COMMENTS AND RESPONSES ON THE
DRAFT ENVIRONMENTAL IMPACT STATEMENT

Honolulu Area Rail Rapid Transit Project

U.S. DEPARTMENT OF TRANSPORTATION

URBAN MASS TRANSPORTATION ADMINISTRATION

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HONOLULU AREA RAIL RAPID TRANSIT PROJECT

Comments and Responses on the

Draft Environmental Impact Statement

U.S. Department of Transportation

Urban Mass Transportation Administration

COMMENTS AND RESPONSES ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT

A. INTRODUCTION

The circulation period for the Draft Environmental Impact Statement began on July 27, 1979, and ended on December 26, 1979. Fifty-three commenting letters were received from Federal, State and local agencies and Neighborhood Boards and from concerned citizens during that period. The official public hearings on the Draft EIS were held on December 11, 1979 at 7 P.M. at Kalakaua Intermediate School Cafetorium, 821 Kalihi Street in Honolulu and on December 12, 1979 at 7 P.M. at McKinley High School Cafetorium, 1039 South King Street, Honolulu, Hawaii. Testimony was taken on these dates before an appointed hearing officer (the Executive Director of the Oahu Metropolitan Planning Organization) and the Director of the Department of Transportation Services, City & County of Honolulu. Attendance included staff of the Urban Mass Transportation Administration. During the hearing sessions, a total of 35 persons presented oral or written testimony. Written statements which duplicated some of the testimony were also submitted.

Transcripts of the Public Hearing may be inspected at the offices of the Urban Mass Transportation Administration in Washington D.C., and locally at the Department of Transportation Services, City & County of Honolulu.

All substantive comments presented in the testimony and letters are included in this chapter with responses provided for each comment. In some instances, the individual comments have not been produced verbatim; but careful attention has been paid to an accurate and complete representation of the original comments. The commentator(s) or agencies and organizations which they represent are identified after each comment. Where appropriate, the Final EIS has been revised to adequately address the comments. Changes that have been made in the text or figures are identified by a vertical bar in the left margin.

The following are the agencies, organizations, and individuals who commented on the Honolulu Area Rapid Transit Project Draft Environmental Impact Statement during the circulation period:

Federal Agencies:

U.S. Department of Transportation (US DOT)
Federal Aviation Administration (FAA)
Federal Highway Administration (FHWA)

U.S. Department of Agriculture***
Soil Conservation Service

U.S. Department of Commerce (US DOC)
Assistant Secretary for Science and Technology***
National Oceanic and Atmospheric Administration

U.S. Department of Defense
U.S. Air Force, 15 ABWg/DEEV (USAF)
U.S. Army Support Command, Hawaii (U.S. Army-Support Command)
U.S. Army-Corps of Engineers, Pacific Ocean Division (U.S. Army-Corps of Engineers)
U.S. Navy, 14th Naval District ***
U.S. Navy, Headquarters Naval Base Pearl Harbor (USN)

U.S. Department of Housing and Urban Development (U.S. HUD)
Area Manager

U.S. Department of Interior (U.S. DOI)
Office of the Secretary, Environment Project Review

Advisory Council on Historic Preservation (U.S. AC on HP)

U.S. Environmental Protection Agency (U.S. EPA)
Region IX Office, Administrator

State Agencies:

Office of Environmental Quality Control (EQC)
Department of Agriculture***
Department of Health (State DOH)
Department of Defense***
Department of Transportation (State DOT)
Department of Education (DOE)
Office of the Governor, Marine Affairs Coordinator (State MAC)
University of Hawaii, Environmental Center (U of H E.C.)
University of Hawaii, Water Resources Research Center (U of H WRRC)
House of Representatives, The Honorable Clifford T. Uwaine and David M. Hagino, 12th District

* Statement of endorsement; no substantive comments
** Statement of opposition; no substantive comments
*** No comments

City and County of Honolulu Agencies:

Department of Land Utilization (City DLU)
Department of Public Works (City DPW)
Department of Housing and Community Development (City DH & CD)
Board of Water Supply (City Bd. of WS)
Building Department

Other Public Agencies and Elected Neighborhood Boards:

Neighborhood Boards No. 2 - Kuliouou-Kalani Iki (NB #2)
3 - Waialae-Kahala (NB #3)
4 - Kaimuki (NB #4)
7 - Manoa (NB #7)
8 - McCully-Moiliili (NB #8)
9 - Waikiki (NB #9)
10 - Makiki (NB #10)
21 - Pearl City (NB #21)
27 - North Shore (NB #27)

Private Organizations:

1) American Lung Association of Hawaii (ALA)
2) Cement and Concrete Products Industry of Hawaii*
3) Chamber of Commerce of Hawaii*
4) Citizens Against Noise (CAN)
5) Construction Industry Legislative Organization*
6) Council of Presidents (COP)
7) Downtown Improvement Association*
8) Hawaii Bicycling League (HBL)
9) Hawaii Building and Construction Trades Council, AFL-CIO*
10) Hawaii Society of the American Institute of Architects*
11) Hawaii State Federation of Labor, AFL-CIO*
12) Hawaiian Electric Company (HECO)
13) Hawaiian Telephone Company (Hawn Tel. Co.)
14) International Association of Bridge, Structural and Ornamental Iron Workers*
15) International Brotherhood of Electrical Workers, Local Union 1186*
16) International Union of Bricklayers and Allied Craftsmen, Local 1*
17) Laborer's International Union of North America, Local 368*
18) Land Use Research Foundation of Hawaii*
19) League of Women Voters (L of WV)
20) Life of the Land (LOL)
21) Makiki Community Association (MCA)
22) Moiliili-McCulley Community Council (2M Community Council)
23) Oahu Development Conference

24) Operative Plasterer's and Cement Mason's, Local 630*
25) Painters and Allied Trades*
26) The Council of Downtown Honolulu Merchants (C of DHM)
27) United Brotherhood of Carpenters and Joiners of America, Local 745*
28) Waikiki Residents Association (WRA)

Individuals:

Stephen L. Brown
Donald R. Hanson
Letitia Hickson, PhD. & Andrew Arno, PhD.
Philip Thayer*
Revocato Medina*
Clyde V. Preece
Michael DiCarlo**
Gene Heston
James Marn, Jr. *
Tom Rainey
Dr. Philip Ellison
Philip Blackman
Virginia Macdonald*
Jane Hanson
Helen C. Priester*

B. COMMENTS AND RESPONSE BY TOPIC:

The following section gives a summary by topic of substantive comments on the Draft EIS and proposed alternatives and the responses to those comments. As noted in Section A above, a number of agencies and individuals either notified UMTA that they had no comments on the EIS or testified in support of or in opposition to the proposed rapid transit project. These letters of testimony are not included in this section.

I. OPERATIONS

Comment I-1:

There should be a complete explanation on how the existing bus system will be integrated with the fixed guideway system. How are the Windward buses, express buses and other buses that serve the indivudal valleys to be integrated? (FHWA)

Response I-1:

Since the total transit system is to be an integrated fixed guideway/feeder bus system, every local, shuttle and express bus route was required to be identified and developed into a complete feeder bus network in order to plan bus interface facilities at the transit stations. All proposed local and express feeder bus routes and their required number of peak and non-peak vehicles are presented in the report "Patronage and Revenue Estimates" by Alan M. Voorhees and Associates, Inc., dated November 1974. A generalized Urban Bus Feeder Network Map, Figure IV-4 is contained in the EIS. It should be noted that this network is proposed and that changes can be expected as the fixed guideway system goes into operation and experience is gained relevant to specific passenger needs.

The Windward buses, express buses and other buses serving individual valleys have been identified by routes and are all tied into the fixed guideway stations. The Windward buses with routes on Likelike are planned to be tied into the Kalihi Station and those on Pali Highway will tie in with the Fort Street Station. The express bus routes serving the westerly areas will tie into the Keehi Station and those serving the easterly areas will tie into either the University or Date Street Station. The bus routes serving the various valleys and ridges of urban Honolulu will generally tie-in to the nearest transit station as shown in Figure IV-4 of the EIS.

Comment I-2:

(a) The Navy has and will continue to support the need for a dependable, inexpensive, convenient, round-the-clock transportation system linking Pearl Harbor with downtown Honolulu, Waikiki and the many residential areas.

(b) The Navy, by enclosure (1), supported the PEEP 2 -- recommended guideway alignment and the Pearl Harbor Station. In order to maximize the use of the fixed-guideway system by military and civilian workers within the Pearl Harbor complex and surrounding communities, an effective feeder bus system would have to be provided to transport people between the station and the Pearl Harbor complex and surrounding communities. (USN)

Response I-2:

Beginning with the PEEP I study period of 1971-1972, the City has met with Navy representatives a number of times to coordinate this transit planning effort. Discussions have been held on the matter of feeder bus service into the Pearl Harbor complex and one problem pointed out by the Navy was that of security check. It was generally agreed by the City and Navy that details of feeder bus service would be determined at a later date and that it was premature to take any formal action at this time, although there was agreement for the need to provide feeder bus service. It should be noted that with the decision to build an 8-mile fixed guideway system, the westerly terminal for feeder buses will be the Keehi Lagoon Station.

Comment I-3:

The nearest accessible station to users at Hickam Air Force Base is the Airport Station. Although the Feeder Bus component was addressed in the Draft EIS, our concern remains that unless an attractive and convenient system is developed, transit patronage by the Hickam Community will be limited. (USAF)

Response I-3:

It is true that unless an attractive and convenient feeder bus system is developed, transit patronage by the Hickam Community will be limited. Through the years, the City has held preliminary discussions with the Military as to how best to serve the Pearl Harbor and Hickam complex. During final design, additional discussions will be held to formalize the feeder bus plan and details of service to be provided. (Also refer to Response I-2)

Comment I-4:

The rapid transit system, as proposed, does not serve the three major Army installations in urban Honolulu, Fort Shafter, Tripler Army Medical Center and Aliamanu Military Reservation. The daytime civilian workforce and military residents are potential heavy users of public transportation. (U.S. Army - Support Command).

Response I-4:

Although the rapid transit system does not directly serve these military installations, there will be feeder buses serving these areas and interfacing with the rapid transit system. Figure IV-4 of the EIS shows a generalized feeder bus plan.

Comment I-5:

The terminal stations at Halawa, Kahala and Keehi do not appear to have the capability of handling the projected number of buses. These stations should reflect major modal transfer type stations. The layouts should be reviewed and the impacts of any revisions should be assessed. (State DOT)

Response I-5:

Terminal stations are planned to accommodate the projected number of feeder buses interfacing at the stations. For the 8-mile fixed guideway system, the terminal stations would be at the Keehi and University Stations. Bus parking facilities provide for 10 berths at the Keehi Station and 11 berths at the University Station which can accommodate about 120 and 130 buses per hour, respectively. Figures IV-10 and IV-19 in the Final EIS depict the station site plans including the bus parking layout and Section V.B.3.c. of the EIS discusses the impacts at the Keehi and University Stations.

Comment I-6:

Reference: Section III,D., Alternative Alignments and Station Locations and Section V-68, Table V-14, Mode of Access to and from Stations.

Comment: The preferred route for Segment 3 was selected on the basis of better proximity to the airport terminal. Since it is cited that 95% of the people will be walking to and from this station, the mechanics of getting people with baggage to and from the station is important. What is the distance from the baggage claim areas to the station site? (City DLU)

Response I-6:

The Airport Station is located immediately north of the parking structure (refer to Figure IV-9 of the Final EIS) and approximately 500 feet from the airport terminal building.

Comment I-7:

Feeder Bus Service (V-65)

Park and ride facilities will be provided at Halawa Stadium for people who want to drive their cars to the HART line and park them all day. Presumably, by 1995, Windward residents will be able to take H-3 to Halawa Stadium, park their cars, and ride HART.

The DEIS obviously makes the assumption that H-3 will be built and will be an active transit link to the Windward side. What the DEIS does not address, however, are the impacts if H-3 is not constructed. (a) How will Windward residents connect with HART? (b) Halawa is too far to drive to park and ride. Will parking facilities be available for Windward residents downtown? (c) If parking is available, will Windward residents have preference over residents who have easier access to the transit line? (d) Will there be frequent express bus service to the Windward side of the island? (U of H E.C.)

Response I-7:

a. Assuming the H-3 is not built, Windward residents would connect to HART via bus routes crossing the Koolau Range on Likelike and Pali Highways. The bus routes on Likelike Highway would connect to HART at the Kalihi Station and the bus routes on Pali Highway would connect at the Fort Street Station.

b. Public fee parking is available in the downtown area for people choosing to drive in that area.

c. Public fee parking is available on a first-come, first-serve basis. There is currently no feasible way to allocate parking spaces specifically to Windward residents or residents from any specific area.

d. Yes, it is planned to provide improved express bus service to the Windward area. Currently there are some 36 buses serving the Windward area which will be expanded to approximately 70 buses by 1995. It should be noted that the City is presently studying the feasibility of park-and-ride sites in the Windward area to interface with the Trans-Koolau express bus service, both existing and future.

Comment I-8:

With respect to the proposed Kahala terminal, the discussion on the following points needs to be expanded:

(c) The probability that the City will be able to obtain and operate the 170 express buses and 30 local buses projected to interface with this terminal during the peak hour in 1995. (NB #2)

Response I-8:

The proposed fixed guideway system for initial construction will be an 8-mile system with the easterly terminal at the University Station. The Kahala Station would not be part of the initial system and therefore, it is not included in the Final EIS.

Comment I-9:

The EIS deals mainly with the fixed rail portion of the HART proposal and does not go in sufficient detail into that important segment of the transit system--the feeder bus portion. The impact of the station design, including bus pass-through, or drop-off, or plans for parking lots or parking buildings is not given enough attention. How would taxis relate to the system and affect traffic around stations? Rapid transit is only one factor in a transportation system and these others must be included in the planning. There are no statements on the integrated multimodal approach. (L of WV)

Response I-9:

The feeder bus system is the key element of the total transit system with the fixed guideway element heavily dependent on feeder buses to collect and distribute patrons to and from the guideway stations. Each transit station location has been identified and its inter-modal transfer facilities planned to readily accommodate patrons transferring to and from feeder buses and automobiles. (See Section IV.A.1 and Figures IV-10 thru IV-19 of the Final EIS)

Taxis would be permitted to drop or pick-up patrons at the kiss-and-ride facilities provided at the stations. The purpose of kiss-and-ride facilities is to minimize disruptions to traffic flow immediately around stations by providing an off-street pick-up and drop-off area that does not interfere with traffic lanes.

As stated at the outset, the fixed guideway is only one element of the total transit system and is heavily dependent on the feeder buses. Section IV.A.1 of the Final EIS contains the following statements: "The proposed rapid transit system consists of an integrated fixed guideway/feeder bus network---." and "Central to the effective operation of the fixed guideway is an island-wide feeder bus service."

Comment I-10:

If constructed, the HART system would facilitate the movement of a significant portion of peak hour "transitees". A breakdown scenario should be discussed in the final EIS. Some of the questions requiring attention: What emergency measures are planned to deal with HART breakdowns? How many days a year is it likely that HART will be inoperable because of breakdowns? What is the experience of similar fixed guideway systems? (LOL)

Response I-10:

In the event of a breakdown of a transit car whereby the train is blocking a track, cross-overs tracks are provided to by-pass the disabled train by using the opposite track. This will disrupt the normal operation of the trains on the opposing track but permits the continuation of 2-way operations at reduced train speed and service. Upon removal of the disabled train, the system can then be placed back into normal operations.

Except in extreme situations where both tracks are blocked and cannot be operated, limited 2-way operations can always be maintained as described above.

Most modern transit systems are designed to have high reliability and with proper maintenance, systems are operating with over 99% availability for normal operations. It should be noted that breakdowns do not close down the entire system for days since disabled trains can usually be removed and the system restored to normal operations within a few hours or less.

Comment I-11:

The D.E.I.S. also fails to discuss whether the equipment intended for the H.A.R.T. will incorporate a capability to carry bicycles. This aspect impacts on bicycle circulation, the parking and stowage question just raised, and ridership. The rail portion of H.A.R.T. should be able to carry bicyles in the city. The combination of bicycle and mass transit thus afforded the riders would be unmatched for convenience, economy, and beneficial effects on their health and the environment. (HBL)

Response I-11:

The Bay Area Rapid Transit (BART) system permits bikes to be carried on transit cars during off-peak periods. The carrying of bicycles during peak periods is hazardous to the movement of other patrons and therefore, prohibited on nearly all transit systems in the world. Although the final decision on this policy will be made by the transit policy makers, it is physically possible to carry bicycles on the proposed equipment. The City is planning to provide bicycle lockers at each station.

Comment I-12:

The final point that I feel should be addressed by the city and state together is what laws or rules will help protect the increasingly public transit-dependent population from strikes and labor problems involving just possibly a few public workers? (Blackman)

Response I-12:

Good labor-management relations are the best way to protect the transit-using population from strikes and labor problems. The collective bargaining process is the primary element, and represents a continuing joint decision-making process between union and management representatives over terms of employment and working conditions. While guarantees of no disruption cannot be given, generally the better the collective bargining process (and by implication, management itself) the better the service to the publi .

Comment I-13:

Secondly, I have tried repeatedly to get a rider's utilization of the buses going up to the University of Hawaii.

In 1973 when we were really short of oil, the utilization of the buses, the express bus coming from Waialua and various places -- I don't know where they were coming from--anyway, they were coming into St. Louis, turning left on Dole, was between seven and nine passengers on the bus.

Now, it is going to cost going from Station 12 or from Kapahulu Avenue, well, Kalakaua Avenue over to there roughly 40 million dollars. Right now that place over there is so congested that they come sometimes halfway up St. Louis Heights to park. Because I live up there, I know, and I question this.

Now, the second station here I question is 14. Who derived-- actually, the train stops at 15. The back end of it will be on 14. That is on Sixth Street. The only people that is being accommodated there will be St. Louis High School.

They could have moved that station down to Waialae Avenue, Kapahulu Avenue under that freeway there, and there could be buses coming in. and it would be a little over a block away from St. Louis High School. But, so, this gentleman wants it there, and they move it up there.

This would entail riding Harding Avenue. It would entail Harding, Eighth, Seventh, Sixth, Fifth Street along there, and it will cost that neighborhood a lot of money to widen that street just because somebody has it here. It will relocate quite a few families. (Preece)

Response I-13:

The guideway stations cited will not be part of the initial system since the guideway terminates at the University Station. Other comments are noted.

II. TRANSIT SYSTEM

Comment II-1:

No alternative alignment for the fixed guideway to fully serve Waikiki was evaluated. A light rail line to Waikiki was considered part of the 28 mile light rail system. It should also be evaluated with the 14 mile fixed guideway system and listed in the comparison table. What improvements in service to Waikiki could be made if the busway was built? (FHWA)

Response II-1:

For the fixed guideway system, various alternative alignments for serving Waikiki were examined including an alignment that would traverse Waikiki. While it would be desirable to serve Waikiki, it was determined that to extend the line easterly beyond Waikiki directly to the Kahala area would either be extremely disruptive to the community located between Waikiki and Kahala if an aerial configuration was used or too costly if entirely undergrounded. Consequently, it was determined that the preferred alignment should be located north of Waikiki and serve the University of Hawaii Manoa Campus and then proceed easterly to the Kahala area. (see "Interim Report - Long Range Transit Plan," March 1972, by Daniel, Mann, Johnson, & Mendenhall 27/)

With the basic alignment established, there remained the question of how to best serve Waikiki - by feeder buses or by a fixed guideway branch line. It was found that the fixed guideway branch line option was less cost-effective than the feeder bus option by a 2 to 1 ratio. Furthermore, the fixed guideway branch line concept was found to limit the main line capacity easterly of the branch line junction to that below the required volume. (see Fixed Guideway Operational Concepts, July 1974, by Daniel, Mann, Johnson, & Mendenhall 28/)

The 28-mile light rail system studied did include a non-grade separated branch line to Waikiki. As discussed in Section III.B.3. of the EIS, it was not the most cost-effective alternative. The primary reasons for this conclusion was that feeder buses utilizing existing streets would be less disruptive and also less costly than to build and operate a light rail branch line.

The reason for not including a branch line for the 14-mile fixed guideway system is that it has to be grade-separated and hence very costly to construct. As discussed in the earlier paragraphs, a fixed guideway branch line would not be cost-effective and also would have operational problems.

With the busway alternative, Waikiki would be served with feeder buses with routes and headways approximately the same as that provided for the fixed guideway system, except that certain percentage of the buses would enter the busway and continue on it in the westerly direction.

Comment II-2:

There should be a discussion of the systems planning that has been done. The brief references in III-1-3 about OTS (Oahu Transportation Study), OTPP (Oahu Transportation Planning Program) and OMPO (Oahu Metropolitan Planning Organization) are vague and confusing. (FHWA)

Response II-2:

Under Section III.A.1, Historical Perspective, pages III-1, 2 & 3 of the EIS, the basic system planning studies accomplished to date were presented. The four (4) basic studies enumerated were:

1. Oahu Transportation Study (OTS) completed in 1967

2. Preliminary Engineering & Evaluation Program - Phase I (PEEP I) completed in 1972

3. Evaluation of Alternative Transportation Systems Study completed in 1973

4. Preliminary Engineering & Evaluation Program - Phase II (PEEP II) completed in 1976

(Please note that reference is made only to OTS and not to OTPP and OMPO in this section)

Each of the above studies were conducted as part of a systematic planning process with each study accomplishing the following:

1. OTS of 1967: Studied two basic transportation concepts for Oahu: an all-bus system operating in mixed traffic with an expanded freeway system and a fixed guideway system of the "trunk line-feeder" type with limited highway improvements. The basic long-range issue explored by this study was either more emphasis on private autos with expanded highway system or more emphasis on public transportation and limited future highway construction. The result of this study was that the latter was a more desirable option for Oahu and this concept of a rapid transit system from Pearl City to Hawaii Kai was subsequently adopted as the long-range transportation policy for Oahu.

2. PEEP I of 1972: This study was conducted to determine the most desirable public transportation (rapid transit) system for Oahu by defining the vehicle system and system route. Various alternative rapid transit systems, corridors, route lengths and alignments were considered, with the fixed guideway system from Pearl City to Hawaii Kai concluded to be the most feasible.

3. Evaluation of Alternative Transportation Systems Study of 1973: This special study was a joint State-City effort requested by the State DOT for an independent review of the feasibility of a technologically advanced rapid transit system referred to as the automatic rapid transit (ART) system. This was done with the objective of examining the most advanced transit system available for Oahu to ensure that an obsolescent system would not be implemented. The result of this study was that the ART would not provide any measurable service improvement over the conventional fixed guideway system but have higher costs and greater adverse environmental effects. Accordingly, the State and City agreed to further advance the transit development program by conducting final planning and preliminary designs of the fixed guideway system defined in PEEP I.

4. PEEP II of 1976: Through this effort, route alignments and station locations were refined with inputs from the communities. Preliminary designs were also conducted to define the guideway and station structures and operating systems in sufficient detail to permit development of cost estimates and assessment of environmental impacts. The results of this study formed the basis for the EIS.

Comment II-3:

The ability of the various systems to handle increased patronage due to possible future interruptions of fuel supplies should be considered. (FHWA)

Response II-3:

Future interruptions of fuel supplies, if they should occur, could be of two types - either short-term or long-term. Under the short-term, it would be impossible for any system to instantaneously expand capacity by providing more equipment, whether it be buses or rapid transit cars. The most feasible response to a short-term disruption might be to obtain greater utilization of existing equipment by instituting mandatory staggered work hours in order to spread the peak demand over a longer time period.

CORRECTION

THE PRECEDING DOCUMENT(S) HAS BEEN REPHOTOGRAPHED TO ASSURE LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

2. PEEP I of 1972: This study was conducted to determine the most desirable public transportation (rapid transit) system for Oahu by defining the vehicle system and system route. Various alternative rapid transit systems, corridors, route lengths and alignments were considered, with the fixed guideway system from Pearl City to Hawaii Kai concluded to be the most feasible.

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Under the long-term condition, more equipment can be procured to accommodate increased demand. Under this condition, the capacity of the system becomes a crucial factor. Of the three basic alternatives - fixed guideway, light rail, and busway - the busway has a line capacity of some 20,000 passengers per hour which ranks the lowest of the 3 alternatives (See III.B.3 of the Final EIS). The fixed guideway and light rail rapid transit systems have comparable capacities of between 30,000 and 40,000 passengers per hour, which is significantly more than the 1995 demand forecast.

Comment II-4:

The use of higher capacity articulated buses should be considered for the busway system. (FHWA)

Response II-4:

The use of articulated buses were examined for various alternative systems and found to have some effect on the O & M cost, but not a significant amount since all system alternatives rely heavily on feeder buses which can also utilize a certain number of articulated buses. It should be pointed out that articulated buses have up to 50% more capacity than the standard buses but to effect operating efficiency, their use should be limited to routes which have high ridership volume.

Several key factors must be kept in mind when planning for the use of articulated buses. Since 2 articulated buses have an equivalent capacity of 3 standard buses, if the existing headway is 20 minutes with 3 standard buses, their replacement with 2 articulated buses would result in a 30-minute headway, thus eroding the service quality. Where existing service is being provided based on maximum headway, and the standard buses are not overcrowded, then this condition will not warrant the use of articulated buses.

Another factor to consider is the flexibility of having all standard buses for off-peak service where again headway is the criteria and not capacity. The use of the larger and more expensive articulated buses during off-peak periods to maintain minimum service is not economical and would negate some of the savings realized from optimum peak period operations.

For the 7-mile busway alternative, summarized in Table III-9 of the EIS, the replacement of all standard buses operating on the busway with articulated buses will reduce both the total annual cost and the cost per trip by 4% and 3% for the 4% and 10% interest rates, respectively. During off-peak operations, if by policy a certain maximum headway is to be maintained, the cost advantages of the articulated buses would diminish from that indicated above since a

single articulated bus would cost more to operate and maintain than a single standard bus. Additionally the station facilities may require larger berthing bays in certain cases, further diminishing the operating cost advantages of the articulated buses.

Comment II-5:

Reference: Chapter III, Analysis of Transit System Alternatives (Page III-4, HOV Priority Treatment).

HOV lanes have been dropped from H-2. The statement should also be qualified to indicate HOV priority treatment on H-1, Kalanianaole Highway and Moanalua Freeway only during a.m. and p.m. peak hours. (FHWA)

Response II-5:

Corrections have been made as shown in Section III.A.2.a and b of the Final EIS.

Comment II-6:

The summary tables on pages III-7 and III-9 indicate that the 7 mile busway and 14-mile guideway are comparable in cost and ridership. The busway has a slightly higher annual cost than the guideway, while the guideway has a higher capital cost. This indicates that the busway option should be considered more seriously than is done in this EIS. There also should be more analysis of how the busway would mesh with existing planned bus lanes on the Honolulu freeways. (FHWA)

Response II-6:

As discussed in the EIS, the selection of the preferred system is not based on cost alone but on many other factors. Reference is made to the statement in Section III.B.3 of the EIS as follows: "The major factors leading to the rejection of the Busway system were its limited capacity, greater visual impact, and higher dislocation." The busway would connect with the existing or planned bus lanes on the H-1 Freeway at Middle Street for the westerly end and in the area of the Kapiolani off-ramp at the easterly end.

Comment II-7:

It should be noted that the alignment of the guideway, between the Pearl Harbor Interchange and the Airport Station, traverses Air Force property near Elliott Street. (USAF)

Response II-7:

Comment is noted.

Comment II-8:

The discussion of on-street parking restrictions in paragraph A.2.a. (page III-4), should note that the municipality is not obligated to provide on-street parking and much of the parking meter area may be expected to disappear eventually, especially in the downtown area of Honolulu. (U.S. Army-Support Command)

Response II-8:

Comment is noted. The City is currently undertaking a parking management study for the CBD which will consider these items.

Comment II-9:

The location and size of the portal of the underground reversible busway at the Kahala Terminal should be coordinated with the State DOT. One concept currently being explored as part of the Kalanianaole Highway Improvement Project is two reversible HOV lanes in the median with car pools permited in either lane. The bus portal as located in Figure IV-26 will impact this two-lane median concept. Additional right-of-way may be required for the two median lanes plus bus portal as well as for the transition area to allow the buses exiting the portal to merge into the Kalanianaole Highway reversible median facility. The impact of this additional right-of-way take should be evaluated. (State DOT)

Response II-9:

The State DOT has recently held design public hearings to address this issue of providing one or two reversible HOV lanes. When the design concept is formalized, a detailed assessment of the impacts can be made.

It is pointed out that with the selection of the 8-mile guideway length for initial construction, the Kahala Terminal would be outside of the project scope.

Comment II-10:

Use of Freeway Facilities: The State DOT and the City DTS have agreed that the fixed guideway shall not pre-empt any existing freeway or HOV lanes should the results of the Development Plan land transportation impact analysis indicate the need for those lanes for vehicular traffic. In this regard, the results of the analysis indicated that prolonged highway congestion will last three hours when freeway lanes and/or HOV lanes are pre-empted for the fixed guideway. In retrospect, the Department of Transportation will not allow any pre-emption of existing or contemplated freeway and HOV lanes for the fixed guideway system in the Halawa-Pearl Harbor and in the Kaimuki sections of Interstate Route H-1. Therefore, the EIS should discuss alternative alignment solutions in light of this State DOT's position concerning the pre-emption of freeway and HOV lanes. (State DOT)

Response II-10:

This comment refers to the guideway segments west of the Airport Station and east of the Universtiy Station, both of which are now outside the limits of the 8-mile guideway length.

Comment II-11:

(a) Page III-4 - The HOV lanes on Interstate Route H-2 have been deleted.

(b) Page V-58 - The HOV lanes are presently in operation only during the peak hours. (State DOT)

Response II-11:

See response under Comment II-5.

Comment II-12:

The Draft Environmental Impact Statement for the Honolulu Area Rapid Transit Project dismisses all forms of waterborne transit as an alternative with a brief paragraph. This dismissal is apparently based on the analysis of waterborne transit in the PEEP I studies.

That analysis, unfortunately, showed a complete lack of knowledge and understanding of modern marine technology.

The Marine Affiars Coordinator expended much time and effort in addressing the errors and inadequacies of the PEEP I studies in regard to waterborne transit. Those efforts appear to have been ignored in the preparation of the current EIS. To the extent that waterborne transit was ignored, I believe that the current draft EIS is seriously deficient. (State MAC)

Response II-12:

The study of waterborne transit for urban travel in Honolulu has confirmed the fact that it is more costly, less attractive, and less reliable than any form of land transportation system. A waterborne system is also less energy efficient than any land transportation system. The most practical application of a waterborne system is for line haul service from point to point where the travel distance for the waterborne vehicle is much shorter than an alternative land transportation system. On an equivalent mile-to-mile travel basis with comparable service quality, a waterborne system cannot compete with land transportation systems and was therefore dismissed from further consideration. It should be pointed out that in 1973 when the State DOT proposed and sponsored the special study titled Evaluation of Alternative Transportation Systems (see Comment II-2), the waterborne system was not included. A subsequent study titled Evaluation of Supplementary Waterborne System, July 1976, conducted by Alan M. Voorhees and Associates, Inc. made the following statement: "A comparison of the systems in terms of costs, however, showed that annual O & M costs, total costs, and O & M subsidy requirements per various operating and passenger units for the waterborne system would be significantly higher than the costs and subsidy requirements per the same units for the land-based system."

Comment II-13:

On the Relationship to Transportation Philosophy

How does the proposed system relate to all other modes of land transport, and how are incentives and disincentives among the various modes going to be applied to assure the projected performance of the system?

a. Another critical element of the environment within which the proposed system would operate is the community's transportation philosophy. Under some philosophies the proposed system would no doubt fail. Taking an extreme example, if the State and local government subsidized the purchase of gasoline for private automobiles and provided free parking in employment centers, the patronage estimates for the transit system in the DEIS would be overestimated. On the other hand, if parking were discouraged and gasoline were taxed at a higher rate, the estimates might be low.

b. No clear statement or even personal commitment by elected officials is evident that suggests that there is an internally consistent transportation philosophy which would in fact work to the advantage of the proposed system and assure its success. In fact, present policies and recent decisions suggest that transportation agencies at both the State and county levels are in agreement that private automobile ridership should be not only accommodated but encouraged (e.g., the proposed H-3 Freeway and the new County parking structure in the vicinity of City Hall). In the light of these evidences of policy it is not clear that the community's decision-makers are serious about public mass transit. Other evidence is provided by the lack of interest expressed in other alternatives to the private automobile, such as pedestrian and bicycle opportunities. The proposed system should be related to an overall all-modal transportation philosophy and strategy.

c. The lack of a clear expression of transportation philosophy indicates that anything could happen as a result of constructing the proposed system. Without such expression- and commitment to whatever is expressed- the crucial impacts dealing with ridership and finances cannot be estimated. (U of H E.C.)

Response II-13:

a. The statement is correct in that public transit and private automobiles are competitive modes and that public policies would greatly influence transit usage. The transit patronage forecasts were made based on current public policies and do not reflect any future possible policies described in the comment.

b. The official joint State-City policies on transportation are reflected in the most current Long-Range Transportation Plan for Oahu as adopted by the Oahu Metropolitan Planning Organization (OMPO).

c. The proposed system is consistent with the above-mentioned OMPO policies and the 1977 General Plan for Oahu which sets forth the City's broad transportation goals and policies.

Comment II-14:

Transportation System Management (TSM) Measures (III-4)

A number of methods for improving the existing transportation system are described in the DEIS. The discussion of two methods should be expanded: segregated bicycle rights-of-way and longer peak commuting hours. The only bicycle lanes we know of within the Kahala-Downtown

transit corridor are on Young Street between Isenberg Street and the Municipal Building, on University Avenue from Kapiolani Boulevard to Dole Street, and on Metcalf between University Avenue and Wilder Avenue. None of these bike lanes is segregated from vehicle traffic, and none offers a safe alternative to automobiles. The discussion on bicycle rights-of-way should be expanded to include proposed bicycle lanes as part of the overall transportation system, especially since part of the existing University Avenue bikelane will be eliminated with the construction of the University transit stop. How is the Bike Plan affected by HART?

It would be interesting to know approximately how many employees are exercising their options on variable work hours. Also, has any consideration been given to encourage schools to stagger their starting times?

The TSM measures should be discussed in greater detail, especially since several of them have not yet been implemented, before commiting ourselves to a permanent, irreversible choice of a transportation system such as HART. (U of H E.C.)

Response II-14:

The discussion of the TSM measures contained in the EIS is necessarily brief to only point out some of the key measures implemented in Honolulu. For information on the proposed Bikeplan, reference is made to the Statewide Master Plan for Bikeways, Final Report, March 1977, prepared by Sunn, Low, Tom & Hara, Inc. and H. Mogi - Planning & Research, Inc. for the State DOT. The following statement is made in this report: "Because of the lack of data and experience on biking in the State, it is extremely difficult to forecast bikeway usage and evaluate bikeways objectively and rationally at the present time. Therefore, it is recommended that the first five-year period be designated as a demonstration phase during which the necessary knowledge and experience can be gained for application to future bikeway planning." The effect of HART on the Bikeplan, including the bike lanes on University Avenue, is discussed in Section V.B.3.b of the EIS.

It is pointed out that flex-time is available to both City and State government employees and it has been estimated that some 20% of the City employees utilize it. The City has suggested different school starting times to the State DOE on numerous occasions but none has been implemented for various reasons.

As mentioned in the last paragraph of Section III.A.2.a, TSM techniques are used to maximize the efficiency of existing transportation facilities, once these systems have reached maximum capacity, new capacity must be provided or congestion will result. TSM is generally used as remedial actions to correct existing problems and not necessarily applicable as long-range solutions for future capacity problems.

Comment II-15:

Bus System Improvements (III-5)

Several major bus system improvements were discussed in the EIS. Increasing the fleet of 400 vehicles this year, plus improvements such as reserved lane bus service on major highways and park-and-ride facilities in the suburbs can dramatically alter the provision of transportation service. One of the disadvantages of the TSM/expanded bus alternative discussed in the EIS was that the system utilized "...existing roadways with no grade-separated facilites" and would "reduce available roadway capacity for remaining automobiles..." (III-13, III-16). Reduction of roadway capacity should not be perceived solely as a disadvantage of the TSM/Expanded Bus System, but also as providing an incentive to the use of mass transit. The purpose of the system, after all, is not to accommodate private automobile users, but to promote public transportation.

This discussion should not be considered as an endorsement for the particular alternative of an improved bus system, but, rather, as criticism of one of the reasons for its elimination. (U of H E.C.)

Response II-15:

It is not the intent to present the "reduction of roadway capacity" by the TSM/Expanded Bus Alternative as a disadvantage but merely a statement of fact that when space is used by buses on roadways, the remaining capacity for automobiles will decrease. Furthermore, when the total travel demand exceeds the capacity of a roadway for both an optimized bus system and automobiles, then the quality of travel deteriorates. It should be stated that proper transportation planning should consider all modes of travel including automobiles since reliance on automobiles as the primary mode of travel will continue for the foreseeable future.

Comment II-16:

Goals, Objectives and Criteria (III-27, III-29)

Why are the 1964 Oahu General Plan and 1967 Oahu Transportation Study used as the basis for comparison for three alternative transit systems? (U of H E.C.)

Response II-16:

When the three (3) basic transit system alternatives were studied between 1971 and 1976, the 1977 General Plan for Oahu was not completed and formally adopted. The Oahu Transportation Study was used since this study was the first and only comprehensive

transportation study made for Oahu with all levels of government involved. It was this study that formed the basis for the Long-Range Transportation Plan of Oahu which continues to be, with some modification, the current policy for Oahu.

Comment II-17:

In summary, the alternatives considered are too few in number and far too limited. A number of modes with exclusive rights-of-way could displace private autos. A combination of modes and incentives and disincentives should be discussed in more detail. (U of H E.C.)

Response II-17:

All viable alternatives deemed applicable to meet future travel demands on Oahu have been considered as described in Chapter III of the EIS. Meeting future travel demands through some unproven mode or modes that could displace private autos would not be considered a viable alternative. Such an alternative would call for the abandonment of the huge investments made in existing roadways, parking facilities and automobiles which would not be socially and economically feasible.

Comment II-18:

The length of the system being proposed and the probability of future expansion of this system needs to be clarified to assess its impact. (NB #2)

Response II-18:

The length of the system being proposed for initial construction is an 8-mile system from the Airport Station to the University Station. The Final EIS addresses this length while the Draft EIS addressed systems of 7-mile to 14-mile lengths and the potential impacts associated with 7, 8, 10, 12 and 14 mile systems. Future extensions beyond the 14-mile length will be determined by future needs.

Comment II-19:

There is a need to discuss in more detail, other alternative transportation systems which can meet Honolulu's needs, which are less costly and more flexible. (NB #2)

Response II-19:

All feasible alternatives to meet Honolulu's needs have been considered and are described in Chapter III of the EIS, including, TSM techniques, busways, express bus systems and the like.

Comment II-20:

With respect to the proposed Kahala terminal, the discussion on the following points needs to be expanded:

(d) The assumption that the proposed median bus lane along Kalanianaole Highway will be built. (NB #2)

Response II-20:

The length of the system being proposed for initial construction is an 8-mile system from the Airport Station to the University Station. The Kahala Station is beyond the proposed system limits and therefore is not included in the Final EIS. The median bus lane will be utilized when constructed by the State DOT.

Comment II-21:

The Kahala Station as suggested in the main proposal (Mauka-Koko Head corner of Waialae Avenue and Kilauea Avenue) is acceptable provided:

a. This station will not be a temporary or permanent end terminal.

b. The traffic pattern and parking facilities for the buses and cars are studied in greater depth, and present traffic problems alleviated.

(The alternate station at the Mauka-Koko Head corner of the Kahala Shopping Center is unaccepted because of inadequate parking and bad traffic problems). (NB #3)

Response II-21:

The 8-mile guideway length proposed for initial development would not include the Kahala Station. Therefore, the Kahala Station will be neither a temporary nor a permanent end terminal under this phase of the program.

Comment II-22:

The 12 mile route (Aloha Stadium to University of Hawaii) is preferable for the initial construction. This system will cost about 104 million dollars less than the 14 mile alternate (Aloha Stadium to Kahala). Connection from University of Hawaii to Hawaii Kai can be made in the future when the demand for usage is warranted. The flaw in this alternate is that by the time the passengers reach the terminal they would almost be in town anyway. (NB #3)

Response II-22:

It is true that the distance from the terminus at the University of Hawaii to downtown is only about 3 miles but it is in this area that the greatest congestion exists due to the high travel demand coupled with overloaded roadway conditions. The remainder of the comments are noted.

Comment II-23:

In discussing the public transit alternatives, two important approaches are glossed over or ignored, just as they were in the Consultant's Reports: one is the electric trolley (bus or streetcar), and the second is the battery-operated vehicle. The electric trolley which, according to the E.I.S., is equal in cost-benefits to the elevated guideway, would also solve nearly all the environmental problems cited in the E.I.S. for HART: yet this is not stated in the summary. The battery-operated vehicles (not even referred to in the E.I.S.) would have a double effect: (a) they would remove all adverse environmental effects from consideration, and (b) since the battery-automobile is more cost-effective than the gasoline-run car, the battery vehicles would discourage more riders from using the public transit system, thereby reducing "trip" usages from HART. All indications from Washington, D.C. are that battery-operated vehicles will gain in use as fossil fuels increase in price. At 60¢/gallon the break-even, cost-effective point for battery-operated vans and buses was reached vis-a-vis fossil fuel operated vehicles. (Hanson)

Response II-23:

The EIS does not state that surface-operated electric trolley system is equal in cost-benefits to the elevated guideway but does state that the light rail rapid transit (LRRT) operating on grade-separated guideway in heavily congested urban Honolulu has a comparable cost-effectiveness to the fixed guideway alternative.

Any reference to private automobiles could apply to other than gas engines such as diesel engines and electric motors. Although diesel engines are now available for passenger cars (Volkswagon and Oldsmobile) the percentage of these cars are almost insignificant in terms of the total automobiles on the streets today. Electric cars (battery-operated) are getting more attention now with R & D continuing by various corporations. Also, electric passenger cars and service vehicles are being put into service locally in Honolulu by Hawaiian Telephone Company and others as a demonstration project. The potential of electric cars is good but how soon they can be fully developed and be competitive with gas engine cars is unknown at this time. Assuming that electric cars

become competitive with gas engine cars in 10 years, or 1990, it is questionable if they would capture a sizable portion of the private automobile market by the planning year of 1995 and therefore may not be a significant factor within the time frame of this study.

Comment II-24:

(a) If a HART System shorter than 7 miles, supplemented by feeder buses, is feasible, then that should be shown in the EIS.

(b) Traffic analysis contained in Table III-3 of the draft EIS should be adapted to include screeline locations at McCully Street, Piikoi Street, Kalihi Street, and Middle Street. Traffic projections and highway network capacity assumptions in the revised Table III-3 should incorporate the corrections indicated in our Point 2.

(c) The draft EIS advocates HART on grounds that projected traffic across screenlines between Ward Avenue and Kapalama Canal would subject an all-bus transit system to intolerable traffic jams. Even if this analysis is correct, data presented in the draft EIS does not adequately justify a 7 mile grade-separated rapid transit as alleged on Page III-21 of the draft EIS. Since it is only a few miles between Ward Avenue and Kapalama Canal, based on information supplied in the draft EIS, it is conceivable that Honolulu could make do with a 3.5 mile grade-separated transit system. This option, pro and con, should be fully discussed in the final EIS. (LOL)

Response II-24:

(a) The HART guideway lengths considered ranged from a minimum 7-mile to a maximum 14-miles for initial system construction. It was found that although all lengths were considered to be feasible, the longer lengths were generally more cost-effective or feasible than the shorter lengths. It should be pointed out that with the guideway system serving urban Honolulu from both sides and with the downtown area as the focal point, the effective length could be considered as approximately one-half of the overall system length. In short, the trips originating from the end termini and destined to the downtown area where the majority of the transit trips end would be approximately one-half of the system length. Thus the 7-mile guideway system could be thought of as comprising two seperate 3.5 mile transit lines.

A 3.5-mile line is a relatively short system with transit riders nearly at their destination when transferring from other modes at the terminal stations, thus reducing the attractiveness of the guideway system. Another crucial factor in making the system shorter than the minimum 7-mile length considered is the development of a suitable terminal station in a highly developed urban area where station access is difficult and community disruptions high. Therefore, these two factors of lesser system attractiveness and high community disruptions were the over-riding considerations in not selecting a shorter length system.

(b) Table III-3 shows the two critical screenlines, one on each side of the downtown area, that are the closest to the proposed bus terminals for the DPM/Bus system alternative for which the table was prepared. Screenlines at the suggested locations are not the critical ones since traffic volumes increase on roadways as they approach the downtown area. The measure of roadway condition should be taken at the point or screenline where the ratio of volume to capacity is the greatest which is where the system constraint or "bottleneck" exists. This could cause traffic to back-up and affect these outer screenlines and thus make any excess capacity that may exist unusable. In reference to Point 2, see Response X-4.

(c) As indicated in (a) above, a 3.5-mile system could be considered as being two separate 1½ to 1 3/4 mile lines serving the downtown area. Such a system would be quite short and hence result in a low level of attractiveness as well as placing terminal stations in areas that would result in high community disruptions. Based on studies conducted, the 7-mile system was found to be the shortest feasible length.

Comment II-25:

(a) Table III-4 of the draft EIS shows projected peak hour bus volume on various streets with an all-bus transit system. What effect would the use of articulated buses have on the number of buses needed during peak traffic hours? Table III-4 should be revised to reflect maximum cost effective use of articulated buses as part of an all-bus transit system alternative.

(b) The EIS projection for the all-bus alternative assumes that the number of riders per bus would be almost 50% less than current patronage per bus. What is the justification for that drop? (LOL)

Response II-25:

(a) Relative to Table III-4, if the City's entire bus fleet could be replaced with articulated buses, the peak hour number of buses can theoretically be reduced to two-thirds of the numbers shown. However, there are many routes that are being provided with minimum service and hence, whether the bus is large or small, the same number of buses would be required. Consequently, it is normally assumed that between 10-15% of an existing fleet can economically utilize the larger articulated buses. This is supported by a recent bus system planning study conducted by the City resulting in the finding that 40 articulated buses could be economically used in the City's 1980 400 Bus Plan.

