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February 28, 2006

Mr. Leslie Rogers, Regional Administrator
Federal Transit Administration, Region IX
U. S. Department of Transportation
201 Mission Street, Suite 1650
San Francisco, California 94105

Dear Mr. Rogers:

Subject: Honolulu High-Capacity Transit Corridor Project

We are transmitting for your use one (1) copy of the FTA Start-up Package (February 6, 2006).

Should you have any questions regarding this document, please contact Mr. Toru Hamayasu at (808) 527-6978.

Sincerely,

T. Hamayasu

MELVIN N. KAKU
for Acting Director

Enclosure

cc: Mr. Ray Sukys, FTA – Region IX (w/enclosure)
Ms. Donna Turchie, FTA – Region IX (w/enclosure)
Mr. James Ryan, FTA – Headquarters (w/enclosure)
Mr. James Barr, FTA – Headquarters (w/enclosure)

bcc: Mr. Mark Scheibe, PBQD (w/out enclosure)

mb (F. Miyamoto)

FTA Start-Up Package for
Honolulu High-Capacity Transit Corridor Alternatives Analysis
City and County of Honolulu

The City and County of Honolulu (City) is initiating an alternatives analysis (AA) and the preparation of a draft environmental impact statement (DEIS) to identify and evaluate high-capacity transit service improvements within a corridor between Kapolei and the University of Hawaii at Manoa (UH Manoa). This document provides an analytical framework for the study by describing the transportation corridor, problems that will be addressed, measures that will be used to evaluate alternative ways to address the problems, and an initial set of study alternatives. Material contained in this document will be included as part of the "scoping process", enabling the general public and affected public agencies to comment on the problem statement, evaluation plan, and initial alternatives. This will then allow the study to develop the information needed to ultimately identify and evaluate major transit investments for improving travel mobility in the corridor.

A. The Study Corridor

As shown in Figure 1, the study corridor is narrow and linear. The densely populated study corridor is located within the Honolulu Urbanized Area (UZA). Based on the 2000 Census, the Honolulu UZA ranks 51st in population among the 71 UZAs in the United States with populations of 500,000 or more. However, of these UZAs with over 500,000 in population, only five have a greater population density than Honolulu.

The major geographic (topographic) features that define and shape the corridor include: the Pacific Ocean, Pearl Harbor and Honolulu Harbor to the south; the Koolau and Waianae mountain ranges to the north; and Punchbowl Crater adjacent to the Central Business District.

The major activity centers within the study corridor include:

- Aloha Stadium,
- Honolulu Harbor,
- Honolulu International Airport,
- Honolulu's Central Business District,
- Kapolei,
- Leeward and Honolulu Community Colleges,
- Naval Station Pearl Harbor,
- Pearlridge and Ala Moana Centers,
- University of Hawaii's Manoa and West Oahu Campuses, and
- Waikiki.

In 2000, nearly 552,000 people lived within the corridor representing 56% of the island's households. Eighty percent (80%) of the island's total jobs are also located within the corridor. Major employment concentrations include Downtown and Kakaako, Waikiki, Honolulu International Airport, and Pearl Harbor.

