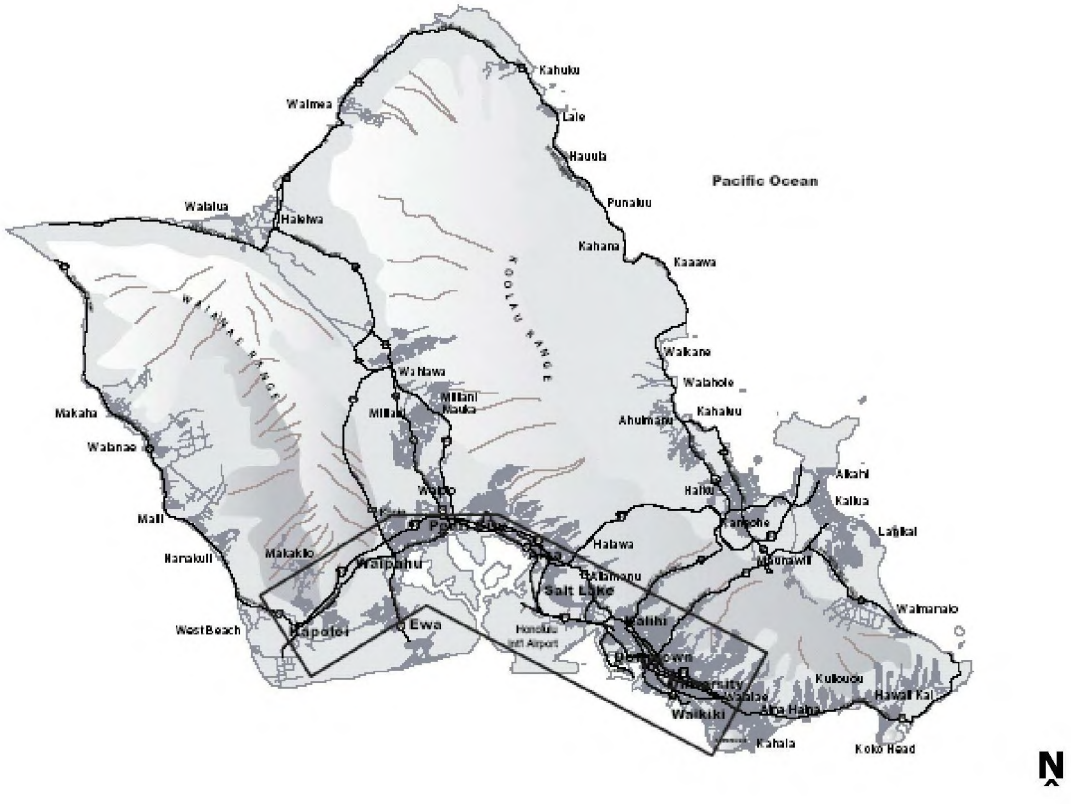
Honolulu High Capacity Transit Corridor
Alternatives Analysis Initiation

City and County of Honolulu

Background

The City and County of Honolulu (City) is initiating a study of high capacity transit service along a corridor between Kapolei and the University of Hawaii at Manoa (UH Manoa) as shown in Figure 1. Both rail transit and bus-based transit options will be considered. The City will undertake an Alternatives Analysis and prepare a Draft Environmental Impact Statement (AA/DEIS) to determine the locally preferred transit alternative for which Federal funds will be sought for implementation. In addition to Federal funds, substantial local funds are anticipated to be available. The Hawaii State Legislature in its recently concluded session passed House Bill 1309 which authorizes the City to enact by ordinance a General Excise Tax surcharge of 0.5 percent to fund a transit major capital investment. Bill 40 to implement this surcharge has been introduced in the Honolulu City Council and is currently under consideration.

