

Honolulu High-Capacity Transit Corridor Project

City and County of Honolulu, O'ahu, Hawaii

Draft Environmental Impact Statement/Section 4(f) Evaluation

Submitted pursuant to Section 42 U.S.C. 4332 (2) (c), 49 U.S.C 1601 eq. seq., 23 C.F.R. Part 771 and Chapter 343 Hawaii Revised Statutes.

by the

U.S. Department of Transportation, Federal Transit Administration
and the City and County of Honolulu

in cooperation with the

Department of Defense (U.S. Army Corps of Engineers)
Department of Defense (U.S. Army Garrison – Hawaii)
Department of Homeland Security (U.S. Coast Guard- 14th Coast Guard District)
U.S. Department of Transportation, Federal Highway Administration
and State of Hawai'i Department of Transportation

(Date of Approval)

Director, Department of Transportation Services
City and County of Honolulu

(Date of Approval)

Regional Administrator
U.S. Department of Transportation,
Federal Transit Administration

The following persons may be contacted for additional information concerning this document:

In compliance with the National Environmental Policy Act (NEPA), this Draft Environmental Impact Statement (DEIS)/Section 4(f) Evaluation describes the alternatives evaluated, transportation effects, environmental consequences, and financial implications of the construction and operation of a high-capacity transit system on the Island of Oahu.

Copies of this document may be purchased for \$XX, which does not exceed the cost of reproduction. Comments are requested by XXXX, 2008 and should be returned to:

Preface

Purpose of the Draft Environmental Impact Statement

The purpose of this Draft Environmental Impact Statement (Draft EIS) is to provide the City and County of Honolulu Department of Transportation Services (DTS) and the Federal Transit Administration (FTA) with the information necessary to make an informed decision, based on a full and open analysis of environmental issues regarding transit alternatives. Prior to this Draft EIS, the *Honolulu High-Capacity Transit Corridor Project Alternatives Analysis Report* (DTS 2006b) was completed in 2006. After review of the Alternatives Analysis Report and consideration of public comments, the Council of the City and County of Honolulu selected a Locally Preferred Alternative to be a fixed guideway project from Kapolei to the University of Hawai'i at Mānoa (UH Mānoa) with a connection to Waikīkī. The City Council directed the first construction project to be fiscally constrained to anticipated funding sources. The First Project was defined as extending from East Kapolei to Ala Moana Center via Salt Lake Boulevard.

The Notice of Intent to prepare this Draft EIS was published in the Federal Register on March 15,

2007. After distribution of the Draft EIS for public and agency review, a public hearing will be held to receive comments from the public and agencies. A Final EIS will then be prepared, which will respond to the comments received. A recommended alternative will be selected. Following publication of the Final EIS, the FTA will sign a Record of Decision. This document will summarize the alternatives considered, factors that support selection of the Recommended Alternative, and commitments to measures that mitigate substantial environmental impacts.

The Honolulu High-Capacity Transit Corridor Project would provide high-capacity transit service in the travel corridor between Kapolei and UH Mānoa on O'ahu. This corridor includes the majority of housing and employment on O'ahu. The east-west length of the corridor is approximately 23 miles. The north-south width is at most 4 miles, because much of the corridor is constrained by the Ko'olau and Wai'anae Mountain Ranges to the north and the Pacific Ocean to the south. This document discusses the complete 34 miles included in the Locally Preferred Alternative selected by City Council. However, the detailed environmental analysis and documentation applies to the core

23-mile corridor between East Kapolei and Ala Moana Center. Future planned extensions are from West Kapolei to East Kapolei and from Ala Moana Center to UH Mānoa and to Waikīkī. These future planned extensions are addressed as cumulative effects in Sections 3.6 and 4.17.

This document builds on the finding of the Alternatives Analysis Report, follows FTA planning and guidance, and provides information on the four alternatives studied:

- No Build Alternative
- Fixed Guideway Transit Alternative via Salt Lake Boulevard (Salt Lake Alternative)
- Fixed Guideway Transit Alternative via the Airport (Airport Alternative)
- Fixed Guideway Transit Alternative via the Airport & Salt Lake (Airport & Salt Lake Alternative)

The Build Alternatives would be constructed in phases. For the Airport & Salt Lake Alternative, the section between East Kapolei and Ala Moana Center along Salt Lake Boulevard would be constructed first, followed by the connection from the Middle Street Transit Center to the Honolulu International Airport, and finally the connection from the Airport to Aloha Stadium.

This document is intended to provide decision-makers and the public with information on the Project's environmental impacts and benefits. It also serves as documentation of the coordination conducted in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, and as the Draft Section 4(f) Evaluation prepared under Section 4(f) of the Department of Transportation Act of 1966. This document also serves as a joint Hawai'i Revised Statutes Chapter 343 coordination document.

Organization of the Draft Environmental Impact Statement

This document is divided into two volumes. This volume contains the Draft EIS, which consists of the following eight Chapters:

Chapter 1 discusses the Project's background, describes the study corridor from Kapolei to UH Mānoa and Waikīkī, and explains the Purpose and Need for the fixed guideway project.

Chapter 2 details the alternatives and technologies considered during the screening and selection process and summarizes the alternatives considered during and after the Alternatives Analysis process.

Chapter 3 describes existing and future transportation conditions in the study corridor, presents consequences, and discusses proposed mitigation for potential transportation impacts.

Chapter 4 describes existing and future environmental conditions, presents consequences, and discusses proposed mitigation for the potential environmental impacts of all the alternatives.

Chapter 5 discusses the Project's effects on public parks, recreation areas, and historic properties, to support determinations required to comply with the provisions of the U.S. Department of Transportation Act of 1966 (commonly referred to as Section 4(f)).

Chapter 6 presents the various funding sources and estimated capital and operating costs.

Chapter 7 compares the alternatives based on the information in Chapters 3 through 6.

Chapter 8 discusses the overall public outreach and agency coordination components.

Volume II consists of electronic files for the appendices referenced in the Draft EIS. The CD is located at the end of this volume. Technical reports supporting the analysis presented in this Draft EIS are available for review from the City and County of Honolulu.

Table of Contents

Executive Summary	S-1
-------------------	-----

Chapter 01 Background, Purpose and Need	1-1
---	-----

1.1	History of the Honolulu High-Capacity Transit Corridor Project	1-1
1.1.1	Conditions Leading to the Project	1-1
1.1.2	Progress of the Honolulu High-Capacity Transit Corridor Project	1-3
1.2	Description of the Corridor	1-4
1.3	Existing Travel Patterns in the Corridor	1-10
1.3.1	Person-trip Patterns	1-10
1.3.2	Transit Travel Patterns	1-11
1.4	Existing Transportation Facilities and Services in the Corridor	1-13
1.4.1	Street and Highway System	1-13
1.4.2	Public Transit System	1-14
1.4.3	Parking	1-14
1.4.4	Pedestrian and Bicycle Systems	1-14
1.5	Performance of the Existing Transportation System	1-15
1.5.1	Highway Traffic Volumes	1-15
1.5.2	Highway Traffic Operating Conditions	1-15
1.5.3	Transit Operating Conditions	1-16
1.6	Potential Transit Markets	1-19
1.7	Purpose of the Project	1-19

1.8	Need for Transit Improvements	1-19
1.8.1	Improve Corridor Mobility	1-19
1.8.2	Improve Corridor Travel Reliability	1-20
1.8.3	Improve Access to Planned Development to Support City Policy to Develop a Second Urban Center	1-20
1.8.4	Improve Transportation Equity	1-21
1.9	Goals of the Project	1-21

Chapter 02 Alternatives Considered

2.1	Alternatives Screening and Selection Process	2-1
2.1.1	Screening of a Broad Range of Alternatives	2-2
2.1.2	Alternatives Considered in the Alternatives Analysis	2-3
2.1.3	Alternatives Consideration Process after the Alternatives Analysis	2-6
2.2	Alternatives Evaluated in this Draft Environmental Impact Statement	2-8
2.2.1	No Build Alternative	2-8
2.2.2	Build Alternatives	2-13

