>Port Allen (Kauai) Hona (Maui) Kalaupapa (Molokai) Volcano (Hawaii) Pohole (Kauai) Waimea (Kauai) Sandy Beach (Oahu) Cape Haleakala (Molokai) Maalea Bay (Lanai) Kaunapali (Hawaii)</p> <p>Or as determined in recommended study</p>	<p>Decision by state to encourage growth of general aviation</p> <p>General aviation growth noted as result of reliever facilities for Honolulu on basis for modest recreational test developments at Port Allen and Hana for study of future sites (See Note 2)</p> <p>Increasing general aviation activity at test sites is basis for recreational development of Volcano site.</p> <p>Significant activity at Volcano is basis for implementation site buildup recommendations resulting from study</p>	<p>Investments in recreational developments for existing airfields only</p> <p>Addition of Volcano airfield for tourist destination airport as well as recreational flying.</p> <p>Implement recommendations of study</p> <p>Slow growth of general aviation by developing no recreational facilities</p>
<p>Growth Option III</p> <p>Heliport and Helicopter Route Network (Not required; providing ground support and controlling helicopter transportation growth if adopted as a state goal)</p>	<p>Requires close coordination between state, FAA, counties and operators in developing satisfactory route/altitude agreements</p> <p>Has minimum impact on land resources</p> <p>Provides sub-options for funding</p> <p>Provides check points at which system development can be held</p> <p>Permits scheduled air carrier service for all people of Hawaii within 30 minutes of their homes</p> <p>May require additional legislation to provide route and altitude enforcement authority</p> <p>Requires joint study encompassing state, county, FAA and operator requirements</p>	<p>Oahu: Kawalo Kaloa Crater Diamond Head Ala Iki Honolulu Harbor Pohole Bay Haleiwa Bastin Lanai Halea Pier Bellows Field Hawaii: Keanu Kaliopone Volcano</p> <p>Maui: Haleakala Kihei Lahaina</p> <p>Molokai: Kaunakakai</p> <p>Lanai: Lanai City</p> <p>Kauai: Nawiliwili Koloa Waimea Honokaa Lanipaho Mauna Keo Lookout Maui: Haleakala Kihei Kaliopone Volcano</p>	<p>Heliports sited to meet essential public service needs - fire/rescue, law enforcement, land and natural resources needs, etc. are developed first</p> <p>If satisfactory control of traffic, noise and environmental perturbations are maintained, community and resort developments can proceed</p> <p>A fare structure competitive with other transportation modes should be undertaken</p> <p>Heliports sited to meet essential public service needs - fire/rescue, law enforcement, land and natural resources needs, etc. are developed first</p> <p>If traffic remains manageable and the environment is not impaired, sites should be considered for select recreational areas</p>	<p>State has option of assuming development and administration responsibility or turning it over to the counties and developers</p> <p>Not can be established incrementally in following optional segments</p> <p>a. Heliports for government use</p> <p>b. Community transportation use including resorts</p> <p>c. Recreational use</p>

NOTES:  
1 - Maui and a new Maui airport would become part of system beyond this planning period  
2 - Subject to county and community concurrence  
3 - Princetonville airport become operational while this volume was in printing

Hawaii County would require about \$24.5 million with about \$9.8 spent at General Lyman, over \$9 million at Ke-ahole and about \$4 million at Waimea-Kohala. The funds would cover principally runway and terminal facilities at General Lyman and Ke-ahole, and would upgrade Waimea-Kohala to maintain it as an air carrier airport to support county and state planned developments in that area. The remainder would purchase property for future airport development in the Ka'u district near Naalehu. In 1975 the total population in this district where planned developments have been slow to mature was estimated to be only 3400 with sluggish growth foreseen through 1990. The area will ultimately be developed, however, and airport land and zoning needs should be taken care of in advance of any development, probably late in this 20-year planning period.

In Maui County about \$59.4 million would be spent. Over \$25 million would go for runway, taxiway and terminal area improvement at Kahului. About \$23.5 million would pay for a new Molokai airport to replace the current facility which lacks a precision approach capability and has other operationally undesirable qualities. On Lanai, about \$8.8 million would be required — principally for runway improvements. In addition, about \$1.0 million is planned for property to expand or relieve Kahului Airport, which is expected to become necessary sometime past the 20-year planning horizon examined by this system plan. A detailed study of Kahului growth options is needed followed by development of a new master plan.

Lastly, almost \$43 million is planned to complete upgrading of the Lihue Airport in Kauai County in accordance with a new master plan being developed. The plan will accommodate forecast growth of demand, solve environmental problems and provide capabilities for precision approaches during bad weather. Tables 13 and 14 show projected expenditures by county and by airport, respectively, in somewhat more depth.



Table 13. SYSTEM PLAN COSTS BY COUNTY, TYPE OF IMPROVEMENT AND PLANNING PERIOD (Dollars in Thousands)

	TYPE OF IMPROVEMENT	NEAR-TERM					TOTALS FY 77-FY 81	MID-TERM TOTALS FY 82-FY 86	LONG-TERM TOTALS FY 87-FY 96	GRAND TOTALS FY 77-FY 96
		FY 77	FY 78	FY 79	FY 80	FY 81				
HONOLULU	Land Acquisition	-	7,000	-	-	-	7,000	5,250	-	12,250
	Operational Facilities	-	-	3,632	519	-	4,151	15,272	10,300	29,723
	Support Facilities	10,800	20,822	13,285	10,579	17,645	73,131	40,226	8,183	121,540
	Navigation and Landing Aids	218	5	269	-	-	492	693	56	1,241
		<u>11,018</u>	<u>27,827</u>	<u>17,186</u>	<u>11,098</u>	<u>17,645</u>	<u>84,774</u>	<u>61,441</u>	<u>18,539</u>	<u>164,754</u>
HAWAII	Land Acquisition	-	-	140	-	-	140	1,612	-	1,752
	Operational Facilities	-	4,963	2,979	-	76	8,018	1,439	-	9,457
	Support Facilities	50	883	426	1,500	106	2,965	7,536	95	10,596
	Navigation and Landing Aids	-	18	221	714	-	953	549	1,224	2,726
		<u>50</u>	<u>5,864</u>	<u>3,766</u>	<u>2,214</u>	<u>182</u>	<u>12,076</u>	<u>11,136</u>	<u>1,319</u>	<u>24,531</u>
KAUAI	Land Acquisition	-	-	-	-	-	-	-	-	-
	Operational Facilities	11,000	-	155	1,136	220	12,511	-	1,646	14,157
	Support Facilities	-	-	6,800	12,200	8,057	27,057	156	129	27,342
	Navigation and Landing Aids	70	674	603	-	-	1,347	-	-	1,347
		<u>11,070</u>	<u>674</u>	<u>7,558</u>	<u>13,336</u>	<u>8,277</u>	<u>40,915</u>	<u>156</u>	<u>1,775</u>	<u>42,846</u>
MAUI	Land Acquisition	-	-	-	-	-	-	-	800	800
	Operational Facilities	-	288	395	9,540	10,428	20,651	12,186	1,625	34,462
	Support Facilities	-	830	11,913	3,398	5,172	21,313	1,450	-	22,763
	Navigation and Landing Aids	-	32	89	419	571	1,111	67	156	1,334
		<u>-</u>	<u>1,150</u>	<u>12,397</u>	<u>13,357</u>	<u>16,171</u>	<u>43,075</u>	<u>13,703</u>	<u>2,581</u>	<u>59,359</u>
GREAT GRAND TOTAL: 291,490										