Utilizing higher capacity buses does not necessarily increase the passenger per lane capacity of the roadway. Normally, the maximum number of buses per hour that can operate on a roadway lane is determined by how long the bus dwells at each stop which in turn is dictated by the number of people boarding and/or alighting from the bus. Since the articulated buses carry more passengers, dwell time will be lengthened, reducing the number of buses per hour that can operate on a lane of roadway. Therefore the same maximum number of passengers/per lane would be carried regardless of the bus size. Table III-4 was compiled to show the effect of the bus system upon CBD street capacity and congestion during peak hours rather than system cost-effectiveness. Although the exact number of articulated buses to be used on a given route cannot reliably be predicted to the year 1995, based upon the previously mentioned study, approximately 10% of the fleet might effectively be replaced by articulated buses. Thus, for example, on Merchant Street, Table III-4 in the EIS shows 118 standard buses in the peak hour; assuming 20% of the fleet is replaced by articulated buses, there would still be some 110 total buses per hour leading to a comparable situation of reduced total roadway vehicle capacity and increased congestion.

(b) Currently, the City does not have an adequate number of buses to provide the desired level of service during peak periods of operation. This results in over-crowded conditions and buses often pass certain stops because they are unable to accommodate any more passengers. Another 50 buses are required today to comfortably handle the ridership of some 180,000 per day (180,000 ÷ 400 buses = 450 pass./bus/day). In 1995, the projected ridership volume is 110 million passengers per year or 364,000 per day requiring 900 buses (364,000 ÷ 900 buses = 400 pass./bus/day). This estimate is based on the required number of buses to attract this number of passengers by providing expanded service to those areas currently served and to new areas. In the latter case, the average number of riders

per bus per day becomes lower since outlying areas involve longer and fewer trips and hence lower numbers of passengers per bus per day. Additionally, the expansion of express bus service which operates only a few hours each work day also results in low ridership per bus per day.

Comment II-26:

The Council of Presidents claims that if the articulated buses are used, more contra-flow lanes are used, gas prices increase, and population projections and distributions in the draft EIS are corrected, then an all-bus transit system would be feasible.

We would then suggest that some additional capital improvements may be appropriate. These might include selected street widening, new exit and entrance ramps to the freeway, new bus lanes on parts of H-1, short loading bays, and bus stations.

These proposals warrant thorough examination and discussion in the final HART EIS. What specific locations would you suggest for improvements, and at what scale? How much extra vehicular capacity would this provide? (LOL)

Response II-26:

The statement attributed to the Council of Presidents' claim that an all-bus transit system is feasible under the conditions given is certainly true but it can also be equally true without those conditions. Whether a system is feasible or not can only be determined after defining what the objectives are that the transit system must meet.

An all-bus transit system is the most popular form of public transportation utilized throughout the world and is usually performing an outstanding service to the area it serves. In most cases, it is the only feasible system given the area's population, land use density, and financial capability. In most medium-size urban areas in the U.S., the bus system is primarily provided to serve those people who have no other means of travel. Typically, these "captive" riders represent some 80% of transit users in a region with the remaining 20% representing "choice" riders who have elected to use the transit over some other mode of travel, primarily the automobile.

In long-range transportation planning, it is necessary to clearly define the future role of public transit in the region. In one case, it may be to continue current service which is primarily to provide mobility to captive riders. Another case may be to greatly increase the role of public transit by capturing a much

larger volume of choice riders by providing a much more attractive service than that capable by an all-bus system. The comment that an all-bus transit system is feasible would best fit the first case whereby the objective is to continue transit service oriented to primarily serve captive riders without significantly improving the quality of service.

In the latter expanded role for transit, an all-bus transit system may fall short of its intended goal by not being able to attract the desired volume of choice riders. It is also well to keep in mind that with an unlimited number of buses provided, the all-bus system could reach its goal of attracting a large volume of riders which might approach the level of the rapid transit system. If this should occur, then the economic factor becomes crucial since at such volumes the fixed guideway system, even with its high capital investment, becomes more attractive than the all-bus system. In comparing the economics of an all-bus vs fixed guideway, the former is generally more cost-effective at lower volumes and the fixed guideway more cost-effective at higher volumes.

Various types of street improvements that will enhance the movement of buses will certainly improve the service of the all-bus system. This could range from very minor improvements involving small capital costs to the optimum consisting of a full grade-separated busway facility from the University area to Middle Street. The latter is one of the long-range alternatives studied under the program. The busway system was found to be almost equal in attractiveness to fixed guideway systems in terms of potential ridership. However, the busway system was determined to have limited system capacity and create greater environmental disruptions than the fixed guideway system.

Based on the projected 1995 transit ridership volumes, the busway system was found to be as cost-effective as the fixed guideway system due to the fast and efficient movement of buses on the grade-separated facilities. To accommodate the same numbers of riders on an all-bus system operating on surface streets, if physically possible, it was found that its total cost was more than that of the busway. This point, as previously mentioned, is crucial in that if the basic objective of transit is to carry a large volume of riders, the all-bus system's operating cost increases to a point which is high enough to more than off-set the large initial capital investment of either a busway or fixed guideway facility.

The key point to emphasize is that the primary constraint to the all-bus system is the lack of adequate street capacity in the CBD-Civic Center area. Even though exclusive lanes and new exit-entrance ramps could be provided on freeways, the buses must still traverse the downtown area where most transit riders are destined. To widen King Street, Beretania Street, Ala Moana/Nimitz Highway or any of

the north-south downtown streets would be socially, economically and environmentally impractical due to both high costs and adverse environmental effects. It was for this reason that a busway alternative was developed and analyzed which consists of a 1.5 mile underground busway facility through the downtown area and elevated busway facilities beyond the downtown area.

The recent study titled "Development Plan & Transportation Impact Analysis" prepared for the City Department of General Planning by Alan M. Voorhees & Associates, Inc., dated January 1980 examined an all-bus system comprising a fleet size of nearly 1,100 buses. The concept of this all-bus system was to provide bus terminal facilities on the fringe of the downtown area since the downtown streets would be incapable of handing this volume of buses. The Makai terminal was identified to be located along Ala Moana/Nimitz Highway and the Mauka terminal along Beretania Street. The study proposed an aerial busway along Nimitz Highway to the Makai Terminal from the west and the use of Beretania Street and Nuuanu Avenue for access to the Mauka terminal.

The cost of the fixed facilities and equipment required for the all-bus system is estimated to cost approximately $300 million and the O & M cost estimated at $85 million per year. Assuming that UMTA would pay 80% of the capital cost, the annualized local share of the capital cost would be $5 million giving a total annual capital and O & M cost of $90 million in 1980 dollars.

The fixed guideway system is estimated to cost $900 million and an O & M cost of $77 million in 1980 dollars. With UMTA assumed to pay 80% of the capital cost, the total annual cost, including capital and O & M, is $92 million. So the total annual cost for the all-bus and fixed guideway system are basically comparable.

The above costs are based on transit demand in the year 2000 but using 1980 dollars. If the O & M costs were escalated from 1980 to 2000 at 8% per year, the multiplier is 4.66. This will give $396 million and $359 million for the escalated O & M cost for the all-bus and fixed guideway system, respectively. With costs escalating each year, the system with the lower O & M cost will have a distinct economic advantage in the long term.

Comment II-27:

The most significant shortcoming of the D.E.I.S. is the lack of any mention at all of provision for secure bicycle parking at the stations. The authors on pages V-64 through V-66 discuss the "park & ride" concept (and its unavailability at most stations). They also dwell on the "kiss & ride" option. The planners appear to have overlooked the "bike & ride" alternative which offers as much or more to the neighborhood commuter in Hawaii as any other option. The D.E.I.S. itself amply describes the excellent weather and mentions the 92,000 bicycles registered in Honolulu.

The League must insist that the authors of the D.E.I.S. study the subject of bicycle stowage at the stations and provide for it. Ample data from San Francisco, Baltimore, Washington, San Diego, Denver and other metropolitan areas is available. The resources of the League of American Wheelmen and the bicyclists in the D.O.T. and the U.M.T.A. are available. If the public can perceive secure bike parking at the stations, many more riders can be expected to leave their cars. The long narrow geography of Honolulu and the convenience of a bicycle for local runs are powerful selling points for the "bike & ride" option. (HBL)

Response II-27:

Facilities for bicycle stowage at stations will be appropriately planned for during the next phase of the program. A statement to this effect has been added in Section IV.A.2 of the Final EIS. It should be noted that the 1977 General Plan of the City and County of Honolulu contains a policy supporting the use of bicycles for trips to work and that this policy will provide direction during this next phase.

Comment II-28:

The League is concerned that bicycles will be forgotten in the elaborate planning for the construction phases, or even worse, lumped together with pedestrians in the minds of the planners. The D.E.I.S. makes no mention of bicycle circulation in the treatment of detours and disruptions occasioned by the construction of the H.A.R.T. The final E.I.S. should provide for bicycle safety in planning the disruption of existing traffic patterns. Fortunately, what is safe for bicycles increases safety for motor traffic also. The bicycle simply needs a smooth surface and visibility in traffic.

Figure IV-2 shows the H.A.R.T. Maintenance Yard located on State land alongside Kalihi Stream. The arrangement of the "pedestrian-

bicycle" traffic pattern and the yard boundaries appears to conflict with the proposed Makai Bikeway which is part of the Keehi Interchange portion of the Interstate Route H-1 Project No. I-HI-1 (86): 17. By copy of this letter, the H.B.L. recommends that the planners of the D.T.S. coordinate this detail with the Highway Design Section of the State D.O.T. (HBL)

Response II-28:

The existing bike lanes and routes affected by the construction of the proposed transit system will be appropriately addressed to maintain safe bicycle circulation through the affected areas as discussed in the Final EIS under Section V.E.4.

Relative to the potential conflict between the Yard and Shop facilities and the makai bikeway, close coordination will be maintained by the City and State DOT.

Comment II-29:

The first set of impacts I would hope would be treated in a joint statement by the city and state and included as a joint presentation. The question would be as follows: How will the transit project be coordinated with the state and city road building requirements? How will it impact on any capital improvement priorities?

Will the state or city or some third body control the construction and later operation of the system? What are the benefits and costs of those alternatives? How is the public to be protected from cost overruns and extended construction time that has plagued other cities' rapid transit system? (Blackman)

Response II-29:

All major State and City transit and road improvement projects are being coordinated through the Transportation Improvement Program of OMPO in order to qualify for Federal grants. As local share of the transportation project costs for both State and City could affect the capital improvement priorities of Oahu; these priorities are set by policy makers of the local and state governments; the process is ultimately a political one.

Currently, the City is authorized to construct and operate public transit on Oahu. No current study has been made as to the advantages and disadvantages of the City, State or some third body constructing and operating the system.

The only assurance that can be provided against cost overruns and extended construction time is by effective program management.

Comment II-30:

Going back to where it says "Bus Only," I think we should consider and maybe in the EIS statement adding the possibility of building light rail, trolley lines. For example, some areas are too far from the main line and parallel, for example, down Young Street or even King Street in the future should be considered. So the EIS might suggest light rail tying into the main line to build a secondary network. (Heston)

Response II-30:

The Light Rail Transit Alternative, presented in Section III.B.2.b, describes the use of at-grade light rail to serve Waikiki, Pearl Ridge-Pearl City area along Kam Highway and communities east of Kahala along Kalanianaole Highway and Hawaii Kai. It was found that conventional buses can provide equal or better service at lower cost.

Comment II-31:

We feel that the route is inflexible. It will be fixed and inflexible to desirable changes in routing in the coming decades. We feel it does not help our area nor other areas not close to the route. It may even hurt our area and other areas if bus service is curtailed as the fixed guideway requires greater and greater subsidies. (MCA)

Response II-31:

It is true that rail rapid transit systems feature a fixed route service and hence the term "fixed guideway". In the urban core, especially with Honolulu's narrow travel corridor, a fixed route that serves major destinations is not undesirable and the likelihood of changes in routing is remote. A fixed guideway/feeder bus system, as proposed for Honolulu, obtains its flexibility through the feeder bus component of the system. As transit demand increases and surface streets get more congested, the fixed guideway system is no more expensive than an all-bus system - in fact, the operating subsidy could be less depending on the ridership volume.

Comment II-32:

Life of the Land feels that the EIS for HART is extremely inadequate, and therefore we cannot support its conclusion that a fixed guideway is necessary for Honolulu. We have closely analyzed the existing studies and are still not convinced that we need HART. However, our position is not a fixed final stance which can never be changed.

If the City can show, in a revised EIS, that an expanded system, along with other traffic measures cannot do the job, then we would consider supporting some version of HART. Unfortunately, the city has not presented an adequate bus alternative. (LOL)

Response II-32:

As indicated in Response II-26, the question of feasibility of an all-bus system must be related to the area's objectives on public transit. Similarly, whether an all-bus system can or cannot do the job can only be determined based on the area's transportation goals and objectives and how high or low the standards are set. If Honolulu is satisfied with today's bus service and ridership volumes and the role of bus transit relative to the overall transportation needs of the island, then certainly an all bus system can do the job. But if Honolulu wants to improve its transit service and substantially increase transit ridership, then a higher level transit system such as the HART system, would be justified.

Comment II-33:

Why is there no discussion of possible bus terminals in the downtown area? The EIS rejects major street improvements for buses, such as selective widenings, or off-street loading bays, or new exit ramps from the freeway. The city takes the policy of not building any new highways and pushes it to the extreme by insisting on using only existing facilities. This denies us a chance to visualize creative alternatives, and prevents improving the highways we already have.

In brief, we are simply not told what a modern bus alternative could look like. (LOL)

Response II-33:

An alternative system using bus terminals is represented by the Downtown People Mover (DPM)/Bus System described in Section III.A.3.c of the EIS. The assumption of no new highways followed in the study of alternatives is based on the State-City policy reflected in the Oahu Long-Range Transportation Plan as adopted by OMPO. Selective widening of streets, off-street loading bays, and new freeway exit ramps were considered but opportunities for these improvements in the critical downtown area are extremely limited. The disruptions and impacts from such improvements would be unacceptable to the communities.

Between Middle St. and the University, attention is directed to the location of the proposed guideway alignment and the major activity centers served by the transit system as compared to the location of the H-1 (Lunalilo) Freeway and the non-existence of major activities centers immediately adjacent thereto. Widening of freeways alone will not be adequate to substantially improve bus service to major activity centers.

Comment II-34:

We believe that if the EIS treated these matters adequately and objectively, for both a rail system and the unconsidered alternative, it might well be found that a transit system such as we suggest would expand the island's mass transit facilities more quickly, would be more suitable for its population size and better meet its transportation needs, and would be less disruptive and more energy-efficient.

Failure to analyze such an alternative and its impact as compared with HART will not satisfy public criticism or meet the requirements of the law. (COP)

Response II-34:

The matters referred to are presumed to be lower population and employment forecasts and lower projected auto travel demand due to energy shortages, both of which would lessen traffic on streets and highways and therefore make the "unconsidered alternative" (a trolley bus system) feasible. As discussed in Response II-26, nearly any alternative could be feasible depending on the area's goals and objectives.

Furthermore, transportation planning can be done under two widely varying scenarios - one that assumes the future to be not unlike the past or present and the other that assumes major energy conservation measures resulting in limited auto usage. The decision or policy leading to the adoption of the rail transit system for Honolulu was done under the first scenario. Under the second scenario, public transit usage could be substantially more than the first scenario - by two-folds, or more. Under such a condition - every known transit system available may be needed including conventional buses, trolley buses, light-rail and heavy rail, with heavy rail being the backbone of a family of transit systems that would be needed to adequately serve this potentially enormous demand.

Comment II-35:

But we have another more efficient and cheaper system which has not been fully explored in the EIS. There is no other city in the world our size that has an elevated mass transit system. You can look at Oslo, Portland, Geneva, Seattle, Zurich. They all have modern surface systems; buses, trolley bus, trolley electric or light rails. They are even going now to battery buses, and here I feel is the ultimate solution because you have no bad effect on the environment, and besides that, with all our solar energy, we can recharge these batteries with photovoltaic cells.

So I would suggest that the EIS study more of these systems and not just the one system and that they then come up with a recommendation that would not destroy our environment. (Hanson)

Response II-35:

Section III.B.1 of the EIS discusses all of these surface systems as non-grade separated alternatives.

Comment II-36:

Another thing I want to challenge here is it shows the routes following up the H-1 Freeway through Kaimuki. Well, I don't know whether all of you know it or not, but I am sure these gentlemen know it because they have heard it. It has been shot down. It will not follow the highway through there. The state federal highway here shot that particular proposal down, and I am sure that you are going to get a lot of hell when you go up to Waialae Avenue if you try to dig that up as you propose to do because, as you know, we voted against that. (Preece)

Response II-36:

With the selection of the 8-mile segment, the system terminates at the University Station and will not traverse the Kaimuki area.

Comment II-37:

Now, I would suggest at the present time, let's upgrade our system now that we have. We have the best in the United States. We have--the City of Los Angeles has over 11 million people, and they are only using buses. That's all they use over there. They have no bus/rail.

So if we can improve the ones we have got now, I think we can do a lot better. I will give you one example, and then I will close. The present system we have got now, you go down to the shopping center down here in town--if you want to go out in the country, stand there. One bus will move up. Another bus will move down; another bus will move down. Why can't all these buses have places, Wahiawa, Kaneohe and et cetera, be marked and all going at one time? And people crowding, fighting and everything else. This is one good example we have all over the city. (Preece)

Response II-37:

Comments are noted.

Comment II-38:

3. Necessarily, Waikiki will not be served by the bus/rail at all. We have a fine bus system on the local run, the marvel of visitors and residents alike in cost and service.

Therefore, in conclusion it seems to us that the proposed bus/rail serves too few island residents and is much too costly. We vote for an Up-Grades, Up-Dated Bus System for all the residents of Oahu. Let us move in that direction! (WRA)

Reponse II-38:

Comment is noted.

Comment II-39:

Dear Mr. Benjamin:

Enclosed please find a report our organization has just released after a comprehensive study of the proposed Honolulu Area Rapid Transit System and the pending draft E.I.S.

Please consider the position taken in the report as our comments on the E.I.S., although of course it is broader than that in that it questions the need for rail transit in Honolulu and describes an "unconsidered alternative".

We believe that what we suggest would expand the island's mass transit facilities more quickly, would be more suitable for the size and projected future population of the city, would better meet our transit needs, and would be less expensive, less disruptive, and more energy-efficient. (COP)

Comment II-40:

Mr. Secretary:

We enclose a report just released, in which we think you will be interested. It is a critical analysis of the proposed Honolulu Area Rapid Transit system (H.A.R.T.) and the draft E.I.S. now under public review.

We also enclose a news clipping on the report.

We believe that the "unconsidered alternative" we describe would expand the island's mass transit facilities more quickly, would be more suitable for the size and projected future population

of the city, would better meet our transit needs, and would be less expensive, less disruptive, and more energy-efficient.

The essence of the report is in the Summary (pp. 1-5) and in the Introduction (pp. 6-8). Supporting data are in Chapter V (pp. 50ff). (COP)

Response II-39 and -40:

Reference is made to Comments and Responses XVI-55 through 96 which fully covers the referenced report, Handbook on HART.

III. TRANSIT RIDERSHIP

Comment III-1:

The travel information on pages II-10 through II-13 is sketchy and possibly not current. Are the travel forecasts the same as those projected by OMPO? Projections of automobile traffic appear to have been made in the early 70's. Specific references should be included to identify the source and dates. (FHWA)

Response III-1:

The travel information is based on the most current transportation planning data for Oahu as developed under the cognizance of the Oahu Transportation Planning Program, the predecessor to the current regional planning agency, the Oahu Metropolitan Planning Organization (OMPO). The same basic travel data (person trip table) developed in 1971 under this transit planning program is being used for all long-range transportation planning projects by both the State and City agencies. The report titled Patronage & Revenue Estimates, Honolulu Rapid Transit Project, Preliminary Engineering and Evaluation Program, Phase II, prepared by Alan M. Voorhees & Associates, Inc., dated November 1974 (and listed as Reference #18) documents the process, models and networks used, identifies agencies that operated the models, and gives the results of modal choice model runs used to obtain the transit patronage forecasts

Comment III-2:

Persons who travel by bus to the guideway will be required to make transfers at the stations. Transfers tend to discourage ridership. Was this considered in making the ridership and travel time estimates? (FHWA)

Response III-2:

Travel time used in the modal split model to forecast transit patronage includes a factor of 2.5 times the estimated transfer time. This is to penalize transfers, including waiting, which is an inconvenience as well as being annoying to the travelling public and hence deters some people from using transit.

Comment III-3:

There is a need to improve the manner in which population and employment projections are described and analyzed within the EIS.

As identified, this information serves as a basis in estimating potential mass transit ridership, as well as specifically identifying trip generation forecasts and travel patterns for those transportation modes which have been evaluated within the PEEP I and PEEP II studies (ref. pages I-1, I-9 to I-13; II-6 to II-10, II-12; III-10; and IV-5).

In numerous areas, the EIS is unclear as to whether anticipated mass transit ridership data, formulated in association with the Oahu Transportation Study (OTS) of 1967, have been appropriately revised and adjusted following current Department of Planning and Economic Development Series II-F and Department of General Planning population and employment forecasts.

In all cases, methodological applications of data acquired from various sources (ie., DGP, OMPO, DPED) should be appropriately footnoted with complete reference citations. (State DOT)

Response III-3:

Although the population and employment forecasts for Oahu developed by the State Department of Planning and Economic Development (DPED) in 1978 have been adopted by the Oahu Metropolitan Planning Organization (OMPO) for use in all long-range transportation planning, the official distribution of population and employment by census tract is not available.

Consequently, the most current, official transportation projections available for use by both the State and City through OMPO are based on the 1995 population forecast of 924,000. Also refer to Response III-1.

The relevant data used in the EIS is footnoted to references listed at the conclusion of the EIS. Methodologies are generally included in the source documents.

Comment III-4:

There is a need to further refine information presented within the EIS alignment section (p. V-35 to p. V-37) specifically identifying the relationship and timing of urban redevelopment projects within the Kakaako and Chinatown community areas. Both of these Central Honolulu communities will be significantly altered and modified following redevelopment and the short-term and long-range impacts of this activity on trip generation forecast and mass transit needs should be thoroughly evaluated with the EIS. (State DOT)

Response III-4:

The potential for change in these two areas are recognized, with Kakaako having by far, the greater potential. Detailed transit planning for these areas is not possible at this time since the Development Plans are still under preparation.

At this time, a need to change the alignment or station locations is not anticipated. During final design of the stations, the latest information will be used to ensure adequate loading capability. The feeder bus system for the Kakaako area will be modified as needed to meet the demand.

Comment III-5:

The City is currently circulating several different sets of projections: those in the draft HART EIS, those in the Proposed Financial Program of Hart, and recent figures from the Voorhees and Associates study. We suggest you pick a single projection of HART ridership, costs, and revenues for public review. We do not feel that it is proper for the City to use different projections for different audiences. Please adjust all of your figures (e.g. regarding screenlines, transit patronage, date of intolerable congestion...) to reflect the latest population figures and General Plan population distribution. If you feel that the projections in the HART EIS should be range estimates rather than point estimates, then use and stick to them. (LOL)

Response III-5:

The ridership projections shown in the EIS are the official figures obtained from the comprehensive transportation planning process conducted under the cognizance of the Oahu Transportation Planning Program (OTPP, the predecessor regional planning agency to the Oahu Metropolitan Planning Organization - OMPO) and the U.S. Department of Transportation. These official projections were the result of studies conducted during the period 1971-1975 using the latest available data, specifically the total population forecast for Oahu of 924,000 in 1995. The population and employment distributions developed and reflected in the EIS were also the latest official data. These data sets have been used consistently throughout the transportation planning process for the HART system. The other sets of numbers referred to have been developed for different purposes by the City and should not be confused with those used in the EIS.

Although the data contained in the EIS are based on official forecasts and distributions, the recently adopted Series II-F total population and employment forecasts are recognized and noted in both the Draft EIS and Final EIS. With the Series II-F population and employment forecasts being lower than the preveious forecasts, ridership estimates used for developing O & M cost and revenue estimates have been correspondingly reduced as described in Section IV.A.4 of the Final EIS.

Comment III-6:

All draft EIS mass transit patronage projections exclude tourists. The final EIS should indicate the potential range for tourist use of HART and the measures to be taken to reduce the subsidization of tourist use of HART. (LOL)

Response III-6:

Although actual on-board surveys have not been made, it is estimated that of the nearly 200,000 daily transit trips, between 5 to 10% of them are by tourists. Assuming each person makes two trips, i.e. to and from his destination, this equals to 10,000 to 20,000 trips or 5,000 to 10,000 tourists using transit. If the daily tourist population is between 30,000 to 40,000 then an average of 20% of all tourists could be using the transit system.

At today's adult fare of 50¢ per ride, the tourists using the bus system may be paying enough whereby no subsidization actually exists. The bus routes serving Waikiki requires much less subsidy than the route serving Hawaii Kai or Waianae where the average trip lengths are 10 miles or more. A tourist riding a bus from Waikiki to Ala Moana Center and paying 50¢ may not require any subsidy at today's costs since the trip is relatively short.

Comment III-7:

With respect to the proposed Kahala terminal, the discussion on the following points needs to be expanded:

(b) The probability that 95% of the people using the station will arrive on the bus. We have determined that this figure is artificially high in view of existing bus ridership and projected future ridership trends. (NB #2)

Response III-7:

With the proposed system for initial construction being 8 miles, the Kahala terminal is outside the project limits and hence not included in the Final EIS.

Comment III-8:

The board wishes to offer the following general comments for your consideration in preparation of other preliminary or final EIS documents. One, there is a need to improve the manner in which the population and employment projections are described and analyzed within the HART EIS. As identified, this information serves as a basis in estimating potential mass transit ridership as well as specifically identifying trip generation for costs and travel patterns for those transportation modes which have been evaluated within PEEP I and PEEP II studies.

a. The DPED series 2-F was issued in March of 1978, a year and a quarter before the Draft EIS was issued, but the series 2-F appear only as a footnote on Page 1-13 of the Draft EIS. This seems to indicate that most of the figures in the Draft EIS have not been adjusted for the new series 2-F.

b. In the EIS on Page 4 -- Chapter 4, Page 5, the total daily patronage in 1995 for the 14-mile bus/rail system including the feeder buses is projected to be 470 or 140 million passengers per year based on population and employment projections published by DPD in 1972. However, we find that Ernst and Whinney has now reduced that figure, and we wish that they would update whatever the latest figure is.

c. Further actual and potential transit ridership should be evaluated within the context of total trips generated by various components of the Oahu population including residents, tourists and military by areas to be served, HART service areas, feeder bus service areas, and neighborhood communities and by daily commuter travel requirements, how many work, how many go to school and et cetera.

Detailed information of this nature is also crucial in evaluating transit alternatives, potential impact to existing land use patterns and accepted residential and commercial densities, projected roadway capacities and et cetera.

In all cases, the methodological applications of the data acquired from various sources, DGP, OMPO, DPED, should be appropriately footnoted with complete reference citations.

A technical appendix summarizing the methodological approaches and technical findings would assist further in an understanding of the methodology used in projecting potential HART or mass transit ridership. (NB #10)

Response III-8:

a. Although the DPED's Series II-F population and employment forecasts were issued before the issuance of the Draft EIS, neither the DPED nor the City has prepared an official distribution of population and employment by census tract, which is necessary for making travel projections. As of this date, the data contained in the EIS are based on the population (924,000) and employment (515,700) forecasts for 1995 made by DPED in 1971. The transportation data developed using these forecasts as contained in the EIS are the most current figures available on Oahu. Therefore, all figures in studies and analyses conducted to date do not reflect the Series II-F forecasts except for the final transit ridership estimates used for developing costs which are adjusted to reflect the new Series II-F forecasts. See Response III-5 and Section IV.A.4 of the Final EIS.

b. In addition to the patronage adjustment described in paragraph a. above, Ernst & Whinney has further lowered the patronage figures for making revenue forecasts to develop a conservative financial program as discussed in Section IV.A.4 of the Final EIS.

c. Potential transit ridership figures are made up of various trip purposes (such as work, shopping and school) as described in the report "Patronage and Revenue Estimates", by Alan M. Voorhees & Associates, dated November 1974, which is available for review at the offices of the City Department of Transportation Services. This report also contains detailed methodology used in generating the figures. Additional detailed information including trips generated from and attracted to each census tract is also available for review.

A technical appendix has not been added to the Final EIS. Methodologies used in preparing the EIS and other studies are included in the source documents listed in the References at the end of this EIS document and which are appropriately footnoted in the applicable sections of the EIS.

Comment III-9:

The community association feels it is unnecessary to have a bus/rail system. With a decreased population projection for the year 2000, we question the ridership projections. (MCA)

Response III-9:

The ridership projections used in developing cost and revenue estimates were adjusted to reflect the lower Series II-F forecast as described in Section IV.A.4 of the Final EIS.

Comment III-10:

Some of the data used in the draft EIS to discredit the buses and justify HART is already obsolete. Even though the report was published just six months ago, it fails to use official population projections that were available two years ago and ignores population distribution found in the city's own General Plan. Because of these mistakes, the projected increase of population for the guideway area is twice as high as current figures indicate. The projected ridership per bus is 50% less than current usage, even though modern argiculated buses can carry 50% more passengers than existing buses. The EIS doesn't even mention articulated buses. Also, the percentage of non-work trips in the peak period in the supporting PEEP II study is about twice as high as the national average. (LOL)

Response III-10:

An explanation of population projections used in the HART system and the EIS is given in Response III-5 and also the adjustments made to ridership estimates for the proposed 8-mile system is discussed in Section IV.A.4 of the Final EIS.

Although the projected increase in population in urban Honolulu under Series II-F forecast in 50% of that previously forecasted, the total projected population in urban Honolulu is 15% less than that previously projected.

The difference in the projected ridership per bus from current figures is explained in Response II-25 (b) and the explanation for use of articulated buses is given in Responses II-4 and II-25 (a) and mentioned in Section III.A.3.a of the EIS.

The percentage of non-work trips in the peak period in the supporting PEEP II study is for the P.M. peak period which is much higher than that for the A.M. peak period.

Comment III-11:

1. The need for rail is justified in the EIS on projections of population and employment growth and volumes of trips which have been shown to be grossly over-estimated. A few examples:

   a. A population increase for the Pearl City--Hawaii Kai corridor more than twice as high as that shown in the General Plan or the draft development plan.

   b. Employment growth in the same area 36% higher than now projected.

   c. A 50% increase in projected total daily trips island-wide, compared with a projected population increase of 23%.

   d. A peak-hour projection, with a 14-mile guideway, of 31% more trips in 1995 than now projected for the year 2000, with transit trips over-estimated by 13%, trips by automobie by 37%, non-work trips by 60%, and auto-mobile non-work trips by 73%.

   e. A projected daily ridership for the 14-mile system 11% higher than shown in the draft EIS and 26% higher than considered reasonable in the City's 1979 Ernst-Whinney report. (COP)

Response III-11:

Section IV.A.4. of the Final EIS discusses the basis for the official transportation planning process on Oahu and its relationship to the new Series II-F forecasts prepared by the State DPED and the City's Development Plans currently under preparation. Although the official distribution of the new population and employment forecasts has not and cannot be done at this time, a preliminary analysis of the implications of these reduced forecasts has been done and patronage estimates adjusted accordingly. It is acknowledged that with the lowering of the population and employment forecasts on Oahu, this will correspondingly lower travel demand, including transit ridership. Although not an official transit ridership estimate, these adjusted volumes are shown in the Final EIS:

a. The population growth projected for urban Honolulu is now estimated to be some 50% less than originally projected but in terms of total population for the area, it is only 15% less than the original projection.

b. Similarly, the employment growth is projected to be lower by some 36% but again in terms of total employment for the area, it is lower by less than 10% of the original estimate.

c. The projected total daily trips increased at a greater rate than the population increase but the greater proportion of this increase was attributed to non-work trips such as social-recreation and shopping trips which normally occurs during non-peak periods.

d. The referenced peak-hour projections were in error and using the corrected figures, the total peak-hour trips is only 4% higher in lieu of 31%, trips by auto only 1% higher in lieu of 37%, non-work trips only 3% higher in lieu of 60%, and auto non-work trips only 2% higher in lieu of 73% as indicated in the comments.

e. Based on the preliminary analysis of the impact of using Series II-F forecasts and the generalized population distribution given in the 1977 General Plan, the daily projected transit ridership is approximately 11% lower than the official estimate previously developed as stated in Section IV.A.4. of the Final EIS. The estimate used by Ernst & Whinney in the financial study was further reduced to obtain a conservative estimate for their financial forecast.

Comment III-12:

4. The draft EIS dismisses all alternative forms of mass transit because of their alleged inability to handle the projected transit ridership on existing streets and highways and at the same time leave room for the projected automobile volume. As shown above, both transit and traffic projections have now been considerably reduced, particularly in the peak hour. Conservation measures dictated by energy programs would reduce auto useage further. (COP)

Response III-12:

If fuel shortage should become so acute that traffic volume on streets and highways is substantially reduced, then this is more reason to have not only a better and larger surface transit system but also a grade-separated, rail rapid transit system operating on its own exclusive right-of-way. Under this limited auto usage scenario, the public will more likely demand faster, safer and more dependable mass transit service that can best be provided by rail rapid transit. Reduction in auto usage due to energy conservation measures does not necessarily mean that the public will forego essential trips - instead they will seek alternative means of travel and transit in the most viable candidate to fill this need.

IV. SYSTEM CONSTRUCTION

Comment IV-1:

The justification in the draft environmental statement for utilizing existing lanes on H-1 between Halawa and Pearl Harbor in lieu of other alternative alignments or widening H-1 to accommodate HART is not compelling. A more detailed analysis of the various alternatives in this section is warranted. The proposed major reconstruction of Interstate H-1 between Kaimuki and Kahala should utilize at least minimum Interstate design standards. Any changes in access or change in design standards for the interstate system will require FHWA assessment and approval. It is requested that sufficient information be provided to fully assess the environmental impact of the proposed project or action relative to reconstruction of Interstate Route H-1. (FHWA)

Response IV-1:

The City has decided that the initial construction segment will be limited to an 8-mile system and hence the Interstate Route H-1 falls outside the limits of the project.

Comment IV-2:

Geodetic control survey monuments may be located in the proposed project area. If there is any planned activity which will disturb or destroy these monuments, NOS requires not less than 90 days' notification in advance of such activity in order to plan for their relocation. NOS recommends that funding for this project includes the cost of any relocation required for NOS monuments. Attached are data showing the location of monuments in the proposed project area. (U.S. DOC)

Response IV-2:

This comment will be appropriately noted and observed during final design and construction.

Comment IV-3:

The statement is commendably clear, concise, consistent and well illustrated. However, for a project of this magnitude, involving extensive excavation or tunneling in downtown Honolulu, it would be advisable to provide in the final statement a geological cross-section showing subsurface conditions anticipated along alignments of the proposed subway(s). (U.S. DOI)

Response IV-3:

Reference is made to the report titled "Preliminary Subsurface Investigation, Proposed Honolulu Rapid Transit System, Underground Section", Sept. 1974, by Dames & Moore which is on file at Department of Transportation Services, City & County of Honolulu. This report contains the log of boring taken along Hotel Street.

Comment IV-4:

Page V-88 discusses "Spoils Disposal" for the 50,000 cubic yards of spoils considered unsuitable as fill material. It notes that "All pertinent ordinances...would be followed in disposing spoils at either City-owned or private locations approved by the City." The statement should identify and describe the spoils areas (both public and private) under pre-project conditions as they relate to flora, fauna and cultural resources. Other sections of the statement should discuss (a) the impacts to the natural/cultural resources of the spoils areas and (b) the mitigation measures to be employed to lessen the impact of spoils operations. We think it inadequate to only state that "Strict controls prevent any form of environmental pollution in the course of the spoils disposal." (U.S. DOI)

Response IV-4:

The two City-operated sanitary land fill sites are identified in the EIS. The spoils from the proposed action will be disposed at one of the City-operated sites, the Kailua Sanitary Land Fill site for which an environmental impact statement has been prepared and approved. Disposal of the spoil materials at this site is not anticipated to result in any significant adverse impacts.

Comment IV-5:

Reference: Underground segments of the project within existing streets and rights-of-way

Comment: There appears to be no discussion of what utility lines, telephone lines, etc. are buried within streets and/or right-of-way easements where the project will be underground. Has there been any discussion with the various utility companies? Has any work been done to map or document what problems, if any, there would be in relocating these lines? (City DLU)

Response IV-3:

Reference is made to the report titled "Preliminary Subsurface Investigation, Proposed Honolulu Rapid Transit System, Underground Section", Sept. 1974, by Dames & Moore which is on file at Department of Transportation Services, City & County of Honolulu. This report contains the log of boring taken along Hotel Street.

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Comment: There appears to be no discussion of what utility lines, telephone lines, etc. are buried within streets and/or right-of-way easements where the project will be underground. Has there been any discussion with the various utility companies? Has any work been done to map or document what problems, if any, there would be in relocating these lines? (City DLU)

Response IV-5:

Underground utilities have been researched with the aid of utility companies' record drawings where available and supplemented with information obtained by ground surveys. Affected utilities are shown on drawings available at the Department of Transportation Services, City & County of Honolulu.

Further discussions with affected utility companies will be held during final design and utility agreements consummated prior to construction.

Comment IV-6:

(a) Segment 4 (page III-54). Will the Kapalama Canal bridge on Dillingham Boulevard be affected by the alignment? Several sanitary and storm sewers are located throughout the length of Dillingham Boulevard, therefore, construction plans should be coordinated with the Divisions of Engineering and Wastewater Management.

(b) Construction Impacts (page V-90). The cut and cover method will have a major impact on the sanitary and storm sewer systems on Hotel Street. What provisions will be provided to maintain the integrity of these systems?

(c) Station Locations (Figures IV-16, 17, 18). There are several conflicts between the underground stations and sewer and drainage facilities. The construction plans of these stations should be coordinated with our department. (City DPW)

Response IV-6:

(a) The Kapalama Canal Bridge will not be affected by the transit alignment. Comments on location of existing services on Dillingham Boulevard are noted and construction plans will be coordinated with cognizant public agencies.

(b) All existing sewers on Hotel will be either relocated prior to construction or temporarily supported during construction to maintain integrity of the systems.

(c) Comments are noted.

Comment IV-7:

Joint use of the right-of-way in terms of adequate space to accommodate all of the existing and future facilities of all of the various utilities.

The scope of work and type of construction involved in relocating, temporarily and permanently, all of the utility facilities and the magnitude of costs associated with these utility relocations.

The funding or financing aspects of all of the utility relocation work involved and how costs are to be shared. We assume that the utility relocations will be largely funded by the Rapid Transit project and would appreciate having this verified in the EIS. (Hawn. Tel. Co.)

Response IV-7:

Private utilities located in public rights-of-way that are affected by the proposed action shall be handled in the normal manner relative to utility relocation practices. This applies to both temporary and permanent relocations insofar as design standards and details, construction work responsibilities, inspection, and disconnecting and re-connecting house service.

During final engineering and prior to actual construction, a utility agreement with each affected utility company will be consummated which will reflect all applicable Federal and local statutes and regulations covering the relocation work and the cost therefor.

Comment IV-8:

Regardless of the final route selected for the HART system, there will be considerable impacts on HECO's existing and future transmission, distribution, and substation facilities (p. VII-4 item E-2, p. V-88, etc.). The costs of the numerous relocations and adjustments to our facilities should be considered a part of the cost of HART and so indicated in the EIS. (HECO)

Response IV-8:

See Response IV-7.

Comment IV-9:

The exact impacts on our system would take considerable time and money to ascertain. Such documentation is not feasible within the constricted review time allowed for the EIS. Additionally, the difficulty of this task is further compounded due to the absence of detailed construction plans for the rapid transit. Accordingly, we have attempted to highlight only those impacts of a significant nature that are readily apparent.

It appears there will be a number of conflicts between the guideway and our existing and future 138kv transmission lines. The following is a list of the locations where the conflicts would probably occur and the 138kv circuits involved.

A. H-1 Highway (adjacent to the Halawa Station) - Existing Waiau-Makalapa 138kv line crossing the highway.

B. Dillingham Boulevard - Existing Halawa-Iwilei, Iwilei School and future Makalapa-Iwilei 138kv lines crossing and parallel to the street.

C. University Avenue & Waialae Avenue - Future Pukele-Kamoku 138kv line crossing and parallel to the street.

D. Waialae Avenue (alternate route) - Future Pukele-Kamoku 138kv lines parallel to the street.

E. Salt Lake Boulevard (alternate route) - Future Makalapa-Iwilei 138kv line parallel to the street.

F. The Iwilei Guideway Station will impact the 138kv dead-end street pole into HECO's Iwilei 138kv Substation. This alternative appears on the surface to be less objectionable than others, however, where the guideway is aerial and is routed, it appears to be exceedingly close to the substation.

G. The rapid transit subway section along Hotel Street, Segment 5 will have a serious adverse effect on HECO's existing Iwilei downtown network systems. The proposed open trench construction method for this segment will expose and jeopardize all eight network feeders from Iwilei Substation. A considerable amount of temporary and final relocation work will be required before, during and after the construction of this segment to insure system continuity and reliability to downtown buildings.

H. Also affected by the segment mentioned in G. is the Generating Station 11kv feed to the existing 4kv Archer substation. In addition, this segment will affect HECO's future plans for undergrounding any new circuits that may be required to Archer substation from Iwilei substation. (HECO)

Response IV-9:

Comments are noted and the indicated conflicts will be thoroughly investigated during the next phase of the program, which includes detailed engineering design and drawings.

It should be noted that since the City has decided on an 8-mile initial segment, the Halawa Station will not be affected. Also, the two alternate routes (Waialae and Salt Lake Blvd.) are not considered in the Final EIS.

Comment IV-10:

The interference of construction on existing highways will be intolerable. Serious consideration should be made to do major construction at night and weekends. (NB #21)

Response IV-10:

Under the proposed 8-mile system the Interstate Freeway H-1, both at the Halawa and Kaimuki areas would be generally outside the project boudaries. Highways to be affected are where the line crosses Nimitz Highway at the Middle Street Interchange and the crossing of the H-1 Freeway near University Avenue. With any type of construction activities at or near highways, traffic flow will be affected but it is intended to maintain existing traffic lanes in operation during peak periods of the weekday. Certain types of work may be required to be done during nights and over weekends to minimize traffic interference.

Comment IV-11:

In response to Draft EIS, Honolulu Rapid Transit Project dated July 1979, the Kaimuki Neighborhood Board No. 4 at this time has not set its position in regard to opposition or favorance of a fixed guideway system. However, the Kaimuki Neighborhood Board would like to state its opposition to the alternative route for segment 8. (NB #4)

Response IV-11:

The Waialae Avenue Alternative alignment applies to the segment of the system beyond the University terminal station of the 8-mile system. Therefore, this segment of the system is beyond the boundary of the proposed project.

Comment IV-12:

Two important environmental effects in Hawaii are completely ignored in the Summary: they are earthquakes and tsunamis; the section on "Regional Description" does refer to them casually. While historical information, as provided in the E.I.S., gives us an "average" idea of what to expect, all engineering projects on which I have worked make plans for the "worst possible" effect, and rightly so. This is especially important for such long-lasting, expensive project as an elevated guideway. The inflexibility and vulnerability of such a structural system is especially significant in considering the economic and social impacts on Oahu residents if the "worst possible" earthquake and/or tsunami struck the leeward side and the proposed guideway. (Hanson)

Response IV-12:

The potential occurence of earthquakes and tsunamis are recognized and have been taken into consideration in the planning of the system. Based on the Uniform Building Code, all structures are required to be designed for Seismic Zone 1. As for tsunamis, reference is made to the following statement in the EIS, Section V.A.2.d: "According to the U.S. Geological Survey "Map of Flood-Prone Areas", no portion of the proposed fixed guideway system will be located in an area that could be inundated by a 100-year tsunami."

Comment IV-13:

What fraction of the Oahu construction work force will be employed to build HART? How much labor will need to be imported to Oahu to build HART? Will massive unemployment in the construction industry follow completion of the construction of HART? (LOL)

Response IV-13:

Currently, there are over 20,000 construction workers on Oahu. During the peak construction year, over 2,000 workers or 10% of the labor force will be required on HART. It is estimated that some 10% or 200 workers with specialized skill may be required to be imported from the mainland. The importation of 1% of the island's total construction labor force should not result in massive unemployment when the project is completed.

Comment IV-14:

During construction, what interim impact will HART have on existing road capacity? What is the proposed construction schedule for HART? What roads will have lanes closed and for how long? (LOL)

Response IV-14:

Basically, all major streets will be required to maintain existing laneage during peak periods of travel. If this is impossible or impractical, temporary by-pass roads will be provided. During off-peak periods, 1 or more lanes in each direction could be closed to permit construction to take place, depending upon roadway widths and traffic volumes.

Although the same laneage would be available, any construction work taking place adjacent to a roadway becomes a distraction and hence causes motorists to drive slower or to hesitate in driving, both causing less than normal traffic flow to occur. It is difficult, if not impossible, to predict what this effect might be since it will depend largely on where it occurs and the specific conditions to be faced by the driver on different roads. Major roadways that will be affected are Dillingham Boulevard, King Street, Kapiolani Boulevard, and University Avenue. Certain segments of these roadways could be affected from 6 months to 18 months at varying degrees.

Comment IV-15:

An estimate of five to six years for the system construction is the only time frame provided. An indication of when segments and stations of the fixed rail system would be constructed should be provided. How many of the busy intersections would be trenched at the same time? (EQC)

Response IV-15:

A proposed construction time frame is shown in Section IV.A.6.a of the Final EIS. Busy intersections will be trenched during off-peak hours of weekdays or on weekends and then decked over for traffic to resume its normal flow. Once the trenching and shoring is completed, the excavation is decked over and the remaining construction activities continued beneath the decking with traffic flowing above. The exact number of busy intersections affected at the same time cannot be determined until detailed construction schedules are developed.

Comment IV-16:

Why did the analysis of different segment lengths assume that construction of any segment length was five to six years? Will construction of a fourteen mile length take the same amount of time as a seven mile length? Does this time frame consider the necessary tunneling downtown and widening of the H-1 Freeway in Kaimuki? (EQC)

Response IV-16:

The most difficult and time consuming portion of any new transit system is the core segment through the downtown and areas immediately adjacent thereto. Underground guideway and station construction generally takes much more time than above-ground construction. While the core segment is being built, outer segments can be built concurrently with little or no additional time required. The only constraint to building longer lengths within the same time frame is the capacity of the construction industry.