Figure 1



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Description of Study Area, Transportation Problems and Needs

The corridor from Kapolei in the west to UH Manoa in the east is the location of the vast share of the total travel occurring on the island of Oahu. Existing transportation infrastructure in this corridor is overburdened handling current levels of travel demand. Travelers experience substantial traffic congestion and delay at most times of the day, on weekdays and weekends. Congestion takes time away from other activities and creates a burden on the economy.

Congestion wastes fuel, produces excess air pollutants, decreases roadway safety and causes stress. It reduces Oahu's attractiveness as a visitor destination and lowers residents' quality of life. Future growth will further increase traffic congestion and delay. The quality of life for Oahu's residents and visitors will continue to decrease unless the transportation system in the corridor is modified to better accommodate existing and future travel necessary for daily life.

Investment is required to improve the efficiency of the corridor's transportation infrastructure. A more efficient transportation system in the corridor will enhance mobility, reduce travel time and improve the quality of life for Oahu's residents and visitors. The purpose of the Honolulu High Capacity Transit Corridor AA/DEIS is to examine candidate investments that would improve the efficiency of the transportation system in Oahu's primary transportation corridor, and the connections between the corridor and the rest of the island.

Work to Date

The need for expanding the transportation system in the corridor along the South Shore of Oahu as population and employment in the corridor has grown has long been recognized. Early plans for meeting the demand focused on highway expansion, resulting in the construction of the H-1 Freeway starting in the 1950s. In the 1960s examination of alternatives to further expanding the highway system began, culminating in the Oahu Transportation Study in 1967. The Oahu Transportation Study explored two alternatives for providing additional transportation capacity: (1) an all-bus system operating in mixed traffic over an expanded freeway system and (2) a fixed-guideway transit system with completion of only the then-committed highway improvements. The study concluded that a rapid transit system would be cost-effective compared to an all-bus system due to the reduced need for additional highway improvements and because it would provide other social, environmental, and community benefits that the all-bus system could not match.

Subsequent regional transportation plans affirmed the need for major capital investments in transit in the corridor, including the Oahu Long Range Transportation

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Plan in 1976, the Hali 2000 Regional Transportation Plan in 1984, the Hali 2005 Regional Transportation Plan in 1991, the Oahu Regional Transportation Plan in 1995 and the Transportation for Oahu Plan 2025 in 2001. The Oahu Regional Transportation Plan is currently being updated for a horizon year of 2030.

More detailed studies of high capacity transit, as an outgrowth of the Oahu Transportation Study, began in 1971. These studies culminated in definition of the Honolulu Area Rapid Transit Project (HART), an 8-mile rail line from Honolulu International Airport to UH Manoa. A combination of budget cuts for transit projects at the Federal level and a change in the Mayor's office at the local level led to cancellation of the HART project in 1981.

Planning of a rapid transit system restarted in 1985. An alternatives analysis that examined 11 alternatives was completed in 1991 and a locally preferred alternative was selected, a 17-mile fixed guideway system from Waiawa to UH Manoa. At this point, the City began a turnkey procurement process that resulted in the selection of a contractor to design, build, operate and maintain the fixed guideway line. The fixed guideway project, as defined by the system contractor, was then carried through preliminary engineering and preparation of a Final Environmental Impact Statement. FTA issued a Record of Decision on the Honolulu Rapid Transit Program in September 1992. The State Legislature passed legislation authorizing the City to increase the General Excise Tax to fund the local portion of the project. However the Honolulu City Council voted 5-4 against raising the General Excise Tax.

In 1998 another examination of transit improvements in the corridor from Kapolei to Honolulu began, the Primary Corridor Transportation Project. Unlike the previous two projects, which focused on fixed guideway transit in exclusive rights-of-way, the Primary Corridor Transportation Project resulted in selection of a Locally Preferred Alternative that consisted of a 17-mile Regional BRT facility with buses in HOV lanes on the H-1 Freeway and a 13-mile In-Town BRT with buses operating in a mixture of exclusive lanes, semi-exclusive lanes, and in mixed traffic. Initial portions of the In-Town BRT, from Iwilei to Waikiki, have been implemented with local funds. The current City Administration has decided to investigate other transit options with more exclusivity in the corridor.

