NOTES ON THE HAWAII PERMIT
APPLICATION AND SUPPORT SYSTEM

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Norman H. Okamura
Dave Raney
Coastal Zone Management Project
Urban and Regional Planning Program

DRAFT

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The purpose of this series of notes is to discuss system elements and costs of the Hawaii Permit Application and Support System. The notes were prepared in response to a request by the Office of Coastal Zone Management for further information about the H-PASS project.

The notes were prepared with direction provided by Mr. David Hunsberger, consultant to the Office of Coastal Zone Management, whose responsibilities were to review coastal State programs involving permit tracking and monitoring systems.

Background

The Hawaii Permit Application and Support System (H-PASS) differs from other states "permit tracking systems" in its purposes, scope, and the comprehensive nature of its data base. These differences have made further analysis of the H-PASS necessary in order to compare its components with like efforts in other states, and to provide cost estimates of the "permit tracking" functions of the H-PASS.

The H-PASS is a more ambitious approach to coordination of coastal management efforts and sharing of data among agencies than has been proposed in most coastal states, which have proposed or implemented systems for tracking relatively few permits directly associated with coastal development approvals. Because of the broader scope of H-PASS, it appears on the surface to be a more expensive approach to "permit tracking" than OCZM has encountered in other states. Only after the total system costs have been allocated among the variety of applications to be implemented on the H-PASS is it possible to make a fair comparison with systems in other states, and the analysis reveals the H-PASS to provide a quite favorable cost picture per application.

These notes explain some of the key differences between the H-PASS and other systems, discuss some specific questions raised by Mr. Hunsberger in his critique of the H-PASS systems design, and present the results of the cost allocation analysis performed to estimate the costs and resource requirements for each H-PASS application.

System Scope

The H-PASS purposes include "permit tracking", but extend beyond that function to provide for maintenance of current and accessible planning data

relevant to a number of the aspects of coastal zone management which bear on specific permits - historic sites and land use inventory data, for example. The H-PASS also provides a network capability which is intended to facilitate the communication and sharing of data relating to ongoing projects in the coastal zone or for use in broader scale planning efforts of importance for effective coastal zone management. Although the need to monitor individual projects is facilitated by the H-PASS, on an on-going rather than after the fact basis, the need to promote wise regional and statewide planning decisions is also recognized in the H-PASS design. For the latter purposes, the maintenance of current county land use inventories is proposed - something which is not presently possible given the county resources available for maintenance of these inventories.

In all, the H-PASS will ultimately network twelve different agencies into an on-line system which will include a minimum of fifteen different land development permits, approvals, or specific types of planning data bases. This network will provide a facility for communication and coordination which does not presently exist, with the attendent economies of scale which will result from the sharing of system costs among a number of different users and applications.

While this project is more ambitious than many encountered elsewhere, it can for that very reason be considered as evidence that Hawaii is attempting to implement a system which will make a significant difference in the active management of coastal resources. It is an innovative approach, but Hawaii has a tradition of innovation in land use management tools.

System Design Issues and Considerations

Mr. Hunsberger raised a number of concerns and questions over the H-PASS system design, and suggested some alternatives for consideration. The major concerns he raised are discussed below.

Length of Data Records:

Issue: Mr. Hunsberger questioned the need for long (2,000-4,000 character) data records currently proposed for some files in the H-PASS system, expressing concern over the data entry and disc storage requirements of long records.

Response: We concur. An estimated length of 2,000 characters has been used for a number of applications as an initial estimate only, subject to further definition in the next phase of specification of user requirements. The rather large record size would permit considerable storage of text if this proved necessary and justifiable to meet user requirements. We believe the final record sizes will be smaller in most cases, and the initial estimates provide some cushion in disk file requirement estimates.

DPED and URPP will be discussing the size of records with the user agencies in the application design cycle. While a reduction in the size of records may be a real possibility, storage of text may be required to meet some of the H-PASS requirements. There are a variety of systems design alternatives available for meeting those requirements in a manner which makes efficient use of the system disk storage. For example, if only a relatively small number of permit applications require extensive text, such data can be stored in overflow records linked to the standard application record. There are other system alternatives such as the use of data compression for storage of data on disk or for data transmission which minimize the impact of large strings of blank text. So, although the proposed use of a 2,000 character fixed size record may appear to require excessive system resources, the actual physical requirements may be much less than would appear by simply multiplying the logical record length (e.g. 2,000 characters) times the number of records. The physical record length after data compression may be much less on average than the logical record length.

We acknowledge Mr. Hunsberger's concerns over record lengths and will bear these concerns in mind during the forthcoming application design cycle and during the selection of specific system design approaches tailored to the hardware and software capabilities of the H-PASS equipment once the selection of a vendor has been made.

Remote Terminals vs. Word Processors:

Issue: Mr. Hunsberger raises the possibility of using remote (non-word processing) terminals for some agencies instead of word processors.

Response: Good Point! DPED and URPP will be reexamining some user-agency requirements regarding the need for word processors. Already, a few agencies have been identified to be requiring only a remote terminal. The DPED and URPP will be proposing these options at the conclusion of the second year, and this may result in a reduction of the costs of the system as presently projected.

In addition, the cost savings from going a remote may not be significant considering that to reduce telecommunications time from the outer islands would require a fairly "intelligent" remote terminal with memory. These machines cost approximately seven to eight thousand dollars. But, these remotes would not provide the capability of printing reports and updates to the agencies. And, as a consequence, using remotes without printers would reduce the overall attractiveness of the program. Substitution of remote terminals for word processors is possible; the savings, however, would only be a few thousand dollars per unit and would leave the user with a device which would not be capable of producing printed reports or be useful for any other purposes when not on-line to a computer.

URPP is presently designing most of the system transactions to be "batch" oriented. This design approach reduces telephone line charges compared to the alternative of an on-line interactive mode of communication, as is the case for most remote terminal applications. The system design becomes more complex and time-consuming if provision for both on-line and batch modes of operation for a particular application such as SMA permit processing is required. The additional programming costs and time loss may offset any hardware cost savings.

Finally, word processors also serve as an inducement into the system and functionally have the potential of reducing the amount of "rekeying" required of the user to enter data into the system.

RJE to the University of Hawaii IBM 370/158

Question: Is a Remote Job Entry port into the IBM 370/158 worth the cost?

Response: Yes, the cost of the RJE port involves only the costs of setting up the programming protocols between the UH 370/158 and the H-PASS computer plus the cost of the modems. UHCC, depending on what becomes available, may also allow the "hardwiring" of the H-PASS computer to their machine at a 9600 baud rate. This would be very cost effective because use of the system would then be at University rates. Use of the RJE link offers some other specific advantages which should more than offset the relatively modest costs of the link. The use of their high-speed line printer for high-volume print jobs allows savings on the H-PASS by deferring acquisition of a high-speed printer in Phase I of the project.

Security

Issue: Are there problems with system security? Is there a possibility of illegal entry and access to a data base.

Response: H-PASS will be utilizing a password system. This is standard to the design. In addition, H-PASS will be creating a separate file structure for each application instead of a common data base. This helps to ensure that the H-PASS can meet its "benchmark" of five applications in a year. But, more importantly, it also helps to protect the data base, especially since agencies for each application will be designated through system controls the ability to "read" or "write." Only the administering agency will be allowed to "write" on the data base, and "read" access will be strictly controlled.