Irrespective of the system length, a minimum of 5 years should be allowed to procure, install, and test various major equipment (sub-systems) such as the vehicle system, automatic train control system, and the propulsion power system. These sub-systems must undergo individual testing and then integration testing to ensure that all sub-systems would operate together safely and reliably as designed.

A seven or 14-mile system could take approximately the same time to construct since either length includes the downtown underground segment. The 14-mile length includes the widening of the H-1 Freeway in Kaimuki and an extra year, or 6 years, for construction would be preferred for this longer length so as not to over-tax the construction industry.

Comment IV-17:

If construction is estimated to take five to six years, how can this time frame be considered short term? The potential localized air quality impacts from traffic tie-ups should be estimated. These tie-ups will occur on some of the busiest streets and intersections in Honolulu. (EQC)

Response IV-17:

The total construction period is estimated to be between 5-6 years with individual construction contracts for guideway segments or stations taking between 1½ to 2 years to complete. About one-half of this period is required to do the finish work which takes place inside the structure. The work involving excavation, forming and pouring concrete, and other activities causing disruption to the environment normally lasts up to a year. An impact to a particular location of up to 1 year may be considered short-term.

It is difficult, if not impossible, to reliably estimate "localized air quality impacts from traffic tie-ups" because the nature and extent of such tie-ups are highly variable. It can be assumed that there will be traffic slow-ups up to a point and then increased diversion to alternative routes and/or spreading of peak travel periods; they may or may not create more air pollution.

Comment IV-18:

Another point is if foreign equipment turns out as expected to be the only available proven rolling stock for the system, will federal law require a significant portion of the train or its assembly to be made in America? If local assembly is an allowable alternative, what economic opportunity and impact would this activity have in Hawaii? (Blackman)

Response IV-18:

The current federal policy requires that 50% of the transit rolling stock use U.S. manufactured components. If local assembly is elected by the successful transit car bidder, this could provide jobs and procurement of local services amounting to some 20% of the car procurement cost

V. AIR QUALITY

Comment V-1:

Air Comments (DEIS Section V, page V-8)

Table V-6 gives traffic projections for the impact areas of selected fixed guideway transit stations. The Final EIS should describe the methodology used in predicting these traffic projections. (U.S. EPA)

Response V-1:

Refer to Section V.A.1.c. of the EIS for methodology used.

Comment V-2:

(DEIS Section V, page V-10)

The Draft EIS states that "...at a particular intersection near a station, there could be an increase in traffic and hence, a similar increase in localized pollution." Traffic projections should be made for major intersections and the potential for violation of the CO National Ambient Air Quality Standard should be calculated using techniques given in "Carbon Monoxide Hot Spot Guidelines" (EPA-450/3-78-033). The Final EIS should include this information. (U.S. EPA)

Response V-2:

The most heavily travelled and highly congested intersection was selected (Kalakaua Ave. & Kapiolani Blvd.) near the Waikiki Station and tested for potential violation of the CO National Ambient Air Quality Standard. The results of this analysis is discussed in Section V.A.1.c of the Final EIS.

Comment V-3:

Air pollution from the electric plants producing power to operate the fixed guideway system will occur outside Central Honolulu, but no environmental effects or mitigating trade-offs are discussed. (FHWA)

Response V-3:

Electrical power is generated from three different power plants - the Honolulu plant located in downtown Honolulu, the Waiau plant located near Pearl City, and the Kahe plant located on the Leeward

Coast north of Barbers Point. There are no plans to expand the generating capacity at the Honolulu or Waiau plant. The Kahe plant is currently being expanded. Consequently, there will be no effect on air quality in urban Honolulu from the proposed fixed guideway system.

The proposed fixed guideway system is estimated to consume less than 2% of Oahu's total power consumption of which over 50% will be generated from the Kahe plant. This will mean that less than 4% of the electricity generated at the Kahe plant would be consumed by the proposed rapid transit system. With the new 300 ft. high stacks currently being installed combined with the use of low sulfur fuel oil by 1981 in accordance with the Consent Agreement between the State Department of Health and Hawaiian Electric Co., Inc., the Kahe Plant will be in compliance with the Federal Regulations.

Comment V-4:

Page V-3: A number of variables go into the computation of emission factors among which are vehicle mix and age distribution. There is no indication that trucks, especially light duty trucks (LDT) were accounted for. What vehicle age distribution was used? Please provide all other input variables used in generating the 1995 emission factors. (ALA)

Response V-4:

The input variables used in generating the 1995 emission factors are described in Section V.A.1.b. of the Final EIS.

Comment V-5:

Page V-3: The AP-42 emission factors were superseded in March, 1978 by Mobile Source Emission Factors (EPA-400/9-78-006). These more recent data are based on EPA's exhaust emission surveillance programs and are significant in that actual emissions are substantially greater than theoretically predicted emissions. (ALA)

Response V-5:

The Final EIS uses the latest available EPA data as noted in Section V.A.1.b.

Comment V-6:

Page V-5: In addition to the error introduced because of use of outdated emission factors, the values presented in Table V-3 appear to be in error. They should simply represent the product of emission factors (Table V-1) and VMT (Table V-2), but they do not. The error seems to be about 4% for autos and 17% for buses. (ALA)

Response V-6:

The error has been corrected in the revised Table V-3 of the Final EIS.

Comment V-7:

Pages V-6 - V-9: While a discussion of local impact in terms of peak-hour vehicle trips is of some value, an evaluation of air quality impact should be expressed in terms of air quality units, not only vehicle trips. What are the anticipated concentrations of the various automotive pollutants in the vicinity of the major stations? (ALA)

Response V-7:

The results of this evalulation are described in Section V.A.1.c. of the Final EIS.

Comment V-8:

Page V-9: What DOH study is referred to in the second paragraph? It does not appear to be listed among the references. (ALA)

Response V-8:

The study is in reference to the Emission Inventory Summary prepared by the State of Hawaii, Department of Health on an annual basis.

Comment V-9:

Page V-9: The comparison of CO emissions is based on the emission factors in Table I which are outdated: thus, this discussion also needs revision. (ALA)

Response V-9:

Corrections have been made in the Final EIS.

Comment V-10:

Page V-82: Recognizing that traffic control measures will be utilized to mitigate impact during construction, there will nevertheless be a substantial reduction in average route speed along the HART route accompanied by periods and locations of stop and go movement. During these times and at such locations emissions of automotive pollutants will be maximized. Since construction will continue for several years and since CO standards in particular are set for 1-hour and 8-hour averaging periods because CO is considered a short-term hazard, a more extensive analysis of air quality impact should have been conducted for the construction phase. (ALA)

Response V-10:

Any form of construction activity in or along a roadway will obstruct the flow of traffic, even though it may only be visual without causing any physical constraint on the travelway. In construction areas, the existing number of lanes will be maintained during peak travel periods. However, in certain cases these travel lanes may have reduced widths, have sharp curves for detours, have temporary barricades in place of shoulders and various other conditions that are normally encountered when driving through construction areas.

The effects on traffic flow during construction could vary from block to block and from intersection to intersection depending on the construction requirements and the availability of space to maintain traffic flow as nearly as possible to existing conditions. Methodology does not exist to reliably quantify the traffic impact which in turn determines air quality impact. However, it is not unreasonable to assume that traffic flow could be affected through temporary reduction in roadway capacity. This capacity reduction would cause increased congestion which in turn may cause motorists to find alternative routes or adjust their travel pattern or time. Therefore, the net impact could vary from only nominal change up to a level of traffic flow reduction equal to the roadway capacity.

Comment V-11:

Ambient SO_2 concentrations near Kahe Point, Oahu, presently exceed Federal and State air quality standards. What is "community wide pollution"? (EQC)

Response V-11:

Comment on ambient SO_2 concentration is noted and reference to "community-wide pollution" is deleted from the Final EIS.

Comment V-12:

Table III-9 aggregates the various types of air pollution emissions and types of fuels. This is inappropriate since, for example, a ton of carbon monoxide is not the equivalent of a ton of sulfur dioxide. Does gasoline have the same thermal rating as low-sulfur fuel oil? We recommend these comparisons be revised. (EQC)

Response V-12:

The referenced table summarizes the relative reductions in air pollution emissions and savings in energy between alternative systems. The table below provides the breakdown by type of pollutants and fuel for the various alternative systems analyzed. The thermal rating for various types of fuel (in Btu/gal.) are: gasoline (125,000), diesel and residual oil (136,000).

COMPARISON OF REDUCTION IN AIR POLLUTANTS & FUEL SAVINGS

	Short 7-Mile Length			Medium 14-Mile Length		Long 23- and 28-Mile Length		
	Busway	LRT	Fixed Gwy.	LRT	Fixed Gwy.	23-Mi. LRT	28-Mi. LRT	23-Mi. F.G.
AIR POLLUTANTS (Tons)								
Carbon Monoxide	- 2,970	- 3,090	- 3,090	- 3,580	- 3,580	- 3,580	- 3,580	- 4,190
Hydrocarbons	- 400	- 380	- 390	- 490	- 480	- 510	- 510	- 590
Nitrogen Oxides	+ 490	+ 260	+ 260	- 40	- 70	- 150	- 180	- 220
Particulate Matters	- 130	- 130	- 130	- 160	- 160	- 160	- 160	- 190
Sulfur Oxides	+ 40	+ 100	+ 90	+ 160	+ 140	+ 280	+ 290	+ 260
TOTAL	- 2,970	- 3,240	- 3,260	- 4,110	- 4,150	- 4,120	- 4,140	- 4,930
FUEL SAVINGS (m.g.)								
Gasoline	- 17.78	- 17.45	- 17.45	- 18.83	- 18.83	- 18.83	- 18.83	- 21.45
Diesel	+ 6.60	+ 4.56	+ 4.56	+ 2.26	+ 2.26	+ 0.87	+ 0.56	+ 1.07
Residual Oil	+ 1.16	+ 4.36	+ 4.03	+ 8.03	+ 7.16	+ 12.92	+ 13.52	+ 11.85
TOTAL	- 10.02	- 8.53	- 8.86	- 8.54	- 9.41	- 5.04	- 4.75	- 8.53

Comment V-13:

The Kahe Power Plant is in airshed #1 (Honolulu and Ewa districts). The air quality both before and after project implementation near the Kahe Plant should be discussed. At present, the Kahe facility is in a E.P.A. designated non-attainment area for SO_2. Upon switching to low-sulfur fuel oil and the construction of higher stacks they will meet the federal standards, but will still not meet more restrictive state standards. Will the increased emissions of SO_2 at Kahe due to the fixed guideway have a significant impact on that area's air quality? (EQC)

Response V-13:

See response to Comment V-3.

VI. NOISE AND VIBRATION

Comment VI-1:

The assessment on noise was based on American Public Transit Association (APTA) design criteria. In view of the scale and long term investment of the fixed guideway system, it is recommended that the design criteria and noise assessment also be based on applicable State and City and County noise control regulations. (U.S. HUD)

Response VI-1:

The State Department of Health determined that the use of the APTA guidelines on noise and vibration in the development of the EIS noise criteria for transit noise impact assessment would be appropriate based on the department's opinion that neither the Vehicular nor Community Noise Control Regulations for Oahu would be directly applicable to moving transit vehicles.

Comment VI-2:

Reference is made to the description of probable noise impact along the aerial segment from Pearl Harbor Interchange to Keehi Lagoon Park. Please be advised that some of the Base military family housing units are approximately 250 feet from the west end of the aerial segment. Despite the currently high ambient noise levels generated from the nearby highway and airport activities, it is our recommendation that sound barriers be provided to reduce additional noise impact on our community. (USAF)

Response VI-2:

The Draft EIS, Section B.1.b., pg. V-30, recognizes the existence of noise sensitive facilities located some 200 ft. from the freeway including a number of schools. However, since the transit system as currently proposed in the Final EIS is an 8-mile system from the Airport Station easterly to the University Station, the base military family housing units will not be affected.

Comment VI-3:

The document has been reviewed and we agree with the EIS conclusion that the impact on ecology will be minor. However, the project will have significant impact on historic sites in the downtown area. Excessive noise and vibration will occur during construction and after the project is in operation. (U.S. Army - Support Command)

Response VI-3:

Impacts and mitigation measures are given in Chapter VI of the Final EIS.

Comment VI-4:

There will be schools affected when the subject project is implemented. We are concerned about the noise pollution affecting our teaching operations whenever the noise exceeds 50 dBA. The noise pollution exceeding this level infringes on our basic verbal communication with students in the teaching and learning operations. (State DOE)

Response VI-4:

The EIS recognizes the existence of a number of schools located along the transit corridor and addresses mitigative measures through the use of sound barrier walls on the guideway structure.

Comment VI-5:

The draft states that the State of Hawaii, Department of Health, agrees that the use of the APTA Guidelines appears to be appropriate as a reference in developing the noise criteria to assess the impact of the fixed-guideway system. We wish to express a concern that Public Health regulations, Chapter 44B, Community Noise Control Regulation, and Public Health Regulations, Chapter 44A, Vehicular Noise and Control Regulation, criteria are both less than the APTA Guidelines (Table V-8, Page V-24) and should be adhered to provide for a satisfactory classroom situation. (State DOE)

Resonse VI-5:

As stated in the Final EIS, Page V-23, the State of Hawaii, Department of Health was contacted to establish the basis for conducting noise impact assessments along the transit corridor. The applicable sections of Chapter 44B, Community Noise Control and Chapter 44A, Vehicular Noise and Control Regulations for Oahu relative to highway intrusion on schools are duly noted.

Comment VI-6:

It will be our assumption that should the project be implemented appropriate funds will be included to reduce the impact of the noise generated by the fixed-guideway system in our classrooms in the event that "noise shields" are not satisfactory. (State DOE)

Response VI-6:

As noted in the Final EIS (Section V.B.), noise barriers will be provided to lessen noise levels near educational facilities. In the event that such measures are not adequate, the City will take additional actions to reduce noise impacts generated by the system.

Comment VI-7:

There are reservations concerning the operation of the fixed guideway rapid-transit system. The noise from the trains, although being a single event lasting for a few seconds, can create an annoyance to the residence along the route. In addition, noise from the activities of the transit system station (transit trains, station mechanical equipment, people, and buses and auto interfacing at the station) can create annoyances to the neighboring residence.

Construction noise impact should address heavy vehicles traveling on trafficways to and from construction project to comply with the limits stated in Public Health Regulations, Chapter 44A, Vehicular Noise Control for Oahu.

We realize that the statements are general in nature due to preliminary plans being the sole source of discussion. We, therefore, reserve the right to impose future environmental restrictions on the project at the time final plans are submitted to this office for review. (State DOH)

Response VI-7:

The greater sensitivity to noise in low density residential areas is reflected in the guidelines used. (See Table V-9 of the Final EIS) The predicted noise levels from train passbys are based on the experience of the most modern transit systems but any future improvements that can produce lower noise levels will be incorporated into the proposed system. Other associated transit operational noise at stations will be closely reviewed during final design to ensure minimum impacts on neighboring residences.

During construction, heavy vehicles (trucks) travelling on trafficways will be required to comply with applicable provisions of Chapter 44A, Vehicular Noise Control for Oahu.

The project will be closely coordinated with the Department of Health during final design.

Comment VI-8:

There is no EIS on the alternatives. Is this not necessary according to NEPA guidelines? There is little mention of energy, either that to be consumed during construction, or possible long-range savings due to maximum use of the system. Noise is another important concern. How did the alternatives measure regarding noise levels? How difficult will maintenance of steel wheels be, and will the projected noise levels hold true if maintenance is a problem. (L of WV)

Response VI-8:

Table III-9 of the EIS summarizes the relative comparisons of various environmental impacts between alternative systems analyzed. Also, the comparison of savings in operating energy and noise levels are shown. A regular maintenance program involving wheel and rail grinding should minimize noise levels. This type of maintenance is currently a regular part of maintenance programs of other transit properties. It should be noted that if the equipment is not properly maintained, increased noise levels can be expected from any type of transit vehicle.

Refer to Chapter V of the Final EIS for construction energy impacts and energy savings associated with the proposed system.

Comment VI-9:

CAN must protest strongly two apparent assumptions in the EIS' treatment of noise impacts: that noise is "largely a product of sensitivity" (p. V-21), and that the existing levels of noise are acceptable.

Noise is a question of health. It is linked to cardiovascular problems, ulcers, hypertension, and a whole host of physical disorders. It is not merely a matter of personal tolerance, but of serious physical stress. If the EIS is based on the assumption that idiosyncratic tolerance is the basis for concern, it is wrong.

The design guidelines for HART are based on standards that consider "typical ambient noise levels for each community area category and the maximum transit noise levels that should receive community acceptance if they are not exceeded." (p. V-21)

Ambient noise levels are not a standard to base a question of health. It is quite possible, even likely, that many locations along the proposed fixed guideway corridor already experience an unhealthful level of noise, ambient as it may be.

One clue to what might be healthful is Oahu's Community Noise Code, promulgated by the State Department of Health. That code was developed with the notions of what an acceptable, healthful sonic environment might be. Its standards cannot be enforced for transit issues, but they do suggest a means of evaluating HART.

In the code, residential areas are assigned permissable noise levels in a range from 55 dBA to 60 dBA during the day, and 45 dBA to 50 dBA in the evening. This contrasts sharply with the adopted American Public Transit Associations standards that provide the basis for HART's design goals. Those standards suggest permissable levels in the 70 dBA to 80 dBA range. Consequently, we find HART design goals no lower than 75 dBA and up to 79 dBA.

Citizens Against Noise does not feel the APTA "standards" are appropriate to impose on Honolulu, a city whose climate encourages open air living, and which consequently opens its windows to the growing din of the streets. A better standard, we suggest, is our own Community Noise Code, for this does reflect at least an estimate of what is healthful, not just what is ambient, or tolerable, or likely to draw a minimum number of complaints.

In summary, CAN is most concerned with the assumptions made about noise in the Draft EIS and the standards adopted for design goals. We think they are both inappropriate and thus detract from the EIS' attempt to adequately describe the impact of HART. (CAN)

Response VI-9:

The Draft and Final EIS state that "noise & vibration impacts are among the most difficult to evaluate since they are largely a product of sensitivity". The reference to "sensitivity" is made not in terms of human sensitivity but rather to the variety of environments traversed and the ambient noise levels encountered. For instance, a moving train with a given noise level may be perceived as "very noisy" when passing by a hospital or residential area but not even noticed when passing by an airport or commercial shopping area.

Further, this is not intended to imply that "existing levels of noise are acceptable" but rather to measure existing ambient conditions and analyze how the proposed action relates to those conditions.

As noted in Response VI-1, the State Department of Health determined that the APTA guidelines were appropriate, given the lack of any reference to transit vehicles in the local Vehicular or Community Noise Code.

Irrespective of the standards used, unless a break-through in technology occurs, the typical noise levels given are the most probable that can be expected at this time and would exceed the Community Noise Code standards in most instances.

This is not to say that lower noise levels are not or would not be attainable in the future. During final design, the most current attainable noise levels will be considered in designing facilities and specifying equipment.

It should be noted that transit stations and ancillary facilities (such as power substations) will be designed to meet Community Noise Standards as they relate to various types of land use.

Comment VI-10:

The problem of noise abatement should be studied in depth to minimize the noise to an acceptable level. (NB #3)

Response VI-10:

All possible noise abatement measures have been studied as described in Section V.B.1. of the Final EIS and this will again be done during final design to take into consideration any advancements in acoustical engineering to further minimize noise levels.

Comment VI-11:

Omitted from the "Summary of Effects" (but discussed in the text) are such important environmental factors as noise (long term) and stream (ocean-beach) pollution. (Hanson)

Response VI-11:

Long term noise effects, especially those cited as exceeding design goals are included in the Summary of Effects in the Final EIS. No adverse stream pollution are anticipated from the proposed action. (Refer to Section V.A.2. of the Final EIS)

Comment VI-12:

Some other points I would like to make: Noise pollution. Our present law in residential areas limits noise to 60 decibels. Add an additional ten decibels, and you double the noise level.

With HART the decibels increase to 80 or two times louder than now allowed by law. (NB #9)

Comment VI-13:

Concern that the noise of the elevated steel-on-steel train will cause 80 decibels of noise 50 feet away, whereas our Health Code states 60 decibels in residential areas is maximum. 10 decibels is a doubling of sound; therefore, HART would mean a 200% increase in noise. (Hanson)

Responses VI-12 and -13:

Comments are noted.

Comment VI-14:

We note that the maximum noise level from train operations using APTA guidelines are anywhere from 10 to 15 DBA above that presently allowable under the Department of Health's Chapter 44B, Community Noise Control for Oahu. This is a significant difference. How much additional noise attenuation by barriers will be needed to meet the State noise regulations? Since Honolulu has higher sensitivity to noise than the mainland cities for which the APTA noise guidelines are designed, every effort should be made to mitigate this impact. (EQC)

Response VI-14:

Under the present state-of-the-art, noise emitted from train operations cannot be mitigated to meet the standards of the Community Noise Control for Oahu. It should be mentioned that present day automobiles, trucks and buses cannot meet these standards either. Furthermore, the Community Noise Control regulations exempt vehicular noise covered under the Vehicular Noise Control regulations. (See Response VI-10)

Comment VI-15:

Noise Impact. We find the noise that will be generated from the system to be higher than that currently allowed in our Community Noise Codes, and as such should be examined more closely. We admit that there is that possibility that this system could possibly run quieter than existing buses, but in and around station stops, we could find that noise levels could be very high given the volume of feeder buses around the station combined with the transit system. (NB #8 and State Representatives of 12th District)

Response VI-15:

See Response VI-9 regarding the Community Noise Control regulations. Refer to Section V.B.1.c. of the Final EIS for noise impact at stations.

Comment VI-16:

Noise

a. The 2M Council is puzzled by the statement on page V-21 that noise and vibration are "largely a product of sensitivity". We feel it is a function of human health, and so does the EPA. If the basis of analysis is the reduction of complaints rather than the maintenance of a healthful environment, we object.

The design guidelines for HART are compared with American Public Transit Association noise standards. (APTA). Page V-21 states that "The noise level design goals were derived by APTA considering typical ambient noise levels for each community area category and the maximum transit noise levels that should receive community acceptance if they are not exceeded."

b. This statement raises a number of concerns. First, that ambient noise levels are presumed to be acceptable. In our view that assumption is questionable. It certainly avoids the question as to whether they are Healthful.

c. Second, again we see this notion of "community acceptance" as a standard. How is this measured? Is there some magical number of complaints that constitute acceptance or non-acceptance? We would prefer community well being as the operative principle.

d. Third, on examining the APTA standards, we find they conflict with our own Oahu Community Noise Code, promulgated by the State Department of Health. APTA standards on page V-24 indicate decibel levels in residential areas ranging from 70dBA to 80dBA. The Oahu Community Noise Code ranges from 55 dBA to 60dBA. Our code is presumably based on an estimate as to what is healthful, and applies to permitted noises at the property line, generated from the property.

e. We pose this question: If the Oahu Community Noise Code says that residential areas deserve a sonic environment of no higher than 60dBA (during the day), on what basis are APTA standards of 70-80dBA an acceptable guideline for HART?

f. Another puzzling aspect of the EIS is the reference to noise barriers. We are not certain that the artists renditions of the HART system (figures V-10b, V-11b & V-12b) include noise barriers. The only discernable barriers are short railings that appear to rise just above the height of the wheels. We ask: Are these the noise barriers? If so, of what accoustical materials are they to be constructed? How much are they expected to reduce noise? Page V-37 refers to "sound barrier walls". Are these the same thing, or different?

g. Finally, we note that there are not specific references to the levels of noise expected to reach the upper floors of high rises along Kapiolani Blvd. Figure V-3 does suggest some noise level contours, but these appear to conflict with evidence that sound amplifies as it rises: i.e. it can be expected to be louder on the 12th story than the 5th story. And of course this would also be important for the construction phase.

h. On this last point. Suggestions are made as to "methods that will be considered" to further reduce noise (p. V-44) with no indication as to why they are not now incorporated in design plans if indeed they are feasible. But also with no reference to the construction phase. We feel the impacts of construction will be significant, and would like to know to what degree noise will be a factor in the Moiliili-McCully area. (2M Community Council)

Response VI-16:

a. Please refer to Response VI-9.

b. This statement is included in the EIS to merely explain how APTA's noise level design goals were derived and the comments are noted.

c. Further to b. above, APTA's noise level design goals and noise acceptibility were determined based on a number of noise level exposure procedures which depend on several variables including maximum single event transient noise levels and number of events per hour of day or time of day. The design goals are established by taking into consideration the psychological and physiological effects of noise as discussed in the APTA guidelines.

d. Please refer to Response VI-9.

e. As stated in the above response (c.), the APTA standards are used only to make relative assessments of the transit-generated noise, and were used because the Community Noise Code and Vehicle Noise Code do not pertain to transit vehicles. It should also be pointed out that the 55-60 dBA recommended for residential areas is normally given as L_{DN} levels while the APTA standards are given as maximum single event passby noise levels.

f. Noise barriers and sound barrier walls are synonymous and they are made of concrete. They will reduce noise levels 9 dBA at a distance of 50 feet from the transit vehicle.

g. Noise levels reduce with distance, both horizontally and vertically, as indicated in Figure V-8 of the EIS.

h. Detailed design of methods for implementing these mitigative measures are normally done during final design and preparation of construction specificiations. A discussion of construction noise is presented in Section V.E.1.

Comment VI-17:

1. Nowhere in the Environmental Impact Statement does the matter of noise pollution seem to be adequately covered. One of the prime issues with our Association is noise pollution. (See our attached issues.). One of the prime station stops at Kapiolani Blvd. and Kalakaua Ave. is in the vicinity of our finest established residential condominiums such as, 1645 Ala Wai, 1717 Ala Wai, 419 Atkinson Dr. and others, which are about 10 years old. These established residential buildings can't help but be disturbed by a system of steel wheels on steel track. Noise pollution is a constant problem in Waikiki. (WRA)

Response VI-17:

Section V.B.1.b. fully describes the potential noise impact on communities through which the transit system traverses.

VII. WATER QUALITY

Comment VII-1:

The surface water resources within the project area should not be significantly affected by the proposed action as long as the general mitigative measures outlined in the draft are carried out. (US DOI)

Response VII-1:

Comment is noted.

Comment VII-2:

Over a distance of about 1.7 miles within the downtown-civic center area, the proposed fixed guideway would be underground. The invert of the tunnel would be constructed at depths of about 10 to 30 feet below sea level as shown on figures IV-7 and IV-8 of the draft statement. The trench for the tunnel would be dug in sedimentary and pyroclastic deposits that underlie the coastal plain of the Honolulu area where the water table is a foot or two above sea level.

The draft statement addresses the need to dewater the tunnel during excavation and construction and proposes mitigative measures that would be taken to prevent ground settlement that may result from the dewatering operations. However, there appears to be no consideration given to possible interference with and damage to existing shallow wells tapping water in the coastal-plain deposits in the vicinity of the tunnel construction. (US DOI)

Response VII-2:

See Section V.E.8 of the Final EIS.

Comment VII-3:

Attached is a Corps letter (PODED-PF) dated 9 April 1979 to City and County of Honolulu, Department of Transportation Services, relative to portions of HART alignment and transit stations that are situationed in, or cross over, 100-year flood hazard areas, as identified on the Flood Insurance Rate Maps prepared for the Federal Emergency Management Agency, Office of Federal Insurance and Hazard Mitigation. (Incl. 1). The 100-year flood refers to a flood having a one percent chance of being equalled or exceeded in any given year.

The Corps acknowledges the Department of Transportation's understanding of Department of the Army permit requirements and recommends that it continue to coordinate with the Corps to ensure that the permit application, if required, is submitted as soon as possible to avoid unnecessary delays in the project schedule. (U.S. Army-Corps of Engineers)

Response VII-3:

Comments are noted.

Comment VII-4:

Wastewater Treatment and Disposal

The treatment and disposal of wastewater from the operation and maintenance of vehicles for the proposed system should be discussed. The treatment and disposal of wastewater from the cleaning and washing of the City's existing buses is a problem at this time.

In general, environmental impacts created by the operation and maintenance of the subject transit system are ignored and should be discussed more fully. (State DOH)

Response VII-4:

There are problems at the Alapai Bus Maintenance Facility, which was built prior to these regulations. However, there are no known problems existing at the City's new Halawa Bus Maintenance Yard where waste water from the cleaning and washing operations is recycled and re-used while the pollutants removed are disposed in a manner conforming to all applicable regulations. See Section V.A.2. of the Final EIS for discussion of wastewater treatment from the operation and maintenance of the proposed transit system.

Comment VII-5:

How does the 208 water quality program relate to the project? Also, the discussion on the CZM program is outdated and should be revised. (EQC)

Response VII-5:

The water quality program cited is to present a background of existing conditions of streams in areas where the transit system will be located. As indicated in Section V.A.2. of the Final EIS, the proposed action is not expected to have any significant adverse effect on the water quality of the area. The discussion on the CZM program has been updated in the Final EIS.

Comment VII-6:

1. The report should address the effects tunnelling would have on groundwater and "caprock" water resources and disruption to utilities. Also, it should mention any mitigative measures that would be implemented to minimize these impacts.

2. The report should identify the existing groundwater or surface water quality that could be affected by the project. (City Bd. of WS)

Response VII-6:

1. See Section V.E.7. & 8. of the Final EIS.

2. As discussed in Section V.A.2. of the Final EIS, the proposed project is not expected to have any significant adverse effect on existing groundwater or surface water quality.

Comment VII-7:

Water Quality (pages II-2, II-3). Several of the streams listed in Table II-1 have had their water quality conditions improved by the elimination of direct waste discharges into the stream. These include Kapalama Canal and Kalihi Stream. Conditions in other streams such as Nuuanu and Moanalua have been improved by the elimination of raw sewage discharge off Sand Island. (City DPW)

Response VII-7:

Comments are noted.

VIII. VEGETATION AND WILDLIFE

Comment VIII-1:

The proposed project should have little adverse effect on fish and wildlife except in Keehi Lagoon. The Lagoon is one of the three major sources of Nehu, Stolephorus purpureus used as bait fish by local commercial tuna fishermen. Every effort must be made to prevent disruption of the Nehu population and habitat, both during construction and operation of the Keehi parking yard and maintenance shop, and during construction of the Moanalua Stream Bridge. These efforts should be described in the final statement. (US DOI)

Response VIII-1:

Mitigative measures to prevent disruption of the Nehu population and habitat in the Keehi Lagoon during construction are discussed in Section V.A.2.b of the Final EIS. Further discussion of mitigating potential problem sources from the operation of the yard and shop facilities is also presented.

Comment VIII-2:

Fish and Wildlife Coordination Act Comments

The statement appropriately describes existing fish and wildlife resources but only discusses the construction impacts in a very general way. Also, the measures to minimize harm are identified only on the basis of what could be done and what provisions should be made; it does not state what will be done. In short, this draft statement lacks adequate information (site-specific locations, design and measures to minimize harm) for a full understanding of how the interrelated Federal actions--Section 10 and 404 permits from Corps of Engineers and Section 9 permit from U.S. Coast Guard--may affect the fish and wildlife resources.

Accordingly, the comments on this statement do not in any way preclude separate evaluation and comments by the Fish and Wildlife Service (FWS) when it reviews the permit applications. In review of the Corps/Coast Guard permit applications, FWS may concur, with or without stipulations, or object to the proposed work depending on project effects which may be identified and evident at that time. FWS advises that its tentative position, based on available information, would probably be to concur to permits with stipulations for the several bridges, dredge and fill, and channelization work.

Should appropriate site-specific information be available, FWS would be pleased to cooperate and coordinate with you, the City and County of Honolulu's Department of Transportation Services, the Hawaii Department of Land and Natural Resources (Division of Fish and Game), the Corps of Engineers, and the U.S. Coast Guard in tentative resolution now of all factors, including stipulations relating to the needed permits, so that this information may be included in the final statement. Indeed we think it essential that this additional "scoping" be carried out now to comply with the views of the Secretary of Transportation in his letter of January 10, 1979, to the Secretary of Interior. (U.S. DOI)

Response VIII-2:

As discussed in Section V.A.2. of the Final EIS, coordination with the Corps of Engineers, the Coast Guard and the Division of Fish and Wildlife Service has been continuously maintained and a preliminary determination of no adverse impact has been received for the proposed project. Coordination will continue to be maintained with these agencies as further planning and design progresses leading to the filing of necessary permits for the proposed action.

IX. LAND USE

Comment IX-1:

In addition, the proposed parking yard and maintenance shop area are to be located on lands illegally created by filling waters of the United States. The matter is still in litigation by the U.S. Attorney. Since the outcome could have a bearing on the proposed plan, we think it would be prudent for you to defer completion of the final environmental statement until resolution of this matter is achieved. (US DOI)

Response IX-1:

The case has been settled with a Consent Decree issued describing remedial measures required and permitted use of the land by the State.

Comment IX-2:

We recommend the EIS discuss alternate sites for maintenance yard and shops (Page IV-4 and Figure IV-3).

The planning of Honolulu Harbor as set forth by the 1995 Honolulu Harbor Master Plan was based on the development of a second deep-draft harbor at Barbers Point. If the proposed Barbers Point Harbor does not materialize, State lands upon which the proposed yard and shops are to be located, would not be released, but would be retained for maritime use.

The proposed site would have to be purchased at its fair market value or exchanged for a real property of equal value since the proposed area is now producing revenues for the State. This impact should also be discussed. (State DOT)

Response IX-2:

A single site of at least 30 acres was determined to be necessary to accommodate the maintenance facilities and provide sufficient storage area to accommodate the number of vehicles required for the initial system.

The following requirements were used in identifying potential sites: 1) land area of 30 acres or more; 2) industrial location; 3) close proximity to main line; 4) centrally located relative to the guideway system and 5) centrally located relative to system employees.

After identification and initial feasibility study of 8 sites, 3 sites were evaluated further. The Keehi Lagoon site was finally determined to be the most desirable of the three because the

property was readily available (mostly owned by the State) and the location would involve the least disruption to existing development on and adjacent to the site.

The other two sites evaluated were located at Makalapa Crater and Mapunapuna. The crater site is Navy property which is currently vacant but planned to be developed into a golf course. Development cost would be high due to the crater site, and considerable difficulty and delays were anticipated in having the Federal Government relinquish the property.

The Mapunapuna site is part State and part Army property, both planned for development. The development of the property would require the decking over of the Moanalua Channel, and the site is floodprone. The over-riding negative factor for this site was the problems anticipated in acquiring this property from the State and Federal Governments due to difficulties in relocating existing facilities to other suitable locations.

The proposed yard and shop site at Keehi Lagoon is recognized as a revenue producing property for the State with a determinable fair market value.

Comment IX-3:

County Community Development Plans are presently being formulated with consideration given to specific Goals, Objectives and Policies identified in the Oahu General Plan of 1977.

The EIS should contain a clear and concise review (with supportive statistical data appropriately footnoted) identifying potential impacts of the proposed mass transit system on density and land use patterns formulated within these plans (County Community Development Plans).

Particular emphasis should be placed on evaluating proposed density patterns to fixed guideway ridership requirements assuring that the proposed system is financially solvent in terms of anticipated transit rider fees. (State DOT and NB #10)

Comment IX-4:

On the Relationship to General Planning

What land use patterns will exist, particularly in the corridor of the proposed transit system and more particularly in the vicinity of the proposed transit stations? These patterns should be described in terms of land use types, densities, and methods by which they will be implemented.

The impacts flowing from the proposed system would be heavily conditioned by the type, location, magnitude and staging of land development in the entire county, but particularly within the principal corridor. High density development, particularly in the vicinity of the stations, would promote higher transit patronage and, consequently, a more favorable fiscal status both for the system and for the local government. However, such a form of land development would have other impacts on the local affected communities- impacts usually flowing from high density urban development. Existing densities and land use patterns probably would lead to fiscal difficulties for the system. There is a clear need for the expression of what land use strategies are to be employed in conjunction with the proposed rapid transit system in order to assess its impacts. In spite of this, the Department of General Planning's development plan effort is taking place largely independent of planning for the transit system. Communication between the two planning efforts is not sufficient. There should be an agreement on a mutual strategy which links the two. Only when the development plans are specified can anything meaningful be said about many significant consequences of the system, including the all-important patronage and fiscal considerations. (U of H E.C.)

Response IX-3 & 4:

As indicated in Section V.B.4 of the Final EIS, future land use patterns are largely the result of actions by the City and County of Honolulu, especially in regard to zoning around the stations in the corridor and desire on the part of private developers to invest in these areas. The Final EIS gives considerable information on availability of development opportunities and possible City actions to achieve development in keeping with City General Plan policies. The Development Plans now being prepared for the entire corridor will establish the desired future land use patterns. A study of land use around stations areas has been completed by the City DTS and this effort was coordinated with the City DGP and DLU. The study evaluated the potential for land use change around each station on the 14-mile system. (See Land Use Study Around Rapid Transit Stations, May, 1980 by Belt, Collins & Associates). It identified the stations most likely to receive the greatest development pressure, and identified the existing and potential changes in land use for the Ala Moana, Fort Street, Waikiki, Ward Avenue, and Halawa Station areas. Basically, this work supports the thesis that employment (and City policy) will continue to concentrate in downtown and the immediate vicinity, and that location of the transit stations in this area as a focus of the system is a logical decision. Further work by Belt, Collins & Associates has identified a range of implementation methods, including zoning amendments, special design districts around transit stations, City acquisition of land with later development by the city or joint development with private industry, special benefit tax assessments and the like.

Comment IX-5:

The relationship between this project and the City's General Plan and Development Plans also needs to be clarified. As you are aware, the neighborhood boards are currently assisting the City's Department of General Planning in the preparation of the Development Plans. The boards have not yet, received the Transportation Facilities Analysis for the Development Plans, which is essential for us to assess the subject project's impact on the Development Plan for our area. The current drafts of the Development Plans suggest reducing the allowable population within the primary urban core, in order to implement the population distribution policy contained in the City's General Plan. The subject Environmental Impact Statement, on the other hand, calls for higher densities along the system's route, which to us appears inconsistent with the population distribution policy of the General Plan. The ultimate population in the primary urban core will have a significant effect on the cost-effectiveness of the proposed system. (NB #2)

Response IX-5:

The relationship between the proposed project and the City's General Plan is expressed in the following objectives and policies contained in the Transportation section of that Plan.

Objective A

To create a transportation system which will enable people and goods to move safely, efficiently, and at a reasonable cost; serve all people, including the poor, the elderly, and the physically handicapped; and offer a variety of attractive and convenient modes of travel.

Policy 1

Develop an integrated ground-transportation system consisting of the following elements and their primary purposes:

a. Public transportation-for travel to and from work and travel within Central Honolulu;

b. Roads and highways-for commercial traffic and travel in non-urban areas;

c. Bikeways-for recreational activities and trips to work, schools, shopping centers, and community facilities; and

d. Pedestrian walkways-for getting around Downtown and Waikiki, and for trips to schools, parks, and shopping centers.

Policy 2

Provide transportation services to people living within the Pearl City - Hawaii Kai corridor primarily through a mass-transit and feeder-bus system, and where appropriate, through limited highway improvements.

Policy 3

Provide transportation services to people living outside the Pearl City - Hawaii Kai corridor primarily through a system of express- and feeder-buses and limited to moderate highway improvements.

This objective and the related policies, as well as objectives on population and economic activity provide the framework for decisions on transportation investments. Furthermore, these policies also provide the framework for the Development Plans ("The Development Plan for the Primary Urban Center has been prepared and represents a relatively detailed scheme for implementing and accomplishing the development objectives and policies of the General Plan for that area;" - Preliminary D.P. Ordinance, April 1980)

Relative to the second part of the comment on the proposed reduction of the allowable population within the primary urban core, this reduction does not mean the lowering of the existing population. Rather, it means that the expected population should be reduced from that which is allowed under the current land use and zoning policies.

Comment IX-6:

Reference: Page II-3, 2. Coastal Zone Management (CZM)

Comment: This section should be updated in accordance with Act 200, SLH, 1979. The last sentence of the first paragraph should be revised to read: "The Act stipulates that the development will not have any substantial adverse environmental or ecological effect, except as such adverse effect is minimized to the extent practicable and clearly outweighed by public health, safety, or compelling public interest." Act 200 also acknowledges the Hawaii CZM Program approved by the U.S. Department of Commerce in September 1978, by incorporating the document into Chapter 205-A, HRS. Implementation of the Special Management Area, is embodied in the provisions of Ordinance No. 4529, as amended. Development within the SMA will require a public hearing and action by the City Council. (City DLU)

Response IX-6:

The relevant section has been updated in the Final EIS and the comment is noted.

Comment IX-7:

Impact Assessment of University Station as a Terminal (V-93 to V-95)

What are the University's proposals for use of the quarry area in the vicinity of the proposed University station?

This question should be answered not in terms of what the impact would be on existing University uses of the area but rather in terms of impacts on planned uses. The University has a plan for use of the area, including some neighboring areas currently in residential use. (U of H E.C.)

Response IX-7:

In planning of the University's quarry area, the University recognizes the rapid transit alignment and the station location which is reflected in the University of Hawaii Master Plan being prepared by the State.

Comment IX-8:

HART, The General Plan, The Development Plans (V-69)

The General Plan advocates new development in areas already zoned "urban" with transportation provided by a mass transit system. Historically, development has taken place along major transportation lines or routes, dense particularly in the vicinity of stations. In this respect, HART is consistent with General Plan objectives especially if increased density occurs around transit stops.

The development plans that are currently being prepared, however, are discussing reducing the allowable, but unused, density requirements permitted by the City and County zoning code. If, in fact, an increase in density will be prohibited along the mass transit route and around the transit stations, then HART may not meet the ridership projections for 1995 discussed in the DEIS. If the population remains relatively dispersed as it is now, then it might be best served by another mode of mass transit. A system such as HART best serves centers of population concentrations, such as downtown, Ala Moana, and the University, but would be less efficient in areas such as Kaimuki, Date Street, and other stops serving residential areas. An expanded discussion on HART and the Development Plans should be included in the final EIS. (U of H E.C.)

Response IX-8:

The proposed Development Plans for the Primary Urban Center (PUC) does down-zone certain areas from that currently permitted. This means that certain areas are currently zoned for high density but with existing low density developments, would only be permitted to be redeveloped to medium density. Therefore, this does not mean that the transit corridor would not increase in density in the future. The future density of the area will continue to increase but not to the same density permitted under the existing zoning.

The proposed transit corridor already has a relatively high density which will continue to increase. The ridership estimates in Section IV.A.4 of the Final EIS has been adjusted to reflect the land use policies of the current General Plans. It is more important for a system like HART to serve high density employment concentrations than population concentrations although it is highly desirable to have high density population concentrations also.

Comment IX-9:

Island Development (V-70)

The DEIS states that "implementation of the proposed transit system would not be likely to have a major effect on island wide development patterns" and continues to mention that Windward Oahu "would be served by a more comprehensive bus service than has previously been available." An improved mass transit system in the central corridor could affect development on the Windward side in a number of ways. The Windward side is not now an attractive area for development because of commuting problems to Honolulu. If, however, these constraints are lifted with the construction of H-3 and the increased use of express buses, then more people may want to move to the Windward side.

The DEIS does not discuss the potential for urban sprawl at the termini of the transit line. Is development expected to take place beyond the Halawa and Kahala terminals? Increased development beyond the Halawa terminal could encroach upon agricultural land. (U of H E.C.)

Response IX-9:

The statement contained in the DEIS that "implementation of the proposed transit system would not be likely to have a major effect on island-wide development patterns" is based on the policies contained in the 1977 General Plan. Basically the policy provides for continued growth and development of urban Honolulu (Primary Urban Center) which is proposed to be served by the rapid transit system. The areas outside of urban Honolulu are also planned for additional growth but with new developments to take place generally within existing urban boundaries. Due to various reasons, the new developments in urban Honolulu will be more in the medium to high density category while those in the outlying areas will be predominantly low to medium density category. With a limited supply of land available for new development in all areas of Oahu and with the policies set forth in the General Plan and the proposed DP's, it is unlikely that rapid transit would have a major effect of changing the above-described pattern of development on the island.

Future growth is projected for the windward side and with the construction of the H-3, this growth could certainly be accelerated. However, the total growth may not necessarily be different with or without the H-3 unless additional reclassification of non-urban land occurs.

The rapid transit system has now been limited to 8 miles with terminals at Keehi Lagoon (with the system extending to the Airport) and at the University. The possibility for urban sprawl in the immediate vicinity of the University and Keehi Lagoon Stations is negligible since this area is already developed. Major urban development beyond the "Primary Urban Center" is discouraged by the City's General Plan objectives on population location and it can be expected that the forthcoming Development Plan will support those objectives. While a new rapid transit system and an expanded feeder bus system will expand mobility opportunities, development opportunities depend to a considerable extent on actions of the City regarding zoning and other development incentives.

Comment IX-10:

Furthermore, as we look at the specific content requirements for Environmental Impact Statements we find much lacking regarding the implications of the proposed action, and relevant and feasible consequences of the action. We have mentioned the need for a clear statement of objectives; it is difficult to measure the impact on land use, and how this will be integrated with the development plans, without this statement. This discussion is tucked into the report. Are there statements regarding the cumulative impacts on land use? What is the relationship of the proposal to the control of density? How were the decisions on siting of the stations made in relation to the plans? (L of WV)

Response IX-10:

The 1977 General Plan contains the basic statement of objectives relative to land use and transportation. This document is being used to guide the preparation of the Development Plans which has been underway for sometime. It should be further noted that the General Plan reflects the development of mass transit in urban Honolulu and therefore, the proposed rapid transit system is compatible with the General Plan.

It would also be appropriate to mention that the City prior to the development and adoption of the 1977 General Plan, completed studies of alternative land use-transportation policies which are documented in the report titled Technical Report No. 4: Transportation Analysis, Department of General Planning, March 1974. This report cites those key impacts on land use as the result of following different transportation policies:

"The proposed rapid transit system will have some influence on density - primarily in the areas adjacent to the stations. However, it should be recognized that land use and density are controlled by ordinance and only developments conforming to applicable ordinances are permitted." Consequently, with or without rapid transit, densities can be regulated and controlled to the desired level.

Stations were sited as described in Section III.D.2 of the EIS.