Transportation Problems and Needs

Work currently under way in the update of the Oahu Regional Transportation Plan provides descriptions of the transportation problems and needs in the corridor between Kapolei and Honolulu. The following figures and tables are taken from Deliverable 6.5: *Final Analysis of Baseline Conditions for the 2030 Oahu Regional Transportation Plan*, May 2005. Figures 1 and 3 show locations of expected population and employment growth between 2000 and 2030.

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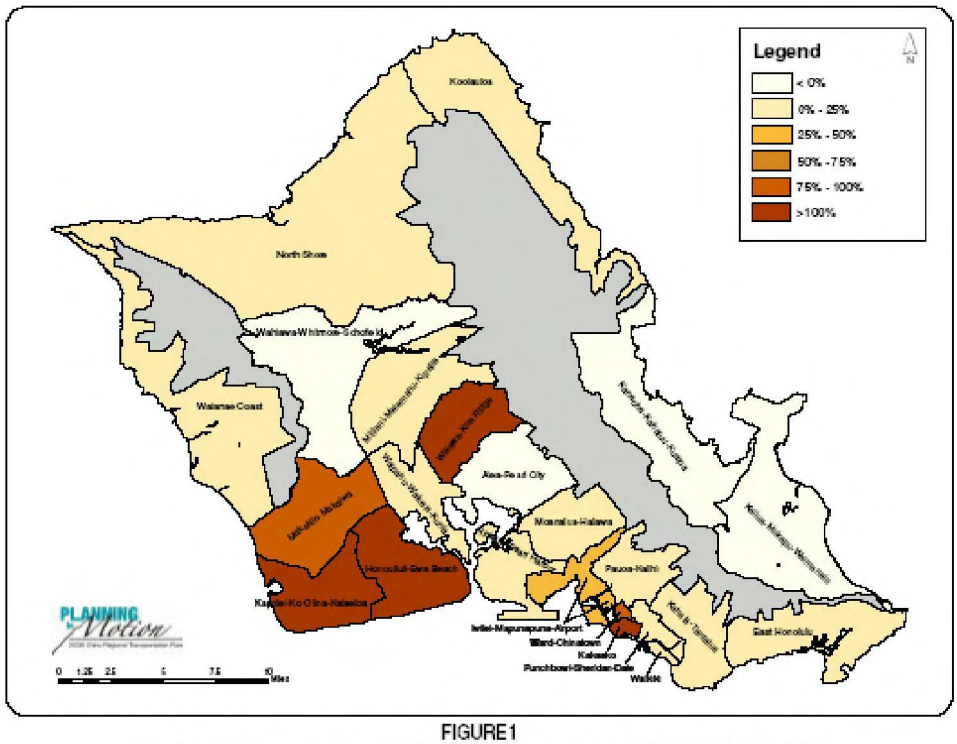

FIGURE 1
POPULATION CHANGES BY TRANSPORTATION ANALYSIS AREA (YEAR 2000 - 2030)

Source: *Final Analysis of Baseline Conditions for the 2030 Oahu Regional Transportation Plan*, May 2005