Chapter 03 Transportation

3.1	Methodology	3-2
3.1.1	Analytical Tools and Data Sources	3-2
3.1.2	Approach to Estimating Transportation Effects	3-2
3.2	Existing Conditions and Performance	3-3
3.2.1	Existing Travel Patterns	3-3
3.2.2	Existing Conditions and Performance: Transit	3-5
3.2.3	Existing Conditions and Performance: Streets and Highways	3-11
3.2.4	Existing Conditions and Performance: Parking	3-15
3.2.5	Existing Conditions and Performance: Bicycle and Pedestrian Network	3-16
3.3	Future Conditions and Effects: No Build Alternative	3-16
3.3.1	No Build Alternative—Future Travel Patterns	3-17
3.3.2	Effects on Transit	3-18
3.3.3	Effects on Streets and Highways	3-20
3.3.4	Effects on Parking, Bicycle and Pedestrian Network, and Freight Movement	3-20
3.4	Future Conditions and Effects: Build Alternatives	3-20
3.4.1	Build Alternatives—Future Travel Patterns	3-22
3.4.2	Effects on Transit	3-23
3.4.3	Effects on Streets and Highways	3-35
3.4.4	Effects on Parking, Bicycle and Pedestrian Facilities, and Freight	3-38
3.4.5	Mitigation of Long-term Transportation Effects	3-41

3.5	Construction-Related Effects on Transportation	3-42
3.5.1	Construction Staging Plans	3-42
3.5.2	Construction-related Effects on Transit Service	3-42
3.5.3	Construction-related Effects on Traffic	3-43
3.5.4	Construction-related Effects on Parking	3-44
3.5.5	Construction-related Effects on Bicycle and Pedestrian Facilities	3-44
3.5.6	Construction-related Effects on Freight Movement	3-44
3.5.7	Mitigation of Construction-related Effects	3-45
3.6	Cumulative Transportation System Effects	3-48

Chapter 04 Environmental Analysis, Consequences, and Mitigation 4-1

4.1	Land Use	4-9
4.1.1	Background and Methodology	4-9
4.1.2	Affected Environment	4-9
4.1.3	Environmental Consequences and Mitigation	4-12
4.2	Economic Activity	4-21
4.2.1	Background and Methodology	4-21
4.2.2	Affected Environment	4-21
4.2.3	Environmental Consequences and Mitigation	4-22
4.3	Acquisitions, Displacements, and Relocations	4-22
4.3.1	Background and Methodology	4-22
4.3.2	Affected Environment	4-23
4.3.3	Environmental Consequences and Mitigation	4-23
4.4	Community Services and Facilities	4-25
4.4.1	Background and Methodology	4-25
4.4.2	Affected Environment	4-26
4.4.3	Environmental Consequences and Mitigation	4-33
4.5	Neighborhoods	4-36
4.5.1	Background and Methodology	4-36
4.5.2	Affected Environment	4-36
4.5.3	Environmental Consequences and Mitigation	4-40
4.6	Environmental Justice	4-43
4.6.1	Background and Methodology	4-44
4.6.2	Affected Environment	4-46
4.6.3	Environmental Consequences and Mitigation	4-46
4.6.4	Public Outreach	4-51
4.7	Visual and Aesthetic Conditions	4-53
4.7.1	Background and Methodology	4-53
4.7.2	Affected Environment	4-53
4.7.3	Environmental Consequences and Mitigation	4-57

4.8	Air Quality	4-89
4.8.1	Background and Methodology	4-89
4.8.2	Affected Environment	4-90
4.8.3	Environmental Consequences and Mitigation	4-90
4.9	Noise and Vibration	4-92
4.9.1	Background and Methodology	4-92
4.9.2	Affected Environment	4-95
4.9.3	Environmental Consequences and Mitigation	4-95
4.10	Energy and Electric and Magnetic Fields	4-101
4.10.1	Background and Methodology	4-101
4.10.2	Affected Environment	4-101
4.10.3	Environmental Consequences and Mitigation	4-102
4.11	Hazardous Waste and Materials	4-103
4.11.1	Background and Methodology	4-103
4.11.2	Affected Environment	4-104
4.11.3	Environmental Consequences and Mitigation	4-107
4.12	Ecosystems	4-110
4.12.1	Background and Methodology	4-110
4.12.2	Affected Environment	4-113
4.12.3	Environmental Consequences and Mitigation	4-119
4.13	Water	4-121
4.13.1	Background and Methodology	4-121
4.13.2	Affected Environment	4-122
4.13.3	Environmental Consequences and Mitigation	4-125
4.14	Street Trees	4-128
4.14.1	Background and Methodology	4-128
4.14.2	Affected Environment	4-128
4.14.3	Environmental Consequences and Mitigation	4-130
4.15	Archaeological, Cultural, and Historic Resources	4-131
4.15.1	Background and Methodology	4-132
4.15.2	Affected Environment	4-135
4.15.3	Environmental Consequences and Mitigation	4-135
4.16	Construction Phase Effects	4-142
4.16.1	Land Use and Economic Activity	4-143
4.16.2	Communities and Neighborhoods	4-144
4.16.3	Visual and Aesthetic Conditions	4-145
4.16.4	Air Quality	4-145
4.16.5	Noise and Vibration	4-146
4.16.6	Construction Energy Consumption	4-147
4.16.7	Natural Resources	4-148

4.16.8 Contaminated Media, Stormwater Quality, and Solid Waste	4-149
4.16.9 Archaeological, Cultural, and Historic Resources	4-151
4.17 Indirect and Cumulative Effects	4-152
4.17.1 Background and Methodology	4-153
4.17.2 Indirect Effects	4-153
4.17.3 Cumulative Effects	4-157
4.18 Anticipated Permits and Approvals	4-163

Chapter 05 Section (4f) Evaluation 5-1

5.1 Introduction	5-1
5.1.1 Section 4(f) "Use"	5-2
5.1.2 Determination of <i>de minimis</i> Impacts	5-3
5.2 Description of the Project	5-3
5.3 Description of Section 4(f) Properties	5-4
5.4 Direct Use of Section 4(f) Properties	5-4
5.4.1 Park and Recreational Resources	5-5
5.4.2 Historic Sites	5-13
5.5 Constructive Use of Section 4(f) Properties	5-21
5.6 Temporary Use or Occupancy of Section 4(f) Properties	5-23
5.7 Determination of Section 4(f) Use	5-23
5.8 Mitigation	5-23

Chapter 06 Cost and Financial Analysis 6-1

6.1 Cost Estimate Methodology	6-1
6.1.1 Capital Costs Methodology	6-1
6.1.2 Operating and Maintenance Cost Methodology	6-2
6.2 Capital Plan	6-3
6.2.1 Capital Costs	6-3
6.2.2 Proposed Capital Funding Sources for Build Alternatives	6-4
6.2.3 Funding Sources for Ongoing Capital Expenditures	6-4
6.3 Operating and Maintenance Plan	6-6
6.3.1 Operating and Maintenance Costs	6-6
6.3.2 Operating and Maintenance Funding Sources	6-6
6.4 Cash Flow Analysis	6-7
6.4.1 Financing Assumptions for the Project	6-7
6.4.2 Project Cash Flow	6-9
6.4.3 Ongoing Capital Expenditure Cash Flow	6-10
6.4.4 Operating and Maintenance Expenditure Cash Flow	6-10

6.5	Risks and Uncertainties	6-10
6.5.1	Project Cost Risks	6-10
6.5.2	Economic and Financial Risks	6-11
6.5.3	Funding Risks	6-11

Chapter 07 Evaluation of Alternatives 7-1

7.1	Effectiveness in Meeting Project Purpose and Need	7-1
7.1.1	Improve Corridor Mobility	7-1
7.1.2	Improve Corridor Travel Reliability	7-3
7.1.3	Improve Access to Planned Development to Support City Policy to Develop a Second Urban Center	7-4
7.1.4	Improve Transportation Equity	7-4
7.2	Transportation and Environmental Consequences	7-7
7.2.1	Transportation	7-7
7.2.2	Environmental	7-8
7.3	Cost-effectiveness	7-8
7.4	Financial Feasibility	7-9
7.4.1	Measure of Capital Financial Feasibility	7-9
7.4.2	Measure of City Financial Contribution for Operating and Maintenance	7-9
7.4.3	Comparison of Alternatives	7-10
7.5	Important Trade-offs	7-10

Chapter 08 Comments and Coordination 8-1

8.1	Public and Community Outreach	8-1
8.1.1	Public Outreach Techniques	8-2
8.1.2	Government and Other Agency Coordination	8-2
8.1.3	Section 106 and Consulting Party Coordination	8-4
8.1.4	Chapter 343 Coordination	8-5
8.2	Community Outreach during the Alternatives Analysis Phase	8-5
8.3	Community Outreach during the Project's Preliminary Engineering/EIS Phase	8-6
8.4	Public Hearings	8-7
8.5	Accommodations for Minority, Low-Income, and Persons with Disabilities	8-7