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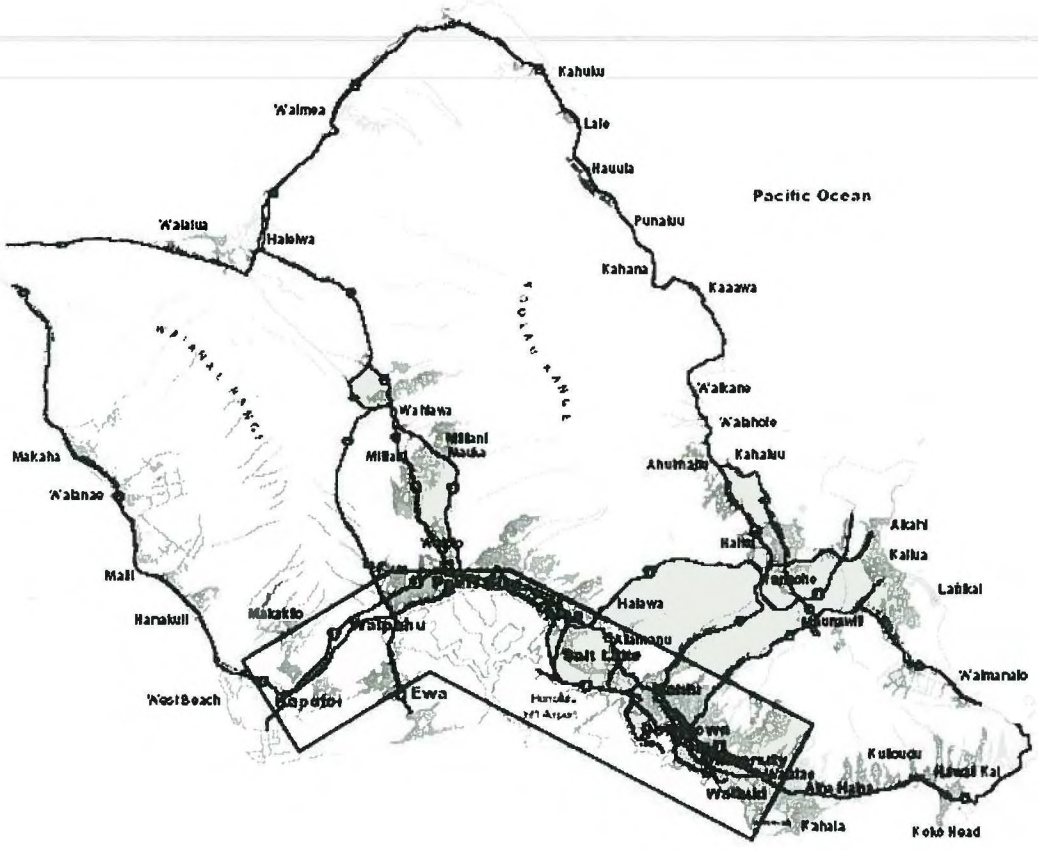

FIGURE 1: STUDY CORRIDOR

B. Corridor Transportation Facilities and Services

The existing transportation system serving the corridor consists of state highways, local streets and an extensive public transportation system. The highway and local street system relies primarily on H-1, which is the only limited-access highway facility serving the corridor, with a connection into central Oahu provided by H-2. H-1 has many substandard sections that result from its construction in dense urban neighborhoods. Significant physical constraints around Pearl Harbor and Downtown also limit the number of continuous arterial streets in the corridor (e.g., Kamehameha Highway, King Street, Beretania Street, Nimitz Highway and Farrington Highway).

Public transportation also plays a significant role in providing mobility within the corridor and offers an alternative to driving single occupant vehicles. A combination of community and urban trunk routes, circulators and express bus service provides good geographic coverage and relatively frequent peak period service. In 2005, the fixed route system, TheBus, had over 207,000 average weekday boardings, the vast majority having origin/destinations within the study corridor.

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Contributing to relatively high transit use is the fact that automobile parking is limited and expensive in Downtown and Waikiki because of high densities and the high cost of land in the urban core. Roughly one-third of all work trips to the Central Business District are currently made on transit during the morning peak period, in part because of limited parking and its high cost. Daily parking rates in Downtown Honolulu are among the highest in the United States, exceeded only by New York and Boston. Monthly unreserved parking rates are exceeded by only 12 cities in the U.S.[1]

C. Corridor Transportation Problems and Needs

Traffic congestion and overall performance of the corridor's surface transportation system is poor and is projected to worsen over the next 25 years. Elements contributing to this deteriorating situation include the following:

- **Population and Employment Growth**. Overall, Oahu's population is expected to grow from 876,000 to over 1.1 million between 2000 and 2030, an increase of 28% (about 1% per annum). The fastest growing area will be to the west in Ewa/Kapolei, where 185,000 people are expected to be living by 2030, an increase of 168% over current levels. The highest levels of growth are projected for the Primary Urban Center (PUC), Ewa and Central Oahu Development Plan Areas. New development in Ewa and Central Oahu has been spurred by high housing prices in the PUC, making Ewa, Kapolei and Central Oahu the primary locations of reasonably-priced housing within the corridor. According to City and County of Honolulu forecasts, the PUC is projected to increase by about 70,000 residents, or 17%, between 2000 and 2030.[2]