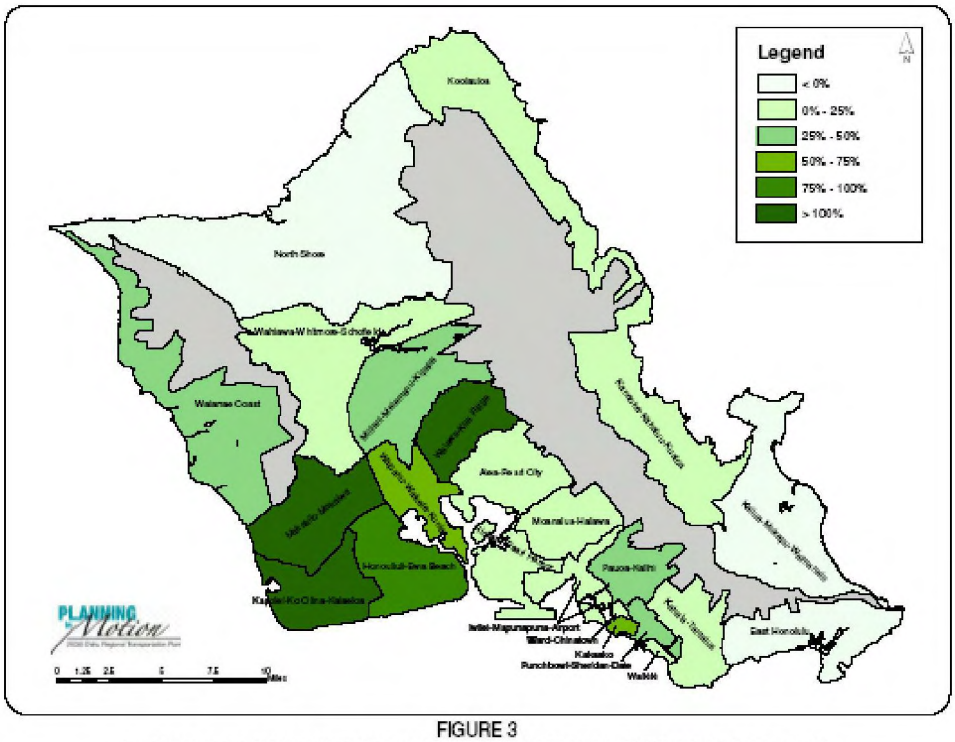

FIGURE 3
EMPLOYMENT CHANGES BY TRANSPORTATION ANALYSIS AREA (YEAR 2000 - 2030)

Source: *Final Analysis of Baseline Conditions for the 2030 Oahu Regional Transportation Plan*, May 2005

As shown, the most significant growth, on a percentage basis, is anticipated to occur at the west end of the Kapolei–Honolulu corridor; but with noticeable population and employment growth also occurring in and around Downtown Honolulu.

Table 3 (from Deliverable 6.5: *Final Analysis of Baseline Conditions for the 2030 Oahu Regional Transportation Plan*, May 2005) provides more detail on employment levels and growth. One key finding is that the largest growth in employment between 2000 and 2030 will be in the Kapolei–Ko Olina–Kalaeloa area, where about 25% of all employment growth on the island will occur. With this growth, by 2030 the Kapolei area will be functioning as envisioned, as a "Second City" on Oahu, and will be a potential destination for transit trips. The growth of Kapolei as an employment center is a change from conditions anticipated in previous rapid transit studies in Honolulu, in the 1970s and 1980s, and may support the need for increased transit services in a "reverse" commute direction.

TABLE 3
EMPLOYMENT BY TAA FOR OAHU (YEAR 2000 AND FORECAST YEAR 2030)