Cost Allocations for Word Processing Administrative Support

Issue: Some of the costs of the H-PASS include costs for word processing capabilities in support of CZM administrative requirements. The analysis presented herein allocates a portion of the H-PASS system costs to an item called Administration, in recognition that the word processors will be used for

functions other than data entry into the H-PASS system. Possible issues arise from this allocation. What are the cost estimates for administration? Are they reasonable? What does this entail?

Response: The proposed allocation for the cost of administration is approximately $3,500 per agency. This is a reasonable allocation since there has been an increase in the clerical workload without an increase in support from the HCZM Program. This is approximately the difference between the cost of a word processing machine and a remote terminal with a printer. The true value of this capability, however, far exceeds the actual dollar allocation since a word processor actually increases output.

Cost Allocation for Coordination/Training

Issue: As with the allocation of some H-PASS costs to administrative functions, an allocation has also been made under the category of coordination/training in recognition that some of the system capabilities would be in support of this category of CZM program objectives. Possible issues may arise over the nature and amount of this allocation. What are the amounts allocated to costs of coordination and training? Are they reasonable? What does this include?

Response: The HCZM Program is responsible in large part for program coordination. The HCZM Program is also responsible for technical support to the counties and other State agencies. H-PASS is predicated on the ability to improve coordination among the various user-agencies. It is also is intended to result in the improvement of technical skills in the user agencies. The proposed allocation of the cost of education per agency is $3,000. Divide this by the average of three persons in each agency receiving the training and the cost is approximately $1,000 per person. This does not include the cost-value of coordination, which is most difficult to measure.

Benchmarks

Question: What are appropriate benchmarks? Can the five applications which involve eight (DPED/Planning Division - CIP; DPED/Special Plans Branch - A-95; DPED/CZM - Federal Consistency; DPED/State Plans Branch - A-95, Federal Consistency, Special Management Area Permits; and four counties (Special Management Area Permits) agencies be implemented in the first year?

Response: A qualified yes. This intense development schedule demonstrates the commitment the State has toward H-PASS and surely is a test of URPP. The five applications are a heavy first-year development schedule. But, DPED and URPP are committed toward seeing the goal accomplished. DPED and URPP feel that if the first year schedule can be met, then subsequent work in the years planned after will be accomplished. It certainly provides some excitement to a benchmark test. And, it is even reasonable to argue that even if a segment of those applications fails, the system could still be worthwhile, with another year of testing.

Right now, however, most of the time is being spent on meeting more administrative needs. This takes away a substantial amount of time which would more effectively be directed toward implementation. No "dog and poney" shows will be undertaken this year.

Updates

Table 1 to 5 (see pages 7 to 11) illustrates the number of update transactions which will be occurring in Years I through V. The number of update transactions are arrived at through multiplying the number of cases by the number of updates expected per case. The figure suggests that the number of update generated will be substantial. However, most of the updating will be accomplished in "batch mode," rather than through individual requests and updates of single records. This means basically that a user agency will (1) add multiple cases (i.e. applications, staff reports, and other information) in a single batch, and/or (2) receive multiple cases for in a single batch for updating, update all of those cases, and send them all to the central computer in a single batch. This batch mode of updating will result in a very substantial reduction of telephone time as well as time on the word processing terminal.

Number of Cases: The number of cases are estimates consistent with those shown on Tables 7 through 11 (See Pages 15 to 19), Disk Space Requirements. They are simply a projection of the number of cases estimated for the each of the particular applications.

Number of Updates: "Updates" is a term referring to the functions of adding, deleting, and/or modifying a case from a file. The number of updates will vary from application to application. There are most likely to be four updates per permit application. The first update will involve simply adding the case to a file. The second will be when detailed information on the case is obtained from the applicant and the staff completes its preliminary review. The third update will occur when there is a public hearing. A fourth update will be performed when a final action on a permit has been completed. For land use inventories, there will be two basic updates. The first will occur when new tracts of urban land are subdivided to created more TMK parcels. After the basic data on these has been developed, there will most likely be only modifications to a file. The update tables for the four land use inventories displays only the modifications to a file. Thus, we have underestimated the number of updates to a file in the table because we did not include additions.

Table 1
Yearly H-PASS System Transactions
Updates by Application
Project Year: 1

Application	# of Cases Existing	# of Updates Per Year	# of Updates Per Case	TOTAL UPDATES PER YEAR	RECORDS AT END OF YEAR
SMA Permit	1,750	550	4	2,800	2,300
FEDCCN Approval*	250	250	4	1,000	500
A-95	1,750	450	4	2,375	2200
CIP	2,800	1,400	4	5,600	4200
H-LUI	142,500	6,500	1	6,500	149,000
CDUA					
Historic Sites					
Historic Surveys					
SLUC-DBC					
K-LUI					
M-LUI					
Honolulu LUI					
EIS					
Zone of Mixing					
NPDES					
Sewage/Cesspools					
Solid Waste					
Shorewaters					
TOTALS BY YEAR	149,050	9,150	17	18,275	158,200

Table 2
Yearly H-PASS System Transactions
Updates by Application
Project Year: II

Application	# of Cases Existing	# of Updates Per Year	# of Updates Per Case	TOTAL UPDATES PER YEAR	RECORDS AT END OF YEAR
SMA Permit	2,300	550	4	2,800	2850
FEDCON Approval*	500	250	4	1,000	750
A-95	2,200	450	4	2,375	2650
CIP	4,200		4	5,600	4200
H-LUI	149,000	6,500	1	6,500	155,500
CDUA	2,400	200	4	800	2,600
Historic Sites	2,300	300	2	600	2,600
Historic Surveys	700	150	2	300	850
SLUC-DBC	1,400	200	4	800	1,600
K-LUI	82,000	4,500			86,500
M-LUI	111,000	6,000	1	6,000	117,000
Honolulu LUI	220,000	10,000	1	10,000	230,000
EIS					
Zone of Mixing					
NPDES					
Sewage/Cesspools					
Solid Waste					
Shorewaters					
TOTALS BY YEAR	576,600	28,900	27	36,775	607,100

Table 3
Yearly H-PASS System Transactions
Updates by Application
Project Year: III

Application	# of Cases Existing	# of Updates Per Year	# of Updates Per Case	TOTAL UPDATES PER YEAR	RECORDS AT END OF YEAR
SMA Permit	2,850	550	4	2,800	3,400
FEDCON Approval*	750	250	4	1,000	1,000
A-95	2,650	450	4	2,375	3,100
CIP	4,200		4	5,600	4,200
H-LUI	155,500	6,500	1	6,500	162,000
CDUA	2,600	200	4	800	2,800
Historic Sites	2,600	300	2	600	2,900
Historic Surveys	850	150	2	300	1,000
SLUC-DBC	1,600	200	4	800	1,800
K-LUI	86,500	4,500			91,000
M-LUI	117,000	6,000	1	6,000	123,000
Honolulu LUI	230,000	10,000	1	10,000	240,000
EIS	2,300	300	4	1,200	2,600
Zone of Mixing	1,300	200	4	800	1,500
NPDES	1,220	60	4	240	1,280
Sewage/Cesspools	2,200	100	4	400	300
Solid Waste	450	50	4	200	500
Shorewaters	2,220	60	4	240	2,280
TOTALS BY YEAR	613,190	29,670	51	39,855	644,660