  For employment, Oahu is projected to see roughly 133,000 more jobs between 2000 and 2030, about a 27% increase, with 80% of this growth to occur in the corridor. Of this growth, approximately 34% is to occur to the west in Ewa/Kapolei. Employment in the Ewa/Kapolei area is projected to increase by about 46,000 by 2030, an increase of almost 250%.[3] With this growth, 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.

- **Travel Patterns**. By 2030 there is projected a 36% increase in trips made within the corridor during the a.m. peak. The increase is illustrative of the fact that most of the projected growth on the island will occur within the corridor, resulting in a corresponding increase in vehicle trips. While all of the origin and destination pairs within the corridor see increases in travel, vehicle trips originating from Ewa is to increase by more than 270%, or from 19,200 a.m. peak period trips in 2000 to 52,400 by 2030. This significant increase can be attributed to future growth that will occur within Ewa.

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[1] *Colliers International*, 2005-07-26

[2] *Final Analysis of Baseline Conditions for the 2030 Oahu Regional Transportation Plan*, prepared by the Oahu Metropolitan Planning Organization, May 2005, p. 9.

[3] Ibid., p. 13.

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Similarly, an increase of 236% is projected for vehicle trips from Central Oahu to Ewa, while trips from Central Oahu to the PUC are to decrease by 10%. This indicates a shift from a single urban center to two or more centers of residential and commercial activity. As a result, these data suggest that morning peak period traffic patterns will no longer solely be oriented towards Downtown Honolulu and instead will become more bi-directional between now and 2030. This is a major change from the current one directional traffic pattern that now characterizes weekday morning travel to Downtown and the PUC. Without expansion of highway capacity or the provision of additional transit service, it is likely that travel times will increase significantly and that the overall performance of the transportation system will continue to deteriorate.

- **Highway Conditions**.

The corridor experiences high traffic volumes, significant vehicle delay, and poor operating conditions, particularly during peak periods. As a result, annual hours of delay per traveler has increased from 10 to 20 between 1982 and 2003.[4]

This trend is likely to continue unless transportation improvements are made. Growth in population and employment at both ends of the Kapolei-UH Manoa corridor will result in increasing demand on existing transportation facilities. Data indicates that the combination of substantial increases in residential population in Ewa and Central Oahu while the PUC remains the primary employment destination will lead to a high projected increase in travel demand between Ewa and the PUC. The majority of the increase in travel demand is predicted to occur in private automobiles (about 86% of commute trips to and from work would be via auto, 8% by transit [e.g., TheBus], and 6% by bicycling or walking). As a result of the projected growth patterns and continued reliance on private vehicle trips, many of the key highways on Oahu, specifically in the Kapolei-UH Manoa corridor, are projected to experience significant congestion by 2030.

Travel times are expected to increase substantially between 2000 and 2030 between the Waianae Coast, Ewa/Kapolei and Central Oahu to the PUC. It is also anticipated that one of the biggest problems associated with the increase in traffic volume through the Waiawa/Pearl City area is the related increase in travel time. Due to the limited highway facilities in this area (namely the H-1 Freeway and Kamehameha Highway) the travel demand is predicted to effectively "bottleneck" resulting in a significant reduction in speed that results in increases in congestion and delay that ripple back through the highway network. The delays will also affect transit services meaning that both private and public transportation modes will be delayed to almost the same extent.

Transit Services. Currently, TheBus serves the developed areas of Oahu through a network of 93 weekday bus routes. Operational data reported in the City's National Transit Database (NTD) submittal for Report Year 2005 for directly operated motor bus include:

[4] *2005 Urban Mobility Report*, Texas Transportation Institute

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- 67,406,800 total unlinked passenger trips,
- 206,960 average weekday unlinked passenger trips,
- 55,615 average weekday total actual vehicle revenue miles,
- 4,160 average weekday total actual vehicle revenue hours,
- 1.2 total exclusive right-of-way directional route miles,
- 34.7 total controlled access right-of-way directional route miles, and
- 882.8 total mixed right-of-way directional route miles.