Comment IX-11:

Seriously review station locations in view of new development plans to insure we are serving the high activity centers. (NB #21)

Response IX-11:

Transit planning has been and will continue to be coordinated with the new Development Plans as they are being prepared.

Comment IX-12:

Community Development. We object to suggestions that areas adjacent to station stops to be developed at a higher density than that are existing. (NB #8; State Representatives of District 12)

Response IX-12:

Comment is noted.

Comment IX-13:

As serious as the aforementioned omissions are, the most serious gap in the E.I.S. is an analysis of the effect HART will have on housing densities adjacent to the elevated guideway. Housing densities, according to HART, must increase to assure ridership on the guideway. Densities of 50-150 units per acre are hinted at. (As a by-product, land prices around HART will accelerate, and to benefit whom? Is the question.) Numerous worldwide studies show that densities of more than 20 units/acre are socially detrimental to families with children. 20 units per acre in the Honolulu zoning code means housing types up to A-1, apartment, 3-story buildings. An analysis of land uses, as presently zoned in the existing urban areas (that is, not including new rural land) shows that up to 500,000 additional units could be built over the next 50 years on existing urban land. Since the present average density is only about 4 units to the acre, developers and speculators (if that is one concern of the City), but preferably homeowners, would all benefit economically as well as staying within socially-acceptable standards if these existing higher land-use densities were used. The E.I.S. does not make this kind of environmental analysis vis-a-vis housing although it is of the utmost basic kind. (Hanson)

Response IX-13:

The Development Plans will establish land use and density policies and the area's development is ultimately controlled by the Comprehensive Zoning Code ordinance. These are the documents which will address the density issues, not HART.

Comment IX-14:

- Concern that the proposed higher high-rise densities around the proposed HART are declared a "long-term adverse effect on Oahu" by Washington, D.C. in its E.I.S. of HART. This subject needs broader research in the E.I.S. (Hanson)

Response IX-14:

The potential for higher densities developing around HART's transit stations would be considered long-term adverse effect only if higher density is permitted against the desires of the people.

Comment IX-15:

Do Federal standards and general transportation principles indicate that 50 million square feet of commercial space is a minimum threshold for heavy rail? Honolulu does not have this amount of commercial space; on what criteria then is the Department of Transportation Services basing Honolulu's need for a heavy rail system? How does Honolulu compare with other cities with existing or proposed heavy rail systems in such densities? Such information should be contained in the final EIS. (LOL)

Response IX-15:

There are no Federal standards setting forth minimum thresholds for commercial space in justifying heavy rail. No one standard can be used in justifying a major transportation investment and such criteria as central city population density, passenger flow per corridor, urban area population, central city population , CBD floor space, CBD trip destinations, among others are usually considered in a transportation analysis.

Several studies* have identified a range of 25,000,000 to 50,000,000 square feet of CBD floor space (not just commercial floor space) as one of the factors justifying a rapid transit system. While downtown Honolulu alone does not reach that threshold, the Central Honolulu area served by the proposed 8-mile transit corridor contains a contiguous strip of commercial-industrial facilities representing over 50 million sq. ft. of floor space. This accounts for some 50% of the entire island's floor area in these

* Adapted from report by Wilbur Smith & Associates and given in Public Transportation; Planning, Operations and Management, Gray & Hoel, p. 275.

categories. This percentage breakdown reflects another justifying factor -- that of trip destination configuration. These percentages indicate the centrality of the employment locations for Honolulu residents -- in other words, the overwhelming majority are headed for jobs in the area served by the system. This is not the case for most American cities now investigating rapid transit.

Comment IX-16:

a. One of the purposes of convenient, subsidized public transit systems is to facilitate travel from place to place. Contrary to statements in the draft HART EIS, HART along with feeder buses has the potential to make it easier and more attractive for Oahu commuters to live in the "country" rather than in the urban core. This is substantiated by City consultants in the Urban Design Study for the Development Plans. In light of the fact that there is already enough residential zoned lands in rural areas to accommodate more population growth than is planned for in the 1977 Oahu General Plan, what measures will be proposed to mitigate the pressure for suburban sprawl?

b. On the other hand, City transportation officials have indicated that there will be pressure for high density development in the area between Kalihi-Palama and Kalakaua Avenue. The revised Development Plan text for the Primary Urban Center (PUC), proposed by the Department of General Planning, calls for high density around transit stations. Yet this is not indicated on accompanying Development Plan Maps which are meant to illustrate proposed land use designations. In light of the fact that the fixed guideway was added late in the citizen review process of the proposed Development Plans, and revealed no difference between the proposed land use, designations of the "pre-guideway" Development Plans, there is an implication that the guideway will have no effect on land use.

c. Land use impacts of a transit system are significant, thereby requiring that they be thoroughly addressed in an EIS. The draft EIS indicates that high density near stations will have both positive and negative effects. Please explain in detail this mixture of effects.

d. The draft HART EIS does not illustrate through text or map the land use objectives and policy to be achieved. What is the land use policy and objectives that the HART bus/rail system is proposed to implement for the PUC, the areas around transit stations, and that of out-lying areas of Oahu. (LOL)

Response IX-16:

a. As long as land is zoned for residential use and available for development, any form of transportation that improves the area's accessibility will improve its attractiveness and hence produce pressure for development. However, it should be pointed out that in land-scarce Oahu, any suitably located land is in great demand and it is only a matter of time before development will occur, with or without transit. Relative to "pressure for suburban sprawl", it will always exist since new low-density housing can generally only be economically developed in suburbs where raw vacant land is available.

b. The guideway will have an effect on land use similar to any new transportation facility. The land use impact normally associated with a guideway in a developed urban area is redevelopment towards concentrated high density uses around station areas. This does not imply that the area as a whole should increase in density but that any planned increase could be concentrated around station areas due to better accessibility.

c. Whether high density near stations has positive or negative effects depends in large part on the desires and attitudes of the residents, business and owners located nearby.

Effects can include (but are not limited to):

- Increased attractiveness for either residential or commercial development and re-development (the actual amount of development depends upon land availability, economic costs, competing land uses etc.).
- Changes in property value.
- Increased pedestrian traffic.
- Increased feeder bus traffic.
- Increased drop-off traffic.
- Changes in through traffic flow (due to increased pedestrian traffic).
- A market for mixed land uses, which can provide an attractive urban living environment for residents.
- Opportunities for upgrading of public spaces during station construction, adding plazas and park areas.

- Demand for parking facilities.

- Easy walking access to any part of the transit system by residents/employees near the station.

Many of these effects can be prohibited, limited, or modified by public action. For instance, parking demand can be limited by not providing park-and-ride facilities; increased development can be limited by zoning regulations.

d. The land use policies and objectives that HART would implement are those in the General Plan and are elaborated in the EIS, Section V.B.4. (see also Response IX-9). The development of areas around transit stations and the transit stations themselves are to be guided by policies contained in the DP's now being prepared. DP's for outlying areas of Oahu are also being prepared and will provide policy guidance.

Comment IX-17:

The list of land uses on page I-3 should include agricultural lands. (EQC)

Response IX-17:

Primary land uses, as defined by the Hawaii State Land Use Commission include agricultural, which in 1979 totaled 1,974,230 acres statewide. Refer to Section I.A.4 of the EIS.

Comment IX-18:

From reading this discussion it does not appear that the planning for HART and the development plans are being coordinated to any great extent. The HART System may greatly affect the demand for greater densities near the stations. How have the development plans and the Oahu General Plan of 1977 been utilized in the consideration of the HART fixed guideway and the alternatives? (EQC)

Response IX-18:

As indicated in Section III.B. of the EIS, the various transit systems considered were evaluated in a number of areas, including their ability to meet regional goals and objectives that included the Oahu General Plan (1964) transportation goals and the Oahu Metropolitan Planning Organization long-range transportation policy. In addition, each fixed guideway alternative length was also evaluated in light of these goals. The more recent General Plan (1977) has development and transportation goals which have been added to Section V.B.4. of the Final EIS and which are supported by the proposed 8-mile rapid transit system.

The development plans have not yet been completed, but all preliminary work being done by the City as input to the plans takes into consideration the proposed system. The alignment of the fixed guideway system and station locations are shown on the proposed DP maps.

Comment IX-19:

Maps detailing the current zoning and all allowable densities should be presented in this section. Honolulu's central corridor population density is claimed to be high enough to sustain a rail system. What is the actual population distribution and density in Central Honolulu? How does this compare to other cities with rail systems? (EQC)

Response IX-19:

The zoning maps are available at the City's Department of Land Utilization and the Comprehensive Zoning Code provides allowable densities which Central Honolulu's corridor population density, from Middle Street to the Kahala area, contained approximately 260,000 people, in 1975, over an area of 24 square miles which gives a population density of 10,800 persons per square mile. Honolulu's population density generally compares favorably with other cities with rail system such as Atlanta, Miami, and Buffalo, which have population densities less than 10,800 persons per square mile.

Comment IX-20:

There is an inconsistency between the statement that, "implementation of the proposed transit system would not be likely to have a major effect on island development patterns," and the claim that implementing HART will forward the land use objectives of the Oahu General Plan. This matter should be clarified.

If the fixed guideway and the park ride facility at Halawa (Aloha Stadium) allow for a reduced trip cost and travel time, will there not be pressure for residential expansion in Central Oahu and Ewa? Will this also result in a net increase in gasoline consumption as persons reside further out from the central business district? (EQC)

Response IX-20:

General island development patterns which have concentrated on the leeward and ewa sides of the island, with more scattered development on the windward side are expected to continue, regardless of the transportation systems built. This is due to the scarcity of land elsewhere on the island, and the high employment development potential in the downtown and adjacent areas.

The land use objectives of the Oahu General Plan call for continued concentration of development in the Primary Urban Center and the secondary urban center (Ewa-Makakilo). Economic activity is to be directed primarily to Honolulu, Aiea and Pearl City, and secondarily to Ewa. The provision of a high capacity 8-mile rapid transit system with an extensive feeder bus system with the focal point being the downtown area of Honolulu (incidentally also serving other employment centers traversed by the system) is in direct conformance with the above-mentioned General Plan objectives.

The Halawa Station is outside the 8-mile system now proposed to be built. Nevertheless, pressure for development may continue in the Ewa area because of land availability and lower housing costs. Presumably, with a feeder bus system into the rapid transit line, people wishing to travel downtown or eastward will have this mode available and can reduce their gasoline consumption at least for commute trips.

Comment IX-21:

Another area of impact I would like to discuss is more closely associated with solely city responsibilities. What mini special design destrict or interpretation of current zoning will give shape to the areas in and around each transit station as that area attempts to grow to the economic potential the large ridership affords?

Will housing in the proximity of these stations be encouraged or discouraged by public policy related to the urban development plans? (Blackman)

Response IX-21:

The City could adopt an ordinance (refer to Section 21-1500 of the Comprehensive Zoning Code) which permits special design districts to be instituted around rapid transit stations. These districts can supplement existing zoning and can be quite specific as to permitted land uses, building design, amenities, etc. Additionally, the City has had detailed studies done on existing development and potential development capabilities, as well as urban design considerations, to be utilized in preparing the new Development Plans.

At the present time, City policy encourages housing development in the Primary Urban Center (which would be served by the proposed rapid transit system); however, since the final development plans are not yet complete, policy regarding housing therein is not known.

Comment IX-22:

Three, there is a need to further refine information presented with the Hart EIS alignment, section pages -- Chapter 5, Page 35 to Chapter 5, Page 38, specifically identifying the relationships in timing of urban redevelopment projects within the Kakaako and Chinatown community areas.

Both of these Central Honolulu communities will be significantly altered and modified following the redevelopment and short-term and long-term impacts of this activity on trips generated forecast, and mass transit should be thoroughly evaluated within the HART EIS. (NB #10)

Response IX-22:

See Response III-4.

Comment IX-23:

Number three, an economically viable HART system would require higher population density along the route. I question and so does the Draft EIS whether this is a desirable effect. (NB #9)

Response IX-23:

Although there is reciprocal impact between land use and transportation, transportation basically serves land use. Therefore, if no further growth, and hence increase density, is to occur in urban Honolulu, then HART and its effect should be questioned. However, this is not the case since the 1977 General Plan and the supporting Development Plans, currently under preparation, both show future increase in population and employment in urban Honolulu.

CORRECTION

THE PRECEDING DOCUMENT(S) HAS
BEEN REPHOTOGRAPHED TO ASSURE
LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

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Comment IX-24:

Our final area of concern in this brief five minute testimony involves impacts of the train on density along the proposed route. The EIS is contradictory and vague on this issue. It claims increased density as a positive result on the one hand, then later mentions it as a negative effect. It is not even clear from the EIS if high density will occur around the train stations, although transportation principles and Federal regulations suggest it will. Existing residential neighborhoods can be severely disrupted by such developments, yet the EIS fails to examine this problem.

The city's Development Plans call for higher densities around train stations, yet top city officials have been claiming the guideway will not cause higher densities. The relationship between land use and transportation needs much more clarification in the final draft of the EIS. Environmental impact should not merely be limited to the obvious direct impacts of a project such as noise and appearance, but must consider the ultimate consequences, particularly the stimulation of high density. (LOL)

Response IX-24:

In the Summary of the Final EIS, it is stated that one of the Long-Term Beneficial Effects is that "The system would support land use policies by providing transportation capabilities that are compatible with more intensive use of urban lands along with preservation of agricultural land." Under Long-Term Adverse Effects is listed the following: "Increase demands for housing and office space along the transit route, especially around stations, will encourage high density developments and cause pressures for up-zoning of certain properties."

The latter adverse effect would naturally apply to situations where the area may not be suitable for high density developments or where the people of the area do not want high density developments. It would, however, be a positive effect where the transit supports land use policies calling for high density developments.

The Final EIS, under Section V.B.4., has been expanded and discusses station areas with potential for land use change. However, this does not imply that these changes would occur irrespective of land use policies or zoning ordinances. Changes will occur only if they are permitted to occur through the normal channel of filing applications for change, holding public hearings, and final approval action by ordinance.

It should be emphasized that transit in itself does not automatically result in high density development to occur. It merely encourages high density development to the place by virtue of improved accessibility.

X. CONGESTION

Comment X-1:

The draft impact statement does not sufficiently discuss or assess impacts due to limited parking at the various fixed guideway stations. What analysis has been made? Page V-64 has only one brief comment on this aspect. Apparently it is hoped that by providing feeder buses, that on street parking in residential neighborhoods will not become a problem. (FHWA)

Response X-1:

As indicated in Section V.B.3 of the Final EIS, and also in Table V-14, extensive evaluation showed that bus access is expected to be the primary mode of access to transit stations, in part because of the lack of available parking in the vicinity of the stations. Most of the stations are located in already developed areas where vacant land in large parcels do not exist. The acquisition of already developed land for parking facilities would be disruptive to the neighborhood and prohibitively expensive.

Further to the above, experience of other rapid transit systems has been that the demand for parking nearly always exceeds supply, in part because of the cost and the difficulty in developing large parking facilities. There is no doubt that a large number of people will prefer to drive, but good feeder bus service coupled with restrictive on-street parking regulations and no provision of park-and-ride space should act together to lessen this mode of access.

Comment X-2:

In our review we note that access to Honolulu International Airport will be provided. This could have a significant impact on vehicular traffic which impacts the airport. These vehicles would primarily be those used by airport workers and greeters - well wishers rather than airline passengers. It should be emphasized in the EIS what the positive effect of possible diversion of the above noted airport traffic will be. (FAA)

Resonse X-2:

Whatever number of trips to the HIA that can be diverted to transit will certainly reduce traffic volume and congestion at the airport, and the comment is noted.

Comment X-3:

The traffic impact around the proposed stations/terminals should be discussed in the EIS. (State DOT)

Response X-3:

Traffic impacts around stations are discussed in Section V.B.3. of the Final EIS.

Comment X-4:

(a) Does the draft HART EIS assume use of contra-flow lanes during peak traffic hours on all feasible roads including, but not limited to, King Street, Beretania Street, Kapiolani Blvd., Dillingham Blvd., Vineyard Street, and School Street? If the answer to this question is no, then most of the highway network capacity assumptions in the draft EIS should be revised, as contra-flow lanes are a viable method of alleviating traffic congestion and should be employed. In particular, Figure II-8 and Tables III-2, III-3, and III-5 all need to be corrected to reflect any increase in peak hour road capacity that would occur through use of contra-flow lanes.

For example, a lane or two of King Street between University Avenue and South Street could be used in the morning for downtown-bound rush-hour traffic. Similarly, a lane or two of Beretania Street between University Avenue and South Street could be used in the afternoon for East bound rush-hour traffic. What would be the advantages and disadvantages of these circulation patterns? What other specific streets in Honolulu could be utilized for contra-flow patterns in the peak hour and what would the vehicle capacity be?

(b) Intuitively, it is obvious that as commuting gets more expensive, more people will choose to car-pool and/or make less individual trips.

The City has access to sophisticated computer models of traffic in Honolulu. The draft HART EIS contains a projection of future traffic through various "screenlines" in urban Honolulu. The final HART EIS should show how much traffic projections would be affected by increasing gas prices. There should be a table in the final EIS showing projected daily trips in 1995 across screenlines at Kapalama Canal and Ward Avenue if gas were $1/gallon, $2/gallon, $3/gallon and $5/gallon.

(c) Given the above, do revised traffic projections and highway network capacity assumptions mean that a decision on HART can be postponed? How long can the decisions be postponed? Declining school enrollment and expanding work force mean that the State and the City and County will be better able to pay for an expanded mass transit system in 1985 or 1990 than in 1980. (LOL)

Response X-4:

(a) The screenline volume to capacity analyses shown in the Draft EIS do not consider any new contra-flow lanes in urban Honolulu. Based on investigations conducted, it has been found that there are no roadways that can feasibly accommodate additional contra-flow lanes to increase overall roadway capacities in urban Honolulu. It should be pointed out that in considering contra-flow lanes, adverse impacts on safety and overall circulation patterns are of prime importance and should not be over-shadowed by some localized improvements in traffic flow.

There are two types of roadways in existence - the standard 2-way streets and the one-way street couplets such as the King-Beretania couplet. For the former type, the coning of Kapiolani Boulevard is a good example of how a contra-flow lane on a major street operates. Notice should be taken that most left turn movements are prohibited during the periods of contra-flow operation and it should be pointed out that Kapiolani Boulevard is unique that this does not create any major problems to the circulation pattern of the area.

An examination of other major east-west, 2-way streets in urban Honolulu indicates the following. Ala Moana Boulvard-Nimitz Highway has sufficient traffic volume in the secondary direction to preclude the use of a contra-flow lane both in the A.M. and P.M. periods.

Similarly, King Street and Dillingham Boulevard, west of downtown Honolulu, also have relatively heavy traffic movements in both directions during both peak periods. Vineyard Boulevard has heavy left-turn movement at a number of intersections and hence contra-flow lanes would be highly disruptive to the area's circulation pattern. The above constitute all of the major east-west, 2-way streets that would have some potential benefits if contra-flow lanes could be feasibly implemented.

Through downtown Honolulu and easterly to University Avenue there exists the King-Beretania one-way couplet. Through downtown Honolulu, both King Street and Beretania Street have heavy traffic volumes during both peak periods and therefore precludes the use of either street for contra-flow lane in this area. A review of street volumes east of South/Alapai Street indicates a relatively low eastbound volume on King Street in the A.M. which would permit a contra-flow lane. However, Beretania Street indicates a sufficiently high volume to preclude its use for contra-flow lane in the P.M. With the critical period being the P.M., the lack of adequate capacity on Beretania does not permit the use of this couplet for contra-flow lanes.

(b) Mathematical models used to make travel forecasts are developed based on actual experience taking into consideration the various factors that influence the travel habits of people in a particular area. Out-of-pocket expenses are a major factor in determining the amount of travelling done in a region but the effects of increasing the cost of gasoline by over 100% have not been accurately measured and therefore, it is difficult to prepare reliable forecasts incorporating such a large change in travel cost. It is only through actual measurement of travel decreases caused by the doubling or tripling of gas cost and travel increases caused by a drop in gas cost of the same magnitude that reliable predictive models can be developed. In short, reliable forecasting methods for changes in travel costs of the magnitude mentioned are not currently available. It should be pointed out that a recent survey concluded by the Highway Users' Foundation found that the greatest reduction in auto driving due to higher gas prices was in social, recreation and shopping trips.

(c) Since transportation is not considered to involve health and safety, there is no mandatory requirement as to when improvements must be made. The statement that the City would be better able to pay for expanded mass transit system in 1985 or 1990 than in 1980 is assumed to mean that our tax base would be increasing over time and hence it would be easier to pay later. This statement is correct except that with continuing inflation, as long as the system is needed by 1990, the increased tax base resulting in lower tax rates to finance the system may be more than off-set by the increased cost in construction due to inflation. It should be pointed out that even if implementation of the system should start almost immediately, it will be nearly 1990 before Honolulu can have an operating system.

Comment X-5:

To some extent, future traffic congestion can best be understood in terms of present traffic congestion. For that reason Figure II-8 in the draft EIS should be revised to compare 1979 traffic volume with the revised estimated 1995 traffic volume. (LOL)

Response X-5:

Figure II-8 in the Final EIS has been updated to reflect the 1978 traffic volumes. The 1979 traffic volumes were not available at this time.

Comment X-6:

Other cities have traffic problems. Has their experience been that traffic congestion keeps on getting worse indefinitely, or that congestion stabilizes at a certain level? This point is relevant to determining the feasibility of an all-bus transit system.

To put the question in context, the draft HART EIS predicts in Table III-5 that 1990 traffic volume with an all-bus transit system will exceed capacity at "level of service E" at various screenlines. Will traffic continue to get worse in the future or will people adjust their living habits and residence locations so that traffic will stabilize at "level of service E"? (LOL)

Response X-6:

It cannot be anticipated that traffic will stabilize at Level of Service E since it is not the worst condition and it could worsen to the Level of Service F which can be interpreted as a condition of very heavy congestion to a point of complete breakdown. The latter condition if permitted to persist could result in serious social, economic and environmental consequences to a region. The social effects are people having to change their lifestyle due to spending much more time in travelling, being forced to move and live in areas less than desired, and having less monies to spend on other things due to higher cost of travel. One of the economic impacts could be the increase in cost to do business in the area due to high transportation costs which ultimately is passed on to the consumer. Higher cost of doing business could also result in industries moving elsewhere and thus causing higher rates of unemployment. Environmental effects would be more noise and air pollution from automobiles that can't move due to heavy congestion. Degradation of our environment could affect Hawaii's tourist industry. The total effects of heavy congestion leading to the loss of

desired mobility could be catastrophic to any urban area. If this were not the case, all major cities of the world would not be planning and implementing major transportation projects, including rapid transit systems.

Comment X-7:

What is meant by "positive control of parking problems"? (EQC)

Response X-7:

By positive control is meant prohibiting long-term parking between certain hours, passing an ordinance to permit only local residents to park on streets for periods of more than 3 or 4 hours, increasing parking violation fines, among others.

Comment X-8:

There may be a significant impact on the parking spaces in Keehi Lagoon Park if the Keehi Lagoon Station is selected as a terminal. (EQC)

Response X-8:

Any public parking areas, on- or off-street parking, would be affected near transit stations. In order to ensure that parking spaces at Keehi Lagoon Park can be reserved for park users, regular patrolling of the area will be necessary and all day parking restrictions would have to be instituted.

Comment X-9:

Traffic Congestion. We find that the system will not reduce traffic congestion, and that if any, the transit system will potentially generate secondary trips that will keep our highway use at or above current demands. Because the Date Street Station is within a residential area, the increased traffic generated from buses and autos in and around the transit stop to be a potential hazardous situation for residents, particularly children, that should be studied further and adequate mitigation measures be defined. (NB #8; State Representatives to 12th District)

Response X-9:

The first portion of this comment is noted. The mere increase in traffic volume does not automatically create a more hazardous situation. However, all streets adjacent to stations will be thoroughly reviewed for potential hazardous situations and mitigative measures defined during final design.

Comment X-10:

Traffic. Section V-B-3 indicates that even with a fixed guideway system, traffic volumes are likely to increase and that vehicular traffic will be affected, but does not indicate the type of impacts and modifications required. We ask: What will be the impact on traffic volume and patterns for those local streets near the Waikiki, Date Street, and University stations? Are street improvements or widenings contemplated? Of special concern is Pumehana Street, with a school and recreational center, which feeds out into King Street and can be entered by Kapiolani. We wonder what the future of this small, narrow, and pedestrian oriented street will be if the Waikiki station is a major connecting point for the feeder bus system.

We also find little to indicate the increased demand for parking near or adjacent to stations, since they will house some commercial businesses. (2-M Council)

Response X-10:

Due to diversion of motorists to transit, the impact around these stations indicate a general reduction in traffic volumes compared to a condition without transit. No major street widening improvements are contemplated. Pumehana being a narrow, one-way street should not be adversely affected since buses will not be using it.

It is not contemplated that transit stations will house commercial businesses.

Comment X-11:

A terminal at the Kahala shopping mall will adversely impact upon this residential community. All know that traffic and parking at the Kahala mall is already unsatisfactory, particularly on weekends and during shopping periods. We feel that the EIS did not adequately address the potential problems that would develop if a terminal was located at the Kahala shopping mall. (NB #3)

Response X-11:

With the selection of the 8-mile segment, the easterly terminal will not be at Kahala since the guideway system would terminate at the University Station.

Comment X-12:

The HART issue is probably the most important choice Honolulu has faced in the last decade, so we should be presented with all the options and alternatives rather than led down a tunnel.

Our concern focuses upon three problem areas in the EIS: inadequate alternatives analysis; use of obsolete data; and possible negative impacts of the fixed guideway.

We are given two extreme alternatives to HART in the EIS -- on the one hand a seven mile four lane elevated highway for buses, and on the other hand, no expansion of existing street facilities for 1000 new buses.

Where is the middle ground? Why is there no reasonable analysis of modernized buses, with extensive use of contra-flow lanes in the east-west corridors? For example, a lane or two of South King St. could be used in the morning for downtown-bound rush hour traffic. Similarly, a lane or two of South Beretania St. could be used in the afternoon rush hour heading out of town. The EIS implies that two lanes for buses would have to be taken away from automobiles, causing further congestion on other lanes. But with contra-flow this would not happen. (LOL)

Response X-12:

All viable and reasonable alternatives have been considered as discussed in Sections III.A., B., & C. of the EIS. Relative to the use of obsolete data please refer to Responses III-5 & -8. For possible negative impacts of the fixed guideway, please refer to the Summary of Effects and Chapter V of the Final EIS.

As indicated in Response X-4, Beretania St. has a large P.M. volume east of Alapai St. which precludes the use of this roadway for contra-flow bus lane. Through the downtown area, both King St. and Beretania St. have sufficiently large traffic volumes in both the A.M. and P.M. peak periods to preclude the pre-emption of a lane to operate contra-flow buses. It should be pointed out that an all-bus system with 1000 buses will attract less transit ridership than the fixed guideway/feeder bus system and at the same time, cost more with or without the expansion of existing street facilities.

Comment X-13:

A new city consultant study by Alan Vorhees Assoc. has made some revisions in the numbers to adjust for some of these mistakes. For example they found that if HART were built the increase of automobile traffic would be 40% less than predicted in the EIS. With such a drop there is even less need for a train. (LOL)

Response X-13:

Section IV.A.4 of the Final EIS explains the development of forecasts by the State DPED and how they were used in the transit planning program including the reason for not being able to use the latest Series II-F forecasts. Consequently, the earlier official forecasts used are not necessarily "mistakes" until such time as the new Series II-F forecasts can be fully developed including their official distributions by census tract.

The recent study by A. M. Voorhees & Assoc., Inc does not indicate a 40% drop in automobile traffic increase since their traffic forecast is based on Level of Service F while the data in the EIS is based on Level of Service D.

Comment X-14:

There are many other important factors not considered in these official reports, such as dramatically higher costs of petroleum, the new conservation ethic, possible rationing, increased carpooling, better bicycle and moped lanes, flexible work hours, fewer trips per day, and related developments which could reduce the peak congestion. (LOL)

Response X-14:

Most of these factors would suggest a greater need for more efficient and improved transit service since more people would become dependent on public transit.

Comment X-15:

2. The rail proposal is justified in the draft EIS by the greatly increased mobility projected and the necessity of catering to the needs of constantly increasing auto usage, neither of which can be reconciled with national energy conservation requirements. Experience has shown repeatedly in many cities that the provision of new transport facilities does not reduce auto usage but tends to induce additional trips on the streets and highways until previous levels of congestion are again reached.

   Since peak hour work trips are difficult to reduce a fruitful source of possible peak hour trip reductions is optional trips taken for social, recreational or shopping purposes. Projections underlying the EIS show work as the purpose of only 30% of total peak hour person trips; 8% were for school; the remaining 61% for shopping, social, recreational or

other purposes. In the later Alan Voorhees projections, 42% of total peak hour trips are still shown as work trips. When only trips taken by auto are counted, the original projections showed 79% of peak hour volume to be non-work trips and the new projections still show 62%. (COP)

Response X-15:

When travel demand exceeds supply or capacity, new facilities can readily be justified. However, in transportation planning, forecasts of future demand are made to ensure that needed capacity is provided before demand exceeds supply. In making forecasts, it is difficult not only to predict future conditions but also what their implications may be. For example, fuel shortage and increasing gas prices will certainly reduce auto usage with discretionary trips being most affected. In this event, growth of total auto travel would diminish and may even result in an overall reduction in peak hour auto traffic volumes.

Under such conditions, people would most likely seek alternative means of travel with mass transit being the primary mode. By providing increased service and capacity, transit usage could easily double or triple the normal demand. The existing bus fleet will require expanding to over 1000 buses and when such size is reached, it would be easy to recognize the fact that less labor intensive means of providing transit service must be found. As proven in various studies, investment in a rail rapid transit system will reduce the overall cost to the public where high transit usage exists.

It should be of interest to know that a recent survey concluded by The Highway Users' Foundation found that due to higher gasoline prices, the areas where driving has been significantly reduced was for social, recreation and shopping trips.

XI. ENERGY

Comment XI-1:

The energy analysis included in the draft environmental statement is incomplete and should be revised to include basic energy components such as station and maintenance energy, construction energy, and vehicle manufacturing energy. Further, the proposed 14-mile Fixed Guideway system should be compared to a No-Build Alternative and the TSM/Expanded Bus Alternative. Since rail mass transit vehicles consume electrical energy for propulsion, the electric propulsion value can be multipled by a factor of three to account for the quantity of primary energy used at the electric powerplant. (FHWA)

Response XI-1:

Energy consumption components including station and maintenance energy are included in the total transit operating and maintenance energy consumption figure. Construction energy and vehicle manufacturing energy requirements and the estimated recovery period is discussed in Section V.A.4. of the Final EIS.

Comment XI-2:

Energy Conservation

Greater emphasis should be given to the social and economic benefits of developing a fixed guideway system. The subject is discussed on page V-19, although in a somewhat limited fashion.

It would be helpful if the total energy costs for operating various modes of transit alternatives were presented. The costs for different fuels to operate autos (gasoline), buses (diesel) and the fixed guideway (electricity) would then clearly illustrate total cost for each alternative presented. (U.S. HUD)

Response XI-2:

In addition to energy conservation being a national policy, any local savings in energy and hence savings in cost will result in social and economic benefits to the public. With the rapidly rising cost of energy, it will consume more and more of the disposable income of the people with serious social and economic consequences. Although the cost of operating a transit system will also increase with increasing energy cost, the overall cost of travelling by transit will be lower than operating a private automobile. Additionally, having a mode choice will give island residents more flexibility in meeting transportation needs in the

most economical and efficient manner possible. It should be noted that social and economic impacts of the proposed system are discussed fully in Sections C & D of Chapter V. of the EIS.

Table III-9 of the EIS gives the total annual cost of various alternative systems which includes the cost of fuel, both diesel and electricity, needed to operate the transit vehicles.

Comment XI-3:

a. Although we agree that the project will probably result in a reduction of petroleum usage compared to the "no-build" alternative (paragraph 3.A.7., page V), the four to five million gallons of fuel saved annually on 1995 (paragraph 3.b., page V-19), should be qualified. Many citizens may find the cost of purchasing and operating an automobile prohibitive within a few years and the current concept of urban travel may be radically altered by economics.

b. Paragraph B.1.d. (beginning on page I-6) should note that synthetic gas is supplied for heating and cooking in some of Oahu (ex. Fort Shafter) and propane gas (not a synthetic gas) is supplied to other areas (ex. Schofield Barracks). Possibly the terminology should be checked with GASCO (Pacific Resources, Inc.). (U.S. Army - Support Command)

Response XI-3:

a. Comments are noted.

b. Comment is noted.

Comment XI-4:

Realizing that an analysis of fuel use and energy efficiency is difficult among the various transit alternatives included within the EIS, an effort should, nevertheless, be made to methodically evaluate which transit alternative would save the most energy in construction and daily operation in consideration of potential rider capacity. (State DOT)

Response XI-4:

As the comment states, analysis of fuel use and energy efficiency is difficult to make, especially within the degree of accuracy required to conduct a meaningful comparative evaluation. For example, Table III-9 gives the amount of fuel saved for the operations of each alternative system which are relatively close for

comparable length systems. It should also be noted that the total costs of systems with comparable lengths are also quite similar. If one were to use the input-output method of analysis, i.e. kwh of energy per dollar of expenditure, the energy requirements for construction and operations would be quite similar. With the difficulty in estimating energy consumption to a greater degree of accuracy, there would not be any measurable difference between alternatives.

It should be noted that additional information on energy effects of the proposed system has been added to Section V.A.4 of the Final EIS.

Comment XI-5:

On page V-4, a proposed fourth generating station on the Windward Coast is mentioned. We do not have a proposed station on the Windward Coast and this statement should be deleted. (HECO)

Response XI-5:

The reference to a possible fourth power plant on the Windward Coast has been deleted in the Final EIS.

Comment XI-6:

The fourth paragraph on page IV-4 mentions that power will be purchased from Hawaii Electric Company and supplied to the vehicles at 600 volts D.C. It is against our tariff to supply D.C. power. (HECO)

Response XI-6:

The City will purchase AC power from HECO and then provide its own rectifiers to convert to D.C. power. The Final EIS reflects this correction.

Comment XI-7:

The draft EIS discussion of the impacts of HART on energy resources assumes that construction of HART does not consume any energy. Since this is obviously not the case, the final EIS should address the total impact of HART on energy resources including use of energy during construction and operation of HART. Likewise, the energy requirements for all other alternative proposals should be thoroughly addressed. (LOL)

Response XI-7:

The estimated energy consumption for construction of the proposed system is contained in Section V.A.4 of the Final EIS. Please refer to Response XI-4 for the second part of this comment.

Comment XI-8:

How much additional power needs to be generated by HECO, presumably at Kahe Point, for use by the fixed guideway? (EQC)

Response XI-8:

The electric energy consumption for the operations of the HART system will be some 2% of the total energy consumption of Oahu. Since the Kahe plant will be generating over 50% of the total energy consumption of Oahu, the fixed guideway will be consuming up to 4% of the power generated at the plant.

Comment XI-9:

The comparison in savings of fuel should be done by employing comparable energy units and not by lumping together gas, diesel fuel and low-sulfur fuel oil. What are the net savings in a comparable energy unit? Does this figure include the cost of constructing the fixed guideway? (EQC)

Response XI-9:

Savings in comprable energy unit is shown in Table V-8 of the Final EIS. The energy consumed for constructing the fixed guideway is shown in Section V.A.4. of the Final EIS.

Comment XI-10:

The fourth thing is on energy resources. On Page 19 of Chapter 5 the Draft EIS, the net daily savings of the bus/rail system are projected to be 15,000 gallons of fuel a day. This amount of fuel in savings is the result of the projected number diverted to the transit from the total number of trips estimated to be taken within the rapid transit system.

Has the series 2-F population in Ernst and Whinney's ridership figures of 114 million for the 14-mile bus/rail system in 1995 been cranked into the equation on Page 19 of Chapter 5? Also, has the improved fuel efficiency mandated for the new automobile fleet which will over time diminish the fuel consumption requirements and lessen savings attributed to the transit uses, have they been taken into account in the equation? (NB #10)

Resonse XI-10:

The projected fuel savings shown in the EIS do not reflect the Series II-F population projection since the official distribution of this population total by census tract is not available, meaning that the essential travel data (such as VMT) necessary to calculate related fuel savings is not available. However, by using a proportional factoring technique, the fuel savings implied by Series II-F would be nearly 9,000 gallons. In all cases, the mandated fuel efficiency of achieving 27.5 mpg (fleet average) by 1985 has been used.

Comment XI-11:

3. The draft EIS does not take into account the requirements or impacts of the escalating energy situation. Gasoline fuel consumption on Oahu has already dropped by some 3% since last year, and the Federal government has just asked for an 8% reduction for next year. Prices rising; shortages have not yet been felt on the island but are expected in the coming years; major conservation measures, if not rationing, will be needed. We submit that our transportation policy should be directed to an immediate and steadily increasing expansion of mass transit facilities along the lines of the "unconsidered alternative" described in our HANDBOOK and to discouragement of unnecessary auto usage. The 2% energy saving claimed for HART in the EIS is at best a fraction of the needed amount. (COP)

Response XI-11:

It is acknowledged that the analysis of a justification for the need for rail transit does not take into consideration the impacts of the escalating energy situation leading to a major increase in transit usage and dependency. Such a situation would increase the need for a justification of the most reliable and cost-effective mass transit system available. Although rail transit will never replace all existing bus transit routes, it could replace the heavy bus transit corridor where total volume is high. Conventional buses, electric trolley buses, or light-rail (street-car) systems can never compete with a rail transit system in terms of carrying capacity and cost efficiency. Future fuel shortage with resulting drop in auto usage should be a positive factor for a vastly improved mass transit service.

XII. DISPLACEMENTS

Comment XII-1:

Social Impacts (V-73)

The DEIS fails to recognize the social impacts of the HART system on a neighborhood or community level. Some factors which use the community as a unit of analysis are solidarity, integration, and political autonomy. Recent amendments to the UMTA regarding EIS guidelines recognize community cohesion as a legitimate area of social impact. Since the proposed project will bisect several communities and displace members, these impacts should be addressed more fully. (U of H E.C.)

Response XII-1:

The social impact attributable to residential displacements is fully covered in the EIS under Section V.C.1. Relative to the subject of community cohesion as affected by the proposed project bisecting several communities, reference is made to the statement contained in the EIS, under Section V.B.3.a.: "Inasmuch as the fixed guideway system is fully grade-separated, impacts on non-transit related pedestrian circulation would be minor. The system will therefore not create a physical barrier and neighborhoods will not be divided." Further to the above, access to public facilities will not be hampered by the fixed guideway system. In summary, the displacement of residential units, the effect on local circulation patterns, and the access to community facilities are generally not considered to cause any significant disruption to any neighborhood in the transit corridor.

It should be noted that the transit guideway, unlike a freeway facility, does not require a wide and exclusive ground-level right-of-way. Rather, the elevated guideway, generally less than 30 feet wide, will be placed on support columns in existing street rights-of-way, allowing complete ground access to continue.

Comment XII-2:

Residential Relocations (V-73)

Twenty percent of the 332 people who will be displaced are elderly with a median monthly household income of $663. The DEIS does not state how many of these people own their own homes and how many rent. Those who are renting may be eligible for the Section 8 housing subsidy if they can find housing within the allowable limits set by the program. What are the current Section 8 housing limits? These people probably have a close network of friends

within their existing neighborhoods. Will attempts be made by the City and County Housing and Community Development program to physically locate housing for these people in the same neighborhood, or anywhere else, for that matter?

For those people who own their homes, fair compensation may not cover the costs of moving to a new home. Housing is much more expensive, interest rates are very high, and it will probably be difficult to qualify for a mortgage on a $663 per month income. How will people in this situation be assisted? (U of H E.C.)

Response XII-2:

a. Federal subsidies available under the current Section 8, Lower Income Housing Assistance Program are fully covered in the document titled "Relocation Plan, Honolulu Rapid Transit System," June 1975, by Surveys & Marketing Services, Inc. which is available at the office of the City Department of Transportation Services.

b. The City's Department of Housing & Community Development has been involved in the transit program from its inception and it is the City's intent to locate housing for displaced families in the same neighborhood whenever possible. A primary relocation assistance policy states: Families and individuals may not be displaced until they have full opportunity to occupy standard housing that is decent, safe and sanitary; within their financial means; adequate to their needs; reasonably accessible to their places of employment or potential employment, transportation, and other commercial and public facilities; and available on a non-discriminatory basis.

c. Although new homes are high in price, affected homeowners' properties would be valued at corresponding fair market value which should minimize any disparity in purchase of new homes. Also, regulations provide that a homeowner may receive payment in an amount to compensate for any increased interest costs for a new mortgage.

Comment XII-3:

Utility displacement is not covered in the EIS. A residence or business may be displaced and may relocate almost anywhere. Obviously, a utility facility such as the Iwilei Substation (p. V-74) cannot relocate anywhere and land would be required in the immediate vicinity of the existing substation. This need and relocation will create a secondary displacement of residences and businesses which is not discussed in the EIS. (HECO)

Response XII-3:

The Iwilei Substation will only be partially affected by the proposed fixed guideway system and it should not require the relocation of the facility.

Comment XII-4:

The displacement of 140 to 150 residential units and 170 to 180 business units should be reviewed in the final decision to minimize relocation. Principal concern here is the long and costly law suits which will surely result with the displacement proposal and its monetary costs to the city and taxpayers. (NB #21)

Response XII-4:

It is recognized that relocation is not only costly but results in hardship to the affected people and therefore must be minimized wherever possible. Every reasonable means will be employed in the design of the system to minimize dislocation of both residential and non-residential properties.

Comment XII-5:

Dislocation. This issue is of concern to us because of the potential social disruption of the 200+ residents in our community who will be directly impacted because of the guideway route. The proposed route does little to enhance our community, and we find that the proposed mitigation measures to be inadequate. We feel a definitive plan should be articulated for relocation assistance for all persons who would be displaced. Relocation assistance should be for relocation back into the community.

We further feel that generalizations relating to the type of residents within the area should not be made. To suggest that only University type persons reside in the community is a disservice to the long-time residents of the area, both rentors and owners. (NB #8 and State Representatives of District 12)

Response XII-5:

A comprehensive relocation study was conducted in 1975 which included home interviews of nearly 90% of the affected households. A detailed report entitled "Honolulu Rapid Transit System - Relocation Plan," by Survey & Marketing Services, Inc., dated June 1975, is available at the City Department of Transportation Services. A new survey to update the plan will be conducted during the next phase of the program and it will describe in detail the various relocation assistance programs that will be made available.

Comment XII-6:

Displacement

a. The construction of the fixed guideway directly displaces 126 dwelling units and 4 businesses (Fig. V-21) in the 2M Community and places an economic hardship on those affected to relocate their homes and businesses. Section V-C-1 outlines a relocation plan (Relocation Plan, Honolulu Rapid Transit System, PEEP, Phase II) to be followed by the City. The program includes replacement housing on the private market, subsidies, public housing, and use of rapid transit funds to acquire housing. We are curious as to what means have been developed to manage these programs, and public input into their implementation.

b. In addition, we note a possible relationship between disruption of business activity and a construction schedule for the line and stations in the 2M area. Since we have some important commercial areas in Moiliili and McCully, the actual timing of construction should be correlated with these potential economic impacts. We note a recent dramatic impact on business by the construction of the highway overpass near Honolulu Airport.

c. Finally, we note that the very selection of station sites could have significant impacts on economic life. This could be true of the University-King Street intersection, which does draw a clientel from the university area. Bypassing this area and locating a station north of the highway might reduce the interaction between the University and the 2M business community. (2-M Council)

Response XII-6:

a. The management of the relocation program will be assigned to the City's Department of Housing & Community Development and the program will be closely coordinated with the public.

b. Comment is noted.

c. The location of the University Station was established with input from the previous 3-M Council. It is acknowledged that station locations would have economic impact on business community.

Comment XII-7:

Present businesses along the proposed route would be disrupted affecting 300 to 600 employees. Do we need additional unemployment? (NB #9)

Response XII-7:

Hopefully the affected 300-600 employees would find employment elsewhere; however, it should be recognized that the proposed project would create over 2000 new jobs during its construction.

Comment XII-8:

May I recommend that the final EIS go into greater depth on this important issue and discuss the effects on nearby residential areas of relocation problems, the land value problems and what effect it has on other neighborhoods, the less desirable highrises that we don't want for growing families. They should be in one, two, and three-story buildings at the most. (Hanson)

Response XII-8:

See Section V.C. of the Final EIS and comments are noted.

XIII. VISUAL EFFECTS

Comment XIII-1:

Urban Design

Urban design guidelines for the areas surrounding the stations should be developed to establish design criteria for intensity of development and architectural character in keeping with the Honolulu setting. (U.S. HUD)

Response XIII-1:

As part of the current Development Plan preparation process, the City has completed the Honolulu Urban and Regional Design Study - Phase III Urban Design Principles and Standards - Central Honolulu. Using this as the starting point, urban design guidelines for station area development will be developed by the City.

Comment XIII-2:

a. We find no mention of phasing and time of action.
b. What does the city plan to do to resolve the concern over visual impact?
c. What are the procedures for determining community interface with station development, design and structure?
d. What will the relationship be with other city concerns -- the Capitol District, Chinatown, Kakaako and Waikiki? (L of WV)

Response XIII-2:

a. The proposed phasing and timing of action is described in Section IV.A.6. of the Final EIS.

b. Visual impact is a major concern and additional studies will be conducted during the final design relative to mass, form, color, texture, etc., to minimize visual impacts. Urban design guidelines for stations and adjacent areas are now being prepared by the City (see also Response No. XIII-1 above).

c. In the subsequent phases of design, the communities will be consulted in the development of stations and structures.

d. Historic Districts, Special Design Districts and others related to development controls will be recognized and close liaison maintained with the responsible agencies.

Comment XIII-3:

We favor, instead of HART's fixed guideway system, a system using express articulated Diesel or electric buses. As the Council of Presidents' study shows, an articulated bus system has the advantages of meeting the transportation needs of Honolulu while expending less energy and less money and causing less of an eye-sore. While economic and energy-saving considerations alone would militate gainst the fixed guideway, the destruction of the land-scape along one of Honolulu's most beautiful drives in order to build the viaducts will be the one blow from which we can never recover. (Hickson & Arno)

Response XIII-3:

Comments are noted.