Transportation Analysis Area (TAA)	Employment		Employment Change (Year 2000 to Year 2030)	
	Year 2000	Year 2030 Forecast	Difference	Percentage Difference
1. Ward-Chinatown	55,700	61,200	5,500	9.9%
2. Kakaako	30,400	46,100	15,700	51.6%
3. Punchbowl-Sheridan-Date	47,000	60,500	13,500	28.7%
4. Waikiki	35,600	43,200	7,600	21.3%
5. Kahala-Tantalus	34,500	40,700	6,200	18.0%
6. Pauoa-Kalihi	19,100	23,900	4,800	25.1%
7. Iwilei-Mapunapuna-Airport	70,200	73,200	3,000	4.3%
8. Hickam-Pearl Harbor	25,000	25,900	900	3.6%
9. Moanalua-Halawa	29,800	31,000	1,200	4.0%
10. Aiea-Pearl City	21,200	24,100	2,900	13.7%
11. Honouliuli-Ewa Beach	7,700	15,400	7,700	100.0%
12. Kapolei-Ko Olina-Kalaeloa	9,800	42,900	33,100	337.8%
13. Makakilo-Makaiwa	1,300	7,100	5,800	446.2%
14. Waipahu-Waikele-Kunia	12,500	21,500	9,000	72.0%
15. Waiawa-Koa Ridge	2,900	12,400	9,500	327.6%
16. Mililani-Melemanu-Kipapa	10,900	15,300	4,400	40.4%
17. Wahiawa-Whitmore-Schofield	22,500	23,100	600	2.7%
18. East Honolulu	7,600	7,000	-600	-7.9%
19. Kaneohe-Kahaluu-Kualoa	12,600	13,100	500	4.0%
20. Kailua-Mokapu-Waimanalo	25,000	24,500	-500	-2.0%
21. Koolauloa	5,900	6,800	900	15.3%
22 North Shore	4,600	4,100	-500	-10.9%
23. Waianae Coast	7,600	9,700	2,100	27.6%
Total	**499,300**	**632,900**	**133,600**	**26.8%**

Note: Individual TAA numbers may not sum to totals due to rounding.

Source: *Final Analysis of Baseline Conditions for the 2030 Oahu Regional Transportation Plan*, May 2005

Growth in population and employment at both ends of the Kapolei–UH Manoa corridor will result in increasing demand on existing transportation facilities. Figures 10 and 15 (from Deliverable 6.5: *Final Analysis of Baseline Conditions for the 2030 Oahu Regional Transportation Plan*, May 2005) on the following page show the effect of this increased demand on an already heavily-used highway system, demonstrating the need for providing additional capacity in the multimodal transportation system.

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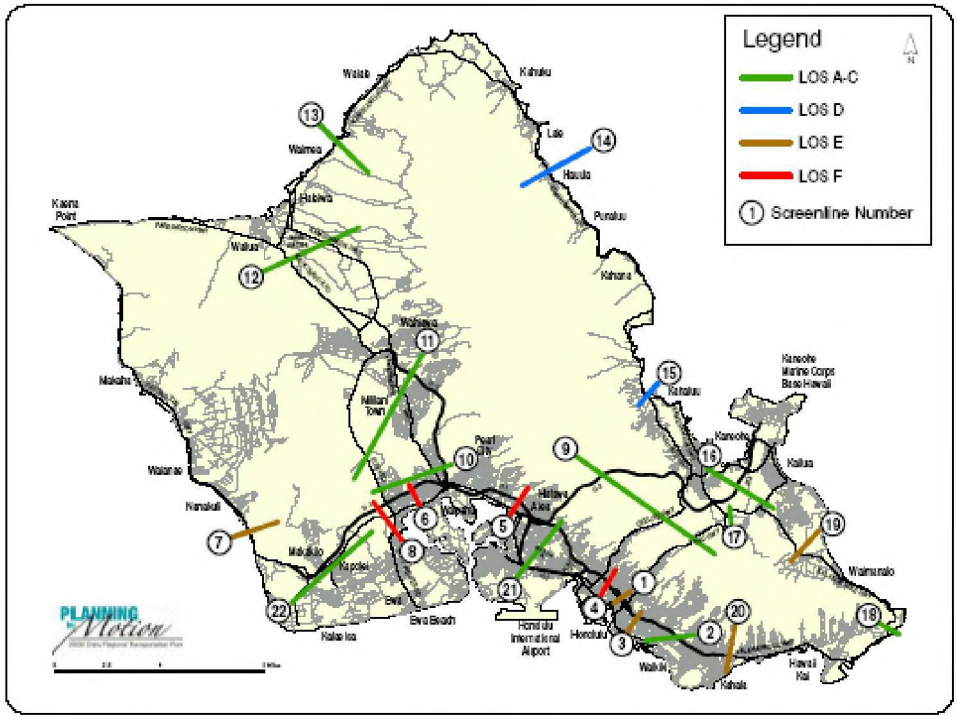