Table 4
Yearly H-PASS System Transactions
Updates by Application
Project Year: IV

Application	# of Cases Existing	# of Updates Per Year	# of Updates Per Case	TOTAL UPDATES PER YEAR	RECORDS AT END OF YEAR
SMA Permit	3,400	550	4	2,800	3,950
FEDCON Approval*	1,000	250	4	1,000	1,250
A-95	3,100	450	4	2,375	3,550
CIP	4,200		4	5,600	4,200
H-LUI	162,000	6,500	1	6,500	168,500
CDUA	2,800	200	4	800	3,000
Historic Sites	2,700	300	2	600	3,000
Historic Surveys	1,000	150	2	300	1,150
SLUC-DBC	1,800	200	4	800	2,000
K-LUI	91,000	4,500			95,500
M-LUI	123,000	6,000	1	6,000	129,000
Honolulu LUI	240,000	10,000	1	10,000	250,000
EIS	2,600	300	4	1,200	2,900
Zone of Mixing	1,500	200	4	800	700
NPDES	1,280	60	4	240	340
Sewage/Cesspools	2,300	100	4	400	400
Solid Waste	500	50	4	200	550
Shorewaters	2,280	60	4	240	2,340
TOTALS BY YEAR	644,660	23,170	51	39,855	672,330

Table 5
Yearly H-PASS System Transactions
Updates by Application
Project Year: V

Application	# of Cases Existing	# of Updates Per Year	# of Updates Per Case	TOTAL UPDATES PER YEAR	RECORDS AT END OF YEAR
SMA Permit	3,950	550	4	2,800	4,500
FEDCON Approval*	1,250	250	4	1,000	1,500
A-95	3,550	450	4	2,375	4,000
CIP	4,200		4	5,600	4,200
H-LUI	168,500	6,500	1	6,500	175,000
CDUA	3,000	200	4	800	3,200
Historic Sites	3,200	300	2	600	3,500
Historic Surveys	1,150	150	2	300	1,300
SLUC-DBC	2,000	200	4	800	2,200
K-LUI	95,500	4,500			100,000
M-LUI	129,000	6,000	1	6,000	135,000
Honolulu LUI	250,000	10,000	1	10,000	260,000
EIS	2,900	300	4	1,200	3,200
Zone of Mixing	1,700	200	4	800	1,900
NPDES	1,340	60	4	240	1,400
Sewage/Cesspools	2,400	100	4	400	2,500
Solid Waste	550	50	4	200	600
Shorewaters	2,340	60	4	240	2,400
TOTALS BY YEAR	674,530	29,670	51	39,855	706,400

Reports

Table 6 (see page 14) illustrates the number of reports expected to be generated in the fifth year of operation. The table illustrates that approximately 40,000 report copies will be generated yearly. The figure suggests that the number of reports generated will be substantial. However, much of the reporting will be accomplished in "batch mode," rather than through individual requests for reports. This means basically that a user agency will receive multiple reports in a single batch. And, over-time, it is expected that the monthly reports will simply be generated at the central computer and "mailed" to the various user agencies.

Types of Reports: There are basically three types of reports which will be made available through the H-PASS system. The first type of report will be those standard reports which are developed for each application. These reports will be generated weekly, bimonthly, monthly, or quarterly, depending upon the user needs as identified in the application design cycle. The second type of report will be those which are developed through inquiries. H-PASS will provide for limited inquiries by a user. Inquiries are specialized reports which are developed through searches of files by a user. These inquiries are specialized and developed for a particular purpose. The third type of report are those specialized reports requiring the use of statistical packages at the University of Hawaii Computing Center. This type of report will be especially useful for yearly reports, specialized statistics such as time studies, and plot printing.

Number of Agencies Receiving Reports: The number of agencies receiving standard reports will vary from report to report. Some reports will be limited to a few agencies. Others will have wide dissemination. The specific agencies receiving various reports will be determined through the application design cycle. Thusfar, the following agencies have been identified as receiving reports:

Department of Planning and Economic Development

Planning Division

Coastal Zone Management Program (Monitoring/Evaluation)
State Plans Branch (State Plan Policy Council)
Special Plans Branch (A-95)

Land Use Division

Economic Research and Analysis Division

Department of Land and Natural Resources

Planning Office

Historic Sites Division

Table 6
Estimates of Yearly H-PASS System Transactions:
Reports by Application

Application	# of BiMonthly Reports	# of Agencies Receiving Bimonthly Reports	# of Weekly or Bimonthly Reports Per Year	# of. Monthly Reports	# of Agencies Receiving Reports	# of Monthly Reports Per Year	# of Limited Inquiries Per Year	# of Reports from UHCC	TOTAL # OF REPORTS PER YEAR
SMA Permit	4 (BM)	7 (26)	728	3	9 (12)	324	800	50	1,902
FEDCON Approval	4 (BM)	7 (26)	728	3	10 (12)	360	500	10	1,598
A-95	5 (BM)	10 (26)	1,040	2	10 (12)	240	800	20	2,100
CIP	8 (W)	3 (52)	1,248	2	10 (12)	240	500	30	2,018
H-LUI	8 (BM)	2 (26)	312	2	1 (12)	24	800	30	1,166
CDUA	4 (BM)	7 (26)	728	2	10 (12)	240	800	10	1,778
Historic Sites	----	----	----	4	10 (12)	480	500	2	982
Historic Surveys	----	----	----	---	----	----	500	2	502
SLUC-DBC	4 (BM)	7 (26)	728	2	10 (12)	240	800	10	1,778
K-LUI	8 (BM)	2 (26)	312	2	1 (12)	24	800	50	1,166
M-LUI	8 (BM)	2 (26)	312	2	1 (12)	24	800	50	1,166
Honolulu-LUI	8 (BM)	2 (26)	312	2	1 (12)	24	800	50	1,166
EIS	4 (BM)	10 (26)	1,040	2	10 (12)	240	500	20	1,800
Zone of Mixing	4 (BM)	10 (26)	1,040	2	10 (12)	240	500	20	1,800
NPDES	4 (BM)	10 (26)	1,040	2	10 (12)	240	500	20	1,800
Sewage/Cesspools	4 (BM)	10 (26)	1,040	2	10 (12)	240	500	20	1,800
Solid Waste	4 (BM)	10 (26)	1,040	2	10 (12)	240	300	20	1,600
Shorewaters	4 (BM)	10 (26)	1,040	2	10 (12)	240	300	20	1,600
(W = Weekly, BM = Bimonthly) TOTAL ESTIMATED YEARLY REPORTING AT YEAR V			12,668			3,660	11,000	364	27,742

Department of Health

Pollution and Technical Control Division

Department of Transportation

Office of Environmental Quality Control

County of Hawaii

Planning Department

County of Kauai

Planning Department

County of Maui

Planning Department

City and County of Honolulu

Department of Land Utilization

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H-PASS Disk Space Requirements

Tables 7 through 11 (see pages 15 to 24) illustrate the growing disk space requirements based on preliminary estimates of the amount of cases (logical records) multiplied by the logical record length of each case.