The performance of TheBus has been affected by its operation on heavily congested streets and highways in the corridor. Data indicates that increased congestion has resulted in the average bus operating speed dropping to less than 10 miles per hour during peak periods. As a result, slow bus speeds limit the mobility of transit riders, limit the ability of transit to compete with automobile travel, and result in increase operating costs. Although operating in HOV and zipper lanes has helped improve TheBus travel time somewhat, the lack of an exclusive transit-only facility has prevented transit from obtaining a competitive time advantage compared to regular automobile use.

It is projected that while transit use will increase from 160,000 daily resident person trips in 2005 to 190,000 by 2030, the transit mode share will decline from 5.7% to 5.4% over the 30 year period. Bicycle and walk trips are projected to remain close to 10% of resident person trips, with auto trips representing the balance of 84% of person trips. Furthermore, the projected increases in highway travel time will also slow down buses operating in mixed-flow traffic, making the use of public transit less appealing.

D. Other Considerations

Factors that will influence future traffic congestion and performance of the transportation system between now and 2030 include the following:

- **Development Policy**. The City and County of Honolulu has adopted a General Plan and a series of community plans that set forth long-range goals and objectives for future growth and development. The City and County's **General Plan** includes policies to promote development of Honolulu's Primary Urban Center (PUC), to encourage development within the secondary urban center at Kapolei and in the Ewa and Central Oahu urban fringe areas and to manage growth in the rural areas of the island so that an undesirable spreading of development is prevented. These policies thus focus future growth within the corridor.

  In general, the goals and objectives of the plans also support the need to create a balanced transportation system of highway and transit system improvements that will benefit both residents and visitors to the island.

  For example, the 1997 **Ewa Development Plan** (revised May 2000) recognizes the linkage between growth and congestion and contains policies that:

  a) Promote reduced auto use through increased use of public transit, pedestrian and bicycle travel.
  b) Support acquisition of a dedicated rapid transit right-of-way prior to development.

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c) Support high density and high-traffic land uses along the rapid transit corridor, especially within a ¼ mile distance of transit nodes.
d) Promote improved transportation access for residents to their jobs, adequate capacity for major peak-hour commuting to work in the PUC.

To support the development of a rapid transit corridor, the plan also indicates that "Planning for all the communities along the proposed transit corridor on Farrington Highway, North-South Road, and Kapolei Parkway should reflect the desire to establish a rapid transit corridor with high density residential and commercial nodes located at regular intervals."

The **Central Oahu Sustainable Communities Plan** also has similar transportation goals and objectives to encourage preservation of existing right-of-way and establishment of setback areas to permit future development of a dedicated transit way along Farrington Highway. In addition, "projected demand for peak-hour travel should be met by increased use of transit and transportation demand management and HOV facilities, park-and-ride facilities and other programs which encourage reduced use of the private auto."

Other transit-oriented policies include:

a) Increases in arterial lanes should be oriented to HOV and mass transit.
b) Exclusive lanes and park-and-ride facilities should be developed to improve transit speed and to provide enhanced incentives for commuters to opt for mass transit or HOV use.
c) Land use planning for Waipahu should emphasize and strengthen Farrington Highway's role as a transit corridor.
d) Community circulation system should be designed to facilitate bicycle and pedestrian travel, increase transit use, and reduce dependence on automobile travel.

The implementation of these provisions will promote accessibility and increase the use of public transit in the Kapolei to UH Manoa transportation corridor.

E. Purpose of the Major Transit Investment

The purpose of the Honolulu High-Capacity Transit Corridor Project is to provide improved person-mobility in the highly congested east-west corridor between Kapolei and the University of Hawaii at Manoa (UH Manoa), confined by the Waianae and Koolau mountain ranges to the north, and the ocean to the south. The project would provide faster, more reliable public transportation services in the corridor than those services currently operating in mixed-flow traffic. The project would support the goals of the regional transportation plan by serving areas designated for urban growth. The project would also provide an alternative to private automobile travel and would additionally improve linkages between Kapolei, Honolulu's urban center, UH Manoa, Waikiki, and the urban area in between.