References

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List of Draft EIS Recipients

Index

List of Appendices (on enclosed compact disk)

- Appendix A Conceptual Alignment Plans and Profiles
- Appendix B Conceptual Right-of-Way Plans
- Appendix C Construction Approach
- Appendix D Record of Correspondence and Coordination

Figures

Figure S-1 Honolulu High-Capacity Transit Corridor Project Vicinity	S-2
Figure 1-1 Honolulu High-Capacity Transit Corridor Project Vicinity	1-2
Figure 1-2 Population, Vehicle Ownership, and Vehicle Miles Traveled Trends for O`ahu	1-2
Figure 1-3 Areas and Districts in the Study Corridor	1-5
Figure 1-4 Major Activity Centers in the Study Corridor	1-6
Figure 1-5 Population Distribution for O`ahu	1-8
Figure 1-6 Employment Distribution for O`ahu	1-9
Figure 1-7 Current (2007) Daily Person-Trip Patterns on O`ahu	1-11
Figure 1-8 Daily 2007 Transit Trips between Transportation Analysis Areas	1-12
Figure 1-9 Concentrations of Transit-dependent Households (2000)	1-13
Figure 1-10 Existing A.M. Peak-Period Waianae to Downtown Travel Time Distribution (Highway Drive Time Only)	1-17
Figure 1-11 Selected Bus Trip Times for Selected Routes	1-18
Figure 1-12 Route Maps for Sampled Routes	1-18
Figure 2-1 Alternatives Screening Process	2-2
Figure 2-2 Salt Lake Alternative	2-9
Figure 2-3 Airport Alternative	2-10
Figure 2-4 Airport & Salt Lake Alternative	2-11
Figure 2-5 Fixed Guideway Transit Alternative Features (Kapolei to Fort Weaver Road)	2-15
Figure 2-6 Fixed Guideway Transit Alternative Features (Fort Weaver Road to Aloha Stadium)	2-16
Figure 2-7 Fixed Guideway Transit Alternative Features (Aloha Stadium to Kalihi)	2-17
Figure 2-8 Fixed Guideway Transit Alternative Features (Kalihi to UH Mānoa)	2-18
Figure 2-9 Example Vehicle on Elevated Guideway (Cross-section)	2-19
Figure 2-10 Typical Side-platform Station Configuration without a Mezzanine	2-20
Figure 2-11 Typical Side-platform Station Configuration with a Mezzanine	2-21
Figure 2-12 Typical Center-platform Station Configuration with a Mezzanine	2-22
Figure 2-13 Legend for Figures 2-14 to 2-37	2-23
Figure 2-14 East Kapolei Station (All Build Alternatives)	2-23
Figure 2-15 UH West O`ahu Station (All Build Alternatives)	2-24
Figure 2-16 Ho`opili Station (All Build Alternatives)	2-24
Figure 2-17 West Loch Station (All Build Alternatives)	2-24
Figure 2-18 Waipahu Transit Center Station (All Build Alternatives)	2-25
Figure 2-19 Leeward Community College Station (All Build Alternatives)	2-25

Figure 2-20 Pearl Highlands Station (All Build Alternatives)	2-25
Figure 2-21 Pearlridge Station (All Build Alternatives)	2-26
Figure 2-22 Aloha Stadium Station (Salt Lake Alternative and Airport & Salt Lake Alternative)	2-26
Figure 2-23 Ala Liliko'i Station (Salt Lake Alternative and Airport & Salt Lake Alternative)	2-27
Figure 2-24 Aloha Stadium Station (Airport Alternative)	2-27
Figure 2-25 Arizona Memorial Station (Airport & Salt Lake Alternative)	2-28
Figure 2-26 Pearl Harbor Naval Base Station (Airport Alternative and Airport & Salt Lake Alternative)	2-28
Figure 2-27 Honolulu International Airport Station (Airport Alternative and Airport & Salt Lake Alternative)	2-28
Figure 2-28 Lagoon Drive Station (Airport Alternative and Airport & Salt Lake Alternative)	2-28
Figure 2-29 Middle Street Transit Center Station (All Build Alternatives)	2-29
Figure 2-30 Kalihi Station (All Build Alternatives)	2-29
Figure 2-31 Kapālama Station (All Build Alternatives)	2-29
Figure 2-32 Iwilei Station (All Build Alternatives)	2-29
Figure 2-33 Chinatown Station (All Build Alternatives)	2-30
Figure 2-34 Downtown Station (All Build Alternatives)	2-30
Figure 2-35 Civic Center Station (All Build Alternatives)	2-30
Figure 2-36 Kaka'ako Station (All Build Alternatives)	2-30
Figure 2-37 Ala Moana Center Station (All Build Alternatives)	2-31
Figure 2-38 Kapolei Bus Service	2-32
Figure 2-39 Central O'ahu Bus Service	2-33
Figure 2-40 Ala Moana to UH Mānoa Bus Service	2-34
Figure 2-41 Installation of a Traction Power Substation	2-36
Figure 2-42 Project Schedule	2-36
Figure 3-1 TheBus Annual Average Operating Speed in Miles per Hour—1984–2007	3-8
Figure 3-2 TheBus Systemwide Schedule Adherence (Percent of Weekday Systemwide Arrivals more than Five Minutes Late)	3-10
Figure 3-3 TheBus Systemwide Annual Service Incidents Involving Turnbacks	3-11
Figure 3-4 Selected Screenline Facilities Locations	3-13
Figure 3-5 TheBus Average Operating Speeds in Miles per Hour—2007 and 2030 No Build Alternative	3-19
Figure 3-6 Transit Shares of Home-Based Work Trips in Two-Hour A.M. Peak Period	3-21
Figure 3-7 Transit Average Operating Speeds in Miles per Hour—2030 No Build and Build Alternatives	3-24
Figure 3-8 A.M. Peak-Period Transit Travel Times	3-25
Figure 3-9 2030 A.M. 2-Hour Peak Period Boardings and Alightings	3-27
Figure 3-10 2030 A.M. 2-Hour Peak Period Link Volumes	3-28
Figure 3-11 2030 Daily Boardings and Alightings	3-29
Figure 3-12 2030 Daily Link Volumes	3-30

Figure 4-1 Project Overview	4-3
Figure 4-2 Planning Regions and Planned Land Use	4-11
Figure 4-3 Existing Land Use, Kapolei to Fort Weaver Road	4-13
Figure 4-4 Existing Land Use, Fort Weaver Road to Aloha Stadium	4-14
Figure 4-5 Existing Land Use, Aloha Stadium to Kalihi	4-15
Figure 4-6 Existing Land Use, Kalihi to UH Mānoa and Waikiki	4-16
Figure 4-7 Designated Agricultural Lands	4-19
Figure 4-8 Farmlands to be Aquired	4-20
Figure 4-9 Community Resources and Facilities, Kapolei to Fort Weaver Road	4-27
Figure 4-10 Community Resources and Facilities, Fort Weaver Road to Aloha Stadium	4-28
Figure 4-11 Community Resources and Facilities, Aloha Stadium to Kalihi	4-29
Figure 4-12 Community Resources and Facilities, Kalihi to UH Mānoa and Waikiki	4-30
Figure 4-13 Corridor Neighborhoods	4-37
Figure 4-14 Environmental Justice Populations within the Study Corridor	4-47
Figure 4-15 Communities of Concern within the Study Corridor	4-48
Figure 4-16 Visually Sensitive Resources and Representative Viewpoints within the Project Corridor	4-54
Figure 4-17 Viewpoint 1—Farrington Highway near Waikele Road, looking `Ewa	4-61
Figure 4-18 Viewpoint 2—Kamehameha Highway near Acacia Street, looking `Ewa	4-62
Figure 4-19 Viewpoint 3—Kamehameha Highway at Ka`ahumanu Street, looking Makai	4-63
Figure 4-20 Viewpoint 4—Kamehameha Highway at Kaonohi Street, looking Makai	4-64
Figure 4-21 Viewpoint 5—Aloha Stadium, looking Mauka	4-65
Figure 4-22 Viewpoint 6—Salt Lake Neighborhood at Wanaka Street, looking Makai	4-66
Figure 4-23 Viewpoint 7—Ala Liliko`i Street/Salt Lake Boulevard Intersection near the Ala Liliko`i Station Area, looking Makai	4-67
Figure 4-24 Viewpoint 8—Salt Lake Boulevard makai of Ala Liliko`i Station Area, looking Mauka	4-68
Figure 4-25 Viewpoint 9—Kamehameha Highway near Radford Road and the Pearl Harbor Naval Base Station Area,looking Makai	4-69
Figure 4-26 Viewpoint 10—Ke`ehi Lagoon Park, looking Mauka	4-70
Figure 4-27 Viewpoint 11— Dillingham Boulevard at Kalihi, looking `Ewa	4-71
Figure 4-28 Viewpoint 12—Dillingham Boulevard and Kapālama Station Area near Honolulu Community College and Kapālama Station Area, looking Makai	4-72
Figure 4-29 Viewpoint 13—King Street Bridge and Chinatown Station Area, looking Makai	4-73
Figure 4-30 Viewpoint 14—Maunakea Street, looking Makai	4-74
Figure 4-31 Viewpoint 15—O`ahu Market at King Street, looking Makai	4-75
Figure 4-32 Viewpoint 16—Nimitz Highway/Fort Street Intersection `Ewa of Irwin Park and Aloha Tower Market Place, looking Koko Head	4-76
Figure 4-33 Viewpoint 17—Fort Street Mall at Merchant Street, looking Makai	4-77
Figure 4-34 Viewpoint 18—Nimitz Highway near Irwin Park and Aloha Tower Market Place, looking Mauka	4-78