Number of Cases: There will be a computer record for each application for a land development permit as identified in the H-PASS general design document. The number of cases will vary among the applications and will vary over time. The reader should note that the growth curve of cases for each application is based on the simplifying assumption of a constant annual increase in cases for each application. The actual growth curves will probably differ somewhat from the projections because they will probably reflect a percentage growth each year rather than a constant absolute amount. In reality, the number of permissions should be lower in the early years. In the later years, the number of cases are expected to increase.

Logical Record Length: The logical record length is the number of characters (letters or numbers) that a case will have. H-PASS records will probably be of a fixed format for any particular record type, and have been preliminarily estimated to be approximately 2000 characters per record. This is due to the number of text strings which will be required in order to keep information on conditions, staff reports, and commission actions. We are in the process of

Table 7
H-PASS System Resource Requirements By Application
Disk Storage Requirements
Project Year: 1

Part 1 of 2

	# of Records at Start	Additions	Records at end of Year	Record Length	On-Line Storage MBs
SMA Permit (Counties)	1,750	550	2,300	3,500	8.0
Federal Consistency (DPED/PD/CZM)	250	250	500	2,000	1.0
A-95 PNRS Review (DPED/PD/SP)	1,750	450	2,200	2,000	4.4
Capital Improvements Program (DPED/PD)	2,800	1,400	4,200	2,000	8.4
Hawaii County Land Use Inventory (Hawaii PD)	142,500	6,500	149,000	80	11.9
Conservation District Use (DLNR)					
Historic Sites (DLNR)					
Historic Sites Surveys (DLNR)					
Kauai Land Use Inventory (KAUAI PD)					
Maui Land Use Inventory (MAUI PD)					
Honolulu LUI (DLU)					

Table XX
H-PASS System Resource Requirements By Application
Disk Storage Requirements
Project Year: 1

Part 2 of 2

	# of Record at Start	Additions	Records at end of Year	Record Length Record	On-Line Storage MBs
Environmental Impact Statements (OEQC)					
Zone of Mixing (DOH)					
NPDES (DOH)					
Sewage and Cesspools (DOH)					
Solid Waste (DOH)					
Shorewaters Use Permit (DOT)					
			TOTAL STORAGE (Megabytes)		33.7

Table 8
H-PASS System Resource Requirements By Application
Disk Storage Requirements
Project Year: 2

Part 1 of 2

	# of Records at Start	Additions	Records at end of Year	Record Length	On-Line Storage MBs
SMA Permit (Counties)	2,300	550	2,850	3,500	10.0
Federal Consistency (DPED/PD/CZM)	500	250	750	2,000	1.5
A-95 PNRS Review (DPED/PD/SP)	2,200	450	2,650	2,000	5.3
Capital Improvements Program (DPED/PD)	(Most recent 3 yrs) (retained on-line) 4,200	---	4,200	2,000	8.4
Hawaii County Land Use Inventory (Hawaii PD)	149,000	6,500	155,500	80	12.4
Conservation District Use (DLNR)	2,400	200	2,600	2,000	5.2
Historic Sites (DLNR)	2,300	300	2,600	1,000	2.6
Historic Sites Surveys (DLNR)	700	150	850	3,500	3.0
Kauai Land Use Inventory (KAUAI PD)	82,000	4,500	86,500	80	6.9
Maui Land Use Inventory (MAUI PD)	111,000	6,000	117,000	80	9.4
Honolulu LUI (DLU)	220,000	10,000	230,000	80	18.4

Table XX
H-PASS System Resource Requirements By Application
Disk Storage Requirements
Project Year: 2

Part 2 of 2

	# of Records at Start	Additions	Records at end of Year	Record Length	On-Line Storage MBs
Environmental Impact Statements (OEQC)					
Zone of Mixing (DOH)					
NPDES (DOH)					
Sewage and Cesspools (DOH)					
Solid Waste (DOH)					
Shorewaters Use Permit (DOT)					
			TOTAL STORAGE (Megabytes)		73.1

Table 9
H-PASS System Resource Requirements By Application
Disk Storage Requirements
Project Year: 3

Part 1 of 2

	# of Records at Start	Additions	Records at end of Year	Record Length	On-Line Storage MBs
SMA Permit (Counties)	2,850	550	3,400	3,500	11.9
Federal Consistency (DPED/PD/CZM)	750	250	1,000	2,000	2.0
A-95 PNRS Review (DPED/PD/SP)	2,650	450	3,100	2,000	6.2
Capital Improvements Program (DPED/PD)	(Most recent 3 yrs) (retained on-line) 4,200	---	4,200	2,000	8.4
Hawaii County Land Use Inventory (Hawaii PD)	155,500	6,500	162,000	80	13.0
Conservation District Use (DLNR)	2,600	200	2,800	2,000	5.6
Historic Sites (DLNR)	2,600	300	2,900	1,000	2.9
Historic Sites Surveys (DLNR)	850	150	1,000	3,500	3.5
Kauai Land Use Inventory (KAUAI PD)	86,500	4,500	91,000	80	7.3
Maui Land Use Inventory (MAUI PD)	117,000	6,000	123,000	80	9.8
Honolulu LUI (DLU)	230,000	10,000	240,000	80	19.2

Table XX
H-PASS System Resource Requirements By Application
Disk Storage Requirements
Project Year: 3

Part 2 of 2

	# of Records at Start	Additions	Records at end of Year	Record Length Record	On-Line Storage MBs
Environmental Impact Statements (OEQC)	2,300	300	2,600	3,000	7.8
Zone of Mixing (DOH)	1,300	200	1,500	2,000	3.0
NPDES (DOH)	1,220	60	1,280	2,000	2.6
Sewage and Cesspools (DOH)	2,200	100	2,300	2,000	4.6
Solid Waste (DOH)	450	50	500	2,000	1.0
Shorewaters Use Permit (DOT)	2,220	60	2,280	2,000	4.6
			TOTAL STORAGE (Megabytes)		113.4

Table 10
H-PASS System Resource Requirements By Application
Disk Storage Requirements
Project Year: 4

Part 1 of 2

	# of Records at Start	Additions	Records at end of Year	Record Length	On-Line Storage MBs
SMA Permit (Counties)	3,400	550	3,950	3,500	13.8
Federal Consistency (DPED/PD/CZM)	1,000	250	1,250	2,000	2.5
A-95 PNRS Review (DPED/PD/SP)	3,100	450	3,550	2,000	7.1
Capital Improvements Program (DPED/PD) (Most recent 3 yrs) (retained on-line)	4,200	---	4,200	2,000	8.4
Hawaii County Land Use Inventory (Hawaii PD)	162,000	6,500	168,500	80	13.5
Conservation District Use (DLNR)	2,800	200	3,000	2,000	6.0
Historic Sites (DLNR)	2,900	300	3,200	1,000	3.2
Historic Sites Surveys (DLNR)	1,000	150	1,150	3,500	4.0
Kauai Land Use Inventory (KAUAI PD)	91,000	4,500	95,500	80	7.6
Maui Land Use Inventory (MAUI PD)	123,000	6,000	129,000	80	10.3
Honolulu LUI (DLU)	240,000	10,000	250,000	80	20.0