FIGURE 10
BASELINE YEAR 2030 AM PEAK HOUR SCREENLINE AVERAGE LEVELS OF SERVICE (INBOUND)

Source: *Final Analysis of Baseline Conditions for the 2030 Oahu Regional Transportation Plan,* May 2005

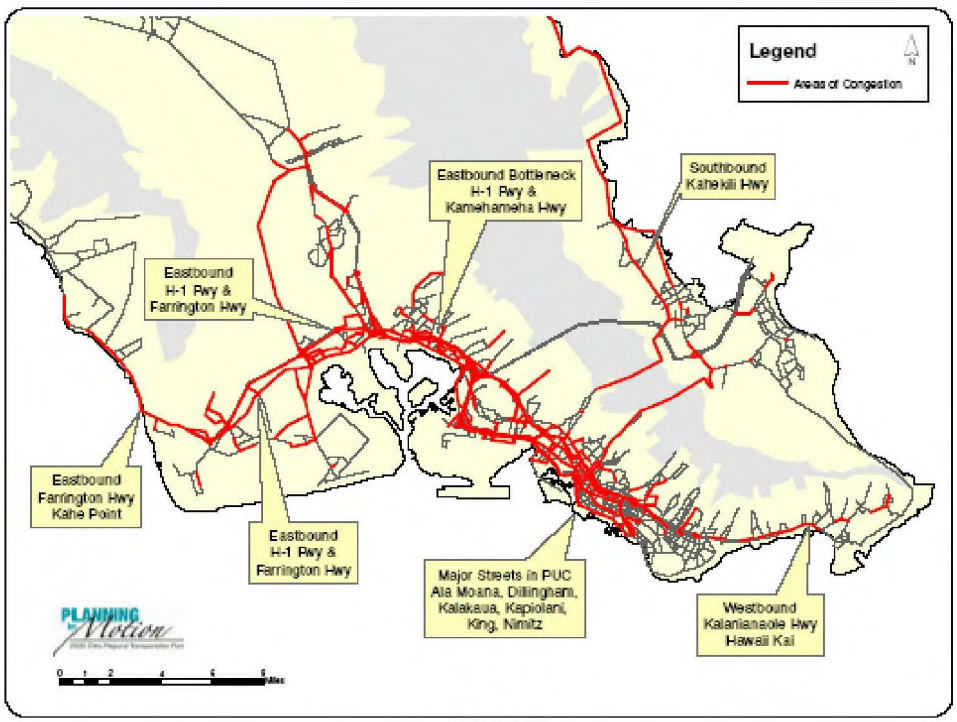

FIGURE 15
LOCATIONS OF SIGNIFICANT AM PEAK CONGESTION (YEAR 2030)

Source: *Final Analysis of Baseline Conditions for the 2030 Oahu Regional Transportation Plan,* May 2005

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Goals, Objectives, and Preliminary Evaluation Measures

Examination of high capacity transit service in the Kapolei–UH Manoa corridor will focus on achieving regional transportation goals and objectives, as defined for the 2030 Oahu Regional Transportation Plan:

GOALS AND OBJECTIVES FOR THE 2030 OAHU REGIONAL TRANSPORTATION PLAN
October 2004

Transportation Services System Goal: Develop and maintain Oahu's islandwide transportation system to ensure efficient, safe, convenient and economical movement of people and goods.	
Objectives:	
#1	Increase peak-period person-carrying capacities on Oahu's transportation network.
#2	Provide efficient, convenient and cost-effective transit service to Oahu citizens.
#3	Encourage the availability of adequate public and private services between Waikiki, the airport and other tourist destinations.
#4	Promote intermodal efficiency of harbor terminal facilities, airport terminal facilities and land transportation systems.
#5	Ensure that no person shall, on the grounds of race, color, gender, age, income, disability, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination in transportation services as provided for under current federal, state, and local legislation.
#6	Ensure user and community safety and security in the physical design and operation of transportation facilities.
#7	Ensure that Oahu's transportation system is planned, designed, constructed and operated in an integrated and cost-effective manner.
#8	Enhance the performance and efficiency of Oahu's transportation system through the use of operation management strategies, such as Intelligent Transportation System (ITS), Transportation System Management (TSM) and Transportation Demand Management (TDM).
#9	Enhance the integration and connectivity of the regional transportation system.
#10	Promote planning, design and construction of transportation facilities and systems to support economic development and vitality.
#11	Provide major rehabilitation/renewal/modernization of facilities in sufficient magnitude to ensure continued effective operation.