Figure 4-35 Viewpoint 19—Halekauwila Street/Cooke Street Intersection, looking Mauka past Mother Waldron Park	4-79
Figure 4-36 Viewpoint 20—Mother Waldron Park near Halekauwila Street/Cooke Street Intersection, looking `Ewa	4-80
Figure 4-37 Typical Sound Levels	4-92
Figure 4-38 FTA Transit Project Noise Exposure Impact Criteria	4-93
Figure 4-39 Noise Measurement Locations and Results (Kapolei to Fort Weaver Road)	4-97
Figure 4-40 Noise Measurement Locations and Results (Fort Weaver Road to Aloha Stadium)	4-98
Figure 4-41 Noise Measurement Locations and Results (Aloha Stadium to Kalihi)	4-99
Figure 4-42 Noise Measurement Locations and Results (Kalihi to UH Mānoa and Waikīkī)	4-100
Figure 4-43 Locations of Potential Impacts to Ongoing Hazardous Materials Operations	4-109
Figure 4-44 Natural Resources, Kapolei to Aloha Stadium	4-114
Figure 4-45 Natural Resources, Aloha Stadium to UH Mānoa and Waikīkī	4-115
Figure 4-46 Ko`oloa`ula	4-116
Figure 4-47 White Tern	4-118
Figure 4-48 Identified Street Trees	4-129
Figure 4-49 True Kamani Trees on Dillingham Boulevard	4-130
Figure 4-50 Affected Archaeological Resources	4-136
Figure 4-51 Historic Resources	4-138
Figure 4-52 Typical Construction Equipment Noise Levels	4-146
Figure 4-53 Visual Simulation of UH Mānoa Extension at Convention Center, looking mauka	4-162
Figure 4-54 Visual Simulation Wakīkī Extension at Kalaimoku, looking mauka	4-162
Figure 5-1 Aloha Stadium	5-10
Figure 5-2 Ke`ehi Lagoon Park	5-12
Figure 5-3 Afuso House, Higa Fourplex, and Teixeira House and Avoidance Alternatives	5-14
Figure 5-4 True Kamani Trees on Dillingham Boulevard and Avoidance Alternatives	5-19
Figure 5-5 Dillingham Transportation Building and Avoidance Alternatives	5-22
Figure 6-1 Total Capital Expenditures by Alternative (Excluding Finance Charges) FY2007–FY2030 (YOE \$M)	6-5
Figure 6-2 Systemwide Fare Revenues for the Salt Lake and the No Build Alternatives (YOE \$M)	6-8
Figure 6-3 Projected Transit Contribution from the General Fund	6-8
Figure 7-1 Communities of Concern and User Benefits for the Build Alternatives Compared to the No Build Alternative	7-6

Tables

Table 1-1 Existing A.M. Peak-Period Travel Times (in Minutes)	1-7
Table 1-2 Major Trip Generators and Attractors for Existing Bus Trips	1-13
Table 1-3 2007 and 2030 A.M. Peak Period Speeds and Level-of-Service on H-1 Freeway	1-16
Table 1-4 Project Goals and Objectives	1-21
Table 2-1 Summary of Alternatives Analysis Findings	2-4

Table 2-2 Alternatives and Technologies Considered but Rejected	2-6
Table 2-3 Committed Congestion-Relief Projects in the O`ahu Regional Transportation Plan 2030	2-12
Table 2-4 Transit Vehicle Requirements	2-13
Table 2-5 Fixed Guideway Operating Assumptions	2-14
Table 2-6 Locations and Capacity of Park-and-Ride Facilities	2-35
Table 3-1 Person Trips by Trip Purpose—2007	3-4
Table 3-2 Daily Trips by Mode—2007	3-4
Table 3-3 Islandwide Roadway Travel Statistics—2007	3-5
Table 3-4 TheBus and TheBoat Fare Structure—2007	3-7
Table 3-5 Average Weekday Boardings on Selected Routes in the Study Corridor—2008	3-9
Table 3-6 Ranked Bus Passenger Vehicle Trips per Revenue Hour for the 20 Largest U.S. Bus Operations—2005	3-12
Table 3-7 Traffic Volumes and Level-of-Service at Screenlines—Existing Peak Hour	3-14
Table 3-8 Daily Person Trips by Mode—2007 and 2030 No Build Alternative	3-17
Table 3-9 Daily VMT, VHT, and VHD—2007 and 2030 No Build Alternative	3-18
Table 3-10 Changes in Total Daily Transit Boardings and Trips—2007 and 2030 No Build Alternative	3-19
Table 3-11 Traffic Volumes at Selected Screenlines—2005 and 2030 No Build Alternative	3-21
Table 3-12 Islandwide Mode Shares—2030 No Build and Build Alternatives	3-22
Table 3-13 VMT, VHT, and VHD—2030 No Build and Build Alternatives	3-23
Table 3-14 Station-to-Station Travel Times	3-26
Table 3-15 Daily Transit Boardings for No Build and Build Alternatives	3-26
Table 3-16 Shares of Total Daily Boardings by Transit Service Type (Residents plus Visitors)—2030 No Build and Build Alternatives	3-32
Table 3-17 Estimated Transit User Benefits Resulting from Build Alternatives	3-34
Table 3-18 Traffic Volumes at Screenlines—2030 No Build and Salt Lake Build Alternatives	3-36
Table 3-19 Column Placement Effects on Streets and Highways	3-37
Table 3-20 Effects on Traffic near Park-and-Ride Lots—2030 No Build and Build Alternatives	3-38
Table 3-21 Potential Effects on Parking due to Fixed Guideway Column Placement	3-39
Table 3-22 Summary of Potential Effects on Bicycle and Pedestrian Systems due to Fixed Guideway Column Placements	3-41
Table 3-23 Bus Routes Affected by Construction	3-43
Table 3-24 Potential Temporary Lane Closures During Construction	3-45
Table 3-25 Construction-Related Parking Reductions	3-46
Table 3-26 Effects of the Planned Extensions on 2030 Daily Transit Ridership	3-49
Table 3-27 VMT, VHT, and VHD—2030 Planned Extensions	3-49
Table 4-1 Summary of Environmental Consequences and Proposed Mitigation Measures	4-4
Table 4-2 Existing Land Use Overview by Planning Region	4-10
Table 4-3 Property Acquisition by Alternative	4-17
Table 4-4 Forecast Employment for the Project Region and Study Corridor	4-21