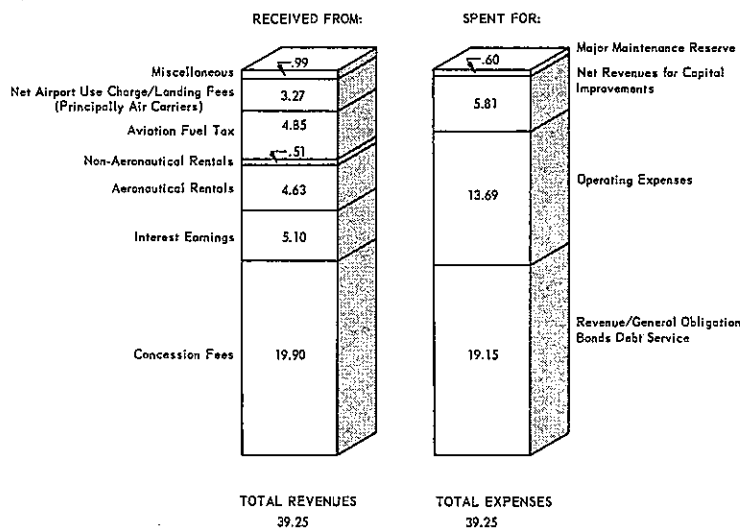
Table 14. SYSTEM PLAN COSTS BY AIRPORT AND PLANNING PERIOD (Dollars in Thousands)

	AIRPORT	NEAR-TERM					TOTALS FY 77-FY 81	MID-TERM TOTALS FY 82-FY 86	LONG-TERM TOTALS FY 87-FY 96	GRAND TOTALS FY 77-FY 96
		FY 77	FY 78	FY 79	FY 80	FY 81				
EXISTING	Honolulu International	11,018	20,827	13,135	10,579	15,339	70,898	53,452	18,483	142,833
	General Lyman	-	4,406	80	2,214	-	6,700	3,000	95	9,795
	Kahului	-	924	11,913	3,094	2,637	18,568	5,745	1,115	25,428
	Lihue	11,070	674	7,558	13,336	8,057	40,695	-	1,775	42,470
	Ke-ahole	50	847	1,462	-	138	2,497	5,359	1,168	9,024
	Molokai	-	-	-	9,877	13,534	23,411	67	28	23,506
	Waimea-Kohala	-	611	2,224	-	-	2,835	1,165	28	4,028
	Lanai	-	84	89	386	-	559	7,727	538	8,824
	Hana	-	32	395	-	-	427	21	28	476
	Kalaupapa	-	110	-	-	-	110	143	72	325
	Upolu	-	-	-	-	44	44	-	28	72
	Port Allen	-	-	-	-	220	220	156	-	376
	PROPOSED	Oahu Reliever No. 1	-	7,000	4,051	519	2,306	13,876	-	28
Oahu Reliever No. 2		-	-	-	-	-	-	7,989	28	8,017
Naalehu		-	-	-	-	-	-	1,612	-	1,612
New Maui		-	-	-	-	-	-	-	800	800
TOTALS		22,138	35,515	40,907	40,005	42,275	180,840	86,436	24,214	291,490

The existing system together with planned growth is depicted by county and by island in Figures 5 through 10 on the following pages. Tentative sites associated with optional growth in Table 12 are not shown because each would be subject to discussion and negotiation between state, county and community representatives should decisions be made to proceed with growth options.

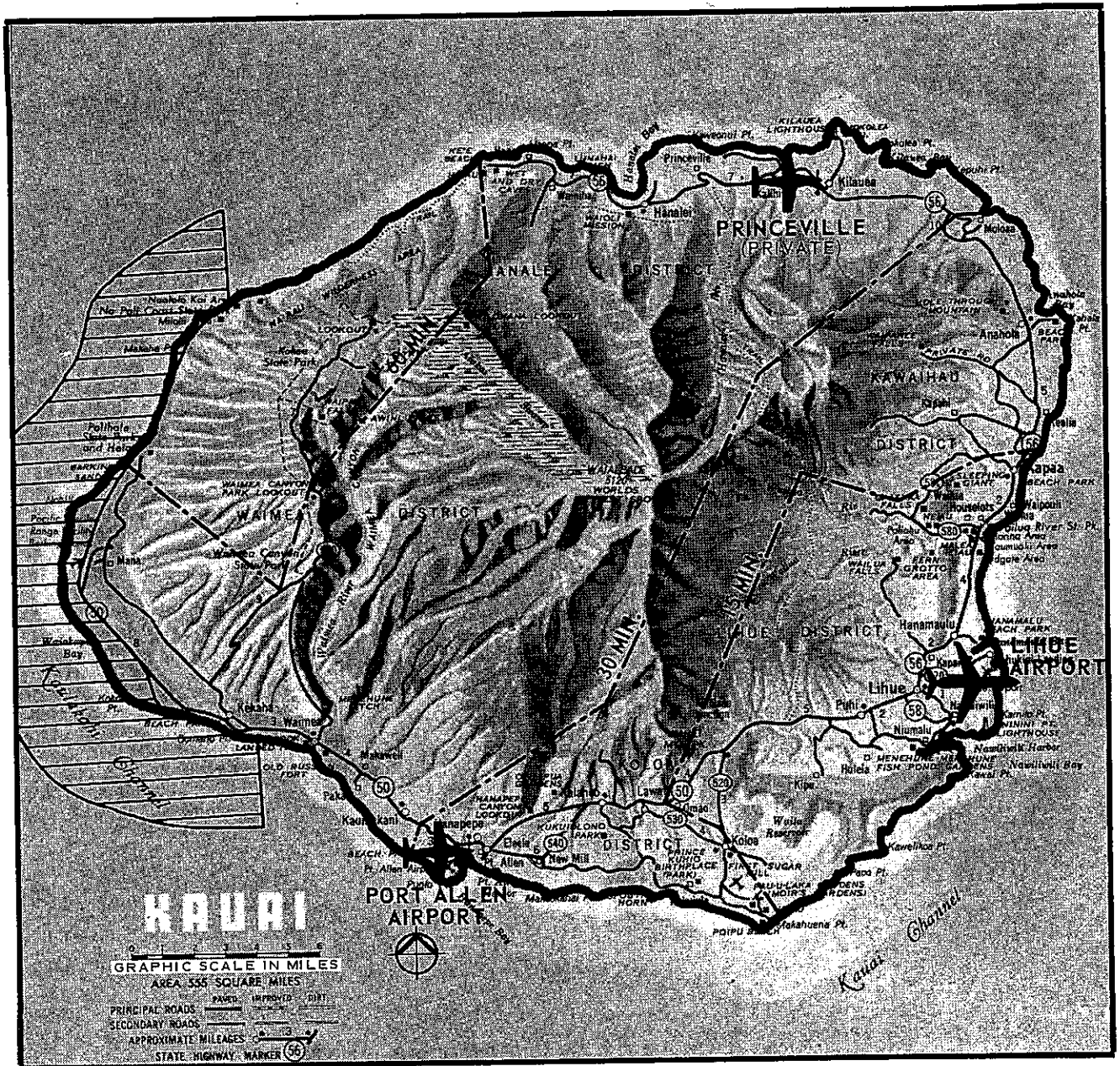
### FUNDING THE PLAN

Except for federal expenditures through FAA grant programs, aviation in Hawaii is self-supporting, deriving most funds from concessions, airport use and landing fees, fuel tax, rentals and interest. These revenues cover all airport costs including construction bond payments, operating expenses and overhead. It is anticipated that the existing sources of revenue will continue to adequately accommodate demands of the growing airport system. Principal sources of revenue and areas of expense are shown in Figure 4 as of June 1975.