More specifically, the major transit investment is needed for:

Improved mobility for travelers facing increasingly severe traffic congestion in the study corridor.

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 both weekdays and weekends. Current morning peak-period travel times for motorists from Kapolei to downtown average between 40 and 60 minutes. By 2030 the travel times are projected to more than double. Within the urban core most major arterial streets will experience increasing peak congestion, including Ala Moana Boulevard, Dillingham Boulevard, Kalakaua Avenue, Kapiolani Boulevard, King Street and Nimitz Highway. Expansion of the roadway system between Kapolei and UH Manoa is constrained by physical barriers and by dense urban neighborhoods that abut many existing roadways.

Improved transportation system reliability.

Because of the operating conditions in this corridor, current travel times are not reliable for both transit and other vehicles. Travelers on Oahu's roadways currently experience 42,000 daily vehicle-hours of delay. By 2030, this is projected to increase over seven-fold to 326,000 daily vehicle-hours of delay. Because the bus system primarily operates in mixed-traffic, transit users experience the same level of delay as automobile drivers.

Accessibility to new development in Ewa/Kapolei as a way of supporting policy to develop the area as a second urban center.

The 2000 census indicates that 876,200 people live on Oahu. Of this number, over 552,000 residents (63 percent) live within the Kapolei to Manoa corridor area that would be served by a high-capacity transit system. This area is projected to absorb an increase to 775,600 people (69 percent of the total population growth projected to occur on Oahu between 2000 and 2030). Consistent with the General Plan for the City and County of Honolulu, the highest growth rates for the island are projected in the Ewa area and in Kapolei, which is developing as a "second city" to downtown Honolulu.

Improved transportation equity for all travelers.

Many lower-income and minority workers live in the corridor outside of the urban core and commute to work in the primary urban center. Daily parking costs in downtown Honolulu are among the highest in the United States. Many lower-income workers rely on transit because they are not able to afford the cost of vehicle ownership and operation. Improvements to transit capacity and reliability, if provided with a grade-separated, high-capacity system rather than operating more buses in mixed traffic, will serve all transportation system users, including lower-income and underrepresented populations.

F. Evaluation Measures

Given the transportation problem and other issues discussed earlier, a broad set of information will be needed to assess the effectiveness of transportation alternatives proposed for the corridor. The information will be collected in five categories and quantified using the measures described below.

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1. The effectiveness of the alternative in improving travel mobility, improving accessibility, and reducing travel times.

   - Total daily transit trips in the corridor and percentage of all weekday travel by transit (mode split),
   - Reduced travel times and reduced vehicle trips,
   - Reduced vehicle hours of delay,
   - Cost savings from improved transit times, and
   - Percentage of trips with transfers and improvement in service reliability.

2. The effectiveness of the alternative in encouraging patterns of Smart Growth and economic development.

   - Degree to which the project will implement transit supportive corridor policies,
   - Degree to which the project will utilize supportive zoning regulations near transit stations, and
   - Degree to which the project will utilize tools (e.g., regulatory and financial incentives) designed to achieve land use policies in the corridor (based on an evaluation of future housing units, population, and employment, along with city/county adopted land use plans).

3. The cost effectiveness of the alternative in terms of benefits generated per dollar of investment in capital costs, operations, and maintenance of facilities.

   - User benefits per dollar cost (capital, operating, maintenance)

4. The effectiveness of the alternative in minimizing the environmental harm to humans and the natural environment.

   - Use of land including natural areas and parklands,
   - Displacement of residents and businesses, particularly for low income and minority communities,
   - Reduction of community amenities,
   - Disruption of future development,
   - Disruption of local circulation,
   - Disruption by construction activities,
   - Savings in energy consumption, and
   - Technical risk.