Table XX
H-PASS System Resource Requirements By Application
Disk Storage Requirements
Project Year: 4

Part 2 of 2

	# of Records at Start	Additions	Records at end of Year	Record Length	On-Line Storage MBs
Environmental Impact Statements (OEQC)	2,600	300	2,900	3,000	8.7
Zone of Mixing (DOH)	1,500	200	1,700	2,000	3.4
NPDES (DOH)	1,280	60	1,340	2,000	2.7
Sewage and Cesspools (DOH)	2,300	100	2,400	2,000	4.8
Solid Waste (DOH)	500	50	550	2,000	1.1
Shorewaters Use Permit (DOT)	2,280	60	2,340	2,000	4.7
			TOTAL STORAGE (Megabytes)		121.8

Table 11
H-PASS System Resource Requirements By Application
Disk Storage Requirements
Project Year: 5

Part 1 of 2

	# of Records at Start	Additions	Records at end of Year	Record Length	On-Line Storage MBs
SMA Permit (Counties)	3,950	550	4,500	3,500	15.8
Federal Consistency (DPED/PD/CZM)	1,250	250	1,500	2,000	3.0
A-95 PNRS Review (DPED/PD/SP)	3,550	450	4,000	2,000	8.0
Capital Improvements Program (DPED/PD) (most recent 3 yrs) (retained on-line)	4,200	---	4,200	2,000	8.4
Hawaii County Land Use Inventory (Hawaii PD)	168,500	6,500	175,000	80	14.0
Conservation District Use (DLNR)	3,000	200	3,200	2,000	6.4
Historic Sites (DLNR)	3,200	300	3,500	2,000	3.5
Historic Sites Surveys (DLNR)	1,150	150	1,300	3,500	4.6
Kauai Land Use Inventory (KAUAI PD)	95,500	4,500	100,000	80	8.0
Maui Land Use Inventory (MAUI PD)	129,000	6,000	135,000	80	10.8
Honolulu LUI (DLU)	250,000	10,000	260,000	80	20.8

Table XX
H-PASS System Resource Requirements By Application
Disk Storage Requirements
Project Year: 5

Part 2 of 2

	# of Records at Start	Additions	Records at end of Year	Record Length	On-Line Storage MBs
Environmental Impact Statements (OEQC)	2,900	300	3,200	3,000	9.6
Zone of Mixing (DOH)	1,700	200	1,900	2,000	3.8
NPDES (DOH)	1,340	60	1,400	2,000	2.8
Sewage and Cesspools (DOH)	2,400	100	2,500	2,000	5.0
Solid Waste (DOH)	550	50	600	2,000	1.2
Shorewaters Use Permit (DOT)	2,340	60	2,400	2,000	4.8
			TOTAL STORAGE (Megabytes)		130.6

reviewing these record lengths with the user agencies. Mr. Hunsberger's observation was that smaller record lengths would suffice if the needs for references to text material could be met "off-line". However, we are not sure that smaller records will help to achieve the monitoring/evaluation and coordination purposes of the Hawaii CZM Program if that means that required textual material is not conveniently accessible to user agencies.

"Overhead" Disk Space Requirements: The disk space requirements in these tables do not reflect the amount of disk capacity required for storage of language compilers, application programs, or index keys as required in a file management system. The amount of storage these items will require will be substantial and can be estimated to be 20 to 30 Mega Bytes.

This suggests that the configuration of a 60 MB disk drive will be insufficient somewhere in the second year. It will be very inadequate if all of the information is expected to be "on-line" at any given moment. There is the possibility of purchasing a second disk drive, however, in the interim, disk storage constraints will be managed by selective scheduling of access to large files which can be stored off-line on tape except when needed for periodic updating (e.g. land use inventories).

Cost

The costs of the H-PASS system can be arrayed in a number of ways. In this part, the costs of the H-PASS are discussed in a number of different ways. Tables 12 through 17 (see pages 26 to 31) displays the estimated total costs of the system by the various applications which will be developed in the years of H-PASS development. This table illustrates the costs which may be attributed to (1) individual applications, (2) administration (i.e. typing); and, (3) coordination/training values. Following each of these tables are the list of agencies and applications which will be completed during the years.

Tables 18 through 20 (see pages 32 to 34) display the costs as allocated in the categories of central hardware, word processing terminals, and software. This purpose of this table is to display those H-PASS costs in the categories monies will be allocated for. The table reflects only those costs associated with the three years of H-PASS development.

Table 21 through 25 (see pages 35 to 39) illustrates the costs for the central computer over the five-year period based on rental. The purpose of this table is simply to display the hardware costs based on a five-year rental.

Finally, a summary cost analysis has been prepared that discusses the difference in the five-year costs of the system due to the differences in costs of the rental vs. purchase option. This analysis does not look at the alternative of a first year buy-out and assumes a one-year benchmark test of the system.

Table 12
H-PASS Allocation by Application Purposes: First Year

	% Allocation Dollars	$ Allocation
SMA Permit (Counties)	29.8	45,000
Federal Consistency (DPED/PD/CZM)	11.2	17,000
A-95 PNRS Review (DPED/PD/SP)	10.5	16,000
Capital Improvements Program (DPED/PD)	10.5	16,000
Hawaii County Land Use Inventory (Hawaii PD)	11.2	17,000
Administration	13.2	20,000
Coordination Training Communication	13.2	20,000
TOTAL FIRST YEAR COSTS	100.00	$ 151,000

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Table 13

Applications

Applications Completed in Year 1:	SMA FEDCON A-95 CIP HAWAII-LUI

Agency Network

Agencies Networked in Year 1:	DPED/Planning Division Hawaii CZM Program County of Hawaii County of Maui County of Kauai City and County of Honolulu

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Table 14
H-PASS Allocation by Application Purposes: Second Year

	% Allocation Dollars	$ Allocation
Conservation District Use (DLNR)	14.5	$ 25,000
Historic Sites/Surveys (DLNR)	11.6	20,000
State LUDB Change (DPED & SLUC)	17.4	30,000
Kauai Land Use Inventory (KAUAI PD)	8.1	14,000
Maui Land Use Inventory (MAUI PD)	8.1	14,000
Honolulu Land Use Inventory (DLU)	8.1	14,000
Operations of Existing Programs	5.8	10,000
Administration	14.5	25,000
Coordination Training Communication	11.6	20,000
TOTAL SECOND YEAR COSTS	100.0	$172,000

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Table 15

Applications

Existing Applications	SMA FEDCON A-95 CIP HAWAII-LUI
Applications Completed in YearII:	CDUA Cultural Sites Cultural Resources Surveys State Land Use District Boundary Petition for Change KAUAI-LUI MAUI-LUI HONOLULU-LUI

Agency Network

Existing Agency Network:	DPED/Planning Division Hawaii CZM Program County of Hawaii County of Maui County of Kauai City and County of Honolulu
Agencies Networked In Year II:	Department of Land and Natural Resources Historic Preservation Office Land Use Commission & DPED/ Land Use Division

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Table 16
H-PASS Allocation by Application Purposes: Third Year