Source: State of Hawaii, Department of Transportation, Airports Division, Accountants' Report June 30, 1975. Coopers & Lybrand. Certified Public Accountants

Figure 4. REVENUES AND EXPENSES - 1975



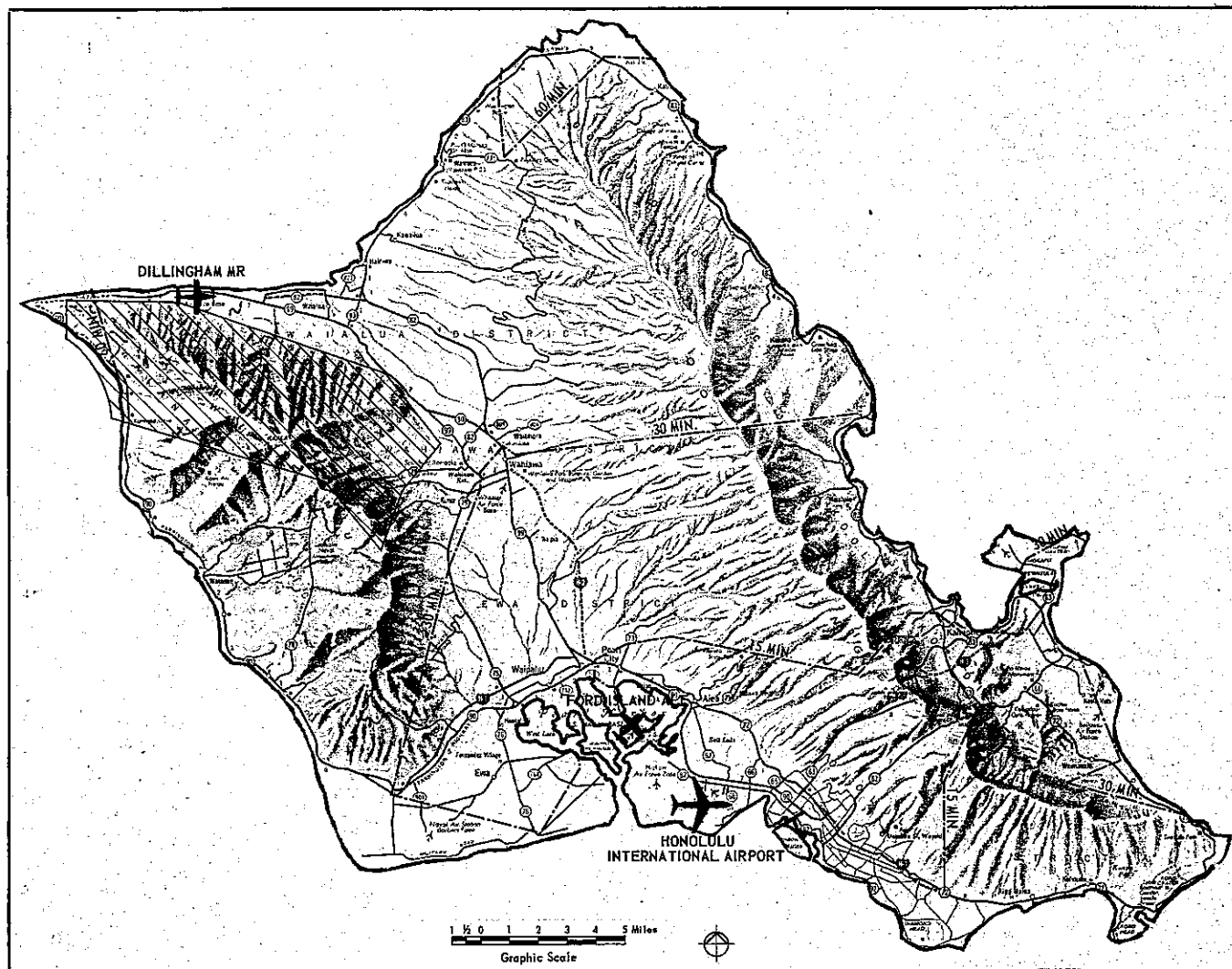
**Legend:**

-  Inter-Island Airport
-  General Aviation Feeder Airport
-  Restricted Area
-  Travel Time Zone





**Source:** Travel Times are computed from the State of Hawaii, Department of Transportation, Highway Division, Annual Traffic Summary Data on distances and estimated average speeds along major routes.

**Note:** Princeville Airport, shown in the Technical Supplement as a future airport, became operational after that volume was printed

**Figure 5**  
**COUNTY OF KAUAI**  
**AIRPORT SYSTEM AND DRIVING**  
**TIMES TO KEY AIRPORT**



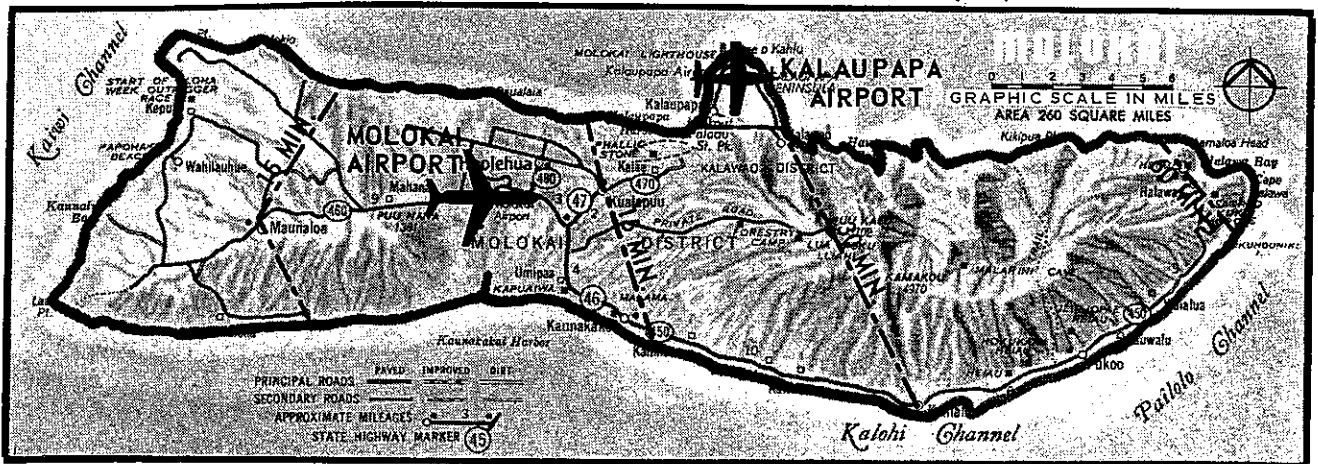
Legend:

- |   |                                   |   |                  |
|---|-----------------------------------|---|------------------|
|  | Overseas and Inter-Island Airport |  | Restricted Area  |
|  | General Aviation Feeder Airport   |  | Travel Time Zone |

Source: Travel Times are computed from the State of Hawaii, Department of Transportation, Highway Division, Annual Traffic Summary Data on distances and estimated average speeds along major routes.

Note: The number and actual location of future general aviation airports on Oahu are being determined in a separate study. It is anticipated that Ford Island will be replaced by a new airport.