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GOALS AND OBJECTIVES FOR THE 2030 OAHU REGIONAL TRANSPORTATION PLAN

Environment and Quality of Life System Goal: Develop and maintain Oahu's transportation system in a manner that maintains environmental quality and community cohesiveness.	
Objectives:	
#12	Develop and maintain Oahu's transportation system to meet or exceed noise, air and water quality standards set forth by federal, state and local agencies.
#13	Encourage energy conservation in transportation.
#14	Preserve Oahu's cultural integrity and sensitive natural resources, including beaches, scenic beauty, and sea and mountain vistas.
#15	Develop and maintain alternative transportation facilities, including bikeways, walkways and other environmentally-friendly elements which can be safely integrated with other transport modes.
#16	Develop a travel demand management system for Oahu that optimizes use of transportation resources by encouraging programs to increase transit ridership, increase ridesharing on Oahu, reduce single occupancy vehicle travel, and reduce auto dependency.
#17	Minimize disruption of existing neighborhoods from construction of the transportation system.
#18	Ensure that transportation facility design and maintenance are compatible with the existing and planned physical and social character of new and existing developments.
#19	Maintain and upgrade existing facilities and design future transportation facilities in a manner that is aesthetically pleasing and incorporates landscaping, tree planting, and public safety.
#20	Develop transportation contingency plans for energy shortages, natural and man-made disasters and other emergencies that would impact the transportation system.

GOALS AND OBJECTIVES FOR THE 2030 OAHU REGIONAL TRANSPORTATION PLAN

Land Use and Transportation Integration System Goal: Develop and maintain Oahu's transportation system in a manner that integrates land use and transportation.	
Objectives:	
#21	Maintain and develop the transportation system to reinforce Oahu's planned population distribution and land use development policies expressed in the City's Development Plans through coordinated efforts of the public and private sectors.
#22	Encourage innovation in planning, design and maintenance of transportation services and facilities.
#23	Encourage the implementation of land use development policies that support efficient use of the transportation system via reduced vehicular tripmaking and vehicle miles traveled.

Specific objectives of a transit major capital investment in achieving these regional goals will be obtained from purpose statements developed during the Primary Corridor Transportation Project:

1. Increase the people-carrying capacity of the transportation system in the primary transportation corridor by providing attractive alternatives to the private automobile.
2. Support desired development patterns.
3. Improve the transportation linkage between Kapolei, which is envisioned to be the "Secondary Urban Center" of Oahu, and Honolulu's Urban Core.
4. Improve the transportation linkages between communities in the Primary Urban Center (PUC) to increase the attractiveness of in-town living.

Preliminary Evaluation Measures

Project evaluation criteria will be related to the project goals and objectives. They also will incorporate the Section 5309 New Starts Project Justification and Local Financial Commitment Criteria:

Project Justification Criteria

The New Starts Project Justification Criteria will provide the basis for most comparisons among alternatives in the AA/DEIS.