Comment XIII-4:

Mis-stated in the E.I.S. is the statement that "some" elevated sections will cause visual impacts. Actually, 80% of the elevated (not "aerial") guideway will cause "visual impact" (page VII-2). (Hanson)

Response XIII-4:

With the proposed 8-mile system as the initial construction length, 80% of the system will be above ground and that visual impacts for communities will be unavoidable.

Comment XIII-5:

Visual impacts. We find and agree with the Draft Environmental Impact Statement that the loss of visual or views is a significant impact. However, we feel that the loss of views within the community to be an important public issue that should deserve more attention than merely saying that the views will be lost. Current planning and development process identifies four major view plains within our community that we find to be valuable assets that should be protected and not eliminated. Further statements in the Draft EIS do not adequately address the question of loss of view adequately. (NB #8 and State Representatives of District 12)

Response XIII-5:

The Final EIS has been amended to included specific effects of the proposed system on views, particularly in the context of the proposed Development Plan for the Primary Urban Center. Refer to Section V.B.2. of the Final EIS.

Comment XIII-6:

We are concerned with a possible conflict between the proposed HART system and the City and County of Honolulu's current "Development Plans" being considered for adoption soon. In a recent draft of these plans, public view corridors are established for a number of streets, including University Avenue. This is labeled a "public mauka view corridor" (mauka means mountains), and presumably is designed to preserve the view of the mountains along University Ave. Since the proposed HART system goes up University at a height of 25', we pose the question: Does HART violate Honolulu's Development Plans? If yes, will an exception be made? On what basis or criteria?

We note the EIS states on page V-52, "Sensitivity of residents to the visual presence of the guideway would be high." In this case we do not question the adequacy of the description of the visual impact, but rather the description of the relationship of that impact to urban land use planning, for we do not feel the EIS has made this clear.

We also dispute a statement on p. V-52, that the "visual sensitivity of the guideway would be low" once the guideway reaches the intersection of University Avenue with King Street." The EIS obviously is not thinking of the "mauka view corridor", but only the view from immediately surrounding buildings. If this is true, then perhaps treatment of viewplanes is inadequate. Certainly mountain to ocean vistas are primary concerns for our urban community, and it is important that "Visual Impacts" explicitly address this issue.

Finally, we are not certain that the visual impact of the stations, especially that of Waikiki and Date Street, have been adequately dealt with. They appear to be significantly larger in bulk and impact than the guideway itself. (2-M Council)

Response XIII-6:

As noted in Resonse XIII-5, the Final EIS has been amended to include more specific and detailed visual affects of the proposed rapid transit system, both in terms of view corridors and visual impact of stations.

The latest draft of the Development Plan Ordinance dated April 1980, does not specifically identify University Ave. as a public view corridor but does contain general statements regarding public views along streets and highways to be protected, consequently, it cannot be determined at this time whether HART does or does not violate Honolulu's Development Plans.

The relationship of visual impact to urban land use planning and to public view corridors are discussed in Section V.B.2. of the Final EIS.

Visual impacts of aerial stations, including the Waikiki and Date St. Stations, are discussed in Section V.B.2. of the Final EIS.

Comment XIII-7:

Visual pollution: The Draft EIS statement says in effect that even in 1967, any new elevated system, which HART will be, was considered unacceptable to the community and environmentally disruptive. (NB #9)

Response XIII-7:

This statement was made with respect to a new freeway, between Middle St. and the University area, where structure would be much wider than the guideway structure and hence environmentally more disruptive.

Comment XIII-8:

We feel the overhead portions, that is, most of it, will detract from our scenery. (MCA)

Response XIII-8:

Comment is noted.

XIV. ECONOMICS AND TAXATION

Comment XIV-1:

The benefit cost analysis results are probably influenced to some extent by the optimistic assumption that construction of a fixed rail system could begin in early 1981. By making this assumption, the main advantages of the bus/TSM proposal (short-term benefits and incremental costs) are somewhat subordinated to long-term benefits favoring a fixed rail system. It is also not clear when it was assumed operation of a fixed guideway alternative could begin. If the benefit cost analysis assured a "30 year period bracketing the year 1995," the benefit cost analysis assumes the fixed guideway alternative is operating in 1980. The benefit cost analysis should assume realistic start of construction and start of operation dates. (FHWA)

Response XIV-1:

The benefit-cost analysis presented in Chapter III of the EIS is used as one of many factors in the comparative evaluation of alternative systems. In comparison of long-range alternatives, a 30-year period was used in the analyses and the actual start of construction and start of operations were assumed to be the same for all alternatives. It would not make any significant difference as to when the start dates would actually occur as long as all alternatives are analyzed on a similar basis.

Relative to the near-term comparative analysis, this comparison is made to test when the investment in a fixed guideway system becomes economically feasible when compared to an all-bus system. In this case, the capital cost was annualized over a 30-year period but the annual O & M costs and the travel benefits are calculated for the indicated study years. Consequently, the selected study years were used for testing purposes and the analysis is not affected by the start of construction.

Comment XIV-2:

On page III-33, it is indicated that the busway system is more susceptible to labor rate escalation than the other systems. However, the 14 mile guideway option indicates the use of a substantial bus feeder system. As the 14 mile guideway option also will require a substantial number of operators, it is subject to similar cost escalations. (FHWA)

Response XIV-2:

All systems are subject to labor cost escalation but an equivalent busway system would employ more total personnel than other alternative systems. Consequently, it would be more susceptible to labor rate escalation.

Comment XIV-3:

Financial Program

It is also recommended the Final Statement incorporate the significant findings and conclusion presented in the Proposed Financial Program for the Honolulu Bus/Rail Transportation System proposed for the City and County of Honolulu by Ernst & Whinney in association with Robert J. Harmon & Associates, Inc., September 1979. (US HUD)

Response XIV-3:

A summary of the Proposed Financial Program is presented in Section IV.A.7. of the Final EIS.

Comment XIV-4:

We have several concerns related to the manner in which the EIS addresses construction, operation and maintenance costs. It should thoroughly review and evaluate the anticipated Capital Improvement Program (C.I.P.) cost of building the proposed fixed guideway system, identifying the likelihood and potential ramifications of diverting funds from other necessary C.I.P. projects (such as parks, police, water, and sewage treatment facilities).

In our judgment, the proposed fixed guideway system would call for State participation from General Obligation Bond Fund sources for the six-year period. The EIS should discuss such a commitment by the State in light of recent constitutional changes.

First, Section 13 of Article VII of the State Constitution, as recently amended, limits the State debt to a percentage of general fund revenues - 20% to FY 1982 and 18.5% thereafter. Simply explained, this means that the State will be able to only issue approximately $150 million in general obligation bonds annually. If some $16 to $17 million were to be required annually during the six-year period of the project, then it would be required by the State to withhold funding of other traditional State projects by a like amount. This would represent a substantial reduction since other State projects are already severely constrained by

the $150 million bond issuance limitation. This is not to say that the State would not be able to absorb this cost but it does mean that other desirable State projects will have to be postponed or deferred in favor of the fixed guideway project.

Second, it is to be noted that by the next session, a State general fund expenditure ceiling may be in effect as mandated under Section 9 of Article VII of the State Constitution. A three-year growth rate formula based on State personal income as presently being considered would institute a general fund expenditure ceiling that would reflect an increased rate of about 9% annually. The estimated growth rate of fixed charges (debt services, employees' retirement system, and health fund contributions) in the State Budget which make up about 25% of the total State general fund expenditure are estimated to increase at an average rate of nearly 10%. This suggests that even if the State legally issued more than $150 million a year to cover the cost of the fixed guideway project, the increase in debt services from such an issuance would necessitate a reduction in the funding of other traditional State operating programs, unless the Legislature decides that the general fund expenditure ceiling should be exceeded and does so by public disclosure and by a two-thirds vote. (State DOT)

Response XIV-4:

The impact of financing the proposed transit system on the State's CIP is discussed in the Proposed Financial Program and summarized in Section IV.A.7. of the Final EIS.

Comment XIV-5:

What is the estimated breakdown of costs to the City and State of the cited 20% local share? (EQC)

Response XIV-5:

See Table IV-1 of the Final EIS to obtain the estimated amount of the 20% local share. The City and State portions of the 20% local share will depend upon the agreed amount of the local share to be borne by each.

Comment XIV-6:

There should be a more detailed discussion of what economic and employment impacts will occur during and after construction of the project. What is the tax revenue loss due to business liquidations resulting from the project? (EQC)

Response XIV-6:

It is estimated that the implementations of the proposed 8-mile guideway system would result in 7,000 man years of direct jobs and 9,500 man years of indirect jobs in the state. It is further estimated that less than 200 workers of specialized skills would have to be imported during construction.

It is difficult, if not impossible, to predict the loss in tax revenue due to business liquidation since there is no way to ascertain which businesses would actually liquidate due to the project, and also their taxable profits. Some indication of possible liquidation is given in "Honolulu Rapid Transit Relocation Plan" prepared for the DTS. All of the surveyed businesses were asked, "Is the business in this location likely to move, or would it liquidate - go out of business if displaced from this location?" Almost 3/4 (114) of the businesses said they would move to another location. Twenty-five (16%) would liquidate and 17 (11%) were undecided or did not know. Manufacturing and light industrial types would have the highest liquidation rate, according to these plans.

Comment XIV-7:

Table IV-3 should be revised to show the recent hike in bus fares. By how much does this increased fare reduce the projected operating deficit? (EQC)

Response XIV-7:

The table has been revised (shown as Table IV-2 in the Final EIS) and the operating deficit adjusted.

Comment XIV-8:

An in depth study should be included on the economic and social impacts around the proposed stations. (City DH & CD)

Response XIV-8:

The Final EIS identifies the following impacts around the proposed stations: noise, visual, traffic, land use and urban development, residential and business relocations, transit dependent accessibility, construction impacts peculiar to terminus stations, (including traffic, land use and urban development, noise and displacement) and park and historic properties.

In addition, a Relocation Plan prepared for the Department of Transportation Services gives detailed information on all potential residential and non-residential dislocations that would be caused by station development, including characteristics of residents, (type of household, ethnicity, monthly income, physical disabilities, etc.) residential units (size, age, structural characteristics, type of occupancy, etc.) and business affected (type of business, ownership, size and financial characteristics, etc.).

The "Land Use Study Around Rapid Transit Stations" prepared for DTS includes an evaluation of each station area in terms of 1) availability of developable land; 2) attractiveness of area for development; 3) demand in the area for development; 4) public land use policies favorable to development; 5) neighborhood attitudes favorable to development; and 6) other new nearby development activity. Based on this information, the consultant prepared an in-depth study of potential development opportunities and demand around 5 stations considered to have the highest potential for development.

It is felt that the information presented in the Final EIS, plus the aforementioned studies, identifies as well as the state-of-the-art permits, all the relevant economic and social impacts.

Comment XIV-9:

On general economic grounds, given the usual history of fixed mass transit systems in other cities, the proposed cost, benefit ratios of 1.06 to 1.29 are not impressive and difficult to interpret. (U of H WRRC)

Response XIV-9:

The benefit cost ratios are used for comparative purposes only and not to justify the investment of one alternative or another. The ratios were developed using only direct travel benefits to reflect the benefits of higher attraction of ridership of one system over the other.

Comment XIV-10:

If "long term beneficial effects" include "positive economic benefits", then "long term adverse effects" should include economic costs, capital operating expenses, whether or not such costs are recoverable through operating revenue. (U of H WRRC)

Response XIV-10:

The long-term beneficial effects provided by positive economic benefits from travel time and cost savings means that there is a net positive benefit after deducting capital and operating costs.

Comment XIV-11:

V.78. Given current zoning and use, it is not obvious that property along the right of way will increase in value. Moreover, if auto traffic is reduced the loss in gas tax revenue and other auto fees and taxes becomes a part of the long term adverse effects. (U of H WRRC)

Response XIV-11:

Generally, property values reflect location of the property which in turn is influenced by accessibility. With improved accessibility to properties near transit stations, it is not unreasonable to assume that those properties will increase in value.

A reduction in gas tax revenue and other auto fees and taxes can logically be expected with a successful transit system. Since these fees are directly utilized to construct and maintain auto transportation facilities (whose costs rise in direct proportion to use), a reduction in vehicular traffic may mean a reduction in associated costs that is the same as or even greater than the reduction in gas taxes, auto fees and the like. Therefore, loss in such revenues may not necessarily result in adverse effect.

Comment XIV-12:

Capital, Operating and Maintenance Cost Estimates (IV-6 to IV-8)

The operation and maintenance costs of HART were covered in the EIS. The discussion should be expanded to include how the 20 percent local share of the total capital costs will be raised. Also, Table IV-3 (p. IV-8) should be revised to reflect the increased bus fares.

An article written by Lowell L. Kalapa, Directer of Tax Foundation Hawaii which appeared in the Sunday Star-Bulletin and Advertiser on September 2, 1979 discusses financing future transportation needs.

> "...one very large issue has never been fully addressed; yet, it should be of concern to every taxpayer in this state--that of financing whichever alternative is chosen."

There seems to be appropriate concern with our ability to finance either HART or the H-3 highway, yet the DEIS assumes that the H-3 will be constructed as well as HART. (U of H E.C.)

Response XIV-12:

A final financial program to raise 20% local share of the total capital costs is not included in the Final EIS because the final determination for financing has not been made. The City has retained a consultant to conduct a proposed financial program study. The study proposes a variety of measures including a statewide variable gas tax, county transportation related charges, a statewide excise tax contribution and property taxes. The City is currently studying the various proposals.

Table IV-3, shown as Table IV-2 in the Final EIS, has been revised to reflect increased bus fares.

The analysis contained in the EIS included construction of H-3 for transportation impact evaluation only. Whether H-3 and a rapid transit system will be built depends upon decisions still to be made by local and federal funding agencies.

Comment XIV-13:

Given the financial commitment needed to implement this project, supporting policies are needed to ensure a high level of ridership. Supporting policies, such as additional taxes on gasoline and parking need to be discussed. In the absence of such supporting policies, this project, if implemented, may prove to be a serious financial burden on the residents of the City and County of Honolulu, for the benefit of a small number of residents (NB #2)

Response XIV-13:

Comments are noted.

Comment XIV-14:

It (the proposed project) will have a wider scope of impacts than is normally associated with a simple transportation decision, including the shaping of future land use patterns and population growth. Therefore, we have determined that the current description of the proposed action needs to be expanded to enable decision-makers to weigh the cost and benefits associated with each of the alternatives outlined in the draft Environmental Impact Statement. (NB #2)

Response XIV-14:

Chapter IV of the EIS presents a brief description of the proposed action. The entire Chapter V containing nearly 100 pages of narrative, tables and graphics discusses the social, economic and environmental effects of the proposed action.

Comment XIV-15:

MR. CAROLE: Yes, the last, final thing is on the construction operation and maintenance costs. We feel that there should be a relationship, a review and evaluation of anticipated CIP costs of building a proposed HART system, identifying the ramifications of the HART CIP with other necessary CIP such as parks, police, water and sewage treatment facilities, and I will close at that point. (NB #10)

Response XIV-15:

The City has been concerned with costs and financing of the proposed transportation system. Accordingly, the City and County hired Ernst and Whinney, in association with Robert J. Harmon and Associates, Inc. to develop a proposed program for financing construction and operation. The work has been completed and transmitted to the Mayor and City Council and contains three alternative financing plans. The final decision on a financing program rests with the City and County and the State policy makers.

Comment XIV-16:

Identification of the specific segment of the population that stands to gain should be addressed. We cannot visualize Windward or North Shore residents supporting HART when they realize no economic benefit from a system that increases their general taxes to pay for its operation and maintenance. (NB #21)

Response XIV-16:

In addition to direct travel benefits to transit users, the entire island benefits with an improved transit system such as HART in terms of reduced social, economic and environmental costs. HART will cause less community disruption than a highway with equivalent capacity in terms of residential and non-residential dislocation and means less air pollution, less noise, and less total travel costs to residents of Oahu. It is not possible to identify a specific segment of population which stands to gain, as the system is available to all people, and provides both direct (low cost transportation) and indirect (less pollution, congestion, highway construction costs) benefits.

Comment XIV-17:

A majority of the North Shore Neighborhood Board is in favor of a Fixed Guideway Rapid Transit System. This support is based upon the urgent need to begin to do something and upon the success of Fixed Guideway Systems in foreign cities where gas prices have been high for years.

However, concern was expressed regarding the extraordinary high public cost associated with this project. The view was also expressed that efforts should be made to distribute job centers and employment through use of technological advances such as tele-communications.

The general consensus was Public Transportation must be improved in Honolulu as soon as possible and a decision should be made now to do something. The State and City have debated what to do for 10 years and in that time the cost have tripled and the need doubled. (NB #27)

Response XIV-17:

Comments are noted.

Comment XIV-18:

The economic/financial impact of HART has promulgated much discussion within the community. This topic is not adequately covered in the draft EIS. In addition, recent studies have prompted further questions that should be covered in the final HART EIS. The following are some of our concerns.

(a) The Proposed Financial Program for Hart claims that the total economic benefits of the Federal share of capital costs will be captured through induced tax revenues to cover much of the local debt service. Does this conclusion assume more total Federal transportation funds will come to Hawaii with heavy rail than with other alternatives? If so, then why?

(b) What are the chances that Hawaii can get Federal funds for both TH-3 and HART, at the levels requested? What are the chances of Hawaii getting that same total funding for other transportation alternatives? What percentage of each of these Federal transportation funds could be spent on alternative uses, such as parks along transit and highway corridors, bikeways, regular maintenance of Federal-aid roads and any other roads? If an electric bus system were developed in Honolulu, with overhead wires, could Federal transportation funds be used to place other utility wires underground as a trade-off compensation for the new transit wires?

(c) Will the financing methods used to cover construction, maintenance and operation of HART, reflect regressive, neutral, or progressive taxation? How much of HART's cost will be borne by people who do not benefit from HART?

(d) What percentage of the City budget will be spent to subsidize mass transit operations and maintenance costs in 1990 and in the year 2000 as compared to 1980? Will the City Council commit itself to adjusting transit fares so that other taxes will not need to be raised if HART is successful in attracting a large number of riders? (LOL)

Response XIV-18:

(a) Whether HART is approved and financed by the Federal Government or not, it should have little bearing on other transportation programs. The point is not whether more total transportation funds will come to Hawaii, as funds are not amply lumped into one transportation fund but rather are earmarked for particular projects. The point is "What program or programs will the Federal Government approve?" The claim of induced tax revenues is merely to show that a portion of the local share of the cost is off-set by this induced tax revenue.

(b) The TH-3 and HART projects must each stand on its own merit and the amount of Federal fund available, whether Honolulu can get the same total funding for other alternatives (to HART), would depend on what this other alternative is and how UMTA would view it. Federal funds approved for specific projects - highways or transit - would apply to those specific improvements and costs allowed by the Federal Government. There is no set percentage established for ancillary improvements such as parks or bikeways; the amount available depends upon the total appropriation approved by Congress and is shared by projects proposed by all 50 states. The cost of undergrounding of overhead utilities would be shared by the Federal Government only if dislocation is caused by the project and there are no alternatives but to place the utilities underground.

(c) The funding sources for HART have not been formally determined and approved.

(d) The percentage of the City's budget allocated to a transit subsidy will depend on the fare structure. The present City Council is not in a position to commit future councils to a set fare rate.

Comment XIV-19:

The final HART EIS should contain a serious discussion of the costs and benefits of requiring that mass transit fares pay most or all of a transit system's operating and maintenance expenses.

During peak traffic hours when commuting is miserable, people will be willing to pay transit fares that cover all costs. During off-peak hours, when traffic congestion is tolerable, there may be more equitable and efficient ways to encourage HART ridership than to subsidize transit fares. (LOL)

Response XIV-19:

Public transportation service is generally viewed as essential public service along with education, police, fire, sewer and health services. Hence the cost of O & M expenses, less fare revenues, are subsidized from transportation related and general tax revenues. In the 26 largest urban areas of the United States which have transit systems, only 45% of aggregate operating costs are covered by fare revenues. The question ultimately returns to a philosophical one of the health and welfare of the community and its willingness to provide services which improve the quality of life of its residents.

Comment XIV-20:

The final EIS should include a table comparing "break-even" fares (including CIP and O/M costs) that would have to be charged on an all-bus transit system (with improvements suggested in Point 7) and a HART system with feeder buses, in 1980 dollars, at various levels of patronage assuming:

- neither system was subsidized by the City or State,
- both systems carried the same number of passengers/year,
- Federal grants subsidized 80% of CIP costs,
- the local share of CIP costs was annualized at a 7% interest rate, and
- tax revenues generated by HART construction were annualized at a 7% interest rate and earmarked to pay for the local share of CIP costs.

the point of comparing "break-even" fares of HART and an all-bus transit system at various levels of patronage would be to compare relative "efficiency" without having to make controversial assumptions about how many more riders would be attracted to HART than to an all-bus transit system. (LOL)

Response XIV-20:

The table below shows the comparison of the two systems using data contained in the Ernst & Whinney (E & W) report titled "Proposed Financial Program for the Honolulu Bus/Rail Transportation System", dated September 1979. The equivalent all-bus system was developed through extrapolation of TSM Bus Plan data contained in the E & W report with the All-Bus CIP costs obtained from the report titled "Development Plan - Land Transportation Impact Analysis" by A. M. Voorhees & Associates, Inc., dated January 1980.

Two different patronage volumes were tested as shown in the table below. The HART System would have a "break-even" fare that ranges between 6% to 8% lower than the All-Bus System at constant 1980 dollars. When escalated costs are used, the "break-even" fare ranges between 13% to 15% lower for the HART System. Based on this comparison, it can be concluded that where annual patronage exceeds 100 million, the HART System should have a lower total annual cost than the All-Bus System.

	All-Bus System		HART System	
	1980 $	Escalated $[1]	1980 $	Escalated $[1]
Annual Patronage	104.5 mil.	104.5 mil.	104.5 mil.	104.5 mil.
Annual O & M Cost	$85.1 mil.	$396.7 mil.	$69.8 mil.	$325.3 mil.
Annual Capital Cost	5.0	7.5	14.5	24.5
Total Annual Cost	$90.1 mil.	$404.2 mil.	$84.3 mil.	349.8 mil.
Cost/Ride	$0.86	$3.87	$0.81	$3.35
% Difference			- 6%	-13%
Annual Patronage	129.4 mil.	129.4 mil.	129.4 mil.	129.4 mil.
Annual O & M Cost	$105.0 mil.	$498.4 mil.	$ 86.9 mil.	$405.0 mil.
Annual Capital Cost	5.6	8.4	14.5	24.5
Total Annual Cost	$110.6 mil.	$506.8 mil.	$101.4 mil.	$429.5 mil.
Cost/Ride	$0.85	$3.92	$0.78	$3.32
% Difference			- 8%	-15%

1. Escalated O & M Cost - 20 years @ 8% compounded.

Comment XIV-21:

Another point I want to bring up is when the tempting federal grants are used up and the state is on its own, what I perceive is going to be a bankrupting, ever-escalating expense to the taxpayers. There is no way to avoid it.

I have heard the figure given as $40 million a year deficit. don't know exactly whether this is true or not, but it seems to be a recurring figure that I hear. (Ellison)

Response XIV-21:

Comments are noted. The estimated O & M cost and revenue (including deficits) are shown in Table IV-2 of the Final EIS.

Comment XIV-22:

The next point is what tax modifications, incentive trade-offs and so forth are being considered to protect the public investment in the system which may lead to individual, private windfall profits?

A detailed relocation plan exists for businesses and individuals displaced, but what is the equivalent analysis that exists to recover for the public benefit any windfall profits? (Blackman)

Response XIV-22:

Various forms of taxes on property value appreciation have been studied to provide means for the public to share in any "windfall" profits. It will be up to the State and City policy makers to determine whether such taxes would be in the best interest of the public.

Comment XIV-23:

- Concern that a 20-25% increase in property taxes and/or other taxes are necessary to subsidize the State and City part in HART. (Hanson)

Response X-23:

Comment is noted.

Comment XIV-24:

The tax burden in 1979 dollars would be approximately 30 million dollars per year before completion, and after completion, 40 million dollars per year to maintain and operate the system. I would also point out the Waikiki Neighborhood Board in its final response sheet to the development plans voted unaimously to disapprove the proposed bus/rail system.

A poll taken by the board also indicates that the majority of the residents in our district are opposed to HART. (NB #9)

Response XIV-24:

The comment is correct in that operating subsidy will increase with HART basically due to the fact that greater volume of passengers is planned to be carried. Simply stated, as long as there is subsidy required for each passenger carried, the more you carry, the greater the subsidy. Unfortunately, the primary objective of improved public transit is to attract and carry more passengers and hence the subsidy will grow almost proportionally with increased ridership.

Comment XIV-25:

Finally, we seriously question the operating and maintenance costs. We feel too large a part of the city's income for the next few decades will have to be used to subsidize the deficits, resulting in the city's inability to finance other city services and capital improvement projects. (MCA)

Response XIV-25:

Comment is noted.

Comment XIV-26:

Regarding the capital costs, paying off money borrowed for the city's share of building will take a large part of the city's budget for the next several decades. (MCA)

Response XIV-26:

Based on the assumption that the Federal Government will pay for 80% of the capital cost, the local 20% share is estimated to be less than $200 million. The annual debt service for this amount will be less than $20 million per year which would be less than 10% of the City's operating budget.

Comment XIV-27:

a. The draft EIS, when compared with the recent Proposed Financial Program by Ernst & Whinney, understates the capital costs and the annual operating deficit, while omitting a discussion of the required local tax subsidies and their impact on us, as taxpayers.

The EIS claims that if construction of the 14-mile system began in 1981, and if costs escalated at a rate of 8% per year, then the total capital construction cost would be $885 million, of which the local share--20%--would be $177 million.

However, the Ernst & Whinney report estimates the total escalated cost by 1989 to be $1.5 billion, and local share of that: $304 million. Part of the discrepancy comes from $417 million for the Capital Replacement and Improvement Program (CRIP), which was evidently not included in the EIS. Much of this difference covers the capital outlay for the bus sector of the system.

b. In the EIS, the annual escalated operating and maintenance cost for the bus/rail system was estimated to reach $73 million in 1985. The annual deficit was estimated at $41 million. Ernst & Whinney, however, say the escalated 1989 operating and maintenance costs will be $126 million, and the deficit will be $76 million. The Urban Mass Transit Administration (UMTA) is expected to cover $15 million of this deficit, leaving us a net deficit of $61 million. When we add to that the system's debt service of $22 million, we actually will have to pay $83 million a year. The EIS does not discuss the impact these required subsidies will have on local taxpayers.

c. Whatever tax sources are used to pay this deficit, the average household would have to pay over $300 in 1989--HART's assumed first year of operation. That amount will rise steadily each year thereafter.

d. The subsidy proposals suggested by Ernst & Whinney are based on raising approximately $20 million a year in taxes. HART will require much more than this, and the State and City both already have other extensive capital improvement needs and plans that require funding.

e. As taxpayers, and as members of an elected community group we can see at least two problems with the HART proposal: the rail portion of the system is projected to serve less than 10% of the island total daily person trips (306,900 out of 3,308,000, as stated in PEEP II), yet the cost is borne by

all Oahu residents. And we note that although the capital cost for the system would be mainly paid by the federal government--this too, is part of our tax burden.

f. In conclusion, most citizens are unable to evaluate the suitability of the proposed mass transit plans for Honolulu. Due to the volume and complexity of information presented to community groups for their consideration, it is difficult, if not impossible, for the average person, without technical training, to understand, or to make informed comments and rational decisions. The EIS did not help. (NB #7)

Response XIV-27:

a. The preliminary capital cost estimate of $885 million given in the Draft EIS represents the initial construction cost of the system assuming start of construction in 1981. The Ernst & Whinney report shows initial construction cost estimate of $1,104 million with start of construction in 1983. A 2-year delay in start of construction at today's inflation rate accounts for the difference in cost. Additionally, the Ernst & Whinney report includes an additional $400 million for capital replacement and improvement costs required up to the year 2000. This latter cost is important in the financial analysis but was not included in the EIS since the important cost there was to show the initial capital outlay required for the project.

b. The Draft EIS indicated the O & M cost at $73 million in 1985 dollars and for 1985 ridership volume of some 90 million passengers. The Ernst & Whinney report shows the O & M cost of $146 million in 1989 dollars for 1989 volume of 91 million passengers. The cost estimate in the Draft EIS was developed in 1978 using 1978 dollars and then subsequently escalated at 8% per year. The Ernst & Whinney estimate was developed using 1980 dollars and then escalated at over 10% per year. The basic difference in the assumed escalation rate which in the short-term can be as high as 10% to 15% and in the long-term around 8% to 9% per year.

The Final Report by Ernst & Whinney show the total annual cost of some $105 million (compared to the $83 million stated in the comment) in 1989 dollars. Using the assumed inflation rate, this amount reduces to $44 million in 1980 dollars. Today's existing bus system incurs a cost of some $35 million for carrying up to 58 million passengers compared to the 90 million expected to be carried on the fixed guideway/feeder bus system.

c. The cost to the average household of $300 in 1989 is equivalent to less than $130 in terms of today's (1980) dollar. Our existing bus system requires a subsidy of some $20 million which equates to less than $150 per household.

d. The Ernst & Whinney Report indicates the raising of some $20 million a year in taxes. This amount is over and above the amount currently being raised in taxes to meet today's subsidy. The total annual funding requirement in 1989 is approximately $44 million in 1980 dollars.

e. Public transit service, like many other public services that the general public receives and pays for, obviously cannot be borne only by users. The subsidy burden must be borne by all Oahu residents since each resident is benefitting, directly or indirectly, by improved public transit service.

f. Comment is noted.

Comment XIV-29:

2. A second source of concern is the Cost. We do not believe Waikiki, the bread winner for the whole state, needs an extra burden in an increase in property tax or excise tax to foot the bus/rail bill, as proposed by the Ernst and Whinney report. (WRA)

Response XIV-29:

Comment is noted.

XV. SECTION 4 (f)/HISTORIC/ARCHAEOLOGICAL CONSIDERATIONS

Comment XV-1:

Reference: Chapter VI, Section 4(f) and Section 106. There appears to be a misunderstanding about the applicability of Section 4(f) to parklands. (See memorandum of October 28, 1975 from Mr. Young Suk Ko to Mr. George Villegas). The applicability of 4(f) is not whether the effects (impacts) are significant but whether there is use of lands from a publicly owned park of local significance. If so then 4(f) applies. (FHWA)

Response XV-1:

Comment is noted.

Comment XV-2:

Reference: Chapter VI, Section 4(f) and Section 106. The 4(f) Statement cannot be finalized until all eligibility determinations have been made by the Keeper of the Register. The 106 process described on page VI-2 must be applied to all properties determined for inclusion on the National Register of Historic Places. (FHWA)

Response XV-2:

All eligibility determinations have now been made.

Comment XV-3:

The DEIS does not address the possible application of Section 6(f), Federal Land and Water Conservation Fund (FL&WCF) Act, to parklands described in Chapter VI. (FHWA)

Response XV-3:

There were no FL&WCF funds used in any of the affected parklands and therefore Section 6(f) is not applicable.

Comment XV-4:

The proposed fixed guideway system would affect two historic areas--the Chinatown Historic District and the Hawaii Capital Historic District. Additional historic resources to be affected include nine properties determined eligible for the National Register and

eight properties identified as being potentially eligible. Of these properties, we note that the proposed alignment would require the demolition of the Robinson Building and the McCorriston Building, both of which are potentially eligible for the National Register and the taking of the Hotel Street Sidewalk Elements (also potentially eligible). The staff of the SHPO has indicated that these three properties are of local significance thus, requiring Section 4(f) analysis.

Since these three properties are located on Hotel Street and because we agree that Hotel Street is by far the more preferable alignment, in view of its central and accessible location, lower construction costs and less overall environmental impacts, we are satisfied that there are no feasible or prudent alternatives to avoid these takings. Although the King Street alignment would avoid impacts to the two buildings and the sidewalk pavings it could not avoid impacting other, perhaps more significant, historic properties fronting its own right-of-way. We concur with the statement's observation that it appears highly unlikely that any route could be found through this central area which would not pose adverse effects to some historic properties.

Further consideration of alternative locations along Hotel Street for the Fort Street Station indicates that relocating the station to avoid affecting the two buildings would create considerably more conflicts, particularly with the Chinatown Historic District. The third taking would require the removal of the granite paving; however; this can be mitigated by eventual replacement after construction.

We are please that UMTA has attempted to undertake all possible planning measures to minimize harm to historic properties as shown by the alternatives considered and the comprehensive mitigation measures proposed. We suggest with respect to the McCorriston Building, that consideration be given to integrating this structure with the proposed station facility. Perhaps the McCorriston Building could house either the elevator/escalator system or ticket/route information counters thereby preserving the distinctive architectural form of its facade. (US DOI)

Response XV-4:

The Section 4(f) analyses have been made for the Robinson and McCorriston Buildings and the Hotel Street Sidewalk Elements in the Final EIS. Further consideration was given to integrating the McCorriston Building with the station facility but determined that it would be extremely difficult and costly, therefore, it was concluded that it would not be feasible to retain this structure.

Comment XV-5:

On the subject of cultural resources, there is no doubt that underground placement eliminates most of the serious impacts associated with above-ground construction of the guideway, particularly through the two historic districts. We are pleased that the criteria of adverse effect have been applied and that the views of the SHPO are presented for each individual property and the historic districts. However, it would have been even more helpful had the entire letter from the SHPO been included for overall reference. We encourage UMTA to continue working closely with SHPO in order that the Section 106 requirements can be favorably resolved. (US DOI)

Response XV-5:

Comment is noted.

Comment XV-6:

The proposed fixed guideway system would take land from three urban parks. We concur that there appears to be no feasible or prudent alternative to these takings. In the case of Keehi Lagoon Beach Park, we agree that Alternative Route D would be the most environmentally preferable as well as the most accessible route. Based on the need to preserve industrial land in the urban area and the full acceptance of the proposed park adjustments (relocation of tennis courts and tot lot and realignment of the access road) by the park officials, the proposed alignment and subsequent park taking of 1.7 acres for a transit station, up to 1,000 square feet of land for guideway support columns and approximately two acres of easement for construction and maintenance purposes with ground surface retained for park use are acceptable. The new alignment will enable those without automobiles to take advantage of the convenient transit facilities that will eventually be serving this recreational area; this public system will be a welcome alternative to the primary and costly use of automobiles.

The temporary construction impacts to Aala International Park are not serious and the advantages of locating the station near Dillingham Boulevard and King Street should offset any minor inconveniences occurring during the construction period. Similarly, the permanent use of up to 150 square feet for temporary construction use along the peripheral margin of Ala Wai Park appears to be the only feasible alternative with relatively minor impacts, in this portion of the preferred alignment. With special attention given to structural design of the alignment to make it suitable in scale and form and with the restoration of landscaping, visual impacts should be minimized. (US DOI)

Response XV-6:

Comments are noted.

Comment XV-7:

On July 30, 1979, we received the draft environmental impact statement for the Honolulu Area Rapid Transit Project and your request for the comments of the Council. After reviewing the information in the statement, however, we find that the Council is unable to respond because the information gathered to date is not complete.

The statement discusses the potential impacts upon nineteen historic properties; however, eight of these are described as potentially significant and evidently have not been submitted to the Keeper of the National Register of Historic Places for an official determination of their eligibility. As you know, the Council's regulations, "Protection of Historic and Cultural Properties" (36 CFR Part 800) set forth the steps that an agency should follow to fulfill its responsibilities pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended. Section 800.4(a) (4) directs an agency to have obtained or requested an official determination regarding the eligibility of a property for inclusion in the National Register prior to requesting the comments of the Council. Without the Keeper's determination, the Council is unable to conclude its review of the environmental document. This is especially important with respect to our review of the proposed demolition of two buildings, the Robinson and McCorriston Buildings. (US AC on HP)

Response XV-7:

All historic properties have now been determined eligible by the Keeper of the National Register of Historic Places.

Comment XV-8:

We have, however, examined the other information in the statement. From this examination, it appears that the Urban Mass Transportation Administration (UMTA) has thoroughly investigated and anticipated the impacts of placing the transit system underground through downtown Honolulu. In contrast, it seems that some of the visual impacts of the aerial guideway structure have been overlooked. It appears that the presence of the aerial structure near the Oahu Prison Administration Building, the Brass Foundry Building, and the Church of the Crossroads may create an adverse effect by altering the properties' surrounding environment (Section 800.3(b)(2))

and by introducing out of character visual and possibly audible elements (Section 800.3(b)(3)). These effects should be analyzed and considered in consultation with the Hawaii State Preservation Officer. Mitigation for such effects migh include careful placement of support pylons to preserve important views and recordation of buildings that will be permanently obstructed from view. (US AC on HP)

Response XV-8:

A field survey was conducted involving the staffs of the City, UMTA, and Hawaii State Historic Preservation (SHPO) office to consider the visual impacts on these 3 historic properties. It was agreed by all parties that the proposed fixed guideway system would not have a significant adverse visual effect on these properties. (See letter from SHPO at the end of Chapter VI of the Final EIS)

Comment XV-9:

a. Page VI-80, paragraph 2, last sentence should read: There is an iron exhaust stack near the east corner which is part of an old smelter below.

b. Page VI-80, paragraph 3, last sentence should read: Equipment includes winches, wooden casting patterns, casting equipment, and other foundry equipment of unidentified uses. NOTE: The "iron and wood sheet metal press" mentioned in this sentence is instead a sheet metal break. This break is not part of the original foundry equipment. It was transported to the premises circa 1974-75 after use of the building as a foundry ceased. (U.S. Army - Corps of Engineers)

Response XV-9:

Comments are noted. It should be noted that the referenced building, the Brass Foundry Building, has been found by UMTA and SHPO not to be adversely affected.

XVI. MISCELLANEOUS

Comment XVI-1:

If the population and socio-economic forecasts shown on II-6 and 7 are the same as those used on the H-3 EIS and those used by OMPO, it should be stated in this EIS. (FHWA)

Response XVI-1:

In Section I.B.3. of the EIS, it states that the population forecasts used were developed by the State Department of Planning and Economic Development and adopted by the Oahu Transportation Planning Program (predecessor to OMPO).

Comment XVI-2:

There is a substantial lack of source document references to support technical conclusions regarding the probable environmental impacts of the proposed HART system. If technical appendices are not used in the Final EIS, full source document references, including the location(s) where the document(s) is available for review, should be provided in the FEIS. (FHWA)

Response XVI-2:

The data used in the Final EIS is appropriately footnoted. References are listed at the conclusion of the EIS. Methodologies are generally included in the source documents.

Comment XVI-3:

The DEIS should summarize all City and County of Honolulu efforts to gain active community/citizen participation in the HART development process. Public Information Meetings, community group meetings, public hearings, etc., should be choronologically listed with a highlighted summary of dialogue obtained at these public encounters. (FHWA)

Response XVI-3:

Information on public information meetings, community meetings, public hearings, etc. held by the City are available at the City Department of Transportation Services. It should be noted that inclusion of such information in the EIS is not required or even mentioned in NEPA regulations; rather, the comments/letters received in response to the Draft EIS, along with the responses are required.

Comment XVI-4:

The original DEIS was circulated in 1972; however, that process was not completed. In the interim, route locations were further defined and stations located. The FEIS should discuss the 1972 draft EIS, comments on the 1972 draft EIS, and subsequent coordination to date. (FHWA)

Response XVI-4:

The 1972 draft EIS is no longer valid due to changes in Federal EIS regulations, hence, a completely new Draft EIS was developed and circulated.

Comment XVI-5:

We have reviewed the subject project and find there will be an impact imposed on City and County facilities located within the Civic Center Station.

Please consult us during the design phase of the project. (City Building Dept.)

Response XVI-5:

Comment is noted.

Comment XVI-6:

Inadequate Description of the Proposed Action (iv-viii)

The description of the action is inadequate because the environment in which it must operate is not specified, although it has an important bearing on the action's performance.

A commitment to a mass transit system - any system - is one of the most important decisions facing the leaders of Hawaii. But it is more than a simple transportation decision, for it has significant consequences for the community in terms of future land use patterns, the fiscal integrity of various governmental units, and the distributional impacts of costs and benefits.

The bulk of the discussion of anticipated impacts of the proposed HART system is centered on minutiae and avoids the "big" issues. Fundamentally, the proposed system cannot be viewed as merely a transportation system but as a potential community-shaping element. The extent to which it would be a community-shaping element, however, as well as many of the detailed impacts discussed in the

DEIS cannot be predicted from the information provided in the DEIS or supporting material. They can be indicated only by understanding what the community's transportation philosophy is and how that philosophy relates to its general planning philosophy. That is to say, impacts of a proposed action can be estimated only if the context of that action is sufficiently specified, particularly if the context will significantly condition the consequences of the action. With an action of the magnitide of the proposed transit system, it is not sufficient to specify the characteristics of the system itself, but rather is necessary to specify other factors as well. Two significant factors which have not been specified are the relationship of HART planning to general planning at the county level and the community's transportation philosophy. Without attention to these factors, planning for the system is a case of the tail wagging the dog. (U of H E.C.)

Response XVI-6:

The initial decision made by the local governments to pursue this fixed guideway project was predicated on their long-range transportation policy as adopted by the Oahu Transportation Planning Program and subsequently reaffirmed annually by the Oahu Metropolitan Planning Organization. Further to the above, the City's 1977 General Plan contains policy statements relative to public transit. In short, the fixed guideway system being proposed is in line with and in support of official policies of Oahu.

Comment XVI-7:

We find that the document is presented in a manner which makes understanding of the proposal and its ramifications difficult; that the text is lacking in a clear statement of objectives and how the proposal will meet them.

First, by regulation the EIS is to be written in such a way as to be clearly understood by decision makers and the public. We find the narrative confusing and the level of information inconsistently presented. The charts and text vary between outdated projections and undocumented assumptions, intermixed with excellent materials. Cross-referencing is difficult. If the tables had been in an appendix the text would have been less technically cluttered and more easily understood by the public as well as those public officials on whom the decisions rest. (L of WV)

Response XVI-7:

The format and content of the EIS follows that prescribed by the National Environment Policy Act and EIS guidelines prepared by the Council on Environmental Quality. With a project of this scope (a multi-million dollar bus/rapid transit system), the amount of information is tremendous and can indeed be confusing. Every attempt was made to present data as clearly as possible.

Comment XVI-8:

Secondly, and more basic, we find no clear statement as to what the proposed plan is to accomplish. For those who have not followed the bus/rail discussion it is difficult to find a statement of objectives and a clear rationale leading to the requirement for the proposal. Buried in the text is reference to planning and land consumption, the content of the Transportation Improvement Program, and statements regarding the growth of travel demand. These should be up front-firmly stated and justified by current statistics. (L of WV)

Response XVI-8:

Refer to Response IX-5 and Section V.B.4. of the Final EIS.

Comment XVI-9:

In order for the community to be part of the discussion, and for decision makers to measure the impact of the proposal adequately, a precise description of the steps leading to the department's decision on the HART system, and the alternatives analyzed before reaching that conclusion should have been presented. The environmental concerns and the various transportation alternatives could then be tied together with a sketch alternative evaluation matrix so the outcome - reason for the proposal - could be better understood in line with long range projections. Such a measurement of the no-build, Transit Systems Management and other alternatives vis-a-vis the travel demand/growth projections could then be easily seen. Once the decision to approve the system has been made it would be possible to begin specific study in order to choose the technology with the least impact, be it visual, noise, energy consumption, mobility or social disruption. (L of WV)

Response XVI-9:

It is believed that Section III.A. of the EIS adequately describes the background and the process that has taken place leading to the current status of the proposed project.

Comment XVI-10:

The League is most interested in the environmental impact of projects being considered for our community. We see great value in the EIS requirement, particularly for large projects such as that being proposed under the HART plan. The time and effort put into the preparation and writing of the EIS should be returned by highlighting the many inter-dependent effects found within the projects and the elucidation of plus or minus factors. By stating these, attention can be given toward minimizing the negative features and enhancing the positive ones. (L of WV)

Response XVI-10:

Comment is noted and reference made to the Summary contained in EIS.

Comment XVI-11:

The City and County of Honolulu would require some sort of mass transit system in the main Honolulu corridor sometime in the far future. Immediate construction of this project is not warranted because of the high expense and lack of rider usage. The heavy cost must be borne by the entire population whereas only a small percentage of the population will be served. For an immediate solution, the City should consider widening and improving H-1 Freeway at strategic locations to improve traffic flow for cars and buses, increasing the number of buses and improving their services, controlling the number of vehicles in the city, and staggering work and school hours. (NB #3)

Response XVI-11:

The fixed guideway system is being proposed as the long-range solution to meet Oahu's future travel demands. Major projects taking years to implement and expected to last nearly 100 years should not be implemented only after their needs have become critical and the project can be justified from the first year of operation. They are normally based on projected needs and justified over the economic life of the facilities.

Comment XVI-12:

HART will encourage high density housing and growth on an island already overtaxed for its water supply. (NB #3)

Response XVI-12:

Transportation projects by themselves do not have a major impact on the growth of a region or island such as Oahu. Economic conditions such as jobs and various growth related public policies determine the growth of an area. Oahu's water supply should not be affected with or without HART.

Comment XVI-13:

The spiralling increase in cost to operate a car will act as a deterrent to purchasing cars. This should greatly reduce the number of cars from those projected in the EIS. (NB #3)

Response XVI-13:

Out-of-pocket costs of owning and operating an automobile will certainly influence future travel demands. Non-essential trips will be more susceptible to costs than essential trips such as work trips which occur during the critical peak periods. The increased cost of owning and operating cars will be, to some degree, offset by smaller, less costly and more fuel efficient cars in the future which may not result in drastic reduction in travel demands.

Comment XVI-14:

We believe there are major problems with the Environmental Impact Statement for the Honolulu Area Rapid Transit system. A recent study of the EIS by the Transportation Study Committee of the Council of Presidents of Honolulu concludes that the EIS used outdated population projections and failed to take into consideration the expected drop in automobile usage due to rising gas prices and people's desire to conserve energy. Consequently, the volume of automobile traffic that HART's proponents claim will clog Honolulu's streets and justify the system will not occur. (Hickson & Arno)

Response XVI-14:

The EIS contains results based on population and travel forecasts which were officially conducted under and endorsed by the joint City-State planning process. (See Response X-4 (b)) It should be pointed out that rising gas prices and people's desire to conserve energy could lead to a greatly increased demand for transit service as evidenced throughout the country during the past year.