Figure 6  
**COUNTY OF HONOLULU  
 AIRPORT SYSTEM AND DRIVING  
 TIMES TO KEY AIRPORT**



Legend:



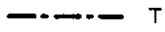
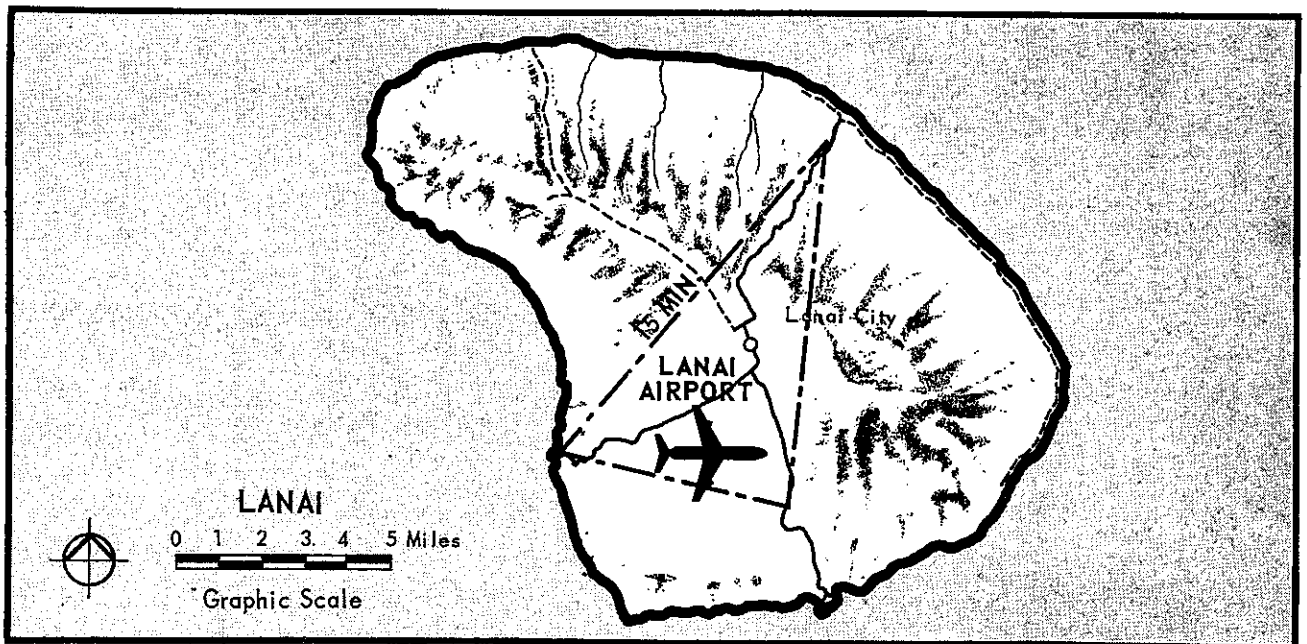
-  Inter-Island Airport
-  General Aviation Feeder Airport
-  Travel Time Zone

Figure 7  
 COUNTY OF MAUI (MOLOKAI)  
 AIRPORT SYSTEM AND DRIVING  
 TIMES TO KEY AIRPORT

Source: Travel Times are computed from the State of Hawaii, Department of Transportation, Highway Division, Annual Traffic Summary Data on distances and estimated average speeds along major routes.



Legend:

-  Inter-Island Airport
-  Travel Time Zone

Figure 8  
 COUNTY OF MAUI (LANAI)  
 AIRPORT SYSTEM AND DRIVING  
 TIMES TO KEY AIRPORT

Source: Travel Times are computed from the State of Hawaii, Department of Transportation, Highway Division, Annual Traffic Summary Data on distances and estimated average speeds along major routes.