	% Allocation Dollars	$ Allocation
Enivronmenal Impact Statements (OEQC)	20.5	$ 37,000
Zone of Mixing (DOH)	6.8	12,000
NPDES (DOH)	6.8	12,000
Sewage and Cesspools (DOH)	6.8	12,000
Solid Waste (DOH)	6.8	10,000
Shorewaters Use Permit (DOT)	14.0	25,000
Operations of Existing Programs	8.8	15,000
Administration	16.6	30,000
Coordination Training Communication	13.8	25,000
TOTAL FIRST YEAR COSTS		$180,000

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Table 17

Applications

Existing Applications	SMA FEDCON A-95 CIP HAWAII-LUI CDUA Cultural Sites Cultural Resources Surveys SLUC-DBC KAUAI-LUI MAUI-LUI HONOLULU-LUI
Applications Completed in Year III:	EIS ZONE OF MIXING NPDES SEWAGE/CESSPOOLS SOLID WASTE SHOREWATERS

Agency Network

Existing Agency Network:	DPED/Planning Division Hawaii CZM Program County of Hawaii County of Maui County of Kauai City and County of Honolulu Department of Land and Natural Resources Historic Preservation Office Land Use Commission & DPED/ Land Use Division
Agencies Networked in Year III:	Office of Environmental Quality Control Department of Health Department of Transportation

Table 18
See Tables 26 and 27 on Pages 36 and 37

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Table 19
See Tables 26 and 27 on Pages 36 and 37

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Table 20

See Tables 26 and 27 on Pages 36 and 37

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Table 21
H-PASS SYSTEM CONFIGURATION: YEAR 1
Hardware/Software Estimates Based on Wang System Configuration

Model	Description	Quantity	Unit Price	Total Price	Monthly Rental	Monthly Maintenance	Applicable for Credit
VS4B	128KB VS	1	$19,000	$ 19,000	$ 513	$ 240	$ 273
2280V-3	Disk Drive 80MB	1	19,000	19,000	513	240	273
22V02	Disk Drive IOP	1	4,000	4,000	108	15	93
2209V	Tape Drive 9TRK	1	13,000	13,000	315	95	256
22V05-2	Magnetic Tape IOP	1	3,000	3,000	81	15	66
2246C	VS/WP Workstation	2	4,300	8,600	234	40	192
5521	200 CPS Printer	1	5,600	5,600	152	48	103
22V07-1	Serial IOP	1	2,500	2,500	68	15	52
22V06-3	TC IOP (3 Ports)	1	4,100	4,100	110	60	50
	Cobol Compiler	1	N/C	N/C	N/C	N/C	N/C
	Basic Compiler	1	3,000	3,000	81	30	51
	RPG II Compiler	1	3,000	3,000	81	30	51
	System Utilities	1	N/C	N/C	N/C	N/C	No Credits
	WP Software	1	5,000	5,000	137	40	91
	TC Software 2780/3780	1	500	500	15	N/C	15
	HARDWARE SUBTOTAL	Credits in Second Year is Equal to 60% of Applicable Credits		$90,300	$2,438	$ 868	$ 942
	Disk Packs	4	500	2,000		N/C	No Credits
	Modem Rental	6	50	3,600	15	N/C	No Credits
	TOTAL			$95,900			

Table 22
H-PASS SYSTEM CONFIGURATION: YEAR II
Hardware/Software Estimates Based on Wang System Configuration

Model	Description	Quantity	Unit Price	Total Price	Monthly Rental	Monthly Maintenance	Applicable for Credit
VS4B	128KB VS	1	$19,000	$ 19,000	$ 513	$ 240	$ 273
2280V-3	Disk Drive 90MB	1	19,000	19,000	513	240	273
22V02	Disk Drive IOP	1	4,000	4,000	108	15	93
2209V	Tape Drive 9TRK	1	13,000	13,000	315	95	256
22V05-2	Magnetic Tape IOP	1	3,000	3,000	81	15	66
2246C	VS/WP Workstation	2	4,300	8,600	234	40	192
5521	400 LPM Printer	1	15,500	15,500	419	125	293
22V07-1	Serial IOP	1	2,500	2,500	68	15	52
22V06-3	TC IOP (3 Ports)	2	4,100	8,200	110	60	50
	Cobol Compiler	1	N/C	N/C	N/C	N/C	N/C
	Basic Compiler	1	3,000	3,000	81	30	51
	RPG II Compiler	1	3,000	3,000	81	30	51
	System Utilities	1	N/C	N/C	N/C	N/C	No Credits
	WP Software	1	5,000	5,000	137	40	91
	TC Software 2780/3780	1	500	500	15	N/C	15
	HARDWARE SUBTOTAL	Credits in Second Year is Equal to 25% of Applicable Credits		$104,300	$2,816	$1,005	$1,797
	Disk Packs	2	500	1,000		N/C	No Credits
	Modem Rental	14	50	8,400	15	N/C	No Credits
	TOTAL			$113,700			

Table 23

H-PASS SYSTEM CONFIGURATION: YEAR III

Hardware/Software Estimates Based on Wang System Configuration

Model	Description	Quantity	Unit Price	Total Price	Monthly Rental	Monthly Maintenance	Applicable for Credit
VS4B	128KB VS	1	$19,000	$ 19,000	$ 513	$ 240	$ 273
2280V-3	Disk Drive 90MB	1	19,000	19,000	513	240	273
22V02	Disk Drive IOP	1	4,000	4,000	108	15	93
2209V	Tape Drive 9TBS	1	13,000	13,000	315	95	256
22V05-2	Magnetic Tape IOP	1	3,000	3,000	81	15	66
2246C	VS/WP Workstation	2	4,300	8,600	234	40	192
5521	400 LPM Printer	1	15,500	15,500	419	125	293
22V07-1	Serial IOP	1	2,500	2,500	68	15	52
22V06-3	TC IOP (3 Ports)	2	4,100	8,200	110	60	50
	Cobol Compiler	1	N/C	N/C	N/C	N/C	N/C
	Basic Compiler	1	3,000	3,000	81	30	51
	RPG II Compiler	1	3,000	3,000	81	30	51
	System Utilities	1	N/C	N/C	N/C	N/C	No Credits
	WP Software	1	5,000	5,000	137	40	91
	TC Software 2780/3780	1	500	500	15	N/C	15
	HARDWARE SUBTOTAL	Credits in Second Year is Equal to 25% of Applicable Credits		$104,300	$2,816	$1,005	$1,797
	Disk Packs	None Needed in Third Year					
	Modem Rental	14	50	8,400	15	N/C	No Credits
	TOTAL			$113,700	$2,816		

Table 24
H-PASS SYSTEM CONFIGURATION: YEAR IV
Hardware/Software Estimates Based on Wang System Configuration