Comment XVI-15:

Growing opposition to the fixed guideway system based on its many disadvantages was reflected in the testimony at a City Council public hearing on October 16, 1979, which was more than two to one against the guideway. For this and other reasons, we believe that the conclusions of the EIS should be rejected and support should be given to an articulated bus system. (Hickson & Arno)

Response XVI-15:

Comment is noted.

Comment XVI-16:

The E.I.S. does not come to any complete summarized conclusion, but instead, provides mainly a shopping list of generalities of "effects". Only two items out of twenty give scientific conclusions: they are B.1. and B.2. (Hanson)

Response XVI-16:

Comment is noted.

Comment XVI-17:

Only 100 pages out of 300 (approx.) deal with the environmental impact of HART, thereby requiring the non-professionals, who comprise more than half of the recipients of the Draft E.I.S. to wade through data which is unnecessary to a review of the E.I.S. In other words, the E.I.S. is not focused on its subject. That is not to say that the other material is uninteresting or irrelevant to those of use who are professional planners with 30 or 40 years experience. But it does mean that the relevant Officials, on whose judgement you are relying for an important decision, cannot adequately comment on this subject matter which is the environmental impact of an elevated guideway on the urban area of Honolulu. (Hanson)

Response XVI-17:

Comment is noted. The EIS is prepared in accordance with appropriate Federal and State regulations.

Comment XVI-18:

Also of basic importance is that the data used in the HART proposal is out-of-date and incomplete. This has led to excessively high estimates of future "trip" usages, of projected automobile trips, of peak volume trips, and of energy-saving of costs per capita to construct, maintain, subsidize and to sustain such an inflexible last-resort system. (Hanson)

Response XVI-18:

Comments are noted. (See Response III-1)

Comment XVI-19:

A renowned senior vice-president for research of Hawaii's First Hawaiian Bank has referred to these discrepancies in a recent speech at a City Transportation conference.

In summary, the E.I.S. on HART does not, in my opinion, adequately or clearly attack the related problems of housing, jobs, and public transportation in relation to the environment. Where the E.I.S. provides scientific data, its conclusions mitigate against HART. Where the E.I.S. hints at conclusions as in housing density, beach pollution, in the dividing of communities by the elevated guideway, visual impact, up-zoning, relocation, and comprehensive development of the urban area, its statements appear, to begrudgingly mitigate against HART, but the conclusions are hesitant, quibbling and indecisive -- suggesting that a great deal more homework is needed for the final E.I.S. Where mis-statements are made, they should be corrected; where there are omissions, the gaps should be filled; where technical data is unnecessary, it should be eliminated. An E.I.S. of about 150 pages or less would be adequate. Where new alternatives to the proposed project are proposed by the public, they should be included in the E.I.S.; or to state my comments succinctly, the draft E.I.S. requires a more scientific professional analysis, written in such a way that public officials and citizens can understand and can properly advise you and the new Administrator of UMTA on this project proposal. (Hanson)

Response XVI-19:

Comment is noted.

Comment XVI-20:

I am strongly opposed to a fixed guideway rapid transit system for Hawaii. I feel that expanded bus service and utilization of available roadways is more flexible and much more appropriate for Hawaii. Thank you for your consideration. (Brown)

Response XVI-20:

Comment is noted.

Comment XVI-21:

It is conceivable that "slow-ways" (for mopeds, bicycles, electric carts, etc) would reduce demand for either a fixed guideway or all-bus transit system. Would public expenditures for off-road and grade-separated "slow-ways" between McCully and Kalihi be a cost-effective investment to relieve peak-period demand and reduce operating subsidies for either HART or an all-bus system?

If "slow-ways" are a cost-effective investment, then where should they be built and how could they be funded? (LOL)

Response XVI-21:

Implementation of "slow-ways" should certainly encourage greater use of mopeds, bicycles, etc., but whether their increase in use could relieve peak period demand for additional transportation capacity would depend on the level of increase. One must remember that not everyone is capable of riding mopeds or bicycles and furthermore, they do not lend themselves to certain kinds and lengths of trips.

Comment XVI-22:

Will any of the following measures be suggested by the Department of Transportation Services for adoption by the Honolulu City Council to encourage use of a mass transit system?

(a) imposing a total moratorium on construction of new public parking structures in downtown Honolulu?

(b) imposing higher parking meter fees in downtown Honolulu?

(c) imposing higher fuel taxes?

(d) reserving road lanes now used by cars exclusively for "slow-ways" and/or pedestrian malls (and prohibiting use by cars)?

(e) allowing high density business and/or housing development around transit terminal (as part of Development Plan Maps)?

(f) subsidizing transit operations so that fares will be less than cost?

(g) any other suggested measures. (LOL)

Response XVI-22:

Any and all of these measures, if found to be feasible based on comprehensive study, and not in conflict with existing policies, would be suggested by the Department.

Comment XVI-23:

What is the 1978 figure for motor vehicle and other vehicles? (EQC)

Response XVI-23:

The 1978 motor vehicle registration is 433,000 and for other vehicles is 18,000. (See Section I.B.4)

Comment XVI-24:

The population and employment projections on this page do not reflect the series II-F projections. These figures should be corrected. How will there be an increase in employment in Waikiki (Table II-4) of 16,000 when Waikiki is rapidly approaching its planned densities? (EQC)

Response XVI-24:

Refer to Responses III-1 and III-3. A land use study on the impact areas around the proposed transit stations indicates that the potential supply of additional floor area around the proposed Waikiki Station is more than 3 million square feet of B-2 and Resort Commercial and 900,000 square feet of A-4 and Apartment District by the year 2000 (given current zoning). Employment projections are based upon this type of information as well as past employment growth rates for various sectors of the economy and other indicators of economic growth and change.

Comment XVI-25:

The Table on this page and that on page III-42 have the same title, but deal with different topics. The title of Table III-12 should be changed to aid the reader. (EQC)

Response XVI-25:

The titles have been clarified in the Final EIS.

Comment XVI-26:

Lands presently owned by the airport should read by the State. (EQC)

Response XVI-26:

This correction has been made in the Final EIS.

Comment XVI-27:

Will the detailed station impact study be a supplement to this EIS? (EQC)

Response XVI-27:

Reference is made to the indicated study which is "Land Use Study Around Rapid Transit Station", Task B, Summary Report by Belt, Collins & Associates, January 1979.

Copies of this report are available at the City Department of Transportation Services.

Comment XVI-28:

Has salt corrosion been given consideration in placing the shops and yards next to Keehi Lagoon? (EQC)

Response XVI-28:

Any facility or property adjacent to or near a body of salt water would be subject to corrosion. In final design, corrosion will certainly be considered.

Comment XVI-29:

a. It is not clear how the fixed guideway, especially the park and ride facility at Halawa will help discourage urban sprawl.

b. The list of necessary approvals (on page VII-3) is incomplete. Such permits as grading, special management area, noise, and Corps of Engineers dredge and fill, etc. need to be listed.

c. There is no summary of unresolved issues as required by the State EIS Regulations, Section 1:42, revised. (EQC)

Response XVI-29:

a. In the management of urban growth, reasonable mobility in and around urban areas if provided would discourage movements toward urban sprawl. Also, a healthy and viable downtown area would tend to keep businesses from moving to suburbs and also discourage urban sprawl. All of the above would be strengthened by the fixed guideway system and thus minimize the potential for urban sprawl.

b,c. Comments are noted; appropriate changes and additions have been made on these requirements.

Comment XVI-30:

Alternative Routes. We have noted in discussions with the Department of Transportation Services that the route selection through the community does not serve our community well. We further noted that the University of Hawaii has consistently noted that they do not wish a station stop in the quarry, yet we find little that mentions or acknowledges this objection.

We further find that the Date Street station to be currently not an acceptable location considering the proximity between the Waikiki station and the University station as currently proposed. We feel that further study should be made with the community on this issue: (NB #8 and State Representatives of District 12)

Response XVI-30:

Numerous alternative routes have been studied through this area and the proposed route and station locations were the ones selected by the community (the 3-M Council) as being the best in terms of service and the least disruptive to the community.

In the University of Hawaii Master Plan being prepared by the State the plan recognizes the rapid transit station location in the quarry.

Date Street Station is centrally located to serve the high density residential area of the community.

Comment XVI-31:

DEIS Format. The DEIS assumes a great deal of prior knowledge and, in a number of situation cites other studies that we are not familiar with, thus creating a situation that we cannot fully evaluate. Studies cited should be generally available to the public. (NB #8 and State Representatives of District 12)

Response XVI-31:

Comment is noted.

Comment XVI-32:

a. Plan Evaluation. What methods are being employed to evaluate the HART plans in relation to other agency plans that are being developed or have been developed, and how are community concerns being addressed given changing times and sentiments.

b. The question of whether or not we want this system or not has not been asked. Comment to this question has merely stated that we do not need this system. We would also like to point out that the 1979 legislature acted to place a June 30, 1980 lapsing date on all state funds for the fixed guideway system. (NB #8 and State Representatives of Disrict 12)

Response XVI-32:

a. All transportation planning is coordinated through the OMPO. The City's Department of Transportation Services and Department of General Planning are coordinating the transportation and land use planning. Community concerns are being addressed through Neighborhood Boards whose primary functions as established by the Revised City Charter is to provide citizen input in the planning process.

b. Comment is noted.

Comment XVI-33:

Other points that I would like to raise this evening regard traffic congestion, with regard to the format of the EIS, community development issue, plan evaluation, exactly how is this plan being evaluated with regard to changing plans and goals of other agencies, and community expression. (NB #8)

Response XVI-33:

(Comment is not clear as to what specific plans and goals are being referred to)

Comment XVI-34:

Social Impact. We find that assessment and proposed mitigation to potential short-term and long-term social impact to be inadequate.

The only area that is addressed is the issue of dislocation. An assessment of the social integrity of the community needs to be taken into account. We would want to know what are the social impact of creating a physical barrier between parts of the community? How would this guide-way impact the social interactions that take place now, and how would this guide-way create blocks to future social interactions? The DEIS addresses only the impact in terms of the physcial elements, the social aspects we feel are equally important. Would the guideway block the future development of our neighborhood? (NB #8 and State Representatives of District 12)

Response XVI-34:

The proposed rapid transit system will either be underground (in the downtown area) or elevated on widely spaced support columns placed in existing streets. Unlike a freeway which may require up to 100 feet of new right-of-way and allows no pedestrian access between the two sides, an elevated transit system such as the one proposed will not create a physical barrier between segments of the community. This type of system therefore, should have little or no effect on the social interactions that exist now, at least in terms of physical proximity and opportunities to communicate in the neighborhood. The physical characteristics of the fixed guideway as described should create no barrier to future social interactions or block the future development of neighborhoods.

The Final EIS, by addressing land use and urban development, noise, and visual impacts, displacement, accessibility of the system to the transit dependent, circulation impacts and economic benefits, does deal with the impacts on the human environment because these elements are the ones which affect how our neighborhoods look, how we move around and the general quality of life.

Comment XVI-35:

As a summary, we find that there are a number of questions relating to the system that are not fully addressed to our satisfaction, and we further find ourselves in a position unable to comment on items of serious consequence because of lack of information on the subject and lack of technical expertise. In short, we find ourselves in a situation that we cannot ask the questions because we don't know what to ask!

We would further like to note that we do not find serious support for this system in our community, in fact we mostly find opposition to this plan. (NB #8 and State Representatives of District 12)

Response XVI-35:

If there are specific questions that have not been fully addressed, the City DTS will be available to provide answers to them.

Comment XVI-36:

With respect to the proposed Kahala terminal, the discussion on the following points needs to be expanded:

a. The social impact on the surrounding community, e.g., crime rates, neighborhood stability. (NB #2)

Response XVI-36:

With the proposed 8-mile system for initial construction, the easterly terminus will be at the University Station and therefore the Kahala area will be outside the project limits.

Comment XVI-37:

How will the military be served?
How will the tourists be served? (L of WV)

Response XVI-37:

Military personnel and facilities will be served by the feeder bus system that terminates at the Keehi Lagoon Station.

Tourists will not be served in any special manner; rather they will have access to the Waikiki and Ala Moana Stations by feeder buses serving the Waikiki area.

Comment XVI-38:

We do, however, strongly oppcse the current planned location of the Downtown station.

The site for the construction of the station as currently planned stretch from Bethel Street to the Union Mall would bisect our Downtown and would put many of our merchants out of business.

The Environmental Impact report states that the mauka side of Hotel Street will cause "destruction or alteration of all or part of the property".

We would propose that the entire station be moved Ewa of Bethel Street. That would accomplish a number of things:

1. It would not affect the Fort Street Mall, hub of our retail community.

2. It would allow the future growth of high rise housing and office buildings to further the growth of Downtown.

3. It would provide a needed economic stimulus to Chinatown.

4. It would provide a focal point for the growth and renovation of the area that would be beneficial to the people that live and work in the area.

5. It would help to solve many of the problems currently associated with Hotel Street - bars, brothels, porno book stores, and probably organized crime.

We have been working hard in Downtown on the revitalization of the retail community. At making the Fort Street Mall a cheerful, clean, and safe people place. At providing an environment and reputation for the Downtown that Honolulu deserves.

The planned location of the station would do a disservice to our community. (C of DHM)

Response XVI-38:

Chinatown is a Historic District which is to be preserved including the structures along Hotel Street. Alternative station locations have been thoroughly studied and the proposed site was determined to be the least disruptive to the downtown area.

Comment XVI-39:

Over 200 cars are expected to be built for the system. How is the city and state prepared to address the potential spiraling increase in automobile use and energy consumption when voluntary measures fail and some of the conventional constraints on this growth are expected to be removed by the bus/rail system? (Blackman)

Response XVI-39:

One of the primary objectives to reduce the rate of increase in automobile population and energy consumption is to provide a highly attractive public transit system such as the proposed bus/rail system. A bus/rail system has been found to be much more effective in attracting additional transit riders than the conventional bus system; therefore, the City is proposing the bus/rail system to best meet this objective.

Comment XVI-40:

I conclude with some general comments and suggestions. Why not in the EIS document include an island-wide transportation goal statement and statement on the role of the fixed guideway in achievement of this overall goal? Include a statement of objectives in environmental terms to guide the choice of particular hardware configurations of the systems including support structures, cars, stations, landscaping and access routes. These statements would serve a similar purpose as the written, quote, development plans are to an overall urban growth for Oahu's community.

These statements are important since some of the renditions in structural designs were created many years ago and should be reviewed. There should be a mandate for designs to take advantage of modern construction techniques yielding a more visually attractive final product in less time and for less cost. Thank you very much. (Blackman)

Response XVI-40:

Comment is noted. (Statement of Goals and Objectives are contained in Chpater III of the EIS.)

Comment XVI-41:

- A large majority is against HART.
- A significant percent turned against HART when they learned that 80% of the system was elevated about 16 feet in the air. A common remark was "Oh my God!"
- Concern that the Oahu Transportation Study advised against any more elevated roadways on Oahu, and the Washington, D.C. E.I.S. states that the mass of the transit structure will add "clutter to the existing views", and will damage the environment. (forever, I might add.) (Hanson)

Response XVI-41:

Comments are noted.

Comment XVI-42:

- Many are stunned that HART will cost a total of 76¢ per ride while buses will cost only 68¢ in the year 1990 (1980 fixed prices); battery and trolley buses should cost even less; street cars also would cost less than a HART ride! (Hanson)

Response XVI-42:

Comment is noted.

Comment XVI-43:

In conclusion, HART would be the wrong priority at this time. For the same $1.5 billion it will cost to build HART, we could build 16,000 new housing units for the 80,000 local families who need new, moderate-cost homes. 16,000 housing units will create the same number of jobs for local construction workers. The finance for these 16,000 housing units will come from the same investors who will buy the Revenue Bonds and Treasury Bills to be issued by the City and the U.S. Government. The increased property taxes from these new homes would help pay for increased education, reduction in crime, etc. A subsidized HART, a money-loser, cannot do this. If we had pushed as hard for more housing as some are now pushing for HART, we would have been well on our way to solving the housing problem for the Hawaiian people. Let's build housing, improve education, reduce crime before we even consider HART. (Hanson)

Response XVI-43:

Comment is noted.

Comment XVI-44:

Some minor points: I believe security and vandalism is a factor to be considered in any public system in the future, the society being what it is today, so I would suggest that the City Council consider firm ordinances to deal with security and take the cost of security personnel into account on stations and on the trains. (Heston)

Response XIV-44:

Comments are noted.

Comment XVI-45:

The other thing I want to bring up is the destruction of property by vandals. Any of you who have ridden on our bus system lately must be aware of the fact that day by day our equipment is being utterly destroyed inside. Eventually the buses will become inoperable, and I can't see how possibly HART can get away from that problem. If anybody can convince me that in that six years it will take to build this thing that vandalism is going to be abolished in Hawaii, then I might take a different viewpoint. But I don't think that is going to happen. (Ellison)

Response XVI-45:

Comments are noted.

Comment XVI-46:

In conclusion, I would urge a much needed study on battery-operated, articulated buses. If America can send a man to the moon, surely we can find an alternative to the bus/rail proposal. (NB #9)

Response XVI-46:

Comment is noted.

Comment XVI-47:

You have your work cut out for you in preparing a final version of the EIS. Comments we have presented here concerning such things as contra-flow lanes, modern equipment, and higher gas prices, are not intended as a completely designed alternative that will definitely replace the need for a guideway. We are presenting the possibilities and expecting you to do the studies that will test these and other alternatives which we feel you have not adequately looked at. (LOL)

Response XVI-47:

All viable, long-range alternatives that can reasonably meet and attain the area's transportation objectives and policies have been considered as documented in Chapter III of the EIS.

Comment XVI-48:

One thing I would like to address, too, before I close, any of you ever hear of Morgantown, West Virginia? They made quite a nice investment up there, and then they tried to get another investment of $200 million to tear it down because nobody would ride it.

And I feel the same thing of what we are building up to now, that we are going to have another Morgantown, West Virginia, because the university students as well as I know them will not ride that. Thank you. (Preece)

Response XVI-48:

Comment is noted.

Comment XVI-49:

Now, as I see it, prices, rates, etc. are not going to go down. Inflation is here, as all experts in the market have agreed. So, why a huge steel and iron structure above the ground, that only a small percentage would ever use (and no doubt change their minds about in a short while)?--especially when they experience the time-wasting shift from train to cars or buses back and forth; then be charged for parking, walking to and from that parking space, etc. Well, I can just imagine all sorts of draw-backs that will take place. Disillusioned people - and we're all stuck with the thing. I can easily envision

1. Many strikes (costs & fares will have to rise)

2. Crime in those enclosed fast-moving trains, as in New York, where one is helpless and at the mercy of thieves, will take place, as sure as I'm standing here.

3. That ugly above-ground structure will mar the looks of the landscape, and we're always talking and reading about the large, massive buildings that are ruining our beloved Hawaii!

If the City and State are so hard up for money that necessary projects are abandoned, then why are we even talking about such a money-gulper? (J. Hanson)

Response XVI-49:

Comments are noted.

Comment XVI-50:

A small point: Being in the downtown area, I would suggest that Hotel Street be given the highest priority for excavation first so that the Chinatown rehabilitation can commence. This thing has been dragging on for years, as you know, and this will tend to delay it even further.

So if Hotel is given highest priority, then we can get things started down there. (Heston)

Response XVI-50:

Comment is noted.

Comment XVI-51:

Mr. Chairman and all the people present today, as you know, I was going to speak for the Waikiki residents as a transportation committeeman, but I have to speak as an individual, and I have to throw my speech away. That doesn't leave me with too much to say except that we are here tonight studying the ecological impact of this railroad, nothing to do with employment, nothing to do with money the city is going to make from it. They are going to lose $40 million. How are they going to make money?

This railroad is an absolute disaster to the city of Honolulu, and if you want to prove it, you just read this flyer that we have given you here tonight, and you read their pros and you read their cons and you realize that they embellish their pros and embellish their cons. And this thing would never be built if the city just believed their own publication. Thank you. (Rainey)

Response XVI-51:

Comments are noted.

Comment XVI-52:

The first thing I have in mind is the continuing pattern of cost overruns. In Washington they ran nine years in finishing this project. I don't know exactly what the picture financially is, but it was considerably higher than the original.

I could speak with a little more authority in San Francisco. It ran three times the original estimate, having lived in California. (Ellison)

Response XVI-52:

Comments are noted.

Comment XVI-53:

And, lastly, there has been sufficient testimony by others as to the undesirability of overhead view blocking, the increased noise level, and one thing that hasn't been brought out is the probability of crime, especially at night. You have all heard the story of New York, and now I understand BART is starting to have that problem too. So we can look forward to that thing happening here. (Ellison)

Response XVI-53:

Comments are noted.

Comment XVI-54:

In a more serious vein, from statistics I have read, if the present 1.1 passengers per auto during rush hours were increased to just two passengers per auto, there would be no need for any new transportation system in Honolulu. (NB #9)

Response XVI-54:

It is correct that if more car-pooling can be realized, this would reduce the number of cars on streets and highways. Many cities, including Honolulu, already have taken steps to encourage car-pooling through the use of TSM measures such as car-pool lanes and preferential parking. These measures have encouraged increased car-pooling and all levels of government are continuing to seek other measures to reduce auto trips, not only to alleviate congestion, but also to conserve energy. Even with the various measures taken, combined with the rapid increase in gas price, we are not aware of any city that has attained an auto occupancy rate of 2 persons per car.

Comment XVI-55:

PREFACE

The island's citizens and community groups will very soon be called upon to provide public input into the City's transportation plans. A public hearing on the ENVIRONMENTAL IMPACT STATEMENT (EIS) for the Honolulu Area Rapid Transit (HART) system is planned for late September or October. In addition, the City Council has scheduled a public hearing on September 19 on a Resolution of support of the system.

The City and its engineering consultants have issued a large number of technical reports on the City's transportation needs and plans since the middle 1960's. It is difficult for citizens to review these critically and to understand or evaluate their arguments justifying the HART system. The Council of Presidents has long felt that there is a need for a source of non-technical information summarizing this material, which the public could use in preparing to testify or comment on both the EIS and the HART proposal itself.

The COP's Transportation Study Committee (COPTSC) includes persons with varied professional experience in urban planning, economics, engineering and research. We have examined the draft EIS and the basic material underlying it and have extracted the material we think is most important for citizens to understand.

The Handbook includes the basic statistical material and projections used in development of the HART proposal; the transit alternatives considered; our criticisms of both HART and the EIS; and a discussion of what we call the "unconsidered alternative" (UA) and the impacts it would have as compared with those of HART.

We now have a new national Secretary of Transportation. The HART proposal has decisive implications for the City's future. Once built, it would alter the face of the island forever. We hope this Handbook, by stating the case on the "con" side as a counterweight to the many statements on the "pro" side already available or to be made in the process of the coming public hearings, will help the community make an informed decision on what kind of a mass transit system will be best for us all.

We express our deep appreciation to the Access to Government Project of the Social Science Research Institute of the University of Hawaii for their encouragement and valuable assistance in the publication of this Handbook. (COP - Hdbk. on HART)

Response XVI-55:

Comments are noted.

Comment XVI-56:

S U M M A R Y

Improved and expanded mass transit is a vital necessity for energy conservation. But the HART system can only attract its projected patronage -- some 750,000 transit passenger trips a day compared with 225,000 now -- if gas shortages and climbing costs induce many people considerably to reduce the use of their cars. When and if they do, the projected 40% increase in automobile traffic which HART's advocates argue would choke our streets and highways and thus require HART, will not take place. In that case there will be room to give priority on existing streets and highways to modern mass transit vehicles, including where appropriate electric trolley buses, to meet our transportation requirements without building the billion-dollar HART system. This is the "unconsidered alternative". (COP - Hdbk. on HART)

Response XVI-56:

The projected patronage given in passenger trips includes transfers, whereby a passenger making one transfer is counted as two passenger trips. A more appropriate unit to use is the number of persons using transit irrespective of the number of transfers. Therefore, projected patronage should be given in daily passengers or persons not daily passenger trips. In this case, the 750,000 daily passenger trips would translate to some 425,000 daily passenger or persons projected to use transit in 1995.

Relative to reduction in auto usage, due to gas shortages and climbing fuel costs, and the "unconsidered alternative", see Response XVI-67.

Comment XVI-57:

THE EIS: ENVIRONMENTAL IMPACT STATEMENT

1. Does not adequately and objectively consider the one alternative system of mass transit most nearly approaching rail in speed and carrying capacity -- a system using express articulated buses or electric trolleys having priority on reserved lanes of existing streets and highways improved to expedite the flow of transit vehicles.

2. Does not compare the costs and social, economic, and physical impacts of such a system -- the "unconsidered alternative" -- with those of the HART system proposed.

3. Is based on out-of-date projections of population, employment, and land use patterns leading to faulty, inconsistent, and excessively high estimates of future transportation trip volumes.

4. Does not take into account the effects of expected future cut-backs in gasoline supplies on automobile usage, which would materially reduce projected automobile trips and traffic volumes.

5. Does not show the guideway achieving significant savings in energy usage nor providing sufficient overall benefits to the community to outweigh its costs or the admitted adverse impacts it would have on the community.

6. Is inconsistent in its analysis of how the guideway would relate to the City's development goals and plans, with particular reference to the lower densities being set in the development plans while, to increase guideway patronage, the EIS calls for higher density development along the route and in the station impact areas.

7. Makes intelligent citizen review of the EIS's statement of the impacts of HART difficult by not providing many basic kinds of current data, such as 1) the number of automobiles now entering the central city area, daily and in peak hours; 2) the number of passengers therein; 3) number of buses and bus passengers now entering central city daily and in peak hours; 4) number of persons now employed in central city and in corridor, by mode of journey to work; and many other similar facts. (COP - Hdbk. on HART)

Response XVI-57:

1. The "unconsidered alternative" described as "a system using express articulated buses or electric trolleys" would be essentially the same as the TSM/Expanded Bus or the DPM/Bus alternative considered in the EIS. See Section III.A&B of the EIS and Response XVI-67.

2. The TSM/Expanded Bus alternative which is essentially the same as the "unconsidered alternative" is compared to the proposed HART system in terms of costs and social, economic, and physical impacts. See Section III.C of the EIS.

3. See Response XVI-67.

4. See Responses XI-11 and XVI-67.

5. Energy savings, big or small, is one of many benefits expected to be derived from the proposed HART system but is not the sole justification for implementing or not implementing the system. Also see Section V.D.3 relative to economic benefits.

6. See Response IX-3 and 4.

7. See Figures II-8, II-9 and Table II-4 of the EIS; other data is currently unavailable.

Comment XVI-58:

THE UNCONSIDERED ALTERNATIVE

- Would immediately begin a program to improve mass transit now by engineering existing streets and highways to maximize the movement of people and providing more, larger and more efficient transit vehicles, including express articulated electric trolley-buses, which have greater passenger capacity, accelerate and decelerate more rapidly, and are quieter and pollution-free.

- Would not require a long period (six to eight years) of disruptive construction before its benefits could begin to be enjoyed.

- Would provide better service, with fewer transfers, to all parts of the island than if buses were used primarily as feeders to a rail line.

- Would provide greater energy savings than a rail system and would not require the large energy output needed to construct the system.

- Would not be subject to major tie-ups, as transit vehicles could move around a bus or trolley which broke down on a street or highway.

- Would permit flexible routing to meet changing transit needs and could evolve incrementally into an island-wide system providing accessible, convenient and fast public transportation for all.

- Would serve the changing patterns of population growth rather than distorting them by forcing development to take place in concentrated station areas or where needed to provide customers for the fixed guideway.

- Would discourage land speculation as the transit load could be dispersed over several routes instead of carried on the guideway only, and the routes could be changed as appropriate to meet new conditions.

- Would not disrupt or damage existing neighborhoods.

- Would not interfere with the island people's often-expressed wishes to retain Honolulu's human scale and low-key character.

- Would discourage optional and unnecessary automobile traffic on streets and highways by giving transit vehicles priority in reserved lanes, at intersections, etc.

- Would save more energy than a rail system and would start doing so with each increment of improvement instead of having to wait till the entire system is completed.

- Would provide for the island's present and future transit needs, at least till the year 2000, at far less capital cost than a rail system.

- Would provide more local contractors and construction employment in the carrying out of a continuous series of small or moderate-sized construction projects -- overpasses, street widenings, new highway connections, erecting poles and wires for trolleys, etc. -- than one enormous construction contract, awardable only to very large companies, could provide.

- Would not create a "boom-and-bust" impact on the island's economy, but rather would be a steady, continuing, predictable segment of the annual construction and employment total.

- Would substitute labor for capital investment, with the added advantage that having an operator in each vehicle rather than for a whole train would provide greater security to passengers in case of mechanical breakdown, accident, crime or illness.

- Would, even with overhead wires on some routes, be far less visually offensive than massive elevated structures and ramps, and would produce only minimum obstruction to views. (COP - Hdbk. on HART)

Response XVI-58:

Comments are noted.

Comment XVI-59:

THE HART FIXED GUIDEWAY SYSTEM

1. Would disrupt the island's life during a six to eight year construction period before it could be used at all.

2. Would serve only a small portion of the island's transportation needs at a disproportionate capital and operating cost to the entire population.

3. Would be subject to major tie-ups of passenger traffic in case of accidents or vehicle breakdown, since only one track would be available in each direction and track clearance would be difficult on elevated structures or in subway.

4. Would require a great expenditure of energy for construction to provide the least energy saving of all forms of mass transit.

5. Would commit the island to a rigid and irreversible transportation route which could never be changed to meet future conditions not now possible to predict nor to adjust to patronage volumes below those needed to provide the anticipated revenues.

6. Would lead to excessive population growth in already congested areas of the island, in contrast with the expressed desires of their residents for lower densities in the future.

7. Would lead -- indeed, has ready led -- to land speculation along the guideway route and around planned station areas, with resulting inflation of land prices benefiting large land-owners and developers at the expense of the rest of the population.

8. Would damage, if not destroy, established neighborhoods which would be bisected by its viaducts and ramps and whose character would be permanently altered by its intrusion and the high-density development it would attract.

9. Would defeat the community's efforts to retain as much as possible of the City's human-scaled, open-space character and the urban design goals of the new development plans, with their emphasis on views, by encouraging massed high-density and high-rise construction near the guideway to provide the needed ridership.

10. Would, to the extent that automobile usage on streets and highways is reduced as former automobile drivers use the transit system, encourage additional automobile usage induced by the lower traffic volumes remaining on the streets and highways.

11. Would require far greater expenditure of energy for construction, station maintenance, and vehicle propulsion than any other form of mass transit and would save only a small amount of energy from reduced gasoline consumption.

12. Would serve a relatively small portion of the island's total transportation needs, at a heavy and disproportionate cost which would have to be borne by the island's entire population through increased taxes.

13. Would lead to a massive and sudden infusion of money and construction activity which would distort the local economy, create more inflation, and probably necessitate importation of mainland labor and technicians, followed after completion of the system by widespread unemployment in the island's construction trades.

14. Would, in order to save relatively small amounts of money in operating costs, substitute one or two train employees for four to ten bus or trolley operators, with costs of maintaining track and stations and amortizing high capital costs resulting in no overall cost savings but, at best, less employment.

15. Would damage and in some locations destroy views as a result of visually obtrusive elevated structures and ramps.

16. Would be a permanent, heavy tax burden on the island's people without providing commensurate benefits. (COP - Hdbk. on HART)

Response XVI-59:

1. See Section V.E of the EIS.

2. See Section IV.A.4, 6 and 7 of the EIS.

3. See Response I-10.

4. See Section V.A.4 of the EIS for estimated construction energy and Tables III-9 and 11 of the EIS for comparison of energy savings of various transit alternatives.

5. See Response II-31.

6. See Response IX-13. Also, this comment contradicts Comment XVI-74.

7. Comment is noted.

8. See Section V.C.4 of the EIS.

9. See Response IX-24.

10. Comment is noted.

11. Same as Comment 4 above.

12. Same as Comment 2 above.

13. See Response IV-13.

14. See Section III.C of the EIS.

15. See Section V.B.2 of the EIS.

16. See Sections IV.A.7 and V.D.3 and 4.

Comment XVI-60:

I. INTRODUCTION

From its beginnings in the early '60's, the HART proposal was based on one key assumption -- that with ever-growing population, employment, car ownership, and the demand for increased mobility, the island's traffic volumes would soon -- as early as 1985 -- exceed the capacity of the city's streets and highways and result in intolerable traffic congestion. Projections of ever-increasing "trips" per person per day resulted in a total volume of trips doubling and tripling that of the 1960's.

These projections were similar to those being made in other cities at the time, and lead, as elsewhere, to the conclusion that only rail transit could meet projected needs, creating what one transportation economist calls the "statistical panic needed by advocates of rail rapid transit."

"Establishing the superiority of rail rapid transit", he points out, "is then a mere formality. A limited set of alternatives, most with rather glaring weaknesses, are contrasted with a rail plan. Invariably, the latter emerges as the preferred system".

The assumption that population, jobs, and automobile traffic would continue to expand at the rates projected was typical of the times. By the mid-'70's, however, it was becoming increasingly recognized that there were limits to growth -- on a national and even international scale but, more specifically, on the island of Oahu. Current projections of population and jobs are materially lower than those of the '60's.

The most compelling change, however, is the limitations on automobile usage brought about by the constraints of "the energy situation". All realistic transportation planning must from now on take this into consideration. Advocates of transit point to the resulting increased need for more transit facilities, and they are right. But mass transit does not necessarily mean rail transit -- in an area with a projected year 2000 population of well under a million, there may be better and cheaper alternatives.

What has not been taken into account by HART advocates is that the smaller future population and employment increases now expected, together with the reduction in the projected increase in the number of automobile trips which every indication shows will result from coming cut-backs in oil supplies, will reduce the volumes of future traffic on the streets from those projected in the 1960's and may delay, for at least twenty years, if not indefinitely, the need for rail transit, if indeed there ever will be a need for such a system on this island.

The national energy program indicates that with decreasing availability of oil, motorists will have to turn increasingly to mass transit. This is already happening in many mainland cities, where both bus and rail transit systems are experiencing rapidly increasing patronage, at least as long as the gasoline lines remain.

In Honolulu, the same thing happened in 1974 and though the rate of increase has leveled off, bus patronage is still going up. With any reduction in gas supplies, Honolulu's mass transit facilities will need rapid improvement. With less than 300 buses in operation (84 more are on order) and something like 350,000 passenger automobiles on the streets, any significant shift from automobiles to mass transit would overload the system -- not in 1990 but a good deal sooner.

The current political impasse between advocates of the guideway and those favoring the H-3 trans-Koolau highway has long been blocking action to solve our transportation problems. With fuel conservation requiring less, not more, automobile usage, building H-3 is out of order. This is also true, we feel, of committing a billion dollars to construction of a rail system which, at best, would not be operative for from seven to ten years and would require vast out-pourings of energy in its construction to make meager, if any, energy savings in its operation.

The Council of Presidents feels that it is time for a realistic and cost-effective program of mass transit improvements along the lines we call the "unconsidered alternative". Substituting for the rival guideway and H-3 proposals, we feel that such a program would meet the following objectives:

1) It would utilize available local and Federal funds to provide, in the light of impending energy developments, the most useful transit improvements for the most people in the shortest possible time.

2) It would make these improvements incrementally to meet critical needs first but according to a comprehensive long-range plan which, when completed, would conserve energy and at the same time give island residents better and more conveniently accessible transit facilities at reasonable cost.

3) It would lead toward full implementation of the "unconsidered alternative," which would meet our transit needs efficiently at least to the end of the century and quite possibly make building of a rail system unnecessary even then.

There are many people who fear that the present transportation impasse between City and State may result in the island's losing out entirely on both sources of Federal funds -- mass transit as well as highway. This is not necessary if we resolve the conflict by going to Washington with an agreed-upon comprehensive transit improvement plan along the lines suggested above. Highway funds could be legitimately spent for highway improvements which facilitate the movement of transit vehicles upon them. In fact, the island might well get more money sooner for a series of construction projects designed to improve transit facilities year-by-year than if it goes on with the present "all-or-nothing" stand-off between two questionable projects, neither of which merits approval. (COP - Hdbk. on HART)

Response XVI-60:

Comments are noted. Also see Response XVI-67.

Comment XVI-61:

II. THE HART SYSTEM

A. Background and Rationale for HART

The proposed HART system is essentially composed of a grade-separated rail trunk line -- partly underground, partly elevated, and partly at ground level -- in the island's central "corridor" (all or part of the twenty-two mile length between Pearl City and Hawaii Kai), and supplemented by a feeder bus system designed for transfers to the trunk line. Studies of what kind of long-range mass transit system the City should undertake arose out of the increasing realization that existing streets and highways could not indefinitely handle growing automobile traffic, that building more freeways was both undesirable and in the end would not solve the problem, and that improved and augmented mass transit was necessary.

A series of studies and reports made between 1962 and 1976 projected future traffic volumes, considered various transit concepts, and found that nothing short of an automated, grade-separated rail "guideway" would handle the load. Various "evaluations" sustained the original decision. Though there have been some revisions in the statistical data used to justify the HART concept, there have been no basic changes in the rationale on which its need was based.

The 1967 "Oahu Transportation Study" set up equations and models to estimate future "trip generation", predictions of how many of these trips would be made by car, bus, rapid transit, etc., and estimated automobile traffic volumes at key "screen-lines" for 1985. Later reports carried these projections onward to 1995 under various different transit concepts.

The original projections in the 1960's used then current patterns of land use, jobs, housing, shopping, etc. and modified them, according to trends and plans then existent, to make the 1985 projections. The extent to which these models and projections have been brought up-to-date and modified to make the 1995 projections underlying HART or the EIS is not clear.

The essential rationale of the HART proposal can be stated as follows:

1) By 1995, due to increasing population and employment and "demands for higher mobility", the island's daily "trips" will have increased by 50% over the current figure.

2) Existing streets, highways, and freeways will not long be able to carry the increasing traffic volume -- especially in peak hours -- even with expanded and improved bus system, so that we must depend increasingly on rail mass transit.

3) Only a high-speed rail transit system on its own entirely separate guideway could handle the volume of transit needed by 1995 and make room on streets and highways for the growing automobile traffic projected.

4) Therefore, we must build HART in the 1980's so as to be ready when the trip volumes exceed the capacity of the street system, which will be no later than 1990. (COP - Hdbk. on HART)

Response XVI-61:

1) Comment is noted.

2) The underlying rationale for the HART proposal or any other form of transportation improvement is that "the long range transportation needs can only be satisfied by providing additional transportation capacity over that existing today." See Section III.B.1 of the EIS.

3) As stated in 2) above, additional transportation capacity would be needed to meet the long-range travel needs of urban Honolulu. This can be met by various forms of transportation systems including highways and/or various types of mass transit which can provide added capacity to that existing today.

4) In Section III.B.1.b, it states that the highway network with the TSM/Expanded bus system would approach capacity as early as 1985 and exceeding capacity in 1990 using Level of Service E as the yardstick. It goes on further to state the following: "Thus, the TSM/Expanded bus system would fall short of meeting 1995 travel demands and hence would not be capable of meeting the long-range transportation needs of Honolulu."

From the above conclusion, it was determined that added transportation capacity can best be provided with a transit system utilizing its own exclusive grade-separated right-of-way. Thus, a series of grade-separated alternative transit systems were studied from which the HART system was determined to be the best for Honolulu.

Comment XVI-62:

B. Do We Need HART?

Many have questioned the guideway proposal because of its undesirable physical impact on the City, its high capital costs, the expected annual deficits, and what they considered to be exaggerated estimates of its patronage. Relatively little attention has been paid to the basic premise on which its need was alleged to exist, the sharp and apparently endlessly continuing increase in the amount of private automobile usage on our streets and highways. Indeed, there was little reason prior to 1973 to expect that the trends in increased car ownership per capita or per household or automobile usage generally, would level off to any great extent.

But OPEC changed all that. Quite apart from difficulties in obtaining gasoline, its ever-increasing price, the argument about whether shortages really are here to stay, or the frustrations of having our national mobility dependent upon the political and economic whims of the oil-producing nations, the monetary drain upon the national balance of payments alone dictates that there must in the coming decade be a significant reduction in the amount of oil imported.

Though our island has not in 1979 as yet experienced the gas lines of 1974, any rational analysis of our future situation, isolated as we are from ready access to other existing forms of energy (coal, natural gas, shale, etc.) should warn us that we cannot hope for any significant increase in the amount of gasoline now available. The 22% increase by 1995 in projected daily trips per capita estimated by transit planners, plus a 23% increase in population, would mean a total 50% increase in the island's daily trips by that year. Even with a daily transit patronage greatly increased -- from about 180,000 person trips now to 425,000 with the guideway in 1995 -- there would still be a 42% increase in projected automobile trips.

1. Since the island already has a preponderance of small, fuel-efficient cars, not much reduction in fuel demand could be hoped for from a shift to smaller cars.

2. Can we, in the face of the expected future energy shortage, expect so large an increase in the availability of highway fuel for private automobile use?

3. Should we not first consider, as a first step in planning our transportation future, whether the 1995 trip projections are realistic? (COP - Hdbk. on HART)

Response XVI-62:

1. It is the government's policy to continue to require auto manufacturers to meet higher energy efficiencies in the future. The average mpg of Oahu's auto population will and must continue to improve with newer and more fuel efficient cars.

2. With the required improvements in auto energy efficiency, future fuel consumptions, if they should increase, would increase at a decreasing rate from past trends.

3. The trip data used in the planning studies are the latest available data which were officially developed under the transportation planning process recognized and agreed to by the Federal, State and City governments. Also see Response XVI-67.

Comment XVI-63:

C. Are All These Trips Necessary?

The assumption of ever-increasing numbers of person trips per day came out of the thinking of the early '60's, when satisfaction of the public's "demand for increasing mobility" was a basic objective of transportation planning. This has become an anachronistic concept. It is doubtful in the light of the energy situation whether from now on we can, or even should, maintain even our present level of mobility as evidenced by our present ratio of trips per capita of approximately 3.06. Energy conservation may well require that this be reduced, but certainly not increased to 3.74 as projected for 1995 by the guideway's planners.

At the present ratio the 1995 projected population of 886,000 would be taking only 2,658,000 trips a day, 20% less than the 3,308,000 projected by HART's planners. This would still be 20% more than now. Each 0.1 reduction in trips per capita per day which conservation efforts or sheer unavailability of fuel might achieve would mean a reduction in daily trips of 89,000. A ratio of 2.7 trips per day -- about 12% less than the current 3.06 -- would reduce total daily trips to 2,392,000, only about 9% more than the present 2,200,000.

This would mean a reduction in the projected rate of increase of trips and the resulting traffic build-up on streets and highways which is the heart of the argument for a separate rail transit system by 1990. At even the current level of daily trips per capita, there would be considerably less automobile traffic in 1995 than projected in the EIS. In that case the "unconsidered alternative" and even the closest one considered, the "TSM/ Expanded Bus" alternative, would have room to operate in its own lanes without the peak hour jamming of the remaining traffic lanes projected to result from a total daily volume of over 3,300,000 trips.

Screen-line vehicle volume to capacity (V/C) ratios were projected in the EIS to exceed 100% at key points (under stated assumptions as to levels of service) by 1990 if the guideway were not built. With 2,658,000 total daily trips instead of 3,300,000, even with no increases in carpooling or average car occupancy, the V/C ratio would drop back to roughly 85% in 1990. Using the approximate 8% to 10% increase per five-year period indicated by the EIS, the V/C ratio would not exceed 100% until after the year 2000. With 10% less trips (2.7 per capita per day), the V/C ratio would not reach 100% until approximately 2005. Car pooling or even a modest increase in average persons per car would extend this period even farther into the future.

The need for energy conservation would seem to call for discouraging unnecessary or even optional automobile usage rather than inducing more automobile trips by facilitiating "increasing mobility". (COP - Hdbk. on HART)

Response XVI-63:

Energy conservation policies could certainly lead to reductions in trips with non-work trips being affected the most. Work trips which make up most of the peak hour trips will be the least affected and, therefore, the existing traffic congestion should continue to be with us. It should also be noted that heavy traffic congestion leads to fuel wastage.

Improved transit service is normally provided to increase transit usage which in turn requires greater operating efficiency of the system to maintain operating cost at a reasonable level. Transit systems with high ridership volume can operate more efficiently if the vehicles can operate unrestricted on their own exclusive, grade-separated rights-of-way. Transit vehicles operating on surface streets are restricted in speed not only due to conflicts with other vehicles and pedestrians but for safety reasons as well. Thus, any future restrictions in energy usage -- either shortages of supply or higher prices -- should tend to increase dependency and usage of transit. In summary, transit investments can be justified from either or both standpoints -- need for additional transportation capcity and/or to achieve greater efficiency in operations.

Comment XVI-64:

D. HART and Energy

A study made by the respected U.S. Congressional Budget Office states: "Of all the commonly held notions about energy efficiency, probably the most misguided are those concerning rail rapid transit...under typical conditions new rail rapid transit systems actually waste energy rather than save it."

Many of the familiar criticisms of HART -- its great capital costs, expected annual operating deficits, environmental disruption during construction, questionable patronage projections, etc., -- would be of much less importance if building it led to significant energy savings. Many otherwise skeptical citizens might be more willing to approve the system, at whatever cost, if they could be sure that it would do so.

The EIS projects 1995 daily energy savings as shown below, in comparison to the "baseline" bus alternative, defined elsewhere in this Handbook. It estimates these savings "as the result of the projected number of motorists diverted to transit from the total number of trips estimated to be taken without the rapid transit."

Daily automobile miles saved:	1,228,000
Gasoline saved:	- 45,000 gallons
Additional fuel for buses	+ 5,000 gallons
Fuel to operate fixed guideway system	+ 25,000 gallons
Net savings	- 15,000 gallons

The total annual savings are estimated as between 4 and 5 million gallons -- which is less than 2% of the island's 1978 highway fuel consumption of 251,583,000 gallons.

It is not known whether any allowance was made in these EIS estimates for amortization, over the expected life of the facility, of the energy required to construct it. The study made by the U.S. Congressional Budget Office found that when all costs of operating a rail transit system are calculated, including station operation and system construction, such systems are the least energy-efficient of all forms of mass transit and under some circumstances, indeed, they represent a net energy loss on an over-all basis.