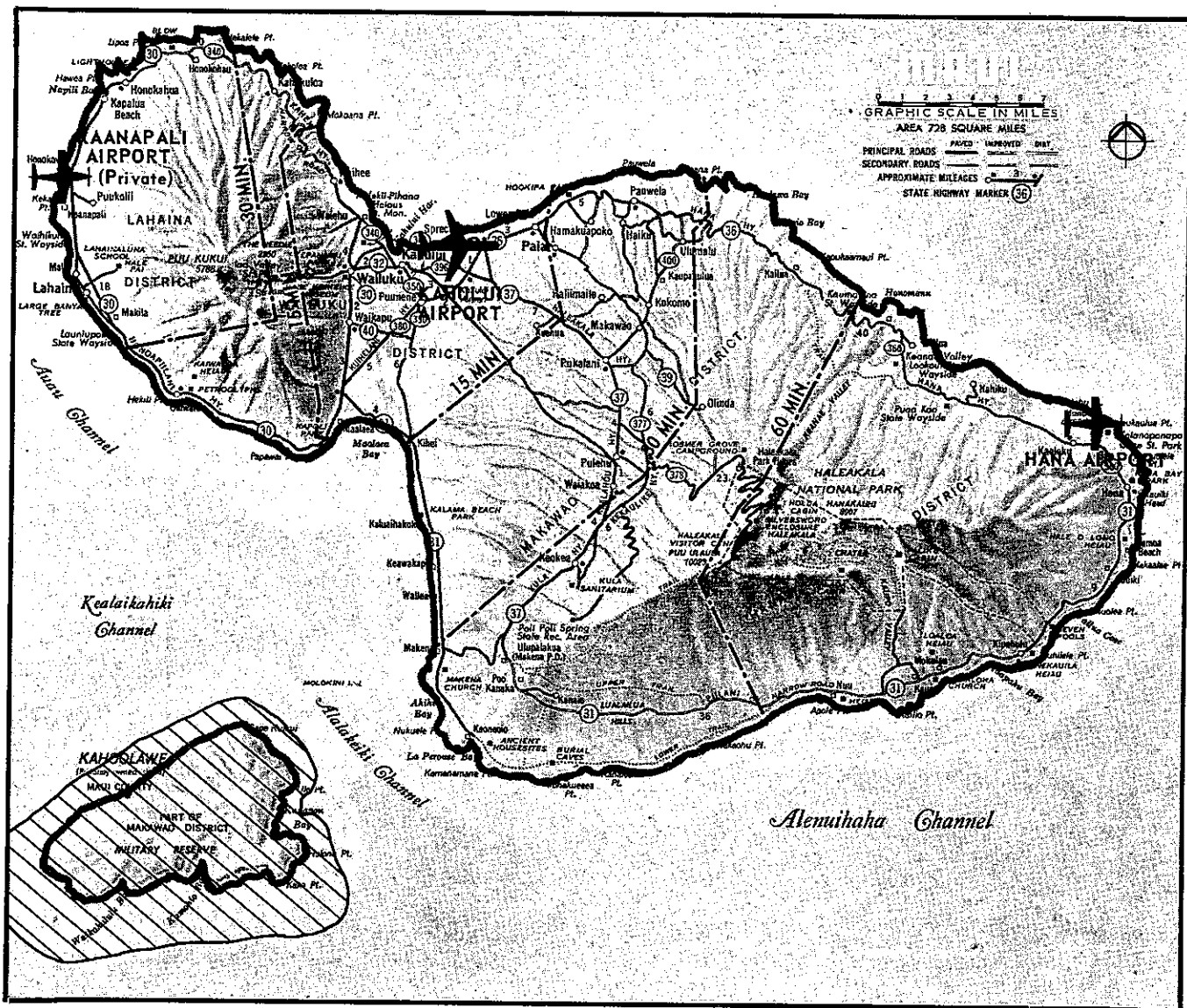






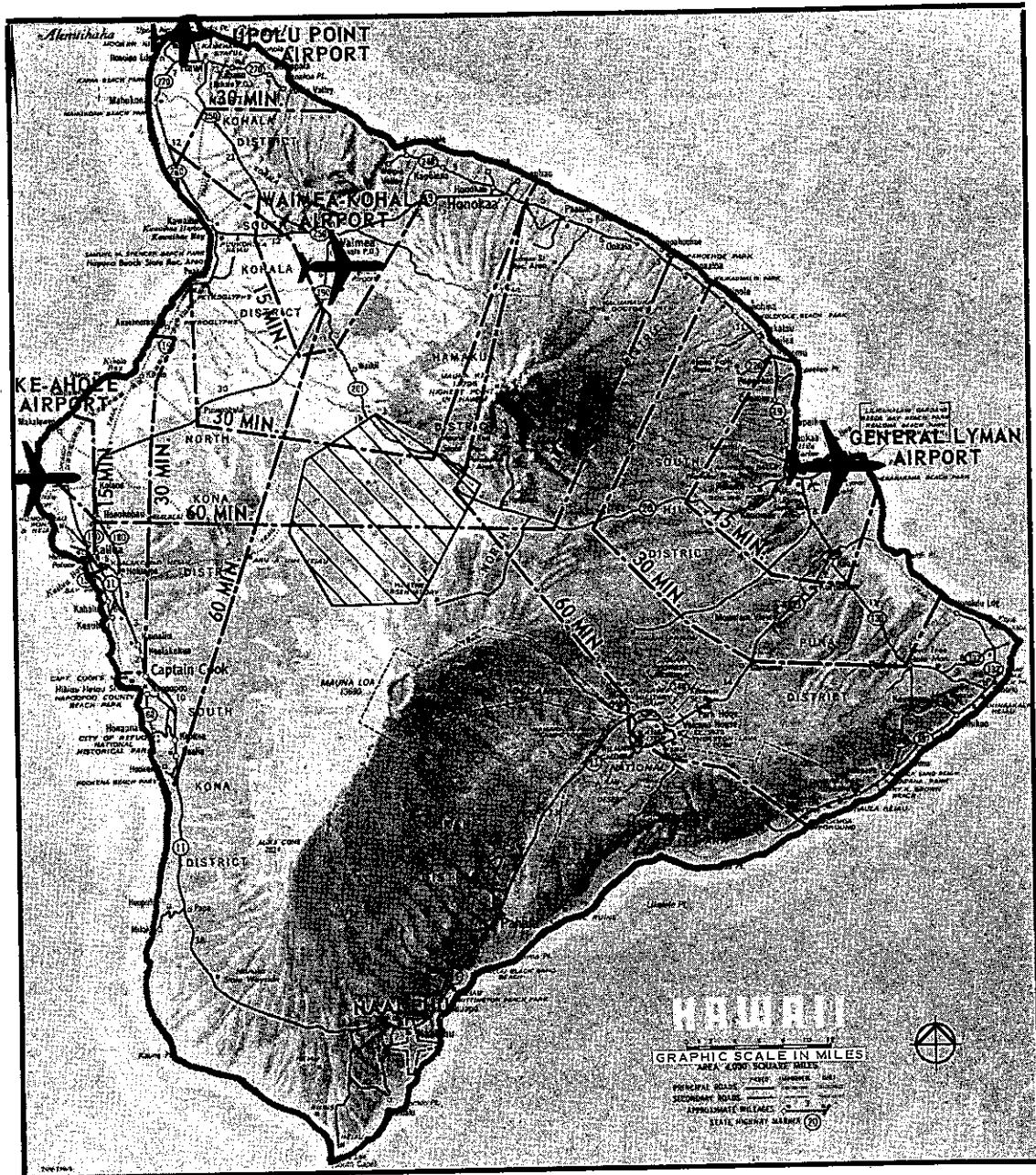
Figure 9  
**COUNTY OF MAUI**  
**AIRPORT SYSTEM AND DRIVING**  
**TIMES TO KEY AIRPORT**

Legend:







-  Inter-Island Airport
-  General Aviation Feeder Airport
-  Restricted Area
-  Travel Time Zone

Source: Travel Times are computed from the State of Hawaii, Department of Transportation, Highway Division, Annual Traffic Summary Data on distances and the estimated average speeds along major routes.

Note: The advisability for expansion of the Kahului Airport vs. a New Maui Airport should be examined in a master planning study.



**Legend:**

- |   |                                 |   |                      |
|---|---------------------------------|---|----------------------|
|  | International Airport           |  | Inter-Island Airport |
|  | General Aviation Feeder Airport |  | Future Airport       |
|  | Restricted Area                 |  | Travel Time Zone     |

**Figure 10**  
**COUNTY OF HAWAII**  
**AIRPORT SYSTEM AND DRIVING**  
**TIMES TO KEY AIRPORTS**

**Source:** Travel Times are computed from the State of Hawaii, Department of Transportation, Highway Division, Annual Traffic Summary Data on distances and estimated average speeds along major routes.

**Note:** Naalehu development is not required during this 20 year planning period, but siting and land acquisition are recommended.

During development of the system plan, federal funding policies were undergoing study and revision. The federal assistance which may be available for achieving the planned system therefore was not known. Estimates of probable federal funding were based on proposed legislation. Considering the estimated federal aid, Table 15 indicates recommended sources of funds for pursuing the planned system for the next 10 years.

Table 15. SYSTEM PLAN RECOMMENDED CIP BY SOURCE OF FUNDING  
(Millions of Current Year Dollars)

SOURCE	PERIOD							
	NEAR-TERM					5-YEAR TOTAL	MID-TERM	10-YEAR TOTAL
	FY77	FY78	FY79	FY80	FY81	FY77-81	FY82-86	FY77-86
Federal Participation	8.7	9.2	9.7	9.7	9.7	47.0	48.5	95.5
Revenue Fund Cash	8.0	8.0	8.0	8.0	8.0	40.0	37.9	77.9
General Obligation Bonds	5.4	18.3	23.2	22.3	24.6	93.8	0	93.8
Total Funding	22.1	35.5	40.9	40.0	42.3	180.8	86.4	267.2

The State Department of Transportation is currently required to operate the airport system so that revenues generated meet all system expenditures. The difference between federal aid and CIP costs must therefore be supported out of system revenue which must also cover operation and maintenance costs. Airport use charges and landing fees are adjusted annually to cover the deficit between system expenses and revenue from other sources. The charges are kept at a minimum to assure that these costs which are passed on to the passengers by the airlines can be reasonably absorbed. In June of 1975 the charges amounted to \$1.399 per 1000 pounds of landing weight.

Estimates of annual expenses to support the plan through 1986 are shown in Table 16, while Table 17 shows estimates of revenue available from sources other than use



charges and landing fees. The deficit, which must be made up each year, and estimated resulting use charges after fuel tax credits are shown in Table 18.

Table 16. FORECAST STATE AIRPORT SYSTEM EXPENSES  
(Millions of Current Year Dollars)

FISCAL YEAR	AIRPORTS OPERATION AND ADMINISTRATION	MAJOR MAINTENANCE ACCOUNT	DEBT SERVICE		COVERAGE OF .35 ON REVENUE BOND DEBT SERVICE	TOTAL EXPENSES
			REVENUE BONDS	G.O. BONDS		
1977	17.1	.6	20.5	5.5	7.2	50.9
1978	19.2	.6	20.6	7.8	7.2	55.4
1979	21.6	.6	21.3	11.9	7.5	62.9
1980	24.3	.6	21.3	14.2	7.5	67.9
1981	27.3	.7	21.3	16.1	7.5	72.9
1982	30.5	.7	21.3	15.9	7.5	75.9
1983	34.0	.7	21.3	15.7	7.5	79.2
1984	38.0	.7	21.4	15.3	7.5	82.9
1985	42.4	.7	21.4	14.5	7.5	86.5
1986	47.3	.7	21.1	13.9	7.4	90.4

Table 17. FORECAST STATE AIRPORT SYSTEM REVENUES  
(Millions of Current Year Dollars)

FISCAL YEAR	FUEL TAXES	CONCESSION REVENUE	AERONAUTICAL RENTALS	OTHER REVENUE	TOTAL REVENUE
1977	5.0	23.4	5.8	4.0	38.2
1978	5.2	25.5	6.5	4.2	41.4
1979	5.4	27.9	7.2	4.2	44.7
1980	5.7	30.3	8.1	4.2	48.3
1981	5.9	32.8	9.1	4.3	52.1
1982	6.1	35.4	10.2	4.4	56.1
1983	6.3	38.2	11.5	4.4	60.4
1984	6.6	41.3	12.7	4.4	65.0
1985	6.8	44.6	14.3	4.5	70.2
1986	7.1	48.2	16.0	4.5	75.8