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Mobility Improvements

- Normalized Travel Time Savings (Transportation System User Benefits per Project Passenger Mile)
- Low-Income Households Served
- Employment Near Stations

Financial Feasibility

- Affordability to Build and Operate

Environmental Benefits

- Change in Regional Pollutant Emissions
- Change in Regional Energy Consumption
- EPA Air Quality Designation

Operating Efficiencies

- System Operating Cost per Passenger Mile

Cost Effectiveness

- Incremental Cost per Hour of Transportation System User Benefit
- Incremental Cost per New Rider

Transit Supportive Land Use and Future Patterns

- Existing Land Use
- Transit Supportive Plans and Policies
- Performance and Impacts of Policies

Other Factors

Additional evaluation factors will be developed based upon local and regional policies and the goals and objectives identified above.

Description of Conceptual Alternatives

At this early point in the study process, definitions of the alternatives to be evaluated are still evolving. Alternatives are defined at a conceptual level at this time, and these alternatives will be refined throughout the AA/DEIS process. At a minimum, the following conceptual transportation alternatives will be developed and evaluated in more detail during the AA/DEIS process:

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No-Build Alternative

The No-Build alternative will incorporate "planned" improvements that are included in the fiscally constrained long-range plan for which need, commitment, financing, and public and political support are identified and are reasonably expected to be implemented. For the transit system the existing route structure will be maintained. Some additional routes may be added to provide service to developing areas that are currently not served. In addition, sufficient service will be provided throughout the system to meet projected future demand at acceptable passenger loading standards.

Transportation System Management (TSM) Alternative

Also evaluated will be a Transportation System Management (TSM) alternative that responds to the transportation problems in the corridor. The TSM alternative will be defined as the "best that can be done" for mobility without a major capital investment for infrastructure. The TSM alternative will include all reasonable cost-effective transit improvements short of the major capital investments proposed in the fixed guideway alternatives. It will include all of the improvements in the No-Build alternative plus relatively low-cost actions such as:

- New express bus service in the corridor, utilizing existing and planned HOV lanes on the highway system;
- New limited stop service on key arterial streets in the corridor;
- Enhanced transit stops and park-and-ride lots at key locations along the corridor;
- Intersection improvements and roadway design enhancements to facilitate the new transit service; and
- Integration of the new services with local bus service to enhance connectivity and improve access to the new services.

The TSM alternative will incorporate some of the service improvements included in the Regional BRT and In-Town BRT elements of the Primary Corridor Transportation Project.

Fixed Guideway Alternatives

The Fixed Guideway alternatives anticipate the construction and operation of a high-capacity transit system, in exclusive right-of-way, serving an approximately 25-mile corridor from Kapolei in the west to UH Manoa in the east. Due to topographic constraints, alignment alternatives will be limited to a rather narrow corridor parallel to the H-1 Freeway, with probably no more than two alignment alternatives considered at any location along the corridor.

Rather than focusing on examining a series of parallel alignment alternatives within the corridor, much of the attention in defining reasonable alternatives will be on the length and termini of the fixed guideway facilities. The Kapolei–UH Manoa corridor is multi-centered, with potential transit destinations at both ends as well as in the middle, from

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Iwilei through Downtown Honolulu to Kakaako. Alternatives that could be considered include:

- A fixed guideway facility the full length of the corridor, from Kapolei to UH Manoa;
- A fixed guideway facility focused on the Kapolei to Downtown Honolulu portion of the corridor; and
- The Kapolei to Downtown Honolulu portion of the corridor further divided, with a fixed guideway facility oriented to Downtown Honolulu from Waipahu or Pearl City and a fixed guideway facility oriented to Kapolei from Waipahu or Pearl City.

The multi-centered nature of the corridor and the range of alternatives that could serve it may result in the AA/DEIS process concluding with the selection of a Locally Preferred Alternative to be implemented with FTA assistance and a 100% locally-funded project, each with logical termini. As an example, the AA/DEIS process could conclude that a Honolulu-centered project extending as far west as perhaps Waipahu would be cost-effective and competitive in FTA's New Starts ratings process. At the same time, the AA/DEIS process could conclude that a Kapolei-centered project extending east to Waipahu would meet local objectives in supporting and encouraging growth of the Second City and should be considered for development using local funds.

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