The Report, for example, concluded that in terms of vehicle propulsion energy alone, buses used only 73% as much energy per passenger mile as modern heavy rail transit vehicles; that, computed on a door-to-door basis with allowance for additional miles traveled because of transfers from one mode to another and including the energy needed to build and operate roads, track and equipment, buses used only 47% as much energy per passenger mile as rail transit; and that when allowance was made for additional

passengers attracted to a mode by new transport programs, which the EIS specifically states it did not include in its energy computations, rail systems can actually involve a net loss of energy.

The EIS discusses the question of generation of electric power for the guideway on p. V-4. There is no reason to assume that electric trolleys would use any more energy than the rail system. Nor do buses use more oil or other energy source (converted to gasoline) than either electric vehicle form (converted to electricity). The significant energy saving is between individual automobiles and mass transit as such.

It should be noted that the energy savings projected in the EIS are in comparison with the "baseline" alternative, which it was projected would attract 188,000 daily passengers in 1995, and not with the energy usage of the "TSM/Expanded Bus" system. The Alt, An. projected that the rapid transit system could generate 150 million passengers a year (497,000 a day), compared with a maximum of 110 million (364,000 a day) for the TSM alternative. Since current daily bus passenger trips, including free transfers, free senior citizen trips, and reduced-fare school children, are only about 225,000, even the TSM alternative would have to assume a significant number of former automobile users.

Thus the TSM/Expanded Bus alternative would already involve a considerable reduction in automobile fuel consumption over the baseline system. (The Congressional Report calculates that buses use only 24% of the energy per passenger mile than a single-occupant automobile does). Since experience in many cities has shown that a large proportion of the passengers attracted to rail transit formerly used buses, would not comparison of HART system energy usage with the TSM/Expanded Bus alternative (to say nothing of the "unconsidered alternative") be necessary to get a more meaningful estimate of the energy the guideway system might actually save? (COP - Hdbk. on HART)

Response XVI-64:

Table III-11 of the EIS provides a comparison of energy savings between the TSM/Expanded bus and HART systems using the "baseline bus system" as the common starting point for the evaluation. As stated in the above comment, the significant energy savings is between the automobiles and mass transit, and the system that can divert the most motorists to transit would effect the greater energy savings. The greater energy savings reflected by the HART system is attributable to its greater attractiveness to capture more transit riders than the TSM/Expanded Bus system.

Comment XVI-65:

E. The Case for Procrastination

In view of the unpredictable consequences of the new energy situation, commitment at this time to building a rail transit system in the 1980's is premature at best. As indicated above, the trip projections on which the need for the guideway by 1990 was justified need to be re-studied in the light of present planning projections and the impact of gasoline shortages. The use of car pooling and increased bus transit patronage with an augmented and improved bus system -- the "TSM/Expanded" bus system and its further evolution into the "unconsidered alternative" -- need to be evaluated in the light of reduced trip projections.

Furthermore, a detailed and full-scale analysis -- not just a dismissal based on an alternative's alleged inability to meet projected 1990 requirements -- should be made of the "unconsidered alternative" to see whether it could not significantly increase the capacity and efficiency of Honolulu's present bus transit system at a fraction of the cost and environmental disruption the HART system would entail, and do so more quickly and without causing the intolerable traffic congestion feared by HART's planners.

The EIS, based on the projections of the '60's, is not adequate in the conditions of the '80's. By the mid-'80's it will be possible to re-evaluate the various transit alternatives already studied, as well as those newly emerging, in the light of actual conditions at that time. The decision on HART should wait at least until then. (COP - Hdbk. on HART)

Response XVI-65:

See Response XVI-67.

It is recognized that in any planning for the future, difficulties exist in predicting not only long-term conditions but near-term conditions as well. The same problems would exist even in the future as one must always predict future conditions in the planning process. In other words, this problem (or level of uncertainty) of predicting the future will always exist, and therefore, should not be a reason for not making rational long-range decisions.

Comment XVI-66:

III. ALTERNATIVES TO HART

A. Transit Alternatives Considered

In the Alternate Analysis it is claimed that "all forms of transit systems were analyzed". Actually, many alternatives were reviewed briefly but only five were given detailed study:

1) A "baseline" or "no-build" bus system
2) A "TSM/expanded" bus system
3) An elevated four-lane busway
4) A "light rail" system
5) A "fixed guideway" system

In addition, Waterborne systems utilizing hydrofoils and canal boats were briefly considered and dismissed as not being able to reach major inland employment and residential areas without bus connections. An Automatic Rapid Transit System (ART) -- a 33-mile elevated system using small, automated cars -- was found to be essentially a more expensive version of a fixed guideway, though of comparable capacity. A Downtown People Mover (DPM) -- an elevated loop or two-way shuttle between bus terminals Ewa and Diamond Head of the CBD -- was rejected because it was concluded that street capacities on the connecting bus lines would be exceeded by 1990, even though a DPM might permit postponement of the need for a new line-haul transit system for a decade.

A summary of the alternatives considered is given in the EIS, pp. vii and viii. A Trolley Bus system is described and while trolley buses are conceded to have the advantages of less noise and air pollution than Diesel buses as well as better hill-climbing abilities, and while articulated buses are recognized to exist, the use of trolleys in Central Honolulu was considered inappropriate and such a system was said to have no advantages over the TSM/expanded bus system in terms of street capacity and to be more expensive and less flexible, and was therefore dismissed.

The five systems given serious consideration in the EIS and the previous City and consultant reports can be briefly described as follows:

Baseline Bus

This system serves as the basis for comparison in assessing and comparing alternatives to the Fixed Guideway. It is essentially the present bus system but with improved services on existing streets and highways, operating where appropriate on exclusive high-occupancy vehicle or bus lanes, using new electronic equipment, with better maintenance facilities, improved schedules, etc.

It is classed as a "low capital investment" system and assumes that in 1980 it would have 450 buses carrying 65 million trips a year -- 9% of projected person trips compared with less than 8% today.

TSM/Expanded Bus

This alternative calls for an expanded transit bus system using existing streets and highway rights-of-way modified for most expeditious service and highest volumes. It is projected to be able to carry 70 million passenger trips a year by 1980, using some 500 buses, and 110 million by 1995, with 900 buses. This is also a "low capital investment" alternative.

Busway

This alternative uses standard buses on a 7-mile elevated right-of-way between Keehi Lagoon and the University, and uses existing and committed streets and highways elsewhere. Between Kalihi and Waikiki the busway viaduct would be a four-lane structure. Like the remaining two alternatives below, it would require high capital investment.

Light Rail Transit

This alternative uses modern articulated (two units hinged together) street cars obtaining power from overhead wires. Rights-of-way of 7, 14, and 23 miles, on viaducts or in a subway through the CBD, and on tracks in exclusive lanes on highways with, farther out, extensions in mixed traffic, were studied. Ticket collection and stations would be similar to those proposed for the Fixed Guideway.

Fixed Guideway

This is the official proposal presented in the EIS. It was the "preferred" system of those considered. Studies were made of lengths of 7, 14, and 23 miles, with the system on viaducts or at grade except for the subway segment serving the CBD and Civic Center. Electric power would be transmitted to the trains by means of a third rail.

Early studies of the Fixed Guideway strongly recommend light-weight vehicles riding on single-axle rubber-tired wheels, since such cars would require smaller radii on curves and could operate on steeper grades than steel-wheeled vehicles. If, as is being considered, final designs are changed to accommodate the heavier steel-wheeled cars, this would mean heavier viaducts and changes in vertical and horizontal alignments, resulting in substantially heavier costs.

However, the EIS reserves the decision and presents photographs of both the Washington, D.C. subway cars (steel) and the Sapporo cars (rubber) as illustrations. Although the EIS does not indicate changed alignments, concrete noise baffles are introduced in the viaduct designs, implying the use of steel wheels.

1. In the discussion of alternatives, the baseline bus system is referred to as the "no-build" alternative. With the projected growth in travel demand, combined with the public unacceptability of the construction of new freeways in the urban core, it is not considered adequate, and therefore it is concluded, new transportation capacity must be provided.

   The 7-mile busway is estimated in the EIS as having a capital cost slightly higher than the comparable fixed guideway, $414 million in 1975 dollars as against $399 million. The busway system is projected to carry 288,000 daily trips as compared with the seven-mile guideway system's 277,000. The 14-mile guideway system, it is said, would carry 307,000 daily passengers at an added cost of $119 million.

   The busway was designed to have four lanes, which would permit express buses to pass local vehicles. The Fixed Guideway would have only two. The busway was judged to serve local and regional objectives less effectively than other systems. Other primary drawbacks cited against this alternative were: the added labor cost of one driver per bus as opposed to one per multiple-car fixed guideway train; the disruption and unsightliness of the heavy, concrete viaduct; and the pollution resulting from Diesel bus operations.

   For the light rail alternative the EIS indicates that it is basically identical in operating characteristics to the Fixed Guideway, and therefore, its evaluation is essentially a comparison of the vehicles proposed. The EIS defines the LRT car as a steel-railed articulated street-car using overhead power lines, which competes closely with the Guideway and was considered only slightly inferior overall. Differences were indicated in service, community disruption, and environmental effects. Particular attention was given to the visual intrusion of the overhead lines in the viaduct segments of the LRT system.

   The TSM/Expanded bus alternative considers the possibility of satisfying the city's transportation needs by a more efficient use of buses. However, this alternative is presented as "based on maximizing the use of existing streets and highway facilities for both automobiles and transit". Within this policy the bus transit system would be structured to utilize existing facilities through various "transportation system management" (TSM) techniques.

Specifically, the objective is "to further improve the carrying capacity of the existing facilities through the ...greater utilization of transit combined with additional improvements for private automobiles...an unbalanced system that improves the transit system at the expense of the automobile, whereby the overall system capacity is reduced, would not serve the objective of this plan".

The analysis of the TSM/Expanded bus alternative was based on a bus system using 500 buses carrying 70 million annual passenger trips in 1980 and 900 buses with 110 million passengers in 1995. "In order to assess the extent to which automobile traffic would be affected by the TSM/Expanded bus system operations in and adjacent to the CBD/Civic Center, 'screen-lines' were established at critical points along the transit corridor". Volume/capacity (V/C) relationships for the baseline system and the TSM/Expanded bus alternatives "can be interpreted as showing the highway network approaching capacity as early as 1985 and exceeding capacity in 1990". The EIS thus concludes that even the TSM/Expanded bus system is incapable of meeting the long-range transportation needs of Honolulu.

But is this the case in terms of today's more realistic projections of population, employment, and trip generation, discussed in VB, VC, and following sections of this Handbook?

2. The EIS analysis of 1995 bus requirements during peak hours assigns two lanes in each direction to buses out of the average of fifteen available lanes through the screen-lines. It alleges that these four lanes, even so, would be sorely taxed to carry the load. But the projected vehicle volumes passing the screen-lines which are said to be beyond their capacity, have not, so far as can be determined from comparison with projections made several years ago, been reduced on the basis of the lower II-F population and employment projections now being used nor for changes in the 1977 General Plan affecting land use, density, population distribution, etc.

   Furthermore, the projected vehicle volumes are on the basis of trends before there was a fuel shortage. If we now project total trips and automobile trips at a lower figure than formerly, and vehicle occupancy ratios at a higher one, the V/C ratios change drastically. Car pooling may not be popular, but like it or not, it is likely to increase.

   Another point to be noted is that the TSM/Expanded bus system analysis does not allow for the greater vehicle and load capacity of articulated electric buses in express service when compared with ordinary local Diesel buses.

Nor does it propose any construction to eliminate key bottlenecks -- overpasses, new street connections, off-street loading bays, etc.

3. Finally, more important than the excessively high vehicle volume projections is the basic assumption that automobile use of the street system must not be curtailed in order to move people more efficiently. This would have been questionable even before the energy problem became acute. In today's terms, mass transit must be given priority over the passenger automobile, thus discouraging unnecessary car usage rather than encouraging it.

   With these factors taken into consideration, a bus system improved even beyond the TSM/expanded alternative could function well into the '90's, when it will be clear what effect the impending change in our transportation habits the necessity of reduced gasoline consumption will cause. (COP - Hdbk. on HART)

Response XVI-66:

1. Urban Honolulu is already experiencing heavy congestion on its major urban highways and arteries. This is confirmed by the Neighborhood Boards identifying traffic congestion as one of the most serious problems existing in Honolulu (second only to shortage of affordable housing.) Also see Response XVI-61.

2. See Responses II-25, XVI-57 (3 & 4) and XVI-67.

3. The City supports the basic premise that the use of existing street and highway facilities should be maximized to increase their people-carrying capacities through priorities given to mass transit systems. This is reflected in the current OMPO Long-Range Transportation Plan which includes only relatively minor improvements for automobile travel within Central Honolulu over the next 20 years, with major emphasis on improved transit service. However, the State DOT, in their comments on the HART draft EIS, stated that they will not allow the preemption of existing or contemplated freeway or HOV lanes for the fixed guideway system in those sections of the Interstate system in which HART was planned to be located.

Comment XVI-67:

B. The Unconsidered Alternative

In the EIS the TSM/Expanded bus system is rejected because, it is claimed, the existing street and roadway system in the central city cannot accommodate the four traffic lanes needed for buses to carry the anticipated future volume of travelers and still have room to carry the projected automobile traffic. However, if a bus system, including express lines, were operated with true priority access to roads and streets and with modern traffic management techniques, and if necessary street improvements and bus facilities were constructed, an all-bus system might well be able to handle future transit passenger volumes, as well as realistically projected automobile traffic, for a considerably longer period than the 1985 or 1990 dates at which the projected V/C ratio would exceed capacity according to the EIS.

This alternative -- an intermediate step between the TSM/Expanded bus system and the Fixed Guideway -- was not given detailed consideration in the various transit alternative studies nor in the EIS. It was outlined in general terms in the Seminar of January 26 and 27, 1978, which was sponsored by the Legislative Auditor.

The basis of this "unconsidered alternative" is the goal of achieving maximum efficiency in the use of existing streets and roads. The objective is to carry the greatest possible number of people, not of vehicles. Transit thus has priority over the private car -- the opposite of the concept expressed in the Alternate Analysis in relation to the TSM/Expanded bus alternative.

This does not mean that the private car is ignored in laying out a bus network, nor that all streets are preempted for bus lanes. Streets presently not in use as principal traffic arteries in the central city should first be considered for bus lanes, and additional bus lanes introduced into major traffic arteries only if necessary. With lower automobile vehicle volumes as suggested above, and fewer total trips than projected before the oil shortage, there is reason to conclude that downtown streets and screen-lines will not be overloaded by 1990 as projected in the EIS.

Within the above concepts there are a number of techniques and possibilities which can be applied when and where they would effectively improve transit service and meet the volume of transit demand. In combination with those already assumed for the TSM/Expanded bus alternative, these form the "unconsidered alternative". They include:

Traffic engineering techniques, such as exclusive and reversible lanes, mixed use of lanes in certain turning movements, electronic

traffic signals and other controls giving buses priority, re-routing of traffic, etc.

Street improvements, such as added lanes for buses, a rethinking of converting Hotel Street to a pedestrian mall as planned, arcading of buildings to provide added traffic lanes or bus-loading bays with sidewalks under arcades, improvement of Queen Street as a bus artery, construction of selected over- or under-passes at bottle-necks, etc.

Off-street loading and unloading. Should provision of added bus-loading lanes and building arcading prove insufficient to accommodate the increasing volume of transit users, the construction of off-street bus terminals can be considered. These might be in one or several locations such as the ground floors of existing public or private garage structures. A more expensive version of this possibility would be an underground terminal. Such bus terminals are used in large cities, as it is the loading and unloading of buses where many routes converge in central areas which is a major cause of downtown street congestion.

Termination of bus routes at the edge of the CBD-Civic Center area. The volume of transit patrons which could be accommodated in rush hours could be considerably increased if bus routes terminated at the edge of the congested central area. Should the terminals be too far apart for patrons to walk to their destinations, they might be connected by some form of shuttle. Such a shuttle (DPM) was briefly considered as an alternative, as mentioned above, but rejected, even though it was admitted that in conjunction with bus terminals at the edge of the central city such a "people mover" might buy time. As a part of a properly designed TSM/Expanded bus system, it could later be a part of the "unconsidered alternative".

Use of electric articulated buses. The volume of bus passengers carried per lane per hour can be doubled, in comparison with ordinary diesel buses such as those now in use, through the use of large electric-powered articulated buses in express routes. These are extensively used in Europe. They can negotiate sharp corners, load and unload more rapidly than ordinary buses, are very durable, accelerate more rapidly than diesel buses and have far less noise and no fumes.

Electric articulated trolley buses are presently extensively used in western Europe. Battery-operated buses eliminate the need for overhead power lines and are used in some central urban areas. Two U.S. Government reports indicate that the battery bus is emerging from the experimental stage and becomes cost-effective with gasoline at $0.80 a gallon and electricity at $0.05 per kilowatt hour. Consultants familiar with both battery and trolley

buses and bus system operations should be part of the engineering team which would design the "unconsidered alternative".

Bus subway. A bus subway through the central area should only be considered as a last resort and will most likely not be needed. Its cost would be in a higher order of magnitude than the other possibilities suggested, and would bring the system into a "moderate capital investment" category. However, the City's consultants did consider busway tunnels and stations in their analysis of the TSM/Expanded bus alternative. It was reported in the State Auditor's Seminar that such a facility was estimated to cost $69 million at 1974-75 prices.

Doubtless the "unconsidered alternative" would also require other improvements to roads and streets in the outlying parts of various express and local bus routes, as they would in the case of the TSM/Expanded bus system or even for the feeder bus system ancillary to the Fixed Guideway. Additional overpasses or short viaducts may be found useful in order to eliminate or ease traffic bottlenecks such as those at the ends of the Pali and Likelike Highways or to facilitate bus access to the freeways or other highways and streets.

The improvements which would be required to keep the capacity of the unconsidered alternative equal to the growing transit demand add up to a considerable capital investment. However, as contrasted with the Fixed Guideway, these need not be made in the very large increments which would doubtless require the importation to Hawaii of mainland contractors and labor. Rather, they can be made in a number of discreet smaller traffic improvement projects employing local labor and contractors, thus contributing to a leveling off of fluctuations in construction employment and contracts.

The type and extent of projects involved might be illustrated by those suggested in a trial layout, made by a member of the COPTSC for the Legislative Auditor's 1978 Seminar, of an express bus route using articulated trolleys. In the central urban area this route called for new street connections from Cummins to Pensacola, adjustments to Kona Street at the Ala Moana Center, a two-lane viaduct from Atkinson to McCully, a new two-lane surface exclusive busway along the Ala Wai Canal, and possibly overpass connections to Waialae and Harding Avenues. This did not include the other construction projects, as listed above, to facilitate the movement of buses in the central area: off-street loading lanes, street widenings, bus-loading garages, etc.

It should also be noted that in addition to the local labor employed in these various construction projects, the unconsidered alternative would provide more jobs in system operations, since

each bus would require an operator. The virtue claimed by guideway proponents that much labor cost would be saved because one train motorman can handle a whole string of cars may not be entirely an advantage. With employment one of the major problems in the island's future economy, what is saved in bus drivers' salaries may be to a considerable extent lost in added unemployment and welfare costs and loss of income taxes.

The aggregate cost of such a program of improvements, if planned as a comprehensive, functioning transit system, can be met largely from Federal highway and mass transit funds. Thus any vested right the State may have in the Federal allocations for H-3 or guideway could be transferred, if desired, to the unconsidered alternative as an overall transportation system, with its bus acquisitions and construction segments defined as transit needs. The local share would be spread out over time and would not involve as heavy revenue bond capital and interest payments as the *vastly more expensive guideway construction.*

The unconsidered alternative would result in far less disruption to the community than the fixed guideway. It would begin with the continued -- but more rapid -- expansion of the present bus system, for, as is pointed out in the EIS, even the limited TSM/Expanded bus system can carry the projected transit traffic in the short run.

The adverse environmental impacts resulting from construction of the fixed guideway subway through the CBD and Civic Center and the construction of viaducts across much of the central city would be eliminated by the adoption of the unconsidered alternative. The disruption from construction involved would be far less, both in the aggregate and because the projects are smaller and capable of scheduling to minimize disruption to traffic and adjacent properties. The fixed guideway would present a permanent visual obstruction along the route of its long viaduct.

In the unconsidered alternative the viaduct would be replaced with the overhead power lines of the express bus routes. Essentially this amounts to a choice between a new massive viaduct and overhead power lines on streets already lined with transmission and telephone posts and wires. In many cases the existing utility poles could also support the trolley wires so as to minimize the change in street appearance. The cost of placing the power and phone lines underground probably rules this out, except for limited areas in the CBD and Civic Center.

The trolley buses suggested for the unconsidered alternative use a system of rubber tires, whereas the fixed guideway may well have to use steel wheels, so that the former would have a clear advantage in producing less noise and vibration.

The fixed guideway requires a set number of large and expensive stations from the beginning. Its promoters hope to offset the cost by tax revenue from concentrating residential density in the station areas and even along the entire route. This is unnecessary in the unconsidered alternative since a beginning can be made with simple bus-loading bays and the familiar bus shelters. Neither is it necessary to resort to excessive high-rise construction to offset the capital cost of the unconsidered alternative which would be far lower than that of the fixed guideway.

The "unconsidered alternative" is not presented by the COPTSC as a complete concept, ready to build. It needs detailed engineering studies and traffic analyses which we do not have the resources to carry on. But we feel that any EIS which fails to consider the present population, employment, and general plan projections and the current energy situation, and does not give serious and objective study to this unconsidered alternative, is inadequate and should not be approved. (COP - Hdbk. on HART)

Response XVI-67:

The population and employment projections adopted for Oahu's long-range transportation planning process and used in planning studies for the HART system were 924,000 and 518,000 respectively, for the planning year 1995. The planning year of 1995 was selected in the early 1970's for all long-range transportation planning which represented 20 years into the future. Currently, it would be more appropriate to be using the year 2000 as the planning year. The new Series II-F population projections are 886,000 and 917,000 for 1995 and 2000 respectively. This represents a variance of 4% and 1% from the 924,000 projection used in the HART studies. The new employment projections are 472,000 and 485,000 for 1995 and 2000, respectively. This represents a variance of 9% and 6% from the 518,000 projection used in the HART studies. This range of variance for either population or employment of a 20-year projection is considered not sufficient to affect the results of the analysis and comparative evaluations conducted for the HART system.

The current energy situation would most likely result in continuing increases in the price of gasoline with a resultant decrease in auto usage. The greatest decrease in auto usage would occur in non-work trips with some reductions occurring in work trips. The impact of these reductions in auto trips would be increased demand for mass transit. This has already been evident with most transit properties, including Honolulu, where transit ridership has shown a substantial increase. This trend is likely to continue with escalating gasoline prices and would thus increase the need and justification for a better and more efficient mass transit system, such as the HART system.

The TSM/Expanded Bus system, described in Section III.B.1.b of the EIS, incorporates various transportation systems management (TSM) improvements such as bus priority lanes, downtown bus mall, signal preemption, etc. to improve the operations of the buses. A greatly expanded express service to various outlying areas is also a key feature of this system. The "unconsidered alternative" as described is a basic bus system with similar characteristics to the TSM/Expanded Bus system and provided with the following additional features:

1. Termination of bus routes at the edge of the CBD - Civic Center area by providing bus terminal facilities with a shuttle (DPM) service operating between the terminals. With this added feature, the system would be the same as the DPM/Bus system described in Section III.A.3.c of the EIS.

2. Use of electric articulated buses (trolley bus system) which would operate similarly to the diesel buses but with less flexibility. The only difference between trolley and diesel buses is the propulsion unit -- one being electrically propelled using overhead trolley wires and the other being an internal combustion engine using diesel fuel. The advantages of the trolley system are that they are more quiet and emit no fumes -- otherwise the systems are comparable with the diesel buses having a slight edge in capital and operating costs.

Based on the above, the "unconsidered alternative" is very similar to the TSM/Expanded Bus system with the exception that if bus terminals are provided with a shuttle (DPM) service in the downtown area, this then would be similar to the DPM/Bus System, both of which are thoroughly described and presented in the EIS. Thus, the "unconsidered alternative" is included as one of the alternatives -- either as the TSM/Expanded Bus or the DPM/Bus system -- in the EIS.

Comment XVI-68:

IV. THE HART EIS

A. Contents of the EIS

An EIS is prepared by the proponents of a project and by its very nature tends to present a favorable picture of the proposal. The draft now under discussion was prepared by the (Federal) Urban Mass Transportation Administration (UMTA) "in cooperation with" the City's Department of Transportation services.

The National Environmental Policy Act of 1969 is the legislative basis for an EIS. In Section 102, it is required that all agencies of the Federal Government shall:

. . . . .

c) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on:

i) the environmental impact of the proposed action
ii) any adverse environmental effects which cannot be avoided should the project be implemented
iii) alternatives to the proposed action
iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity
v) any irreversible or irretrievable impact on the environment which may be involved in the proposed project should it be implemented.

d) study, develop and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.

The Urban Mass Transportation Act of 1964, as amended (Title 49, sec. 1604 i) contains similar requirements (see EIS, p. xii). The Act requires that certification of a project specify that full public hearings were held and that they included "consideration of the social and economic effects of such project, its impact on the environment...and consistency with the goals and objectives of urban planning as promulgated by the community."

It is required that such certification be accompanied by

1) a report which indicates the consideration given to the economic, social, environmental and other effects of the proposed project including, for construction projects, the effects of its location or design and the consideration given to the various alternatives which were raised during the hearing or were otherwise considered and

2) upon the Secretary (of Transportation)'s request, a copy of the transcript of the hearings.

The HART EIS is structured to meet these legal requirements and is therefore sometimes difficult to follow. There is no index, so that frequently the reader has to look in several sections of the document to pull together all it says on a given subject.

For example, the very important question of the impact of the guideway system on Land Use and the General Plan's development policies is discussed, among other places, on pp. v, vi, I-12, I-13, III-31, IV-17, V-69, V-70, V-92, V-94, VII-3, and VIII-3. As a result the COPTSC decided not to try to comment on the EIS section by section but opted instead for a broad discussion centered around what we consider to be the key questions.

We found that the basic legal requirements could be translated into four questions:

1) Is the HART proposal consistent with the community's general plan and its emerging area and neighborhood development plans?
2) Were all possible alternatives considered fully and objectively?
3) What are HART's major beneficial and adverse impacts on the community's social, economic, and physical environment?
4) How do these compare with the impacts of alternative courses of action?

In Part III above, we discussed the alternatives which were and were not considered by the City's transportation planners. The EIS discussed them in its summary on pp. vii and viii and in detail in Sections III and IV.

A brief summary of beneficial and adverse effects is presented on pp. v, vi, and vii, but for the more detailed discussion of impacts, the reader has to refer to the various sections of the EIS as follows:

V. Probable Environmental Impacts of the Proposed Action -- on the natural environment, community, social, economic, construction, etc.
VI. Parklands and Historical Properties
VII. Probable Adverse Environmental Impacts Which Cannot be Avoided -- natural environment, community, social, economic
VIII. Relationship between .... Environment .... and Productivity -- also lists certain specific benefits

Obviously, a proposal of the magnitude of HART will affect almost all aspects of the island's future life. Constraints of time and space made it impossible to discuss all of these in this Handbook. We have, therefore, selected key subjects in relation to which we feel that the draft EIS is inadequate or incorrect. These include:

The General Plan and Land Use
Density of Development
The Central Business District
Costs
Cost/Benefit Analyses
Energy
Other Physical Environmental Effects
Public Opinion

It should be noted that we have not included in this Handbook any references to the lengthy EIS sections on alternative routes or alignments, alternative segment lengths or vehicle types, alternate station locations, ways to protect historic buildings during construction, etc. We have, rather, concentrated on those sections of the EIS which we felt went to the heart of the matter -- whether HART was the best mass transit alternative and how its impacts compare with the "unconsidered alternative". (COP - Hdbk. on HART)

Response XVI-68:

Comments are noted.

Comment XVI-69:

B. Comparative Impacts of HART and the Unconsidered Alternative

The EIS, on pp. v, vi, and vii summarizes what it considers to be the major beneficial and adverse effects of the HART proposal. We suggest below what we find to be the comparative effects of the "unconsidered alternative", keyed to the section headings and paragraph numbers of the EIS.

3. Summary of Effects:

A. Long-term beneficial effects:

1. The unconsidered alternative will improve mobility and accessibility at an earlier date than would the HART proposal, as there is no long period of years required for construction of extended and massive viaducts, ramps, and a subway. Overall travel time will be reduced materially, with less need for modal transfers. Comfort and convenience are comparable to that afforded by rail vehicles.

2. Provision for the elderly and handicapped can be made more easily in the unconsidered alternative, as it needs no elevated or subway sections and will have less complicated station arrangements.

3. The unconsidered alternative can provide the transportation capacity and choice of travel modes claimed for the guideway and can do so sooner and more closely related to where people live and work. It can expand or contract services, as needed, with greater flexibility.

4. The unconsidered alternative will provide virtually the same savings in travel time as the fixed guideway, but can do so sooner, in phase with the growing demand for transit services, and at a fraction of the cost in terms of capital investment by the Federal, State and local governments. Operating costs of the unconsidered alternative may be little, if any, higher as the added costs of more bus operators will be offset by not having the extensive viaducts and subway as well as the stations, to maintain.

5. The unconsidered alternative will support land use policies that are not dependent on excessive density concentrations at stations and can adjust to changing land use policies better than the fixed guideway because of the flexibility of bus lines (even if powered by overhead wires).

6. The unconsidered alternative, using electric-powered buses, will contribute to the overall reduction of air pollution at least on a par with the fixed guideway. As the unconsidered alternative will ride on rubber tires, the noise pollution will be less than that produced by a fixed guideway with steel wheels.

7. Because it will be unnecessary to expend the energy required to build the viaducts and subway, and less station energy is required, the unconsidered alternative will result in greater saving of petroleum.

B. Long-Term Adverse Effects:

1. In its initial decade the unconsidered alternative will probably require less land for transit stations than the fixed guideway. As no engineering studies have been made for the unconsidered alternative, no estimate can be given as to the amount of park land which might eventually be required.

2. Without engineering studies there can be no estimate of the number of residential or commercial structures which might eventually be adversely affected or demolished.

3. There will be some visual impact to the community resulting from a few overpasses constructed to eliminate traffic bottlenecks and from bus trolley wires, but these impacts would be far less obtrusive than the continuous viaducts and ramps of the fixed guideway.

4. There will be some increase in traffic congestion and noise at the bus stops and at possible future express bus stations, but this would be less than that at the fixed guideway stations as the unconsidered alternative would operate on rubber tires, with the fixed guideway cars likely to use steel wheels. The fixed guideway stations would probably attract greater clusters of high-rise buildings.

5. The effect of the unconsidered alternative on stream flow and aquatic life cannot be estimated without engineering studies, but is unlikely to be any more adverse than the fixed guideway.

6. The unconsidered alternative is likely to reduce the number of lanes available for private vehicles and force adjustment of current traffic patterns to accommodate bus routes and bus lanes. The reduction in lanes available for automobile traffic may result in added congestion, unless, as is now likely, automobile traffic is less than that projected by HART planners, as a result of gasoline shortages and conservation measures. Giving transit priority will discourage unnecessary automobile usage.

7. Increased accessibility of land along major bus routes is likely to encourage demand for up-zoning of adjacent properties, though such pressure would be less than that generated by the fixed guideway stations.

C. Short-Term Effects During Construction:

1. While the fixed guideway will adversely affect the buildings in the CBD and Civic Center adjacent to the subway and require foundation underpinning, the unconsidered alternative will cause little, if any, such disruption, as underground garages for off-street loading and unloading are highly unlikely and an underground busway through the CBD is not recommended. However, some disruption will be caused by the street changes and construction projects which may be necessary in developing the unconsidered alternative.

2. Increased noise and vibration during the construction of projects associated with the unconsidered alternative may be anticipated but to nowhere near the degree involved in the construction of the fixed guideway.

3. Some traffic congestion and pedestrian inconvenience will be occasioned by the stringing of overhead power lines and construction of bottleneck elimination projects, but to far less a degree than may be anticipated in the construction of the continuous viaducts and subways of the fixed guideway.

4. Some business disruption may be occasioned by the construction of the various projects needed by the unconsidered alternative in the CBD-Civic Center Area but on a much smaller scale and for shorter periods than would result from the construction of the fixed guideway subway in this area.

5. Unsightly conditions due to removal of trees and other vegetation during project construction may be anticipated. However, the fixed guideway would have the same adverse effects in its massive construction sections and could do little to soften the harsh silhouette of its viaduct.

6. The unconsidered alternative will use existing streets and highways wherever possible, so that the use of park land would be minimal. The location and amount of such land cannot be determined precisely without engineering studies. (COP - Hdbk. on HART)

Response XVI-69:

See Tables III-11 and III-12 of the EIS for a comparison of various evaluation factors between the HART system and the "unconsidered alternative" (assumed to be similar to the TSM/Expanded Bus System). On a general basis, the HART system with its vastly superior physical and operating features, would provide greater beneficial effects than the "unconsidered alternative." Conversely, the HART system involves the construction of a substantial amount of physical facilities which will cause greater community impacts than the "unconsidered alternative."

Comment XVI-70:

C. The General Plan and Land Use

The Urban Mass Transportation Act requires consideration in an EIS of the "consistency" of a proposed project "with the goals and objectives of urban planning as promulgated by the community".

It is not known to the COPTSC to what extent the City's new General Plan of 1977 was taken into consideration in the EIS and the current HART proposal. With the exception of a 10% reduction in transit patronage and the revised projections of operating costs and revenues, there is no reference in the EIS to any changes having been made as a result of the new General Plan. The new General Plan contains considerable changes from the 1964 General Plan in land use patterns, densities, and the distribution of activities, as well as in the projections and distribution of population and employment, which are reflected in the area development plans now in progress. These changes affect transportation needs and volumes. Have they been taken into account in the EIS, and if so, how?

The new General Plan includes many objectives and policies, which are of course not always achievable without trade-offs, are open to various interpretations, and can be used in many ways to justify various courses of action. Basically, guideway proponents point to the City's alleged objective of "concentrating" population growth in the urban core as justification for implementation of the HART proposal. We will discuss only a few of the ramifications of the Plan here: (COP - Hdbk. on HART)

Response XVI-70:

See Response III-8.a and XVI-67.

Comment XVI-71:

C. The General Plan and Land Use

I. General Plan section on Transportation, Objective A, Policy 2, p. 39 reads: "Provide transportation services to people living within the Pearl City -- Hawaii Kai corridor primarily through a mass-transit and feeder-bus system . . ."

The legislative history of this policy is worth noting, as is the fact that the term used is "mass" transit, not "rapid" or "rail" transit.

In the Plan's first draft, dated 8/2/76, Policy 2 read "primarily through a rapid transit and feeder bus system", etc. There was also in this draft a Policy 8: "Design a rapid transit system which will serve not only the existing population but also the future population of Oahu as it will be distributed by the year 2000."

In the second draft, dated 10/6/76, Policy 8 was deleted.

In the final Plan, dated 1/18/77, the words, "rapid transit" in Policy 2 were changed to "mass transit".

It is evident that the General Plan does not call specifically for a rail transit system. Would not, then, any mass transit system which meets Objective A and related objectives throughout the Plan be in accordance with the Plan? (COP - Hdbk. on HART)

Response XVI-71:

Yes, any high capacity mass transit system operating in a trunkline mode and supported by feeder buses could be interpreted to be in accordance with the Transportation, Objective A, Policy 2 of the General Plan.

Comment XVI-72:

C. The General Plan and Land Use

II. General Plan section on Population, Objective B, Policy 1, p. 19, reads: "Allocate efficiently the money and resources of the City and County in order to meet the needs of Oahu's anticipated future population."

Allocation of the very large sums required to meet the local share of the guideway's capital cost and subsequent annual operating deficits can only be considered "efficient" if no cheaper alternative can be found to meet the transit needs as specified, and if it can be shown that the needs have been correctly anticipated. Until the volume and distribution of future trips generated have been revised in terms of current plans and projections and the inevitable effects of the energy situation, the needs as projected in the HART proposals cannot be considered proven.

Once the needs have been revised, objective and detailed analysis of the "unconsidered alternative" in terms of its ability to meet those needs is necessary before a rail system can be justified as an efficient allocation of resources.

Did the EIS address itself to the costs of the "unconsidered alternative" in terms of its ability to meet the revised transit needs? (COP - Hdbk. on HART)

Response XVI-72:

See Responses III-8.a and XVI-67.

Comment XVI-73:

C. The General Plan and Land Use

III. General Plan section on Population, Objective C, Policy 1, p. 20, reads: "Facilitate the full development of the Primary Urban Center".

The revised General Plan projects a year 2000 population for the Central Honolulu Area of 516,500, compared with 1975's 438,000. This increase of 78,500 or 18% in 25 years, is moderate and is spread all the way from Pearl City to Hawaii Kai, not only in the transit "corridor".

The massing of clusters of high-rises over and surrounding the proposed transit stations, which guideway planners count on to increase guideway patronage, is a distortion of this policy and is indeed contrary to other General Plan policies such as those on housing, urban design and enhancement of the living environment.

Full development of the PUC, in terms of increasing its population and maximizing the use of public facilities already at hand, can be implemented efficiently through the "unconsidered alternative" without cramming all the increased population into the guideway station areas. Can the HART system function efficiently without such high density concentrations? (COP - Hdbk. on HART)

Response XVI-73:

The City's study on land use around stations indicates developments in the order of magnitude of some 3,000 dwelling units or approximately 6,000 population. This indicates that all of the growth is not intended for concentration around transit stations. The HART system can function efficiently without concentrating all future growth around the stations. Also, see Response IX-19.

Comment XVI-74:

C. The General Plan and Land Use

IV. General Plan section on Population, Objective C, Policy 4, pp. 20-21 reads: "Seek a year 2000 distribution of Oahu's residential population which would be in accord with the following table".

The table, as revised for the later DPED II-F lower projections for the year 2000, distributes 28% of the anticipated total island increase of 213,000 to the PUC (60,000), with the remaining 78% of the increase (153,000) in the remainder of the island. The PUC population would drop from 56% of the island total to 50%. Arguments that building the guideway would concentrate the population in the PUC do not seem to be consistent with this planned distribution.

Actually, transit experience in many cities has indicated that improved mass transit of any kind, be it bus or rail, is as likely to encourage development in outer areas as to concentrate it in the City center, because the shortening of travel time to the downtown makes suburban living more desirable.

The EIS states that "Implementation of the proposed transit system would not be likely to have a major effect on island development patterns." Why then, does the EIS claim repeatedly that the HART proposal will implement the General Plan's proposed land use development objectives? (COP - Hdbk. on HART)

Response XVI-74:

See Response IX-9.

Comment XVI-75:

C. The General Plan and Land Use

V. General Plan Environment section, Objective B, policies 2 and 3, p. 32 read: "Protect Oahu's scenic views, especially those seen from highly developed and travelled areas" and "Locate roads, highways, and other public facilities and utilities in areas where they will least obstruct important views of the mountains and the sea."

The adverse visual impact of miles of an elevated structure, with diagonal ramps connecting it with the underground and at-grade sections is obvious and needs no discussion here. Has this admitted adverse impact been compared with the considerably lesser impact of electric trolley wires along essentially the same route?

It has been suggested that the whole system be put underground. An increased cost estimate of $46,000,000 for the Waialae Ave. subway alternative alone is mentioned in the EIS. Furthermore, as the Alt. An. points out, if the proposed aerial segments are not acceptable to the local community on account of the elevated structures or the higher noise levels, putting them underground would be beyond the financial capabilities of the island. If so, why did the EIS not do cost studies of the "unconsidered alternative"? (COP - Hdbk. on HART)

Response XVI-75:

Section V.B.2 of the EIS describes in detail the potential visual impact of the HART system on the community.

As stated in Response to Comment XVI-67, the "unconsidered alternative" as described in the Handbook on HART, is basically the same as the TSM/Expanded bus or the DPM/Bus alternative described and analyzed in the EIS.

Comment XVI-76:

C. The General Plan and Land Use

VI. General Plan sections on Urban Design, Objective D, Policy 4 and 6, p. 48, and Objective E, Policy 3, p. 49, read: "Require the consideration of urban design principles in all development projects" and "Design public structures to meet high aesthetic and functional standards and to complement the physical character of the communities they will serve" and "Maintain adequate roads, public facilities, and utilities without damaging the character of older communities."

The effect on the city's communities and older neighborhoods of the intrusion of a guideway system is both physical and social. Some would be virtually cut in half. Clusters of high-rise development in station areas are contrary to the expressed desires of neighborhoods all along the corridor for lower, moderate-density

development with open space and views. Both during the six- to eight-year construction period and thereafter, neighborhood character and stability would be adversely affected. No pretty pictures of station platforms or aerial views of glass-windowed, attractive trains can describe the actual impact on surrounding neighborhoods of an elevated rail system, or even the necessarily fenced-in barrier of the rail line at grade. Why does the EIS not consider the General Plan in this regard? (COP - Hdbk. on HART)

Response XVI-76:

The EIS, in Section V.B.2, points out in detail the potential visual impacts created by the proposed transit system. General Plan Objectives and Policies will certainly be observed in the final planning and design of the system to meet the highest aesthetic standards possible. Also see Response XIII-1.

Comment XVI-77:

D. Density of Development

The EIS seems rather confused about the impact the HART system would have on density. Under "long-term adverse effects", it points out that the system will increase demands for development along the transit route and stations and "will encourage high density development and cause pressures for up-zoning of certain properties." (Two years ago a bill was introduced in the City Council to re-zone the land around each of the twenty-two proposed stations to densities (FAR's) comparable to those in Waikiki before the Special Design District Ordinance was enacted.)

The interest and concern of the island's citizens and neighborhood and community organizations with the issue of density of development were clearly expressed in recent controversy over Bill 84. The compromise finally enacted, though permitting higher densities than these groups wanted, did bring about a significant decrease from the open-ended "bonus" densities permitted in apartment districts before 1978.

The 1977 General Plan's lowered population projections, as compared with those current in the 1960's, are reflected in the lower densities proposed in the development plans now in progress. As the City's Chief Planning Officer said at a meeting on development plans with neighborhood board members on June 2, 1979, "We

are not facing a problem of having to extend our urban boundaries, nor to increase the allowable density...We have an over-supply of lands both zoned and planned for residential purposes." He went on to recommend down-zoning in such central areas as Makiki and Moiliili/McCully.

Although the EIS rightly, we think, lists encouragement of high density development under "adverse effects", it also claims, under beneficial effects, that "the proposed system will support land use policies by providing transportation capabilities that are compatible with more intensive use of urban lands along with the preservation of agricultural land." Later in the report, however, it is stated that "Implementation of the proposed transit system would not be likely to have a major effect on island-wide development patterns."

Somewhere else it is stated that "rapid transit may prove to be a most effective tool in achieving land use objectives in accordance with General Plan policies" and refers to "planners' current best thinking with regard to the desirability of increased residential and commercial densities" -- which, as quoted above, was listed as an adverse effect and is contrary to what the Department of General Planning is working into its area development plans.

A clear and consistent statement of HART's impact on the island's density patterns should be insisted upon.

It has often been claimed that "Honolulu has the highest density corridor of any city in the world", or words to that effect, and that therefore rail transit is necessary even though the island's population is far lower than ordinarily required to sustain a rail system.

Density ratios are variable, depending on whether they are "gross" or "net" and just how the corridor is defined. For illustration, if we take a strip one mile wide on each side of the entire 22-mile guideway route, we would have a gross area of 44 square miles. The population of the entire Honolulu urban area between Pearl City and Hawaii Kai. from mountains to sea, is about 450,000. Even if all these people lived within the two mile strip, which of course they don't, the average gross density would be only about 10,000 per square mile which can be compared with gross densities per sq. mi. for other cities with rail transit figured over their entire area, not just their core, of approximately 14,000 in Chicago, 11,000 in Toronto, 10,300 in Washington, 10,000 in San Francisco, 14,000 in Philadelphia, etc.

At the State Seminar on Urban Transit, the transcript includes some data cited by Theodore Keeler as follows:

> "Net residential densities in Chicago....range from 200,000 people per square mile in the middle of the CBD to just over 20,000 eighteen miles on either side of the CBD .... Honolulu's (average) net residential density, by my calculations, is 17,000 per sq. mi. -- lower than the figure 18 miles out from the Chicago CBD .... Even if there is some high density settlement, it cannot be extensive enough to arrive at a low average of 17,000 and still be comparable in any way or order of magnitude to that observed in a city such as Chicago. Also, it is difficult to believe that even the most optimistic of demand forecasts would give Honolulu such a density and, even if they did, there may be some reason to question whether the residents of this island want such densities."

Upon what data is the density of Honolulu's central corridor claimed to be high enough to sustain a rail system in a total metropolitan area projected to have only 917,000 people in the year 2000? (COP - Hdbk. on HART)

Response XVI-77:

Although residential density is certainly a key factor in determining transit usage, the location and density of employment as well as the travel pattern would be a great influencing factor on transit usage. Honolulu has a high concentration of employment centers along the transit corridor and it also has only a single east-west travel corridor which enhances transit usage.

Also see Response IX-19.

Comment XVI-78:

E. The Central Business District

One of the usual arguments in favor of rail transit is its alleged beneficial and revitalizing effects on a City's central business district (CBD), including improved ease of access, shorter travel time, relief of congestion, greater ease of parking, etc. This is particularly likely to be true in the case of multi-million population older Eastern-U.S. cities, with their decaying downtowns, major shifts of business to suburban areas, etc.

These arguments do not apply to Honolulu, whose downtown is not the City's retail, hotel, restaurant or entertainment center, nor even its only major center of employment. Nor is it likely to replace Waikiki and the existing major regional centers -- Ala Moana, Pearlridge, etc. -- in these respects.

As the EIS says, "Central business districts nationwide have been experiencing an erosion of middle-class residential uses ... a downtown area that is deserted after dark .... only through a battery of incentives, often including improved transit services, has this trend been arrested or partially reversed in mainland cities.

"Downtown Honolulu has not suffered in this respect to the same degree ... therefore, implementation of the proposed transit system cannot be expected to 'turn downtown around', since it remains a viable business center...."

Downtown, like most areas of the island, does need better transit and less automobile traffic. The benefits it would receive from the "unconsidered alternative" are as great as the guideway system could confer, and in many respects greater -- the years of subway construction and its disruption could be avoided, buses or trolleys could stop closer to many destinations than the guideway, the disadvantages and costs of operating a subway in Honolulu's warm, damp climate would be avoided.