Table 18. FORECAST SYSTEM PLAN REVENUES, EXPENSES, AND AIRPORT USE CHARGE AND LANDING FEE REQUIREMENT (Millions of Current Year Dollars)

FISCAL YEAR	TOTAL REVENUES	TOTAL EXPENSES	NET AIRPORT USE CHARGE AND LANDING FEE REQUIREMENT	FUEL TAX CREDITED TO USE CHARGE	GROSS AIRPORT USE CHARGE AND LANDING FEE REQUIRED (BEFORE FUEL TAX CREDIT)	GROSS USE CHARGE RATE PER 1,000 LBS (IN \$)
1977	38.2	50.9	12.7	4.8	17.5	1.437
1978	41.4	55.4	14.0	4.8	18.8	1.471
1979	44.7	62.9	18.2	5.1	23.3	1.736
1980	48.3	67.9	19.6	5.4	25.0	1.774
1981	52.1	72.9	20.8	5.6	26.4	1.802
1982	56.1	75.9	19.8	5.8	25.6	1.680
1983	60.4	79.2	18.8	6.0	24.8	1.565
1984	65.0	82.9	17.9	6.3	24.2	1.461
1985	70.2	86.5	16.3	6.5	22.8	1.331
1986	75.8	90.4	14.6	6.7	21.3	1.196

NOTE: Gross use charge rates presented here are lower than those forecast by the State Department of Transportation for two reasons:

- (1) Consultant estimates of future operating expenses are somewhat lower than those foreseen by the State
- (2) Consultant estimates of eastbound visitor spending led to higher concessionaire revenue forecasts than those of the State

Expenses and revenues have all been calculated on a 6 percent annual inflation rate. Estimated use charges increase at an average of about 5.2 percent annually until 1982 and then decline. The impact of the recommended CIP on the use charges and landing fees is therefore believed to be manageable and reasonable.

With respect to airport financing, a number of recommendations are made and discussed in some detail in the Technical Supplement. Briefly they are:

- Emphasis on general obligation bond financing to minimize debt service and accordingly minimize user charges.
- Retention of the special fund structure for financial management of airport system resources.
- Provision for General Fund support if required, recognizing the essentiality of the airport system to state social and economic health.

- Retention of residual special fund year-end revenue surpluses, when annual revenues exceed annual expenses, to be used for cash financing rather than returning them to users.
- Separation of the fuel tax and use charges to make them distinct revenue sources.
- Study of airport use charge and landing fee rates to assure that all classes of users are contributing equitably. The study should consider the possibility of establishing minimum landing fees for all traffic at the busiest airports to discourage non essential traffic, to defray the higher expenses associated with operating these airports, and to help defray costs of financing reliever facilities.

## PRIORITIES

Recommended work has been prioritized considering seven rating categories which include:

- Level of Service — rates an airport on how important it is to the state as a whole. Overseas airports which link Hawaii with the rest of the world are rated highest.
- Type of Requirement — is concerned with whether an item is needed for safety (rated highest), efficiency, convenience or support.
- Operational Growth — gives priority to airports according to rate of growth in total air activity over the past five years.
- Passenger Traffic Loads — rates airports according to the most recent year's passenger traffic volume.
- Need Date — gives priority according to urgency of the requirement.
- Alternatives Available — answers the question of whether the requirement can be satisfied by other means, giving priority to needs that have no alternative solution.
- Impact on the System — considers the impact on the system related to recommended FAA planning criteria.

Priorities for all CIP projects system-wide for each airport and according to cost are all listed item by item in the technical volume. It is recommended that such a priority system, modified as necessary to fulfill peculiar needs not directly related

to the airport, such as regional unemployment or development objectives, be implemented for future CIP planning and revisions. Table 19 illustrates the prioritizing system used for this study.

Table 19. WEIGHTED FACTORS FOR PRIORITY DETERMINATION

LEVEL OF SERVICE		TYPE OF REQUIREMENT		IMPACT ON THE SYSTEM		OPERATIONAL GROWTH (Last Five Years)		PASSENGERS IN MILLIONS (Last Year)		ALTERNATIVES		NEED DATE	
FACTOR	WT.	FACTOR	WT.	FACTOR	WT.	FACTOR	WT.	FACTOR	WT.	FACTOR	WT.	FACTOR	WT.
Overseas (Primary)	5.0	Air Safety	5.0	Essential for current operations	5.0	80%	5.0	>2	5.0	Provides sole capability for intended purpose	5.0	Next year	1.0
		Ground Safety	4.5	Will complete an incomplete facility	4.5								
Inter-island (Secondary)	4.0	Operational Expedient IFR	4.0	Provides for traffic now exceeding criterion	4.0	50-79%	4.0	2-1	4.0	Replaces inadequate but operational capability(ies) having no alternative means of accomplishing goal	4.0	+2 years	.8
		Operational Expedient VFR	3.5	Increases total airport potential	3.5								
Commuter (Feeder)	3.0	Ground Handling Expedient	3.0	Required for A/C being introduced this period	3.0	25-49%	3.0	1-1	3.0	Supplements related facility(ies) which provide reasonable alternatives for accomplishing goal	3.0	+3 years	.6
		Revenue Producing	2.5	Provides for traffic forecast to exceed criterion this period	2.5								
General Aviation	2.0	Public Convenience	2.0	Provides for traffic now exceeding 60% criterion	2.0	0-24%	2.0	.1-.01	2.0	Extends capabilities of existing adequate facility	2.0	+4 years	.4
		Preventive Maintenance	1.5	Provides for traffic forecast to exceed 60% criterion	1.5								
None this period	1.0	Maintenance or Administrative Facility	1.0	No capacity criteria established	1.0	Negative	1.0	<.01	1.0	Provides desirable redundancy	1.0	+5 years	.2
												+>5 years	.1

## SECTION IV—COORDINATION WITH OTHER PLANS

This airport system plan has been developed at a time when a new cycle of state, county and metropolitan general planning is beginning to reshape some of the goals and objectives which guided the growth of the state for the past ten years. From an era of explosive development which inevitably brought "growing pains," the governmental agencies are moving toward a more cautious growth pattern — one that hopefully will not only maintain the state's current economic vitality but also spread it to segments of the population and to communities which have been bypassed in the frantic growth of the past.

Existing plans have been considered as this study proceeded; however, many proposed plans have not yet been adopted, or are still in formulation. Consequently, the first update of Hawaii's Airport System Plan which is part of a continuing planning process should be undertaken within three years. After that, less frequent updates will be needed. Principal plans made available for study are shown in Table 20.

Table 20. PRINCIPAL PLANS CONSIDERED IN HAWAII'S AIRPORT SYSTEM PLANNING

PLANNING LEVEL	AGENCY	PLAN
National	Department of Transportation (FAA) FAA FAA	National Airport System Plan 1972 National Aviation System Plan 1972 National Aviation System Policy Summary 1972
State of Hawaii	Department of Planning and Economic Development (DPED) Department of Transportation (DOT) DPED DPED DPED DPED DPED DPED DPED	General Plan (now being revised) Transportation Plan 1961 (now being revised) Multi-Year Program and Financial Plan 1974 Comprehensive Open Space Plan 1972 Comprehensive Outdoor Recreation Plan Energy Policies Plan 1974 Growth Policies Plan 1974 Hawaii Tourism Impact Plan 1972 Hawaii's Next 20 Years 1961 Opportunities for Hawaiian Agriculture 1970
County - Honolulu	City and County of Honolulu City and County of Honolulu City and County of Honolulu Department of General Planning	General Plan (now being revised) Central Oahu Planning Study Oahu Transportation Study Planning for Oahu 1974
County - Hawaii	County of Hawaii	General Plan - County of Hawaii
County - Maui	County of Maui Planning Commission County of Maui Planning Commission  County of Maui Planning Commission County of Maui Planning Commission County of Maui Planning Commission County of Maui Planning Commission  University of Hawaii	A General Plan for the Lahaina District Open Space and Outdoor Recreation Plan 1974  Wailuku-Kahului General Plan 1972 Lahaina Community Development Plan 1973 Kihei Civil Development Plan 1969 Makawao, Pukalani and Kula General Plan 1975 Molokai, Present and Future 1973
County - Kauai	County of Kauai	Kauai General Plan 1970