Model	Description	Quantity	Unit Price	Total Price	Monthly Rental	Monthly Maintenance	Applicable for Credit
VS4B	128KB VS	1	$19,000	$ 19,000	$ 513	$ 240	$ 273
2280V-3	Disk Drive 90MB	2	19,000	38,000	1,026	440	546
22V02	Disk Drive IOP	1	4,000	4,000	108	15	93
2209V	Tape Drive 9TRK	1	13,000	13,000	315	95	256
22V05-2	Magnetic Tape IOP	1	3,000	3,000	81	15	66
2246C	VS/WP Workstation	2	4,300	8,600	234	40	192
5521	400 LPM Printer	1	15,500	15,500	419	125	293
22V07-1	Serial IOP	1	2,500	2,500	68	15	52
22V06-3	TC IOP (3 Ports)	2	4,100	8,200	110	60	50
	Cobol Compiler	1	N/C	N/C	N/C	N/C	N/C
	Basic Compiler	1	3,000	3,000	81	30	51
	RPG II Compiler	1	3,000	3,000	81	30	51
	System Utilities	1	N/C	N/C	N/C	N/C	No Credits
	WP Software	1	5,000	5,000	137	40	91
	TC Software 2780/3780	1	500	500	15	N/C	15
	HARDWARE SUBTOTAL	Credits in Second Year is Equal to 25% of Applicable Credits		$104,300	$2,816	$1,005	$1,797
	Disk Packs	None Needed in Third Year					
	Modem Rental	14	50	8,400	15	N/C	No Credits
	TOTAL			$113,700	$2,816		

Table 25

H-PASS SYSTEM CONFIGURATION: YEAR V

Hardware/Software Estimates Based on Wang System Configuration

Model	Description	Quantity	Unit Price	Total Price	Monthly Rental	Monthly Maintenance	Applicable for Credit
VS4B	128KB VS	1	$19,000	$ 19,000	$ 513	$ 240	$ 273
2280V-3	Disk Drive 90MB	2	19,000	38,000	1,026	440	546
22V02	Disk Drive IOP	1	4,000	4,000	108	15	93
2209V	Tape Drive 9TRK	1	13,000	13,000	315	95	256
22V05-2	Magnetic Tape IOP	1	3,000	3,000	81	15	66
2246C	VS/WP Workstation	2	4,300	8,600	234	40	192
5521	400 LPM Printer	1	15,500	15,500	419	125	293
22V07-1	Serial IOP	1	2,500	2,500	68	15	52
22V06-3	TC IOP (3 Ports)	2	4,100	8,200	110	60	50
	Cobol Compiler	1	N/C	N/C	N/C	N/C	N/C
	Basic Compiler	1	3,000	3,000	81	30	51
	RPG II Compiler	1	3,000	3,000	81	30	51
	System Utilities	1	N/C	N/C	N/C	N/C	No Credits
	WP Software	1	5,000	5,000	137	40	91
	TC Software 2780/3780	1	500	500	15	N/C	15
	HARDWARE SUBTOTAL	Credits in Second Year is Equal to 25% of Applicable Credits		$104,300	$2,816	$1,005	$1,797
	Disk Packs	None Needed in Third Year					
	Modem Rental	14	50	8,400	15	N/C	No Credits
	TOTAL			$113,700	$2,816		

Summary Cost Analysis

There are two major alternatives for the development of the H-PASS. The first alternative involves a five-year development/implementation program based on rental of all required computer, word processing, and terminal hardware. The second alternative is the five-year development/implementation of H-PASS based on the purchase of hardware after the first year of rental. What follows is a cost breakdown of these alternatives and a discussion of the implications they have for the cost of (a) networking the ten agencies in the H-PASS and/or (b) the cost of the fifteen applications which will be a part of H-PASS.

Alternative #1
Costs of H-PASS Based on Five-Year Rental Program of Required Hardware

Total Costs: Table 26 (see page 41) illustrates that the total cost for the five-year development/ implementation of H-PASS would be approximately $792,000. Of these monies, $245,000 would be for the computer rental. $212,000 would be for the word processing lease purchase.

Federal-State Costs: As the CZM grant involves a State match of twenty percent, the total Federal share of this project would be $634,000. The State share would be $158,000.

+634,000	Federal Share
+158,000	State Share
$792,000	Total Five-Year Costs of H-PASS

Total Costs - Five-Years Administrative Costs: Of the $792,000, $100,000 could be applied to the administration value of the system (i.e. the typing value of the word processors). This means that $692,000 is left to H-PASS.

$792,000	Total Five-Year Costs of H-PASS
-100,000	Administrative Value
$692,000	Residual H-PASS Costs Minus Administrative Value

Total Costs - Administrative Costs - Five-Years Coordination/Training Costs
Of the $692,000 that is the left from the total costs minus the administrative costs, $80,000 can be applied to the coordination/training value of H-PASS. This means that $612,000 is left to H-PASS.

$692,000	Total H-PASS Costs - Administrative Value
- 80,000	Coordination/Training Value
$612,000	Residual H-PASS Costs - Administrative and Coordination/Training Values

Table 26
Five-Year Cost Estimate For H-PASS Systems Development and Operation
Based on a Five Year Rental Strategy

	YEAR				
	1 79-80	2 80-81	3 81-82	4 82-83	5 83-84
1. CENTRAL HARDWARE	$35,000	$40,000	$45,000	$45,000	45,000
2. WORD PROCESSORS & TERMINALS	30,000	42,000	52,000	30,000	30,000
3. SOFTWARE	90,000	90,000	90,000	40,000	25,000
YEARLY TOTALS	$155,000	$172,000	$187,000	$115,000	$95,000
				Buyout of Computer	50,000
				Buyout of Word Processor	25,000
GRAND TOTAL					$792,000

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Table 27
Five-Year Cost Estimate For H-PASS Systems Development and Operation
Based on a One Year Rental Strategy, With Purchase After One Year

	YEAR				
	1 79-80	2 80-81	3 81-82	4 82-83	5 83-84
1. CENTRAL HARDWARE	$ 35,000	93,000	-----	-----	-----
2. WORD PROCESSORS & TERMINALS	30,000	51,000	25,000	-----	-----
3. SOFTWARE	90,000	90,000	90,000	40,000	25,000
4. Maintenance of Computer	-----	10,600	10,600	10,600	10,600
5. Maintenance of Word Processor	-----	7,000	10,000	10,000	10,000
YEARLY TOTALS	$155,000	$252,000	$136,000	$ 61,000	$ 45,000
GRAND TOTAL					$648,000

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Total Costs Minus Administrative Costs Minus Equity: Of this amount, $612,000, approximately $125,000, or half the cost of the system hardware could be considered as equity. The equity of the system is derived from the sales value of the computer and word processing systems, which for the purposes of this analysis is estimated to be only 50% of the original value of the machinery. This leaves a figure of approximately $487,000 over the five-year period.

$612,000	Total H-PASS Costs - Administrative and Coordination/Training Values
-125,000	Equity Value of Computer and Word Processing Terminals
$487,000	Residual H-PASS Costs - Administrative and Coordination/Training Values

Yearly H-PASS Costs: This figure, $487,000, reflects the total cost for the development/implementation of the H-PASS system over the five-year period. If we divide this total figure by the five years, the approximate yearly cost of the system comes out to be $97,400 per year.

$487,000	Total H-PASS Costs - Administrative and Coordination/Training Values, and Equity in Machines
./. 5	Five-Year H-PASS Baseline
$ 97,400	Yearly H-PASS Costs - Administrative and Coordination/Training Values and Equity in System

Cost of Single H-PASS Application by Year: What this essentially means is that each of the fifteen applications for the H-PASS system cost $7,560 per year, including all hardware, software, training, and coordination.