Table 4-5 Acquisition and Displacements Summary	4-24
Table 4-6 Religious Institutions Adjacent to Project Alignments	4-31
Table 4-7 Affected Community Facilities and Services	4-34
Table 4-8 Year 2000 Demographic Characteristics of Neighborhoods	4-40
Table 4-9 Demographic Characteristics of O`ahuMPO Environmental Justice Area	4-49
Table 4-10 Potential Visual Effects of the Build Alternatives	4-58
Table 4-11 National and State Ambient Air Quality Standards	4-89
Table 4-12 2030 Regional Pollutant Burdens (kg/day)	4-91
Table 4-13 FTA Transit Noise Impact Criteria—Land Use Categories	4-93
Table 4-14 FTA Ground-borne Vibration Impact Criteria	4-94
Table 4-15 Number of Residential Buildings, Parks, and Schools with Noise Impacts	4-95
Table 4-16 Noise Impacts Common to All Build Alternatives	4-96
Table 4-17 Location of Potential EMF Receptors within 200 Feet of Project Alternatives	4-102
Table 4-18 2030 Summary of Average Daily Transportation Energy Demand by Alternative	4-103
Table 4-19 Summary of Sites of Concern that Could Be Polluted near the Project	4-106
Table 4-20 Hazardous Materials Sites from Which Right-of-Way Would Be Acquired	4-108
Table 4-21 Threatened, Endangered, and Protected Species Identified by Agencies	4-111
Table 4-22 Threatened, Endangered, and Protected Species Identified by Research	4-112
Table 4-23 Threatened, Endangered, and Protected Species Observed along the Study Corridor	4-116
Table 4-24 Summary of the Project’s Effects on Threatened, Endangered, and Protected Species Common to All Build Alternatives	4-119
Table 4-25 Streams in the Study Corridor	4-123
Table 4-26 Marine Waters in the Study Corridor	4-124
Table 4-27 Floodplains	4-124
Table 4-28 Wetlands	4-125
Table 4-29 Summary of Street Tree Effects/Transplanting Mitigation	4-130
Table 4-30 Summary of Effects on Cultural and Historic Resources	4-137
Table 4-31 Potential Long-term Adverse Effects on Cultural Resources Related to Act 50	4-137
Table 4-32 Historic Properties adjacent to Project Alignment	4-139
Table 4-33 Employment Effects	4-144
Table 4-34 Total Construction Energy Required	4-148
Table 4-35 Rail System Benefits on Real Estate Values	4-156
Table 4-36 Planned and Foreseeable Actions in the Study Corridor	4-159
Table 4-37 List of Anticipated Permits	4-164
Table 5-1 Publicly Owned Parks and Recreation Areas Adjacent to Alignment	5-5
Table 5-2 Historic Properties and Section 4(f) Use	5-6
Table 5-3 Section 4(f) Uses of Parks and Recreation Areas	5-9
Table 5-4 Section 4(f) Uses by Alternative	5-23
Table 6-1 Capital Cost Estimates for the Build Alternatives by Cost Category (Millions of 2007 and YOE dollars)	6-3

Table 6-2 Overview of Capital Expenditures through 2030 (Millions of 2007 and YOE dollars)	6-4
Table 6-3 2030 Operating and Maintenance Cost by Alternative, by Mode	6-7
Table 6-4 Project Sources and Uses of Capital Funds by Alternative (Millions of YOE Dollars)	6-9
Table 7-1 Project Goals and Objectives	7-2
Table 7-2 Effectiveness of Alternatives in Improving Corridor Mobility	7-3
Table 7-3 Effectiveness of Alternatives in Improving Corridor Travel Reliability	7-4
Table 7-4 Effectiveness of Alternatives in Supporting Planned Development	7-5
Table 7-5 Population of Communities of Concern within Easy Walking Distance of Stations in 2030	7-5
Table 7-6 Equity Comparison of 2030 Transit Travel-time Savings for Build Alternatives Compared to the No Build Alternative	7-7
Table 7-7 Cost-Effectiveness of the Build Alternatives	7-9
Table 7-8 Financial Feasibility	7-9
Table 7-9 Comparison of Transit Travel Times (Minutes) among Alternatives	7-10
Table 8-1 Summary of Agency Roles and Responsibilities	8-4

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Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
ACHP	Advisory Council on Historic Preservation
APE	area of potential effect
AST	aboveground storage tank
AVO	average vehicle occupancy
BMP	best management practices
BRT	bus rapid transit
BTU	British thermal unit
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CFR	Code of Federal Regulations
City	City and County of Honolulu
CO	carbon monoxide
CPI-U	Consumer Price Index for all Urban Consumers
CWA	Clean Water Act
dB	decibels
dBA	common frequency weighting for environmental noise; simulates how an average person hears sound
DBEDT	State of Hawai`i Department of Business, Economic Development and Tourism
DBFS	City and County of Honolulu Department of Budget and Fiscal Services
DFM	City and County of Honolulu Department of Facility Maintenance
DHHL	State of Hawai`i, Department of Hawaiian Home Lands
DLNR-DOFAW	Department of Land and Natural Resources, Division of Forestry and Wildlife
DPP	City and County of Honolulu Department of Planning and Permitting
DPR	City and County of Honolulu Department of Parks and Recreation
DTS	City and County of Honolulu Department of Transportation Services
EIS	environmental impact statement
EJ	Environmental Justice
EMF	electric and magnetic field
EPA	U.S. Environmental Protection Agency

ESA	environmental site assessment
ʻEwa (direction)	toward the west
FFGA	Full Funding Grant Agreement
FHWA	Federal Highway Administration
ft	feet
FTA	Federal Transit Administration
FY	fiscal year
GET	general excise and use tax
GIS	Geographic Information System
H-1	Interstate Route H-1 (the H-1 Freeway)
H-2	Interstate Route H-2 (the H-2 Freeway)
HAR	Hawai`i Administrative Rules
HART	Honolulu Area Rail Rapid Transit
HBMP	Hawai`i Biodiversity and Mapping Program
HCP	Habitat Conservation Plan
HDLNR	State of Hawai`i Department of Land and Natural Resources
HDOH	State of Hawai`i Department of Health
HDOT	State of Hawai`i Department of Transportation
HECO	Hawaiian Electric Company
HOV	high-occupancy vehicle
HRS	Hawai`i Revised Statutes
HRT	Honolulu Rapid-Transit Development Project
HRT&L	Honolulu Rapid Transit & Land Company
HUD	U.S. Department of Housing and Urban Development
IVT	in-vehicle time
kg	kilogram
Koko Head (direction)	toward the east
Ldn	day/night noise level (descriptor of daily noise environment; incorporates a penalty for high noise levels at night)
Leq	equivalent sound level (common environmental noise descriptor)
Leq(h)	hourly equivalent sound level
Lmax	maximum noise level during an event
LOS	level-of-service
LPA	Locally Preferred Alternative
LWCF	Land and Water Conservation Fund

makai (direction)	toward the sea
mauka (direction)	toward the mountains
MBTA	Migratory Bird Treaty Act
MBTU	million British thermal units
µg/m ³	micrograms per cubic meter
MOA	memorandum of agreement
MOT	Maintenance of Traffic (Plan)
mph	miles per hour
MSAT	mobile source air toxics
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NO ₂	nitrogen dioxide
NOAA/FS	National Oceanic and Atmospheric Administration National Marine Fisheries Service
NOI	notice of intent
NO _x	nitrogen oxides
NPDES	National Pollution Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O&M	operating and maintenance
O ₃	ozone
O'ahuMPO	O'ahu Metropolitan Planning Organization
OR&L	O'ahu Railway and Land Company
ORTP	O'ahu Regional Transportation Plan
OTS	O'ahu Transit Services, Inc.
Pb	lead
PEEP	Preliminary Engineering and Evaluation Program
PIP	Public Involvement Plan
PM ₁₀	particulate matter smaller than or equal to 10 microns in size
PM _{2.5}	particulate matter smaller than or equal to 2.5 microns in size
ppm	parts per million
PUC	Primary Urban Center

ROH	Revised Ordinances of Honolulu
RTD	City and County of Honolulu Department of Transportation Services Rapid Transit Division
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act—A Legacy for Users
SHPD	State Historic Preservation Division
SO2	sulfur dioxide
SR	State Route
SSMP	Safety and Security Management Plan
TAA	Transportation Analysis Area
TDM	Transportation Demand Management
TMK	Tax Map Key
TMP	Transit Mitigation Program
TOD	transit-oriented development
TPSS	traction power substation
TSD	transit-supportive development
TSM	Transportation System Management
UH	University of Hawai`i
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USDOE	U.S. Department of Energy
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USHHS	U.S. Department of Health and Human Services
UST	underground storage tank
V/C	volume-to-capacity
VdB	vibration decibels (measure of vibration velocity)
TMP	Transit Mitigation Program
TOD	transit-oriented development
TPSS	traction power substation
TSD	transit-supportive development
TSM	Transportation System Management
UH	University of Hawai`i
USACE	U.S. Army Corps of Engineers

USC	U.S. Code
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USDOE	U.S. Department of Energy
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USHHS	U.S. Department of Health and Human Services
UST	underground storage tank
V/C	volume-to-capacity
VdB	vibration decibels (measure of vibration velocity)
VHD	vehicle hours of delay
VHT	vehicle hours traveled
VMT	vehicle miles traveled
VOC	volatile organic compounds
vph	vehicles per hour
Wai`anae (direction)	toward the west
YOE	year of expenditure

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Executive Summary

The U.S. Department of Transportation Federal Transit Administration (FTA) and the City and County of Honolulu Department of Transportation Services (DTS) are considering a project that would provide high-capacity transit service on the Island of O‘ahu.