Some of the most significant goals for the coming years are contained in the State of Hawaii Growth Policies Plan. Many of these influence airport needs. Therefore, this system plan assumes the state in cooperation with the counties will succeed in:

- Guiding the state civilian population growth rate to approximately 1.7 percent per year by attaining a population growth on Oahu of about 1.5 percent per year, and growth on the Neighbor Islands of 3 percent per year.
- Guiding population to compact urban developments.
- Stabilizing sugar and pineapple industries and diversifying agriculture so that most lands now used for agricultural purposes will continue to be so used.
- Controlling growth of tourism to about .5 percent annually, with about a 3 percent annual growth rate on Oahu and 9 percent on the Neighbor Islands.
- Assuring economic health of the visitor industry.
- Bringing new non-polluting industry to Hawaii to broaden the economic base accompanied by sufficient development of energy resources to encourage such growth.
- Developing improved inter-island water transportation of people and goods.
- Bringing land-based mass transit systems to Oahu with a complementary marine transit system, simultaneously reducing automobile travel.
- Providing an increase in housing construction.
- Preserving and enhancing the physical environment.

#### **SUMMARY OF COORDINATING AGENCIES**

During preparation of this plan the existing data base was broadened by coordination with the air carriers serving Hawaii, pilots using the system, fixed base operators, businessmen and passengers, in addition to coordination with governmental agencies. Inputs obtained were considered and incorporated wherever possible in the system definition as it progressed. Subsequently, the draft was coordinated formally with key industry and government agencies. Table 21 summarizes coordinating agencies, their relationship with the system and the nature of the coordination. Specific acknowledgments are made in Volume II of this study.

Table 21. COORDINATING AGENCIES

AGENCY	RELATIONSHIP WITH SYSTEM	NATURE OF COORDINATION	INPUTS OBTAINED
Air Molokai	Commuter air carrier	I	V
Alii Air	Commuter air carrier	I	V
Aloha Airlines	Intra-state carrier	L	W
American Airlines	Overseas carrier	L	W
Associated Aviation	Fixed base operator	I	V
Braniff Airlines	Overseas carrier	L	NR
Continental Airlines	Overseas carrier	L	W
District Airport Superintendents (Each County)	Airport operators	I, FDR	V & W
Federal Aviation Administration	Federal agency responsible for system	RL & FDR	V & W
General Aviation Council of Hawaii	General aviation spokesman	IDR	V & S
Hawaii Chamber of Commerce	Business spokesman	RL	S
Hawaii Country Club of the Air	Fixed base operator	I	V
Hawaii County Fire Department	Helicopter user	I	W
Hawaii County Planning Department	County planning agency	I, FDR	V & W
Hawaii Helicopters International	Air taxi operator	I	V
Hawaii Visitors Bureau	Business agency	RL	V
Hawaiian Air Lines	Intra-state carrier	L	W
Hawaiian Air Tour Service	Air taxi/tour operator	I	V
Hickam-Wheeler Aero Club	Fixed base operator	RL, S	V
Honolulu Airlines Committee	Air carrier spokesman	RL, FDR	V & W
Honolulu Fire Department	Helicopter user	I	V
Honolulu Police Department	Helicopter user	I	V
Island Pacific Air	Fixed base operator commuter air carrier	I	V
Kauai Planning Department	County planning agency	I, FDR	V & W
Kenai Helicopters	Air taxi and agricultural work	I	V
Life of the Land	Environmental interest group spokesman	I	V
Mass Transit Authority	Surface transportation	I, FDR	V & W
Maui Planning Department	County planning agency	L	W
Northwest Orient Airlines	Overseas air carrier	I	V
Oahu Soaring	Glider operator	I	V
OK Air	Air taxi operator	I	V
Panorama Air Tour Inc.	Air taxi/tour operator	I	V
Piper Flight Center	Fixed base operator	I	V
Royal Hawaiian Air Service	Commuter air carrier	I, IDR	V
State Department of Planning and Economic Development	State planning agency	RL	V
State Department of Transportation	State agency responsible for system	RL & FDR	W
Statewide Transportation Planning Council	Intermodal planning	FDR	W
U.S. Weather Service	Airport weather services	RL	V
United Airlines	Overseas air carrier	I	V

LEGEND: I - Comments solicited by interview  
 L - Comments solicited by letter  
 RL - Routine liaison  
 FDR - Formal review of draft  
 IDR - Informal review of draft  
 V - Verbal comments offered  
 W - Written comments offered  
 S - Survey  
 NR - No response

## **SECTION V—AVIATION'S PLACE IN HAWAII TOMORROW**

Aviation will continue to be a uniquely important mode of transportation in Hawaii for the foreseeable future — the system that bonds Hawaii with the rest of the world and gives it internal cohesiveness. It is increasingly difficult to separate the social, economic and environmental implications of aviation but it is meaningful to estimate its future impact on Hawaii in each of these terms.

### **AVIATION AND THE PEOPLE**

The people of Hawaii will rely on aviation as the chief means of inter-island and overseas transportation for the foreseeable future notwithstanding developments in ocean transportation. Even in this state, where compulsive haste has never dominated activity patterns, time is a valued commodity and most travel is done with the objective of accomplishing something — either business or recreation — at the destination.

A short trip leaves more time for business associates, family, friends or fishing. Flying time is measured in minutes while, except for nearby destinations, surface travel is measured in hours. Frequent flight schedules improve the picture. Weather is seldom a factor in flying in Hawaii, while sea conditions may become quite unpleasant. Introduction of low cost surface ferry transportation between islands may open new markets but is not expected to have a significant effect on current air travel patterns. The people of Hawaii are and will remain dependent on air transportation in the years beyond those addressed in this plan.

### **AVIATION AND THE ECONOMY**

Recent years have seen increasing efforts to achieve a broader economic base for Hawaii. Dominance of the visitor industry in island economy is a valid concern because of the many facets over which the state has no control. Concentrated efforts to identify and encourage suitable new industries which could take up the slack if tourism should suddenly fail have produced no acceptable alternatives. In the



years to come it appears tourism will remain a dominant industry with nearly all tourist traffic depending on air transportation. State economy is further linked to air transportation by expanding export markets for papayas, flowers and other perishable products. Hawaii's economy will remain, for the foreseeable future, strongly dependent on air transportation.

## **AVIATION AND THE ENVIRONMENT**

Many of the same factors that encourage a strong air transportation net in Hawaii also limit system expansion. Land and airspace are both limited by topography. Inter-island air travel is confined to a relatively narrow band of airspace shared at two points with substantial overseas traffic. The low altitude structure, in a practical sense, is confined laterally to within a few miles either side of the island chain and along the narrow coastal plains because of the inland mountain masses. Again, in a practical sense, it is also confined vertically by cloud conditions because most VFR traffic (which comprises over 93% of Hawaii's general aviation flying) remains beneath the clouds taking advantage of the scenic beauty of the islands. Similarly, most airports are located on the coastal plains, again because of topography. The result is that air activity takes place in very confined airspace where positive control is also limited because radar is blocked by the mountains.

Public concern for safety, and resentment against environmental disturbances, particularly noise and air pollution, still further restrict siting of new airports and to a lesser extent expansion of existing facilities. Aircraft and engine design technology ultimately will reduce noise and pollution impacts somewhat. The extent that this will ease public reaction cannot be estimated, but as progress is made in reducing ambient noise levels in accordance with recent legislation, the relative effects of reducing aircraft noise may not be easily discernible.