$ 97,400	Yearly H-PASS Costs
./. 18	Number of Applications
$ 5,411	Cost of Application Per Year

Costs by Agency: One way of viewing the cost of the system is by looking at the agency allocation. There are eleven agencies which will be networked into the H-PASS. The total yearly cost of the system ($97,400) ·/. 12 agencies results in a yearly cost per agency of $8,117. This suggests that the cost for the information per agency would be roughly $8,117.

$ 97,400	Yearly H-PASS Costs
./. 12	Number of Agencies Networked in H-PASS
$ 8,117	Cost of Agencies Per Year

Costs of Applications/Agencies Without Subtracting Value of Administration or Equity in System Hardware: The cost of the individual applications without substracting the administrative value of the word processing machines in each of the counties would be approximately $158,400 or $8,800 per year. The cost per agency, if one did not subtract the administrative value or equity of the system hardware would be $158,400 or $13,200 per year.

$158,400	Total H-PASS Costs
./. 18	Number of H-PASS Applications
$ 8,800	Cost Per Application
$158,000	Total H-PASS Costs
./. 12	Number of H-PASS Agencies
$ 13,200	Cost Per Agency

Ongoing Costs: In addition, the ongoing costs for the maintenance of the fifteen applications, without additional work on the system, will only be only $3,040 a year (Cost of System Personnel, $25,000, + Cost of Maintenance for the Computer and Word Processors $20,600, ./. by the fifteen applications of the system = $3,040.)

Alternative #2
Costs of H-PASS Over Five Years
Based on Purchase of Hardware After One Year Rental

Total Costs: Table 27 (see page 42) illustrates that the total cost for the five-year development/implementation of H-PASS, based on the purchase of hardware after one year rental, would be approximately $648,000. Of these monies, $170,000 would be for the computer rental. $142,000 would be for the word processing purchases.

Federal-State Costs: As the CZM grant involves a State match of twenty percent, the total Federal share of this project would be $518,000. The State share would be $130,000.

$518,000	Federal Share
+130,000	State Share
$648,000	Total Five-Year Costs of H-PASS

Total Costs Minus Five-Years Administrative Cost-Value: Of the $648,000, $100,000 would be applied to the administration value of the system (i.e. typing value of the word processors). This means that $548,000 is left to H-PASS.

$648,000	Total Five-Year Costs of H-PASS
-100,000	Administrative Value
$548,000	Residual H-PASS Costs Minus Administrative Value

Total Costs - Administrative Costs - Five-Years Coordination/Training Costs Of the $548,000 that is the left from the total costs minus the administrative costs, $80,000 can be applied to the coordination/training value of H-PASS. This means that $468,000 is left to H-PASS.

$548,000	Total H-PASS Costs - Administrative Value
- 80,000	Coordination/Training Value
$468,000	Residual H-PASS Costs - Administrative and Coordination/Training Values

Total Costs Minus Administrative Costs Minus Equity Value: Of this amount, $468,000, approximately $125,000, or half the cost of the system is equity. The equity of the system is derived from the sales value of the computer and word processing systems, which for the purposes of this analysis is estimated to be only 50% of the original value of the machinery. This leaves a figure of approximately $343,000 over the five-year period.

$468,000	Total H-PASS Costs - Administrative and Coordination/Training Values
-125,000	Equity Value of Computer and Word Processing Terminals
$343,000	Residual H-PASS Costs - Administrative and Coordination/Training Values

Yearly H-PASS Costs: This figure, $343,000, reflects the total cost for the development/implementation of the H-PASS system over the five-year period. If we divide this total figure by the five years, the approximate yearly cost of the system comes out to be $68,600 per year.

$343,000	Total H-PASS Costs - Administrative and Coordination/Training Values, and Equity in Machines
./. 5	Five-Year H-PASS Baseline
$ 68,600	Residual H-PASS Costs - Administrative and Coordination/Training Values

Cost of Single H-PASS Application by Year: What this essentially means is that each of the fifteen applications for the H-PASS system cost $3,800 per year, which includes all hardware, software, training, and coordination.

$ 68,600	Yearly H-PASS Costs
./. 18	Number of Applications
$ 3,800	Cost of Application Per Year

Costs by Agency: Another way of viewing the cost of the system is by looking at the agency allocation. There are eleven agencies which will be networked into the H-PASS. The total yearly cost of the system ·/. 12 agencies results in a yearly cost per agency of $5,717. This suggests that the cost for the information per agency would be roughly $5,717.

$ 68,600	Yearly H-PASS Costs
./. 12	Number of Agencies
$ 5,717	Cost Per Agency Per Year

Costs of Applications/Agencies Without Subtracting Value of Administration or Equity in System Hardware: The cost of the individual applications without substracting the administrative value of the word processing machines in each of the counties would be approximately $129,600 or $8,640 per year. The cost per agency, if one did not subtract the administrative value or equity of the system hardware would be $129,600 or $11,800 per year.

$129,600	Total H-PASS Costs
./. 18	Number of H-PASS Applications
$ 7,200	Cost Per Application
$129,600	Total H-PASS Costs
./. 12	Number of H-PASS Agencies
$ 10,800	Cost Per Application

Ongoing Costs: In addition, the ongoing costs for the maintenance of the fifteen applications, without additional work on the system, will only be only $3,040 a year (Cost of System Personnel, $25,000, + Cost of Maintenance for the Computer and Word Processors $20,600, ·/. by the fifteen applications of the system = $3,040.)

Rental and Purchase Alternatives

The University Bid Review Process has been completed and we have selected Wang Laboratories to be the vendor for this project. Here, we outline the reasons leading to the above analysis in terms of the Government Services Administration (GSA) contract with Wang Laboratories.

The issue of rental, lease, or purchase must be raised at this point. Rental for the Wang equipment for the first year results in the application of 60% credits to the customer. This, as Mr. Hunsberger suggests may be considered to be a reasonable investment for both the OCZM and State of Hawaii to make as it provides "insurance" in the testing of both the system concepts and hardware.

However, in each of the subsequent years, only 25% of the credits may be applied to a purchase. This may lead one to the belief that a piece of machinery may be amortized in four years. The suggestion is misleading. Two facts of the Wang rental policy (corporate policy varies from vendor to vendor) leads to the conclusion that purchase must be undertaken in the second or third year. These two facts of Wang corporate policy are:

1. The rental plan includes maintenance in its cost. This means that the amount of monies which are available for the credit option are reduced by the amount for maintenance. This means that although $30,000 is paid for rent, one will have to subtract the maintenance (approximately $11,000) from this figure to get at the applicable credits. Then, this figure is multiplied by the credit factor (60% of first year payments) to get the amount of credits applied to a purchase consumed at the end of one year ($11,00).

2. Wang does not allow a customer on a rental plan to utilize more than 50% of the credits on a purchase. This means that only 50% can be applied to any purchase. Any rental beyond that can only be considered to be free. It is thus a Wang corporate policy that a customer in this schedule buy after 50% of the machine has been amortized.

If this is the case, the buy-out of a system after the first, second, or third year must also include the costs for maintanence in subsequent years.

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