The study corridor extends from Kapolei in the west (the Wai‘anae or ‘Ewa direction) to the University of Hawai‘i at Mānoa (UH Mānoa) in the east (the Koko Head direction). It is confined by the Wai‘anae and Ko‘olau mountain ranges in the mauka direction (toward the mountains, generally to the north within the study corridor) and the Pacific Ocean in the makai direction (toward the sea, generally to the south within the study corridor) (Figure S-1) . This corridor includes the majority of housing and employment on O‘ahu. Its east-west length is approximately 23 miles and between Pearl City and ‘Aiea, its width is less than one mile between Pearl Harbor and the base of the Ko‘olau Mountains.

Purpose of and Need for Transportation Improvements

The purpose of the Honolulu High-Capacity Transit Corridor Project is to provide high-capacity rapid transit in the highly congested east-west transportation corridor between Kapolei and UH Mānoa, as specified in the *O‘ahu Regional Transportation Plan 2030* (ORTP) (O‘ahuMPO 2006). The project is intended to provide faster, more reliable public transportation service than can be achieved with buses operating in congested mixed-flow traffic. It would provide reliable mobility in areas of the corridor where people of limited income and an aging population live, and would serve rapidly developing areas of the corridor. The project would also provide an alternative to private automobile travel and improve transit links within the corridor. In conjunction with other improvements included in the ORTP, the project would help moderate anticipated traffic congestion in the corridor. It also supports the goals of the Honolulu General Plan and the ORTP by serving areas designated for urban growth.

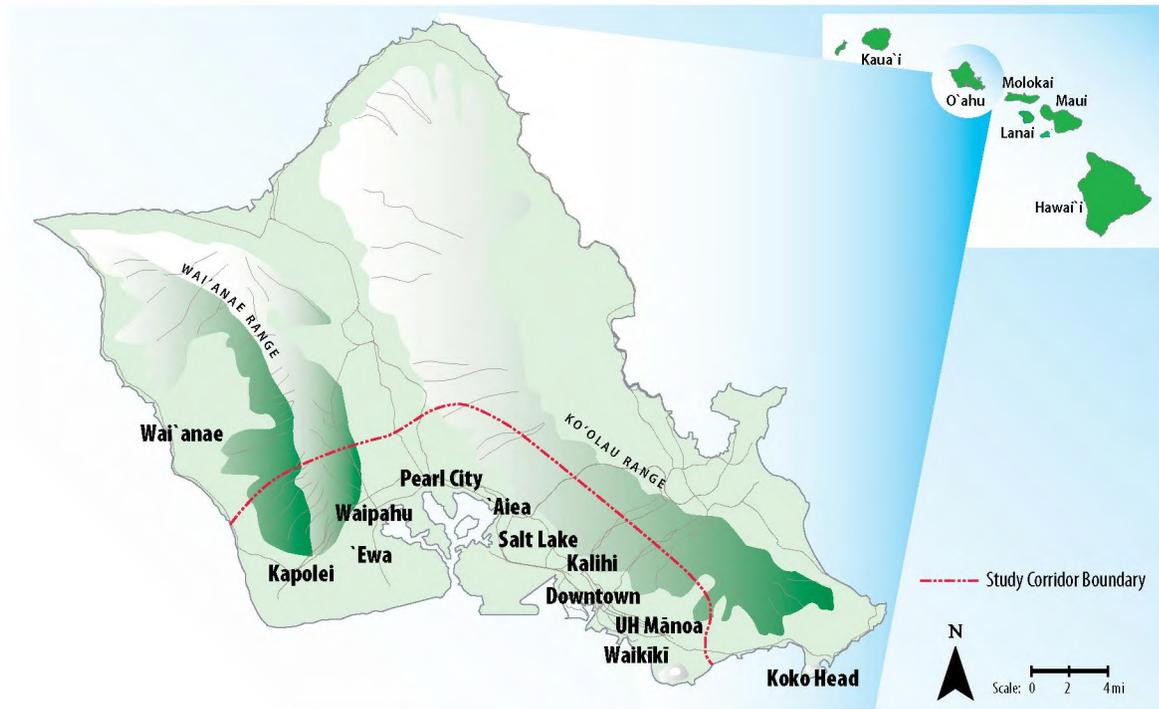


Figure S-1 Honolulu High-Capacity Transit Corridor Project Vicinity

The project would improve mobility for travelers who face increasingly severe traffic congestion, improve transportation system reliability, provide accessibility to new development in the ‘Ewa/Kapolei/Makakilo area in support of the City’s policy to develop this as a “second city”, and improve transportation equity for all travelers.

Alternatives Considered

Prior to completing this Draft Environmental Impact Statement (Draft EIS), alternatives were evaluated at three stages. First, a broad range of alternatives was considered and screened to four alternatives for evaluation in the Alternatives Analysis. Second, the *Honolulu High-Capacity Transit Corridor Project Alternatives Analysis Report* (DTS 2006b) recommended (and the City Council selected) the Fixed Guideway Alternative as the Locally Preferred Alternative. Third, scoping for the National Environmental Policy Act (NEPA) process confirmed that no alternatives that had not been previously studied and eliminated for

good cause would satisfy the Purpose and Need at less cost, with greater effectiveness, or with less environmental or community impact.

During the fall of 2005 and winter of 2006, the City and County of Honolulu conducted an alternatives screening. This is documented in the *Honolulu High-Capacity Transit Corridor Project Alternatives Screening Memorandum* (DTS 2006a).

The alternatives were screened through a series of steps including data gathering, creating a comprehensive list of potential alternatives, developing screening criteria, presenting viable alternatives to the public and interested public agencies and officials for comment during the scoping process. Lastly, input from the scoping process was analyzed and the alternatives were refined based on this input.

Once this evaluation was complete, the modal, technology, and alignment options were combined

to create the following alternatives, which were evaluated in the *Alternatives Analysis Report*:

- **No Build Alternative**
- **Transportation System Management Alternative**
- **Managed Lane Alternative**
 - Two-Direction Option
 - Reversible Option
- **Fixed Guideway Alternative**
 - Kalaeloa-Salt Lake-North King-Hotel Option
 - Kamokila-Airport-Dillingham Option
 - Kalaeloa-Airport-Dillingham-Halekauwila Option

Chapter 2 of the *Alternatives Analysis Report* describes these alternatives in detail, and Chapter 6 compares them. After review of the *Alternatives Analysis Report* and consideration of public comments, the Council of City and County of Honolulu selected a Locally Preferred Alternative that was signed into law by the Mayor, becoming Ordinance 07-001. This ordinance authorized the City to proceed with planning and engineering of a fixed guideway project from Kapolei to UH Mānoa with an extension to Waikīkī. The City Council also passed Resolution 07-039, which directed the first construction project to be fiscally constrained to anticipated funding sources, and to extend from East Kapolei to Ala Moana Center via Salt Lake Boulevard.

During the NEPA scoping process, several scoping comments were received requesting reconsideration of the Managed Lane Alternative. This was considered and rejected during the Alternatives Analysis process. Because no new information was provided that would have substantially changed the findings of the Alternatives Analysis process regarding the Managed Lane Alternative, this alternative is not included in this Draft EIS.

In addition to suggestions to reconsider previously eliminated alternatives, three separate

proposals were received and documented in the *Honolulu High-Capacity Transit Corridor Project National Environmental Policy Act Scoping Report* (DTS 2007). One proposal was to provide additional bus service with either school buses or private vehicles. The second was for a High-Speed Bus Alternative, to include aspects of the Fixed Guideway Alternative and the Managed Lane Alternative (which was eliminated during the Alternatives Analysis process). These proposals were similar to alternatives that had already been considered and eliminated during the Alternatives Analysis process. Therefore, they are not considered in this Draft EIS. The third proposal was for an additional fixed guideway alternative serving the Honolulu International Airport. This alternative is included in this Draft EIS.