It is not generally realized how small a downtown Honolulu's CBD really is, compared with Toronto, Philadelphia, and the other cities whose rail transit systems are held up as examples. In a consultant's recent report on the land use possibilities of the areas around the proposed rail transit stations, it was stated that there were between 8 and 9 million square feet of floor area in the Fort St. station "impact area" -- bounded generally by River St., Beretania, Richards St. and the water front. By the year 2000, it was stated, the total floor area built might be 13 to 14 million square feet, with a maximum demand of 20 million.

In contrast, Federal minimum criteria for justification of a rail transit system in a city, as cited in 1975, included a minimum CBD floor space of 25 million sq. ft., with 50 million desired. Similarly, the 1977-78 Transit Fact Book, official publication of the American Transit Association, mentions 50 million sq. ft. of contiguous non-residential floor space as the minimum downtown size requiring rail transit.

What is the present UMTA minimum CBD commercial floor area standard considered adequate to require and sustain rail transit to downtown? How many CBD employees should there be? Does Honolulu's CBD meet these criteria? (COP - Hdbk. on HART)

Response XVI-78:

It should be noted, although the American Public Transit Association's (APTA) 1977-78 Transit Fact Book mentions the results of the New York Regional Plan Association criteria of 50 million sq. ft. as the minimum downtown size for contiguous non-residential floor space, APTA neither advocates nor endorses these criteria for selecting any specific transit mode.

Also see Response IX-15.

Comment XVI-79:

F. Costs of HART

The objection most frequently raised to HART is its cost. In a period of inflation, cost estimates, no matter how conscientiously calculated, tend to be understated. PEEP II in 1976 projected the inflation-calculated cost of the 14-mile guideway system, if construction started in 1976, at $582 million; annual operating and maintenance costs in 1995 (in dollars escalated to 1980 levels) at about $68 million for the guideway and feeder buses; annual revenues at $44 million (based on a 35-cent adult fare and a 15-cent student fare, senior citizens free); and an annual deficit of over $23 million in 1980 escalated dollars.

The EIS, in a preliminary capital cost summary, estimates the escalated capital costs of the 14-mile guideway at $885 million, based on an assumed 1981 construction start and on an 8% annual rate of inflation during the construction period. The 20% local share, $177 million, would amount to over $800 per island household.

Annual operating and maintenance costs, including feeder buses, in 1985 (assuming 90 million transit riders, or about 300,000 on a daily basis), are projected at $73 million in dollars escalated to 1985 levels; annual 1985 fare revenues, assuming that fares would rise to match the escalation rate, are projected at $32 million and the annual deficit, $41 million. (The escalated fare, starting with the assumed $.25 in 1978 and escalated at 8% a year, would be $.43 in 1985).

The EIS properly points out that if construction starts later than 1981, capital costs will rise accordingly. At the assumed 8% escalation rate a year, the cost with a 1982 start, for example, would be $955 million. If annual operating and maintenance costs,,revenues, and deficits rose at the same rate, the annual deficit by 1995 would be $85 million, or over $300 per year per island household.

The EIS cost and revenue projections cited above are, it is explained, "based on the revised population and employment projections and distribution." (This refers to the 1995 series II-F population and employment projections mentioned in the EIS footnote to Table I-7, p. I-13.) Capital costs would be shared, according to the EIS, 80% by the Federal government and 20% by local (State or County) funds. Operating deficits under present regulations are primarily the responsibility of local governments.

How do these costs compare with those of the "unconsidered alternative" engineered to carry a transit load comparable to that of the fixed guideway? (COP - Hdbk. on HART)

Response XVI-79:

The cost comparison between the TSM/Expanded bus and the Fixed Guideway systems is presented in III.C.1.b and c of the EIS. Since the "unconsidered alternative" contains features which are more expensive than the TSM/Expanded bus alternative, the above comparison would be applicable to the "unconsidered alternative."

Comment XVI-80:

G. . Cost/Benefit Analyses

Calculations of benefits relative to costs are subject to enormously different conclusions, based on what assumptions are used, such as how intangible benefits -- shorter travel time, less air pollution, etc., are quantified. Even more ephemeral are negative cost factors such as loss of views, neigborhood disruption, etc. The various reports underlying the HART proposal present wildly different benefit/cost conclusions.

The HRTS report, for example, states that based on conservative assumptions the benefit/cost ratio which would result from the proposed rapid transit program would be 3.79 to 1 -- that for every dollar invested by the public, $3.79 would be returned in quantifiable benefits.

PEEP II is more modest and sets the benefit-cost ratio at 2.2, on the basis of various assumptions too complicated to detail here.

The EIS estimates the net 1985 benefit/cost ratio, again after detailed calculations, at 1.12 for the TSM/Expanded bus system and 1.13 for the guideway system, compared with the baseline bus system. By 1990, however, the guideway's B/C ratio is projected at 1.33 and the TSM/Expanded Bus system at 1.03. Other B/C ratios are found later in the EIS report, such as 1.09 for the guideway in 1985 and 1.29 in 1990.

The COPTSC believes that the whole process of computing benefit/cost ratios as related to HART and its alternatives is so subjective that none of these ratios has much significance.

For example, the figures in the EIS's Table III-13 for 1985 could be translated as follows to yield more commonly used gross (rather than net) B/C ratios:

	Baseline Bus	TSM/Expanded Bus	14-Mile Fixed Guideway
Assumed baseline bus ratio	1.00		
Baseline benefits ($ million) (equal to baseline costs)	32.87	32.87	32.87
Net or marginal benefits ($ million)		13.55	37.63
Total benefits ($ million)	32.87	46.42	70.50
Total costs ($ million)	32.87	44.97	66.23
Benefit/Cost ratio	1.00	1.03	1.06

From the same table, the following comparisons are of interest:

	Baseline Bus	TSM/Expanded Bus	14-Mile Fixed Guideway
Annual patronage (millions)	64.72	83.65	102.36
Average cost/ride	.51	.54	.65
Increases over baseline			
Total Costs ($ million)		12.10	33.36
Annual Patrons (millions)		18.93	37.64
Cost/ride per additional patron		.64	.89

Considering the subjective nature of the assumptions and the impossibility of correctly predicting costs, revenues, patronage, and benefits, how significant are B/C ratios as low as 1.03 and 1.06 and how meaningful is the difference between them? (COP - Hdbk. on HART)

Response XVI-80:

See Response XIV-9.

Comment XVI-81:

H. Other Physical Environmental Effects

The COPTSC decided that we were not competent to make a detail examination of the EIS's claim in respect to the effect of HART on such aspects of the environment as noise, water quality, air pollution, vegetation and wildlife, etc. We believe that there are groups in the community specifically interested in these matters who have the expertise we lack.

On pp. v to vii and in Sections V and VII as stated above, the EIS summarizes what it considers to be the long-term beneficial and adverse environmental effects, as well as the short-term adverse impacts of the HART proposal. These are discussed in greater detail in the sections listed below:

	EIS pages
Views and Visual Impact	V-45 ff.
Noise	II-5, V-21 ff.
Construction effects (short-term)	V-80 ff.
Station-generated traffic	V-64 ff.
Air pollution	II-4, V-2
Streams, floods, water resources	II-1, V-11 ff.
Coastal zone management	II-3
Vegetation and wildlife	II-5
Archaeological and historic sites	II-6
Natural and Ecological Resources	V-18 ff.

The difficulties we encountered in trying to deal with these topics can be illustrated by the question of air pollution. The EIS claims that pollutants will be decreased 10% island-wide and 11% in Central Honolulu, assuming that the total number of trips remains the same and not counting any automobile trips induced by the assumed lower traffic congestion.

Even if we accept this assumption, it should be noted that a daily highway fuel savings of 40,000 gallons a day is claimed, which amounts to about 12,500,000 gallons a year, less than 5% of 1978 highway fuel consumption. We do not have any way of measuring this against the claimed reduction in air pollution, nor do we know if the pollution caused by the generation of electricity to operate the guideway has been taken into account.

Experience seems to show that when a new transit facility, or even a new highway, is provided, traffic soon builds up to just about the same level of congestion as previously. In that case there would be no decrease in air pollution.

If, on the other hand, fuel shortages caused a marked reduction in automobile usage, this alone would reduce air pollution no matter whether the former automobile users doubled up in car pools, used buses, or changed to rail transit.

It should be noted that the EIS addresses itself only to the environmental effects of the HART system. There is no way citizens can compare these with what would result from a system such as the "unconsidered alternative." We feel that one of the EIS's most serious shortcomings is its failure to analyze the comparative impacts of the alternatives it considered, as well as the latter. (COP - Hdbk. on HART)

Response XVI-81:

Since the "unconsidered alternative" is essentially the same as the TSM/Expanded Bus system, the environmental effects would also be similar which is shown in Table III-11 of the EIS.

Comment XVI-82:

I. Public Opinion

In the preface to the EIS it is stated that "the proposed project has been the subject of extensive discussion and review with local officials and the public since 1971. Public meetings were held in Honolulu and in the neighborhoods where the proposed project is located."

Though HART's proponents have made great efforts to "sell" it to the public through slide shows, glossy brochures, a half-hour TV film, and presentations at information meetings, the public has been markedly reluctant to buy the product.

On 1/25/78 the Honolulu Advertiser printed the results of a poll of a random sample of Hawaii residents who were asked:

"Are you in favor of a fixed-guideway transit system or do you prefer improving our present bus system?"

Oahu residents were 33% for the guideway, 56% for better buses, and 11% in the "other" or "don't know" category. The newspaper report also mentions a 1974 survey, which found 30% in favor of a guideway.

Seven months later, on 9/1/78, another poll was taken and also reported in the Honolulu Advertiser. This time Hawaii people were asked:

"Some people say that Honolulu should try to cut down traffic jams by building a new transit system with fixed guideways and coaches that can be strung together like trains. Others believe it would be better to improve our bus system. (Which) are you in favor of?"

This time 24% voted for a fixed guideway, 54% for improved buses, and 22% "other" or "don't know". The article states: "The Advertiser's Hawaii Poll has asked roughly the same thing in five separate polls over a four-year period. Never have supporters of the guideway held a plurality; since 1976, supports of an improved, all bus system have been in the majority."

The article also points out that although this last survey included only voters who said they plan to vote in the 1978 Democratic primary, 85% of the votes cast are Democratic, so that this sample would not be substantially different from the electorate as a whole. Oahu residents polled were 25% for the guideway, 56% for the all-bus system, and 19% undecided.

An auxiliary question was posed to pro-bus voters based on the argument of guideway proponents that "buses alone can't solve traffic problems because population and the number of cars keep growing and buses have to compete with cars on the highway." 93% of those who favored buses said that despite this argument, they still favored an all-bus system.

Why is there no mention in the EIS of these clearly indicated public expressions of opposition to the HART system in spite of the efforts referred to above. Will public comments on the EIS, if opposed to HART, be given consideration? (COP - Hdbk. on HART)

Response XVI-82:

The purpose of the EIS is to divulge both positive and negative impacts of the proposed action to permit the informed public to voice their opinions on the project. It is not the purpose of the EIS to conduct or report public opinion polls but to carefully consider relevant comments on the project for policy makers to use as the basis for their decision.

Comment XVI-83:

V. FACTS, FIGURES, AND PROJECTIONS

A. Inconsistency of Projections

The EIS does not, nor could it, include all the complex calculations and projections which led up to the recommendation of the HART system. It is, however, difficult for citizens to make comments or criticisms of the assumptions, allegations and conclusions contained in the EIS or any other report on HART without knowing on what they are based.

It was therefore necessary for the COPTSC to go back to a number of transit studies and reports and try to trace the derivation and evolution of the HART proposal. In this part of the Handbook we have discussed what we consider to be the most important and relevant quantitative data and projections and some of their implications where appropriate.

Throughout this Handbook cross references have been made to the relevant material in this Section so that the reader can trace back the origin of the various figures and projections we cite. This often presents problems in that the EIS uses material from a number of different previous reports, often differing from one another in both concept and numbers used.

A special problem is that trip and transit estimates based on four sets of population (and related employment) projections are used:

1) Some are based on the General Plan of 1964 and the OTS Studies, using, for example, a population projection for 1985 of 1,050,000.

2) Projections used in the 1970's include, for example, a 1995 population of 924,000.

3) Others are based on the General Plan of 1977, such as a year 2000 population estimate of 1,039,000.

4) Later projections are based on the revised GP-DPED projection for the year 2000 of 917,000 with 886,000 estimated for 1995.

It is often not possible to trace through whether the estimates of automobile traffic volumes, bus or rail transit passengers, distribution of employment, downtown peak hour bus traffic, etc. have been corrected for the changes in these projections. The EIS cites projections, for example, of automobile vehicular volume crossing certain "screen-line" locations which are identical in reports published before the new General Plan of 1977. Similarly, its total daily trip projections, computed from data in EIS Table III-7, are the same as those projected in PEEP II in 1976.

Some EIS population and employment projections were revised downward, as indicated in a footnote on p. I-13, for such purposes as transit patronage and revenues, but the COPTSC could find no evidence that other projections were adjusted accordingly.
(COP - Hdbk. on HART)

Response XVI-83:

See Response XVI-67.

Comment XVI-84:

B. Population

Projections of the amount of population increase between now and 1995, particularly in the Central Honolulu corridor, are crucial to any realistic projection of transit needs. Both the total island growth and the proportion of it in Central Honolulu are now projected at a considerably lower level than when the HART studies were made.

For example, the EIS projects more than twice the population growth to 1995 between Pearl City and Hawaii Kai as does the General Plan of 1977 (as adjusted for the lower DPED projections). This, of course, affects employment and trip projections in the corridor and tends to inflate projected transit ridership and automobile congestion at screenlines on either side of the CBD.

Specifically, for the Central Honolulu Area (Pearl City to Hawaii Kai) the 1995 population was projected in the EIS at 573,500, an increase of 136,000 or 31% over the comparable 1975 figure of 438,000. In terms of the 917,000 total 2000 population projection of the adjusted General Plan, the Plan shows a year 2000 projection for this area of only 516,500 (458,700 in the Primary Urban Center and 57,800 in East Honolulu.) Interpolated for 1995, the Central Honolulu area would then have a population of at most 500,000, an increase over 1975 of 62,000 or 14% rather than 136,000.

This over-statement of population growth is, of course, reflected in the high projections of automobile and transit trips in the corridor and in the alleged need for higher density zoning.

For the island as a whole, the original estimates leading up to the present transit proposals were made in the early and middle '60's and are described in the Oahu Transportation Study of 1967, in which the island's 1965 population of 617,000 was projected to grow to 1,050,000 by 1985. (Projection of this rate of growth would result in a population of between 1,300,000 and 1,400,000 by the year 2000).

Later reports, specifically the HRTS report of December 1972, prolonged the planning period to 1995 and used a projection for that year of 924,000, an estimate also found in the Alt. An. and the PEEP II report.

The current DPED Series II-F adjusted GP projection for 1995 is 886,000 and is used in the EIS as a basis for reduction of the transit patronage, cost and revenue figures from those in PEEP II. With the 1977 resident population at 717,600, this represents a projected 1977-95 island total population increase of 168,000 or 23%. (COP - Hdbk. on HART)

Response XVI-84:

See Response XVI-67.

Comment XVI-85:

C. Employment

The OTS 1967 report projected the island's employment as growing from 198,000 in 1965 to 342,000 in 1985. The 1972 HRTS report projected a figure of 518,140 in 1995, based on DPED projections then used as a basis for planning. This figure was also used in PEEP II and a slightly smaller projection, 515,700, is cited in the EIS.

In line with the DPED's series II-F projections, a lower employment figure for 1995 of 472,000 is also mentioned in the EIS. It is our understanding that all these numbers include both civilian and military jobs.

With 1975 employment at 333,000, even the lower 1995 projection represents a 42% increase, compared with a 23% increase in population.

The COPTSC finds it difficult to believe that, with a 1977-1995 projected population increase of 168,000 (886,000 minus 718,000) there would be an employment increase as high as 139,000 (472,000 minus 333,000).

Central Honolulu -- defined as the Primary Urban Center plus East Honolulu -- is projected in the EIS to have a 1995 employment figure of 410,000, about 79% of the island total of 515,700. On the basis of the decreased island total 1995 employment projection of 472,000 (adjusted for the DPED lower projections now used in the General Plan), 79% would mean 373,000 jobs in Central Honolulu, an increase of 106,000 or 40% over 1975's approximately 266,000 jobs (79% of the island total of 333,000), instead of 144,000 (410,000 - 266,000), which would represent a 54% increase.

Again, the COPTSC can find no evidence that the lower employment projections, either island-wide or in the Central Honolulu area, were translated into lower numbers of trips in peak hours or at automobile screenline locations.

Employment in the major urban employment areas in the Central Honolulu area in 1995 was projected in 1972, and similar but somewhat revised projections are given in the EIS, as follows:

	1970	Alt. An. 1995	EIS 1995	1995 Increase over 1970
CBD-Civic Center	52,400	83,100	90,000	73%
Waikiki	18,800	39,800	40,000	111
Ala Moana - Ward Ave.	18,600	29,800	20,000	5
Kakaako	16,500	26,300	Not shown	Not available
Kalihi - Iwilei	30,300	52,800	56,000	87
Airport	14,800	21,000	28,000	87
Pearl Harbor - Hickam	40,200	40,900	41,000	2

For the six above areas for which the EIS shows 1995 employment projections, the average 1970-1995 increase is 57%. The EIS shows no revised employment projections for Central Honolulu as a whole or for these areas of the lower total employment and population projections of the DPED II-F series. (COP - Hdbk. on HART)

Response XVI-85:

See Response XVI-67.

Comment XVI-86:

D. Trips

A basic projection in all transportation planning is the average number of daily trips taken by the projected population. In the 1967 OTS, 1985 trips were estimated on the basis of a standard methodology taking into account a great many factors -- 1960 or later data on trip origins and destinations; the distribution of trips by type (work, school, shopping, recreational, etc.); modes of travel used (auto, bus, etc.); automobile ownership ratios; household incomes; land used for residential, commercial, industrial purposes; and many others. These data were integrated into a series of models and applied to small geographical zones of the island as they might exist in 1985 on the basis of a number of assumptions. Out of this came aggregated estimates of the number of trips the 1985 population would take each day by purpose and by mode.

It was found that in 1960 a total of 1,258,000 daily person trips were made, an average of about 2.04 trips per capita. This was projected in the OTS to increase to an estimated 2,818,000 daily trips in 1985, an average of 2.68 per capita. The HRTS 1972 report projected a total of 3,362,000 person trips a day by 1995, a ratio of 3.65. PEEP II in 1976 projected 1980 trips at 2,264,000, or 3.08 per capita, and 1995 at 3,308,000, or 3.58.

The 3,308,000 trips would be an average of 3.74 per capita per day, based on the EIS's lower population figure of 886,000 for 1995 after adjustment to the II-F series. It should be noted that this would represent an increase of 22% per capita per day over the current average of 3.06. It represents an overall 50% increase in person trips compared with a projected population increase of 23%.

In transportation reports, two kinds of trips are defined:

1) A "person" trip is movement from an origin to a destination by one person, irrespective of how many different "modes" -- an automobile, a bus, even a walk, he may use on his journey.

2) A "passenger" trip is movement on a single mode. Thus, if someone drives from his home to a bus stop, takes a bus to a rail transit station, a rail journey, and another bus to his destination, the one person trip has involved four passenger trips. (COP - Hdbk. on HART)

Response XVI-86:

Comments are noted.

Comment XVI-87:

E. Peak-Hour Trips

From a technical point of view, it is not total daily trips which test the capacity of a street or transit system, but the volume during the time of greatest traffic concentrations, the "peak period" or "peak hour". The peak periods are usually defined as the two consecutive hours of heaviest traffic volume in the morning rush period and the corresponding two in the evening. During each peak period there is a peak hour, when the traffic

is heaviest. A rule of thumb loosely used by some transit planners is that volume in the peak hour is 60% of that in the peak period and that each peak period volume is roughly 20% of total daily volume.

It is difficult to get any measures of total peak hour trip data from the EIS. A footnote to Table III-3, page III-12, explains:

> The equivalent daily capacity is derived from hourly capacities through a procedure that is essentially the inverse of developing the peak hour, peak direction traffic volumes from daily volumes. Therefore, the volume-to-capacity relationship (or V/C ratio) that compares daily volumes to daily capacity reflects similar conditions that would exist during the peak hour in the peak travel direction.

From this we evidently must assume that where the EIS says that the daily volume at a given screen-line for example, exceeds the daily capacity by 8% (a V/C ratio of 1.08), the situation in the peak hour would be the same.

Earlier reports do provide us with some peak hour figures, however. In PEEP II it is projected that there will in 1995 be 368,000 person trips (about 11% of the daily total) in the evening peak hour, of which 81,900 (22% of the peak hour total) will use transit. These figures are broken down by type in the Alt. An., as follows:

	1995 Daily Total		1995 Peak Hour (P.M.)		
	Number	Percent of Total	Number	Percent of Total	Percent of Type
Type of Trip					
Home-base work	673,600	20.4	108,580	29.5	16.1
Home-base shopping	456,200	13.8	53,020	14.4	11.6
Home-base social/ recreational	857,400	25.9	90,400	24.6	10.5
Home-base other	383,700	11.6	41,150	11.2	10.7
School	288,000	8.7	28,840	7.8	10.0
Univ. of Hawaii	33,400	1.0	3,610	1.0	10.8
Non-home base	615,700	18.6	42,350	11.5	6.9
Total	3,308,000	100.0	367,950	100.0	11.1

(COP - Hdbk. on HART)

Response XVI-87:

Comments are noted.

Comment XVI-88:

F. Trips by Mode and Type

A projected 1985 distribution of trips by type and mode, plus conversion of automobile person trips to automobile trips, is shown in the following table from the OTS, which is based on the assumption of a high-speed rapid transit system supplemented by feeder buses. Percentages were added by the COPTSC.

Type of Trip	Person Trips		Transit Person Trips			Automobile Person Trips		Equivalent automobile Trips	
	No.	% of Total	No.	% of Type	% of Total	No.	% of Total	No.	Persons Per Car
Home-based work	668,033	24	151,955	23	36	516,078	22	348,875	1.48
Home-based other	1,371,627	49	119,896	9	28	1,251,730	52	644,590	1.94
Home-based school	288,579	10	29,273 plus 83,299 non-scheduled and special buses	10 29	7 20	176,006	7	20,229	8.70
Non-home based	489,610	17	36,295	8	9	453,313	19	283,082	1.60
TOTAL	2,817,849	100	420,718	15	100	2,397,129	100	1,296,776	1.85
Truck Trips	166,495		Equivalent		to			234,190	
								1,530,966	

It should again be noted that "home-based other" -- shopping, social and recreational, primarily -- form half the projected daily automobile trips, and that work trips, which are heavily concentrated in peak hours, form only 27% of the total (348,875/1,296,776)

The HRTS report includes a table showing 1995 projections of total and transit trips by type, based on a 22-mile rapid transit system with feeder buses, as follows:

Type of trip	Total Trips No.	Total Trips % of Total	Transit Trips No.	Transit Trips % of Type	Transit Trips % of Total
Home-based work	674,000	20	193,000	29	40
Home-based non-work	1,697,000	50	193,000	11	40
School	289,000	9	32,000	11	7
Non-home based	616,000	18	40,000	7	8
Other special trips	86,000	3	26,000	30	5
TOTAL	3,362,000	100	484,000	14	100

Of the projected transit trips, 72% (348,000) were projected to be by rapid transit and 28% (136,000) by bus.

It should be pointed out that in both tables above, transit trips are projected at around 14% or 15% of all person trips, compared with 8% or 9% at the present time. In 1995, this leaves some 2,878,000 trips a day to be made by other means, preponderantly by private passenger automobile. At the same number of passengers per car (1.85) shown in the OTS table, this would require about 1,557,000 automobile trips per day. (COP - Hdbk. on HART)

Response XVI-88:

Comments are noted.

Comment XVI-89:

G. Transit Trips

As early as the 1967 OTS report, a rapid transit concept was used in estimating transit trips. It was suggested that this concept "should be incorporated into all long-range transportation plans for Oahu". Though various transit projections were made, ultimately a model was set up in which "the operating characteristics

of the rapid system were altered to give the maximum advantage to the system". Daily 1985 person transit trips were variously estimated at 337,419, 363,113, and, including school riders on non-scheduled and private buses, 420,718 (compared with 125,440 in 1960).

Transit trips were thus projected in the OTS to rise from 25 per 100 population in 1960 to 40 in 1985. (The actual ratio in 1977 was 25.) The ratio projected for 1995 in the EIS is 48.

Though the projections varied somewhat in different reports, they remained in the same relative order of magnitude. HRTS projected for 1995 484,000 daily transit trips out of a total of 3,362,000 trips -- 14.4% of the total. With 510,000 passenger trips on feeder and local buses, 123,000 on express buses, and 349,050 using rapid transit in whole or in part of their journey, a total of 982,060 passenger trips was projected (compared with about 220,000 in 1977).

PEEP II projected, for a 14-mile guideway system in 1995, a daily average of 473,000 person transit trips, of whom 306,900 would use the fixed guideway. In terms of passenger trips, the total would be 834,500 -- 386,000 on local buses and 141,000 on express buses, in addition to the guideway trips.

In the EIS, the total transit projection is reduced by about 10% to adjust to the DPED series II-F projections now used as the basis of the City's General Plan and the development plans. The EIS thus projects a daily transit patronage on a 14-mile system of 425,000, of whom 276,000 would use the guideway. A comparable reduction in PEEP II's total daily 834,500 passenger trips would result in about 750,000 passenger trips compared with a 1978 level of 224,000.

It should, however, be pointed out that although the EIS reduces the 1995 transit trip figure from 473,300 to 425,000, there seems to be no overall reduction in total passenger trip projections to adjust to the lower population figure of 886,000 or the lower employment projections now being used. Since it is work trips which show the highest proportion using transit, especially during peak hours -- plus the fact that they also make up the bulk of peak hour traffic generally, this is another example of the tendency to overstate traffic and transit volumes.

Until the long-term implications of the energy situation began to be generally accepted, most criticisms of the HART proposal were directed against its patronage projections, which seemed unduly optimistic in view of the difficulties experienced nationwide

in getting people to leave their cars for transit of any kind. Especially in cities like Honolulu -- with a population well below a million, a high ratio of car ownership, an existing island-wide network of highways -- the chances of weaning people out of their cars did not seem promising. The higher gas prices of the mid- and late '70's did not make much of a dent, apparently, in the ever-increasing volume of fuel utilization.

The first indication of sharply increased transit patronage was felt during and after the fuel shortage of 1974, during which year bus passenger volume increased 38% from 1973. With gas again available, though at increasing prices, 1975 bus patronage was only 15% higher than 1974 and subsequent years show gains of only 11%, 3% and 2% for 1976, 1977 and 1978 respectively.

This would seem to indicate that as long as gas were freely available, total daily transit passenger volume increasing from 224,000 in 1978 to 750,000 in 1995, even with an attractive rail guideway, would not be likely.

With the new energy situation, the COPTSC feels that this argument has to a certain extent become out-dated. Far more important, as we have stated above, is the probability of a reduction in projected future automobile trips, brought about by a combination of fewer total trips per capita per day, a smaller population projection, and an increase in car pooling and doubling up which would increase the average number of persons per car per trip.

With these in combination, even the HART proposal's transit projections might well be accommodated without the construction of a rail guideway. The congestion of streets and highways at designated "screenlines" and in the downtown area, upon which the need for HART was predicated, would be lessened to the point where the "unconsidered alternative" might handle the transit load for decades to come. (COP - Hdbk. on HART)

Response XVI-89:

Comments are noted.

Comment XVI-90:

H. Peak-Hour Transit

PEEP II projects 1995 evening peak hour transit patronage at 81,900 person trips, with a 14-mile guideway system. Total peak hour passenger trips are projected at 148,800 -- 56,000 on the guideway (entering and leaving each station and traveling between stations), 66,700 on local buses, and 26,100 on express buses. It should be pointed out that these figures refer to the total system on the entire island and not to the load at any point or any one moment of time.

The projected distribution of the 1995 peak hour load along the length of the guideway is shown graphically in PEEP II, but a table from the HRTS report shows similar (though not identical) figures which we found easier to understand. We include it here. It is for the 23-mile system, so that the number of passengers are a little larger than would be found in a 14-mile system.

Station	Koko-head bound	Ewa-bound	Both Directions (by addition)
Pearl City	7,400	1,300	8,700
Pearlridge	8,900	1,400	10,300
Halawa Stadium	10,500	1,000	11,500
Pearl Harbor	11,200	2,000	13,200
Airport	10,500	3,000	13,500
Keehi Lagoon	11,600	3,500	15,100
Kalihi	17,900	4,900	22,800
Liliha	19,000	6,200	25,200
CBD	14,600	13,800	28,400
Civic Center	10,500	17,500	28,000
Ward Avenue	9,400	18,800	28,200
Ala Moana	8,700	16,800	25,500
Waikiki	4,300	17,600	21,900
University	1,100	16,500	17,600
6th Avenue	690	14,100	14,790
Koko Head	570	12,600	13,170
Kahala	170	11,500	11,670
Aina Haina	150	10,000	10,150
Niu	190	9,100	9,290
Hawaii Kai			

From the above table it can be seen that even with a 23-mile system the maximum passenger load on the guideway during the morning peak hour between any two stations is projected to be about 28,000, including both directions. The largest load in any one direction is 19,000. With a 10% reduction to be consistent with the post II-F reduced total transit volume, these would be a little over 25,000 and 17,000, respectively.

These projections are for rail transit only and do not include any additional bus passengers assumed to be traveling through the corridor during the peak hour.

The Alt. An. report projected for 1995, under the TSM/Expanded bus alternative, a required maximum peak hour volume of 188 local buses in the heart of the CBD (Hotel St. at Fort St. Mall) and 245 express buses on all the north-south streets in the downtown area -- a total of 433 buses.

HRTS projected 432 express and feeder buses needed during the 1995 peak hour on the entire system to supplement the guideway, apparently on the entire island. (COP - Hdbk. on HART)

Response XVI-90:

Comments are noted.

Comment XVI-91:

I. Transit Capacity

The capacity of a single track of guideway at any one point, assuming ten 72-passenger cars per train and a train every two minutes, would be 21,600 an hour. Bus capacities, assuming a single lane with on-line curb stops, are said to be 100 to 120 buses an hour under optimum conditions. With 70 passengers loaded into a 50-seat bus during peak hours, the capacity of a single reserved lane would be no more than 7,000 passengers per hour. It would thus take four bus lanes to carry the 28,000 peak hour passengers projected for the guideway if they were evenly divided in both directions; not even two lanes could carry the peak hour one-directional maximum of 17,000.

It has been argued that the gas shortage and the resulting prospect of increased transit demand favor a rail system, as it would have a greater capacity than that estimated for the TSM/Expanded bus system. Though a rail line undoubtedly has greater

capacity per track than a single bus lane, there is no limit to the number of bus lanes which can be run through an area, provided there is sufficient street space.

If automobile traffic drops significantly -- and this is the only eventuality which could generate a sharp increase in transit demand -- more lanes could be taken out of automobile use and reserved for transit vehicles without causing the intolerable traffic jams foreseen by HART's proponents. A case in point is the successful inauguration of Hotel Street as a reserved bus street, which did not create the feared over-loading of the remaining downtown streets. It should be remembered that a bus requires the street space of only a relatively small number of cars but can carry many times more passengers.

Whereas ordinary local buses making frequent stops can only move between 5,000 and 7,000 persons per hour, articulated express buses can move 10,000 to 12,000 and articulated electric trolley buses in reserved lanes, with priority at intersections and a few grade separations at critical bottlenecks, can move between 15,000 and 20,000. Fixed guideways, totally grade-separated, can move up to 25,000 per track. As already pointed out. at 2-minute headways, as planned for the HART guideway during peak hours, ten-car trains with a capacity of 72 persons per car could move 21,600 persons in each direction, not significantly more than two express bus lanes or one high speed electric trolley lane.

In the downtown area guideway trains would stop only at Liliha, Fort, and Punchbowl Streets. If express buses or trolleys did the same, downtown street capacity for buses would be increased considerably over what the usual standards calculate. (COP - Hdbk. on HART)

Response XVI-91:

Minimum safe operating headways are a function of dwell time which is determined by the number of boarding and alighting passengers. The fewer the stops, the longer the dwell time and consequently, the longer the headway (i.e., the fewer buses per hour) which reduces capacity.

Comment XVI-92:

J. Bus Transit

In 1960 the island had 254 buses in operation, with 95,410 revenue passengers on an average weekday. In 1973, before the gas shorage led to the increase in bus patronage, there were 315 buses, with an average daily total passenger count of 121,500, and in 1974, with 333 buses, the count was 167,000. (Daily average figures are calculated by dividing annual totals by 302 which allows for Sundays and holidays). In 1977-78 there were about 350 buses and a daily average of 180,000 person trips and 224,000 passenger trips, including about 39,500 free transfers, 24,700 senior citizens riding free of charge, and 50,900 students at reduced fares. Full-paying revenue passengers average 109,000, total revenue passengers 160,000.

Projections of 1995 bus patronage depend, of course, on what assumptions are made as to the extent of improvements made to the existing bus system and whether or not a rail system is built. In various reports a bus concept was developed involving assumptions of extensive improvements and alterations in operating procedures and a considerable expansion of the bus fleet -- the "TSM" or "Transit System Management" concept. Such a system, it was projected, without rail transit, would by 1980 have 500 buses and be carrying 70,000,000 passenger trips a year (232,000 a day) and by 1995 would have 900 buses carrying 110,000,000 passenger trips a year (364,238 a day). (In the EIS this concept is called the "TSM/Expanded Bus system and includes such improvements as reserved bus lanes.)

In PEEP II it is projected for 1995 that, in addition to the 14-mile guideway's daily 306,900 passenger trips, the local bus system would carry 386,600 passengers (primarily feeder trips) and the express buses would carry 141,000. It was estimated that this would require a fleet of 580 buses -- 210 for local and shuttle service, 317 express, and 53 more for 10% spares.

The COPTSC has worked out a table showing these projections in terms of average passengers per bus per day as follows:

	Buses	Daily Passengers	Average Passengers Per Bus Per Day
1979	345	220,000	638
1995 TSM	900	364,000	404
1979-95 Additions	555	144,000	259
1995 FG	580	528,000	912
Local	210 (+21)	386,000	1,671
Express	317 (+32)	141,000	404

Without being able to go behind these figures, we cannot but question the reasonableness of some of these averages, particularly the very low average for the additional 555 buses under the TSM alternative. With the system improvements assumed for this alternative, including express buses on reserved lanes, a daily passenger load averaging only 41% of the current overall figure is, we feel, open to question.

It should also be pointed out that, just as the EIS reduced the overall transit trips from the PEEP II figures by 10% (473,000 to 425,000), possibly the bus figures above should have been reduced proportionately. If this is so, then either the average projected bus passengers per day under the TSM alternative would drop even more, or the number of buses needed would be less. In the latter case, bus volumes, especially in peak hours, would also be lower than projected.

Response XVI-92:

A similar table to the above is shown below to reflect the maximum number of buses in operation on a daily basis (excluding spares) and the average daily passenger trips (including transfers).

	Buses	Daily Passenger Trips	Average Passenger Trips Per Bus Per Day
1979	290	230,000	790
1995 TSM	831	440,000	530
1995 FG	527	528,000	1000

The low passenger trips per bus figure shown for the TSM concept reflects this system's need to attract a high number of passengers by expanding service not only in areas currently being served but to new areas in outlying districts. Buses, therefore, must make longer and fewer trips per day, which is reflected by the average trip length estimated to be approximately 6 miles/passenger as compared to the 1979 bus system and 1995 fixed guideway estimates of approximately 5 and 4 miles/passenger, respectively. Feeder buses serving a rail rapid transit system would inherently have shorter runs and hence can make more trips per day which increased their load factor.

Comment XVI-93:

K. Automobile Ownership

In the early '60's, when the OTS studies were made, America's love affair with the automobile was already coming into full flower. There were 230,590 passenger vehicles registered on the island in 1966. Car ownership was projected to grow to 360,352 by 1985. (Car registrations in a year are higher than car ownership at any one time. COPTSC estimates ownership at about 85% of registrations).

In 1972 it was estimated that the island would have over 500,000 motor vehicles by 1995 -- more than one for every two persons. It is not clear from the text whether this includes trucks, buses, etc., but since passenger cars are about 90% of the total, it is clear that a continued increase in private car ownership was projected.

The OTS found the 1960 car ownership ratio to be 0.97 cars per household and projected this to grow to 1.19 by 1985, with a ratio of 1.24 in central Honolulu (Census tracts 1 to 65). It expected the persons-per-car ratio to drop from 3.57 in 1960 to 2.91 in 1985, and suggested that the saturation point in car ownership would come at about 2.50 persons per car.

In 1972 the 1995 projection was set at 1.30 cars per household. In the island's urban area the ratio had grown from 1.01 in 1960 to 1.15 in 1970, holding steady in the rural areas at 1.11.

These projections turned out to be very conservative. In 1978, the ratio of population to passenger car ownership had already dropped, according to COPTSC estimates, to 2.30 to 1, and average car ownership per household was estimated at 1.49. The gasoline shortage of 1973-74 and subsequent events have, however, applied the first brakes to the seemingly endless growth in automobile ownership and usage. A few figures are suggestive:

1) The island's passenger car registrations were 266,823 in 1969 and 327,638 in 1973 -- an increase of 60,815, or 23% in four years. From 1973 to 1978, however, the growth was only to 380,311 -- 52,673, or 16% in five years. The average increase per year thus dropped from 15,200 in the earlier period to 10,500 in the later one, in spite of population growth. (Differences in the rate of re-registration of used cars or the rate of purchase of new ones cannot be gauged from the available data.)

2) Only 5,200 more passenger cars were registered on Oahu in 1978 (380,311) than in 1977 (375,100), compared with an average increase per year of 13,140 between 1966 (230,590) and 1977 (375,100). (COP - Hdbk. on HART)

Response XVI-93:

Comments are noted.

Comment XVI-94:

L. Automobile Usage

OTS found that in 1960, 88.2% of all daily person trips were by automobiles, with 51.2% being auto drivers and 37.0%, auto passengers. This was an average of 1.81 persons per car, quite stable compared with a 1952 finding of 1.8. Work trips were found to average only 1.22 persons per car. It was also found that one-car families averaged 5 vehicle trips per day, two-car families 8, and so on up to five-car families averaging 18 trips.

As indicated above, car ownership in both absolute and relative terms actually grew more rapidly than projected by OTS. Not only ownership but usage per car seems to have grown, at least until the first gas crunch applied the brakes. For example, from 1969 to 1973 island highway fuel consumption data show average annual gallons used per vehicle ranging between 598 and 614, and average estimated miles of travel per vehicle running between 8,377 and 8,600. During the same four-year period total highway fuel consumption rose 27%.

After 1973, however, the situation began to change. The average gallons used per vehicle dropped to 581 in 1978 and the estimated average miles traveled dropped to 8,135 -- a 5% decrease from the 1973 high of 8,600. Total fuel consumption rose only 11% in the 1973-78 five-year period, compared with 27% in the previous four-year period.

Though these evidences of a tapering off in vehicle usage are modest, the effects of the national energy conservation program and limitations on fuel imports can be expected to continue to reduce automobile usage in the foreseeable future, at least in comparison with the projections of the 1960's and early 1970's.

It should be noted that from the source utilized, the COPTSC could not separate out truck and bus usage from automobiles. Since there is no reason to assume that average fuel consumption by these types of vehicles was reduced after 1973, the actual degree of reduction for passenger automobiles would, we feel, be at least as great as the average for all vehicles and, quite possibly, greater than the overall average. (COP - Hdbk. on HART)

Response XVI-94:

Comments are noted.

Comment XVI-95:

M. Screen-line Traffic Volumes

From the beginning of the studies undertaken in the 1960's, it was a basic assumption that the City's overall transportation plan had to be "balanced", that it had to provide for the needs of both transit and the projected automobile traffic volume. In discussing the TSM/Expanded Bus alternative, the Alt. An. points out that the objective of the plan is "to further improve the carrying capacity of the existing facilities through greater utilization of transit combined with additional improvements for private automobiles....the bus transit plan must therefore provide a fine balance relative to the joint use of the street facilities by both buses and automobiles. An unbalanced system that improves the transit system at the expense of the automobile, whereby the overall system capacity is reduced, would not serve the basic objective of this plan."

Though the numbers vary in different reports, all projections were that without a rail transit system the streets would not be able to carry the volume of automobile traffic after a certain point in time. In the Alt. An. the number of cars which would be driving through selected central Honolulu "screenlines" -- Kapalama Canal, Nuuanu Canal, Punchbowl Street, and Ward Avenue -- in 1985 were projected under three alternate assumptions -- existence of the "baseline" bus system, the "TSM" bus system, and a 14-mile fixed guideway. In each case, the "volume" of traffic was compared with the estimated carrying "capacity" of the streets and highways crossing the screenline, and a V/C ratio computed.

The Alt. An. found that in 1985 the following V/C ratios would result under the three alternatives shown:

Screen Line Location	Baseline Bus	TSM Bus	14-Mile Fixed Guideway
Kapalama Canal	0.94	0.89	0.87
Nuuanu Canal	0.95	0.90	0.89
Punchbowl Street	1.01	0.98	0.91
Ward Avenue	1.00	0.98	0.90

The EIS repeats the same table for the two bus alternatives but adds for the TSM/Expanded bus alternative V/C ratios of 0.97, 0.98, 1.10 and 1.08 in 1990 at the four locations, respectively. These form the essential basis upon which they conclude that by 1990 traffic volumes would exceed capacities and only a rail system could relieve enough automobile traffic to bring the ratios down below 1.00.

No 1995 V/C ratios are shown in the EIS, though it is stated that an average of 350,000 to 450,000 daily auto trips are projected for the urban core corridor by 1995, with traffic volume exceeding capacity by an average of approximately 100,000 autos per day. Converting this to peak hour trips would, it is claimed, result in approximately 6,000 autos per hour in each direction requiring the equivalent of a new six-lane freeway.

Unfortunately, the EIS does not relate vehicle trips to person trips or passenger trips, so that we do not know, when looking at their estimates of vehicle volumes, how many persons are projected to be in the vehicles or what proportion this is of daily total or peak hour person trips or passenger trips.

It is not clear to the COPTSC whether any of these screenline volume figures were adjusted downwards for the lower population and employment projections of the II-F series and the population distribution of the 1977 General Plan. For 1985, the same figures are shown in the EIS as in the Alt. An. (COP - Hdbk. on HART).

Response XVI-95:

See Response III-5.

Comment XVI-96:

N. Transit in Other Cities

European cities like Paris, London, Madrid, etc., long ago turned to rail transit systems, since the high ratios of auto ownership common in the U.S. did not exist there (and, indeed, some predated the auto). In the U.S. the older Eastern metropolises also developed early rail systems -- New York, Chicago, and so on. With their high-density populations running into many millions and as many more people in their suburbs, they had no alternative and, indeed, could not have survived without them.

The newer U.S. cities, especially in the Western part of the country, developed later, during the automobile age. They replaced their early streetcars with wide-spread networks of freeways, expressways, and other types of facilities serving the ever-growing automobile traffic. The more of these they built, the more traffic there seemed to be. It was the reaction to the futility of this course of action -- to say nothing of its expense and detrimental environmental effects -- which led to the movement for better mass transit.

In 1977-78 there were 440 public transit systems in all the country's urbanized areas with 500,000 population or more. Of these, 422 were all-bus systems, 4 were all rail -- heavy, light, or personalized rapid transit -- and 14 were "multi-mode" -- various combinations of heavy rail, light rail, trolley cars, cable cars, ferry boats, etc.

Heavy rail systems, some only partially completed, were operating in New York (metropolitan area population about 10 million), Chicago (7 million), Boston (4 million), Philadelphia (5 million), Cleveland (2 million), San Francisco (3 million) and Washington (3 million). In addition, Seattle (1.4 million) had a short mono-rail connecting its downtown with the former World's Fair site. In Canada, Toronto (3 million) had a rail transit system.

Light rail (usually streetcar systems) were operating in Detroit, Cleveland, Boston, New Orleans, Pittsburgh, San Francisco, Philadelphia, and Newark.

Trolley Coaches were operating in Boston, Philadelphia, Seattle, Dayton, and San Francisco.

Los Angeles, with a metropolitan population of 7 million, Baltimore (2 million), Miami (1.5 million), and Atlanta (2 million) have new rail systems in operation, under construction, or in planning. Cities with rail transit systems under study include Detroit (4.4 million), Pittsburgh (5 million), St. Louis (2.4 million), and Denver-Boulder (1.4 million).

These metropolitan populations should be compared with the entire 1978 population of Oahu (720,000) and its planned 2000 population of 917,000 (COP - Hdbk. on HART)

Response XVI-96:

Although Honolulu's population does not match some of the larger U.S. cities with, or presently implementing rail rapid transit systems, Honolulu is characterized by its high transit usage. Transit data compiled by the Dallas Transit System in 1978, shows Honolulu's population as one of the highest users of public transit represented by the number of annual riders per capita as shown on the table below:

TRANSIT SYSTEM RIDERSHIP COMPARISON[2]

1977 Calendar Year

		Maximum No. Veh. Operated	Annual Ridership (Millions)	Annual Riders per Veh. Mile	Annual Riders per Capita	Annual Riders per Vehicle (Thousands)
Honolulu		305	55	3.62 (1)	78 (1)	180 (1)
Baltimore[1]	(MTA)	840	46	3.44 (2)	22	55
Miami[1]	(MDCTA)	401	55	3.04 (2)	36	137 (2)
Pittsburgh[1]	(PAT)	816	91	2.42	47 (3)	112 (3)
Atlanta[1]	(MARTA)	678	61	2.20	56 (2)	90
San Diego	(SDTC)	277	30	2.26	25	108
Minneapolis-St. Paul	(MTC)	825	63	2.13	35	76
Dallas	(DTS)	346	24	1.89	25	69
Portland	(Tri-Met)	404	31	1.52	32	77

Source: Transit Data -- 26 American Cities -- 1978 -- Compiled by Dallas Transit System.
[1]Systems presently implementing rapid transit or light rail with UMTA funds.
[2]No cities with long established rapid transit systems included.

Also, more recently, the American Public Transit Association compiled ridership data for the first seven months of 1980 which shows Honolulu ranking 14th out of approximately 150 transit systems, which includes all of the major systems in the U.S.