Regardless of environmental issues the islands of Hawaii are small and population centers which can feasibly be served by fixed-wing aircraft are, for the most part,

adequately served or have airport sites tentatively identified. A few small communities in rugged coastal or interior mountain areas are either too small to support a facility or because of topography must be served by helicopter.

For these reasons, airport system growth will be largely qualitative. The number of airports is unlikely to grow appreciably in the years beyond those addressed in this study.

## SECTION VI—RECOMMENDED ACTIONS

In the course of this study, areas were identified where new policy should be considered, where policy had never been defined, or where for some other reason an in-depth study beyond the scope of this report was advisable. A specific example is the need to determine the place that general aviation will occupy in the state's socio-economic growth. Until such questions are answered or actions are taken, an optimized system plan cannot be implemented.

Attention has been called to these recommendations in the technical discussions, most of which are too involved for this summary report. In most cases a brief examination has been made of existing legislative authority, the agencies likely to be involved, and schedules necessary to achieve timely problem resolution in consonance with proposed airport development schedules. For convenience of the reader, the most important of these recommendations and other pertinent information are summarized in Table 22. Legislative references are intended merely as a guide to the planner and may not encompass all pertinent authority in each area. They should be used in conjunction with appropriate legal counsel. It would also be presumptuous to assign agencies responsible to accomplish actions recommended; these too therefore are intended only to guide the planner in initial approaches to problem solution.

Table 22. RECOMMENDED ACTIONS, TIMING AND RESPONSIBILITIES

RECOMMENDATION	STATUTORY AUTHORITY		RESPONSIBILITY		RECOMMENDED SCHEDULE
			PRIMARY	COORDINATING AUTHORITY	
1. Complete airport improvement programs.	HRS 261-2 261-4 261-5 261-8	Session Laws 1974 Act 218 Section 80, 81	State Department of Transportation (DOT)	Federal Aviation Administration (FAA)	Closely scrutinize recent economic events and develop a viable CIP, reflecting cautious near-term expansion.
2. Study and implement noise abatement plans for General Lyman and Kahului airports. Define noise easements.	Same as "1" HRS 341-4 341-6	above plus: 342-42 344-4	DOT - Joint with Office of Environmental Quality Control (OEQC)	FAA and Counties of Hawaii & Maui	Kahului 1977 General Lyman 1978
3. Establish airport buffer zones, reserve land for future clear and approach zones by appropriate zoning.	HRS 261-2 262-2 262-3	262-4 344-4	DOT	FAA, Counties and Land Use Commission	Annual
4. Select future airport sites, purchase land and establish protective zoning.	HRS 261-2 261-3 261-5	261-8 262-3 341-4	DOT	OEQC, Counties, FAA, Land Use Commission and Department of Accounting and General Services	Oahu 1977 *Maui - New Airport 1990 Hawaii - Naalehu 1990
5. Assess potential for community development as an effect of airport development in selected sites.			State Department of Planning and Economic Development (DPED) - Joint with DOT	FAA, Counties and Land Use Commission	Waimea-Kohala 1977 Lanai 1985 Upolu 1978 Naalehu 1990
6. Study and recommend state goals and objectives for general aviation growth.	HRS 261-2 261-3	344-4	DOT - Joint with DPED	FAA and General Aviation Council of Hawaii (GACH)	1977
7. Assess general aviation growth objectives, establish facility requirements compatible with established goals and undertake development of required facilities.	HRS 261-2 261-4 261-7 261-32 262-3 262-4 262-5 262-6 262-11 341-4 Act 246 Act 247 Act 248	HB 2067-74 HB 2547-74 SB 1397-74 341-6 342-3 342-22 342-32 342-42 343-4 343-5 344-1 344-4	DOT - Joint with FAA	DPED, Counties and GACH	1978
8. In consonance with established general aviation growth goals study and develop a formula to make general aviation partially self-supporting.	HRS 261-2 261-7 261-8 261-16 262-5 262-6 262-11 341-4 341-6 Act 246 Act 247 Act 248	342-3 342-22 342-32 342-42 343-4 343-5 344-3 344-4	DOT	FAA, GACH and DPED and Department of Accounting and General Services	1979
9. Use enforceable legal constraints on flight routes and to establish for noise control.	HRS 261-17 263-2 263-4 342-3 342-8 Act 242	342-11 342-17 342-42 344-4	DOT - Joint with FAA	OEQC	1979
10. Study options and select an optimized solution to Kahului airport growth requirements. (Including assessment of Kanaha Pond Bird Sanctuary constraints.)	HRS 261-2 261-3 261-4 261-5 261-8 261-32 261-33 261-35	262-2 262-3 341-4 341-5 342-42 342-43 344-3 344-4	DOT	OEQC, University of Hawaii, Environmental Center and FAA	1979

\*NOTE: Maui Kahului reliever requirements to be established by recommendation No. 10

Table 22. (Continuation)

RECOMMENDATION	STATUTORY AUTHORITY		RESPONSIBILITY		RECOMMENDED SCHEDULE
			PRIMARY	COORDINATING AUTHORITY	
11. Study and establish state position relative to encouragement of community and tourist destination airports.	HRS 261-2 261-3	261-4 261-16	DOT	DPED, OEQC, Counties, Land Developers and Communities	Kihei/Puunene 1978 Lahaina/Kaanapali 1980 West Molokai 1978 Poipu 1980
12. Establish minimum state safety and environmental standards for community and tourist destination airports.	HRS 261-2 261-3 261-4 261-12 261-16 261-17 262-2 262-3 262-11 341-4 Act 247 Act 249	341-6 342-2 342-3 342-22 342-32 342-42 342-52 344-3 344-4	DOT - Joint with FAA	OEQC, Counties, Land Developers and Department of Health	1977
13. Study and establish state position relative to responsibility for development of helicopter sites and route structure.	HRS 261-2 261-3 261-4	262-2 262-3 262-4	DOT - Joint with Counties and FAA	OEQC and Commercial Operators	1979
14. Develop or coordinate development of helicopter landing site sub-system.	HRS 261-2 261-16 262-3 262-4	262-5 262-6 262-11	DOT as determined with others: Counties, Department of Land and Natural Resources, Land Developers	OEQC and FAA	Annual
15. Pursue long-term joint use of military airports in conjunction with county requirements.	HRS 261-2 341-4 341-6 342-22	342-42 344-3 344-4	DOT	Honolulu Airlines Committee (HAC), U.S. Senators, U.S. Congresspersons, Governor, OEQC and FAA	Kaneohe MCAS 1976/7 Barbers Point NAS 1976/7 Wheeler AFB 1976/7 Dillingham Field 1976/7 Barking Sands NMF 1990
16. Pursue agreement for unrestricted use of Kahoolawe restricted airspace R3104.	HRS 261-2 261-12		FAA - Joint with DOT	HAC	1990
17. Study per-passenger space requirements for air terminals and adopt standard policy.	HRS 261-2		DOT	HAC	1976/7
18. In coordination with air carriers, study and adopt improved inter-island baggage handling scheme.	HRS 261-2 261-7		DOT - Joint with HAC and Inter-Island Airlines		1977
19. Evaluate need for improved intermodal passenger interface systems serving airports.	HRS 261-2 261-7	341-4 342-3	DOT	Counties	1980
20. Re-assess airport funding system and advisability of G.O. bond financing, short term support by General Fund, retention of year-end revenue surpluses, separation of fuel tax and use charges and equitability of use charges and landing fees.	HRS 261-5 261-7 Act 109 Act 218	261-55 2840-74 2374	DOT	FAA and HAC	1977