During the scoping process, comments were requested on five transit technologies. The comments received did not substantially differentiate any of the following five considered technologies as being universally preferable to the other technologies:

- Light-rail transit
- Rapid-rail transit
- Rubber-tired guided vehicles
- Magnetic levitation system
- Monorail system

Subsequent to the scoping process, a technical review process that included opportunities for public comment was used to select a transit technology. This process included a broad request for information publicized to the transit industry. Transit vehicle manufacturers submitted 12 responses detailing the features of these different vehicle technologies. The responses were reviewed in February 2008 by a selection panel that ranked the performance, cost, and reliability of the proposed technologies and accepted public comment on the technology selection. The panel's findings are summarized in its report to the City Council dated February 22, 2008. The panel's

report resulted in the City establishing steel wheel operating on steel rail as the technology for the Build Alternatives evaluated in this Draft EIS. This eliminated the other technologies from further consideration.

The alternatives evaluated in this Draft EIS are the result of this process of developing alternatives, and reflect comments received during the scoping process. This information is summarized in the *Honolulu High-Capacity Transit Corridor Project National Environmental Policy Act Scoping Report* (DTS 2007).

The following four alternatives are evaluated in this Draft EIS. They were developed to comply with the Locally Preferred Alternative adopted by the City Council, and to address the public and agency comments received during the Chapter 343 and NEPA scoping processes:

- No Build Alternative
- Fixed Guideway Transit Alternative via Salt Lake Boulevard (Salt Lake Alternative)
- Fixed Guideway Transit Alternative via the Airport (Airport Alternative)
- Fixed Guideway Transit Alternative via the Airport & Salt Lake (Airport & Salt Lake Alternative)

The No Build Alternative is included in this Draft EIS to provide a comparison of what future conditions would be if none of the Build Alternatives were implemented. This alternative includes completion of the committed transportation projects identified in the O'ahu Metropolitan Planning Organization (O'ahuMPO)'s ORTP 2030.

The Build Alternatives would provide a fixed guideway transit system from East Kapolei to Ala Moana Center (the Project). Planned extensions are anticipated to West Kapolei, UH Mānoa, and Waikīkī. The Locally Preferred Alternative selected by City Council includes the Project and the planned extensions. Detailed plans of the

Project are included in Appendix A. The system would use steel wheel on steel rail technology and could be either automated or employ drivers. All parts of the system would either be elevated or in exclusive right-of-way. The guideway would follow the same alignment for all Build Alternatives through most of the study corridor, except between Aloha Stadium and Kalihi.

In addition to the guideway, the Project would require construction of transit stations and supporting facilities. Supporting facilities would include a vehicle maintenance and storage facility, transit centers, park-and-ride lots, and traction power substations. The maintenance and storage facility would be located either near Farrington Highway between North-South Road and Fort Weaver Road, or near Leeward Community College.

Some bus service would be reconfigured to bring riders on local buses to nearby fixed guideway transit stations. To support this system, the bus fleet would be increased. All Build Alternatives assume completion of the committed transportation projects identified in the ORTP 2030.

Transportation

Existing and future (planning horizon year 2030) transportation system conditions, service characteristics, performance, and transportation effects for each of the alternatives (including the No Build Alternative) were evaluated. This evaluation was organized into four sections:

- Existing (2007) conditions and performance;
- Future (2030) No Build conditions and performance, with comparisons made to existing conditions;
- Future (2030) Build Alternatives conditions and performance, with comparisons made to 2030 No Build conditions; and
- Construction-related effects.

The existing transportation network (streets, highways, parking, bicycle and pedestrian

network, and public transportation) was evaluated. This evaluation found that congested-related delays occurred on roadways. This includes peak a.m. and p.m. congestion, especially in the peak direction (i.e., toward downtown in the morning) and on existing HOV lanes.

These congested-related delays reduce travel times for the entire network, and increasing congestion and constrained operating conditions for public transit services have led to transportation conditions that are becoming less and less reliable. Although TheBus system's productivity exceeds several systems that operate in larger metropolitan areas, gradually slower speeds, increased costs, and reduced service reliability have resulted from buses operating in mixed traffic. Even with the \$3 billion in planned roadway improvements outlined in the ORTP, congestion will increase, making it more difficult for bus transit to effectively serve the population.

Under the No Build Alternative, transit service would experience slower operating speeds and reduced reliability through the 2030 horizon year.

Under the Build Alternatives, overall transit speeds would increase, which would reduce travel times and improve operating efficiency as a result of the fixed guideway system. The Build Alternatives would reduce travel time to major activity centers. Transit service would be improved through local bus routes and pedestrian and bicycle access to guideway stations, resulting in an increased transit share of total trips (particularly for work-related trips). A fixed guideway system would also improve transit equity by reducing travel times for transit-dependent populations to major employment areas. Vehicle hours of delay are expected to be reduced by 21 to 23 percent with the Build Alternatives.

With the Build Alternatives, the fixed guideway would affect existing streets, parking capacity,

and pedestrian and bicycles facilities. Careful design and placement of guideway columns would minimize these potential effects. The Build Alternatives would also have temporary effects on the transportation system, and mitigation would include a Maintenance of Traffic Plan and Transit Mitigation Plan.

Environmental Analysis, Consequences, and Mitigation

The study corridor's various environmental aspects were analyzed, including existing conditions, future consequences, and required mitigation. All aspects of the natural and social environment were evaluated per NEPA regulations.

Geographic areas of effect are typically discussed in four categories:

- **Project Region**—the entire Island of O'ahu
- **Study Corridor**—the southern coast of O'ahu where the Project would be located
- **Project Station Area**—all areas within one-half mile of a proposed project station
- **Project Alignment**—the fixed guideway's proposed route, and properties adjacent to the alignment

Displacements and Relocations

Property acquisition from 187 to 213 parcels would be required. The Project would require 34 or 35 full acquisitions, depending on the alternative selected. Partial acquisitions would range from 153 to 178 parcels. A partial acquisition could represent a narrow strip of land or a more substantial portion of a parcel, possibly involving a structure or other facilities. However, for properties that would be partially acquired, existing land uses would not change.

Full acquisition of land used for residential and commercial purposes would result in displacements and relocations. Displaced residents would need to purchase or rent new dwellings. Displaced businesses would need to purchase or lease new

commercial/industrial space, and the location where employees would work would change.

Depending on the alternative selected, 20 residences, 1 church, and between 62 and 67 businesses would be relocated by the Project. Acquisition of property for the Build Alternatives would be conducted in accordance with Federal and State regulations and procedures outlined in the *Real Estate Acquisition Management Plan* (RTD 2008q). Where relocations would occur, affected property owners, businesses, or residents would receive compensation in compliance with all applicable Federal and State laws. Compensation would be in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act.

Visual and Aesthetics

Visually sensitive resources in the study corridor include landmarks, significant views and vistas, historic and cultural sites, and Exceptional Trees. These resources are important because of their scenic quality, scale, and prominence within the visual environment.

The Project's potential visual effects include removing trees, altering 'Ewa-Koko Head and mauka-makai views, light and shadow effects, and introducing project components that are out of scale or character with their setting.

Mitigation measures would focus on preserving visual resources and enhancing the project design to comply with applicable policies. The following measures would be included with the Project to minimize negative visual effects and enhance the visual and aesthetic opportunities that it creates:

- Develop and apply a *Design Language Pattern Guidebook*, to establish a consistent design framework for the Project with consideration of local context
- Retain existing trees where practical, and provide new vegetation
- Shield exterior lighting

- Coordinate the project design with transit-oriented development planning
- Consult with the public and local design community regarding design theme

Noise and Vibration

Noise impacts from the Project were evaluated using criteria established by the FTA, which are based on community reaction to environmental noise exposure (FTA 2006).

Noise levels were measured at locations along the Build Alternative alignments and near proposed station locations, to establish the most sensitive existing environment (i.e., existing baseline noise levels). This was done by performing a series of measurements at representative locations. All noise measurements were made in accordance with American National Standards Institute procedures for community noise measurements.

Noise measurements were taken at 53 noise-sensitive locations along the study corridor. Measurements for 24-hour periods were conducted at 29 of the sites that include residences and other buildings where people normally sleep. These locations were supplemented with short-term 15-minute measurement sites, to determine existing noise levels at typical recreational, institutional, and commercial land uses with primarily daytime and evening activity. Potential noise effects from transit park-and-ride lots and maintenance and storage facility operations were also identified.