5. The effectiveness of the alternative in achieving consistency with adopted community plans.

   - General Plan for the City and County of Honolulu
     - Primary Urban Center Development Plan, June 2004
     - Central Oahu Sustainable Communities Plan, December 2002
     - Ewa Development Plan, August 1997 (Revised 2000)

- Hawaii State Plan (Chapter 226, Hawaii Revised Statutes)
- Transportation for Oahu Plan TOP 2025, Oahu Metropolitan Planning Organization

G. Transportation Alternatives

At this early point in the study process, definitions of the alternatives to be evaluated are still evolving. This corridor has been studied several times over the years, and previous study results have been taken into consideration in defining an initial set of conceptual alternatives that will be refined throughout the AA process. At a minimum, the following conceptual transportation alternatives will be developed and evaluated in more detail during the AA process.

No Build Alternative

The No-Build Alternative will incorporate "planned" highway improvements that are included in the most current version of the Oahu Regional Transportation Plan (ORTP), which is expected to be adopted in early 2006. The plan is a fiscally constrained long-range regional transportation 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 to be 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 Bus Rapid Transit (BRT) and In-Town BRT elements of the Primary Corridor Transportation Project.

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Managed Lanes Alternative

The Managed Lanes Alternative will include construction of a two-lane grade-separated facility between Waipahu and Downtown Honolulu for use by buses, para-transit vehicles, and vanpool vehicles. The lanes will be managed to maintain free-flow speeds for buses, while simultaneously allowing High-Occupancy Vehicles (HOVs) and variable pricing for toll-paying single-occupant vehicles. Intermediate bus access points will be provided in the vicinity of Aloha Stadium and Middle Street. Bus operations utilizing the managed lanes will be restructured and enhanced to provide additional service between Kapolei and other points Ewa of Downtown, through to the University of Hawaii at Manoa.

Fixed Guideway Alternatives

The Fixed Guideway alternatives anticipate the construction and operation of a high-capacity transit system, in exclusive or semi-exclusive right-of-way, serving an approximately 23-mile corridor from Kapolei to Waikiki and UH Manoa on one of several possible alignments. Alignment alternatives to be considered include, but are not limited to:

- Kamokila Boulevard/Salt Lake Boulevard/King Street/Hotel Street/Alakea Street/ Kapiolani Boulevard Alignment, which would serve various communities and activity centers between Kapolei and UH Manoa, including UH West Oahu, Waipahu, Pearlridge, Aloha Stadium, Salt Lake, Kalihi, Downtown Honolulu, Kakaako, Ala Moana Center, and Moiliili.
- North-South Road/Camp Catlin Road/King Street/Queen Street/Kapiolani Boulevard Alignment, which would serve various communities and activity centers between Kapolei and UH Manoa, including UH West Oahu, Waipahu, Pearlridge, Aloha Stadium, Pearl Harbor, Honolulu International Airport, Salt Lake, Kalihi, Downtown Honolulu, Kakaako, Ala Moana Center, and Moiliili.
- Ft. Weaver Road/Farrington Highway/Kamehameha Highway/Dillingham Boulevard/ Kaaahi Street/Beretania Street/King Street/Kaialiu Street Alignment, which would serve various communities and activity centers between Kapolei and UH Manoa, including Kalaeloa, Ewa Villages, Waipahu, Pearlridge, Aloha Stadium, Pearl Harbor, Honolulu International Airport, Kalihi Kai, Downtown Honolulu, Thomas Square, and Moiliili.
- North-South Road/Farrington Highway/Kamehameha Highway/Airport/Dillingham Boulevard/Hotel Street/Kapiolani Boulevard with a Waikiki Spur Alignment, which would serve various communities and activity centers between Kapolei and UH Manoa, including Kalaeloa, UH West Oahu, Waipahu, Pearlridge, Aloha Stadium, Pearl Harbor, Honolulu International Airport, Kalihi Kai, Downtown Honolulu, Kakaako, Ala Moana Center, Moiliili, and Waikiki.

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

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- A fixed guideway facility the full length of the corridor, from Kapolei to Waikiki and UH Manoa;
- A fixed guideway facility focused on the Kapolei to Downtown Honolulu portion of the corridor; and
- The Kapolei to Downtown 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 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 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 process. At the same time, the AA 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 developing using local funds.

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