A solid parapet wall would be included in the Project design to reduce noise levels. In areas with high-rise apartments and hotels that have lanais or open windows above the elevation of and facing the rail, this wall would have a limited benefit (less than a 3-dBA noise reduction) at floors above the level of the guideway.

The Project would not create vibration effects, so no mitigation is proposed.

Hazardous Materials

A number of sites within the study corridor were identified as potential sites of concern for hazardous materials. In some locations, large or specialized hazardous waste or hazardous materials sites may be affected by right-of-way acquisition. These include underground and aboveground storage tanks (USTs and ASTs), fuel islands, and engineered storage facilities. In a few cases, the Project may displace hazardous materials operations. This includes relocating gas station fuel islands and USTs and ASTs. Environmental Site Assessments would be conducted for potentially contaminated sites, and remediation would be completed where needed.

Water Resources

Although floodplains and surface and marine waters are found at various sections of the study corridor, mitigation to control stormwater quality and quantity using permanent best management practices (BMPs) would promote a natural, low-maintenance, sustainable approach where possible. An integral part of all permanent BMPs is implementing an Inspection and Maintenance Plan to ensure that BMPs operate as designed. As part of the permitting process, written plans would be prepared to establish good housekeeping practices that would help prevent stormwater pollution.

Where the guideway would cross floodplains, the columns supporting the guideway and stations would be designed to withstand flooding, as necessary. Facilities in floodplains at ground level (e.g., stairs and elevators) would be designed to function and remain safe during flooding. Traction power substations would be placed outside of floodplains. Hydraulic studies for specific locations where the Project would cross floodplains would be performed during project design. If hydraulic studies reveal that piers in the floodway would raise base flood elevations, these increases may be avoided by the design. In particular, the Pearl Highlands

parking structure would be designed to allow floodwaters to pass unimpeded.

Street Trees

Coordination regarding street trees has been initiated with the City Department of Parks and Recreation Division of Urban Forestry and community groups such as the Outdoor Circle and Sierra Club. This has resulted in identifying “Exceptional Trees” along the project alignment. Coordination will be ongoing as the Project progresses.

The Build Alternatives would require tree pruning and removal. Tree removal would be minimized to the greatest extent possible, but if a street tree is close to the guideway it would likely require periodic pruning, if not removal.

Effects on street trees would be mitigated by transplanting existing trees or planting new ones. Most of the trees along Farrington Highway that would be affected could be transplanted.

Historic, Archaeological, and Cultural Resources

Under the National Historic Preservation Act, Section 106 requires Federal agencies to consider the effects of their actions on historic properties. This includes archaeological and traditional cultural properties, which are the beliefs, customs, and practices of a living community of people that have been passed down through the generations. Hawai‘i’s historic preservation review legislation [Hawai‘i Administrative Rules Chapter 13-275(b)] includes similar requirements.

Known and potential historic resources were identified and evaluated, and the Project’s effects on them were determined. Properties within the Area of Potential Effect (APE) were identified as those with construction dates before 1969. Field observations were made and photographs were taken of these properties.

Archaeological resources already documented within the study corridor include remnants of fishponds, human burials, subsurface layers related to traditional Native Hawaiian occupation, historic building and structure foundations, and historic trash pits and privies. Because of the level of existing development along the study corridor, many of these resources have been destroyed or altered beyond repair.

The analysis of cultural resources was based on compliance requirements for the National Environmental Policy Act, Section 106 and Act 50 (House Bill No. 2895, H.D.1, 20th Legislature [2000]), as it amends the State of Hawai'i EIS law (Chapter 343, HRS) to include "effects on the cultural practices of the community and State."

The APE contains 76 historic resources (individual or districts). Potential long-term effects on these resources include permanent modification (e.g., moving, damage, or destruction). The permanent destruction of sub-surface resources, including filled fishponds, filled/covered terraces, enclosures, shrines, and 'auwai (irrigation ditch system) is another potential long-term impact. Full and partial takes would occur from parcels that contain historic resources.

Because archaeological resources could be affected during construction, appropriate mitigation measures are discussed in the following Construction Effects section. Where cultural resources remain or may be discovered, all effort would be made to avoid destruction. A plan for restoration and care would be made for each existing cultural site. Mitigation measures for historic resources are being developed in consultation with the State Historic Preservation Division. The current project design avoids affecting historic resources wherever possible.

Construction Effects

Construction effects would be temporary and limited in area as construction proceeds along the project alignment. These effects would vary depending on the land use in each sub-area. Construction-related effects would primarily result during construction of the main structural components: the foundations and columns, superstructure (the elevated guideway structure), and stations. Construction of other system components such as traction power substations would also have associated effects, but to a lesser degree. Construction activities at the maintenance and storage facility, park-and-ride lots, and staging and support facilities would result in effects that are localized to the vicinity of those facilities.

During construction, access to businesses near construction activities could be affected. Mitigation would be implemented to reduce adverse economic hardships on existing businesses along the project alignment during construction.

The construction contractors would implement a project-specific Safety and Security Management Plan to mitigate effects on community services, such as fire prevention and emergency preparedness and response. This plan would also protect the general public, private property, and workers from construction risks.

During construction, visual quality may be altered for all viewer groups. Construction-related signage and heavy equipment would be visible at and near construction sites. Mature vegetation, including trees, may be removed from some areas or pruned to accommodate construction of the guideway, stations, and park-and-ride lots. This would degrade or partially obstruct views or vistas.

Noise during construction would be bothersome and annoying to nearby residents, visitors, and businesses. All of the Build Alternatives would generate similar types of noise, which would occur

intermittently in different locations throughout the construction period.

Common sources of vibration during construction activities include jackhammers, pavement breakers, hoe rams, bulldozers, and backhoes. Pavement breaking and soil compaction would likely produce the highest levels of vibration. Depending on soil conditions in a given sub-area, activities such as pile driving can generate enough vibration to result in substantial short-term noise impacts.

Various mitigation methods may be utilized to minimize noise and vibration impacts during construction.

Section 4(f)

Section 4(f) of the U.S. Department of Transportation Act of 1966 protects public parklands, recreational lands, wildlife refuges, and historic sites of National, State, or Local significance from acquisition and conversion to transportation use. Because avoiding Section 4(f) resources was an important consideration, most public parks, recreational resources, and historic properties identified within the study corridor were avoided in designing the Build Alternatives. However, the Project would result in the direct use of six Section 4(f) resources. The Project would result in *de minimis* impacts on four Section 4(f) resources with the Salt Lake Alternative, and six Section 4(f) resources with the Airport and Airport & Salt Lake Alternatives.

Cost and Financial Analysis

The capital cost of the Build Alternatives, in 2007 dollars, would range from \$3.9 billion for the Salt Lake Alternative to \$4.8 billion for the Airport & Salt Lake Alternative. The capital cost for the Airport Alternative is estimated to be about \$200 million higher than the Salt Lake Alternative.

The local funding source for the Project is a dedicated 0.5-percent surcharge on the State of

Hawai'i's General Excise and Use Tax (GET). This GET surcharge revenue is to be exclusively used for the Project's capital and/or operating expenditures and is expected to total \$4.1 billion (year-of-expenditure \$) through 2022.

The City receives Federal assistance for ongoing capital investments to maintain and overhaul its transportation system, through various funding programs from the FTA. The financial analysis performed assumes the City will continue to receive these funds, some of which would increase noticeably after implementation of the Project.

Comments and Coordination

Agencies, non-governmental groups, and the public have been engaged throughout the project planning process, as required by Federal and State law. Public involvement efforts, including agency coordination and consultation, have been continuous throughout the Project, beginning with the Alternatives Analysis phase in December 2005. In accordance with Executive Order 12898, particular attention has been paid to reaching low-income and minority populations, which are traditionally underserved and underrepresented in the public involvement process.

Public involvement in the form of opportunities for comment and information sharing will continue through the remainder of the Project. The public involvement effort will continue to make use of existing citizen groups, neighborhood boards, and a wide variety of community organizations to inform the public and allow for community input into the project process.

Consultation with the SHPD and other Section 106 consulting parties has been on-going and will continue.

As part of the NEPA and Chapter 343 process, the Draft EIS is being circulated for a 45-day review and comment period. A formal public hearing will

also be held during this period. The hearing's purpose is to give interested parties an opportunity to formally submit comments on the Project and the analysis contained in the Draft EIS. Attendance at the hearings is not required to submit comments.