07
CHAPTER

Evaluation of the Project

This chapter compares the Honolulu High-Capacity Transit Corridor Project to the No Build Alternative from several perspectives. Section 7.1, Changes to this Chapter since the Draft Environmental Impact Statement, summarizes how this chapter has changed since the Draft Environmental Impact Statement (EIS). Section 7.2, Effectiveness in Meeting Project Purpose and Need, draws on information in prior chapters and summarizes how well the Project meets its Purpose and Need. Section 7.3, Transportation and Environmental Consequences, discusses the Project's potential effect on transportation and the environment. Section 7.4, Cost-effectiveness, adds a cost perspective to the effectiveness comparison, to consider the Project's benefits in justifying its capital and operating costs. Section 7.5, Financial Feasibility, looks at affordability given available funding sources. Section 7.6, New Starts Program, summarizes the Project's ratings in the Federal Transit Administration (FTA) New Starts Program. Section 7.7, Important Trade-offs, is a discussion of trade-offs to be made in implementing the Project. The chapter concludes with Section 7.8, Unresolved Issues.

The evaluation measures used in this chapter reflect local goals for the Project (described in Chapter 1, Background, Purpose and Need) as well as FTA criteria for evaluating projects proposed for funding under the Section 5309 New Starts program. FTA criteria that are meaningful to an analysis of the Project include user benefits and development potential (both measures of effectiveness) and the FTA's cost-effectiveness index. By including these criteria, this chapter fulfills Council on Environmental Quality regulations (40 CFR 1502.23), which require that an EIS "indicate those considerations, including factors not related to environmental quality, which are likely to be relevant and important to a decision."

7.1 Changes to this Chapter since the Draft Environmental Impact Statement

This chapter has been updated to reflect the identification of the Airport Alternative as the Project and to reflect updated and additional analysis presented in the other chapters of this Final EIS. Transportation data have been updated, as

described in Chapter 3, Transportation. Section 7.6 has been added to document FTA's approval of the Project to enter the Preliminary Engineering phase of the New Starts process. Section 7.7 has been modified to compare the Project to the No Build Alternative. Section 7.8 has been added to address unresolved issues related to the Project.

7.2 Effectiveness in Meeting Project Purpose and Need

Section 1.8, Need for Transit Improvements, of this Final EIS describes four needs that the Project is intended to meet. This section evaluates how well each alternative meets these needs, based on the variety of measures of effectiveness shown in Table 7-1. Several of these measures are primarily intended to address local goals, while others are also factors considered in FTA New Starts evaluations.

7.2.1 Improve Corridor Mobility

Just as mobility and congestion have worsened over the years, conditions in 2030 will be worse than today. Despite implementation of the planned $3 billion in roadway improvements identified in the *O'ahu Regional Transportation Plan 2030* (ORTP), the No Build Alternative still would not relieve traffic congestion for drivers or improve mobility for transit riders compared to today. Average travel times along major corridors would increase. Locations farthest from employment centers would experience the largest increase in congestion, decline in mobility, and constrained access. The Project will substantially improve corridor mobility compared to the No Build Alternative.

As shown in Table 7-2, vehicle miles traveled (VMT), vehicle hours traveled (VHT), and vehicle hours of delay (VHD) would increase under the No Build Alternative compared to today. Vehicular traffic volumes on major roadways would grow substantially between now and 2030. Increases in a.m. peak-hour traffic across screenlines would range from approximately 10 to 50 percent (Table 3-9 in Chapter 3).

For TheBus and TheHandi-Van riders, these increases in highway congestion would directly affect their mobility because travel times on buses would increase. For the No Build Alternative, transit would continue to operate in mixed traffic, except on several short bus-only segments and in high-occupancy vehicle lanes on freeways. As shown in Figure 3-6 in Chapter 3, average transit speed has dropped by approximately 10 percent

Table 7-1 Project Goals and Objectives

Goal	Measure of Objective
Improve corridor mobility	• Transit ridership (daily linked trips) • Transit user benefits • Corridor travel time • Vehicle miles of travel (VMT) • Vehicle hours of travel (VHT) • Vehicle hours of delay (VHD)
Improve corridor travel reliability	• Percent of transit trips using fixed guideway • Percent of transit passenger miles in exclusive right-of-way
Improve access to planned development to support City policy to develop a second urban center	• Development within station area compared to existing amount of development
Improve transportation equity	• User benefits to transit-dependent communities • Percent of project costs borne by communities of concern

Table 7-2 Effectiveness of Alternatives in Improving Corridor Mobility

Measure	2007 Existing Conditions	Alternative (2030)	
		No Build	Project
Transit Travel Time (minutes)			
Wai`anae to UH Mānoa	128 minutes	121 minutes (1 transfer)	93 minutes (2 transfers)
Kapolei to Ala Moana Center	101 minutes	105 minutes	59 minutes
Transit Performance			
Transit ridership (daily linked trips)	184,700	226,300	282,500
Transit user benefits (hours per year)	n/a	n/a	20,775,000
Highway Performance			
Daily islandwide vehicle miles traveled (VMT)	11,232,400	13,623,100	13,049,000
Daily islandwide vehicle hours traveled (VHT)	325,700	415,600	383,800
Daily islandwide vehicle hours of delay (VHD)	71,800	104,700	85,800

since 1984 (from 14.6 to 13.2 mph) and would continue to decline through 2030 to approximately 12.7 mph under the No Build Alternative.

The Project will increase average transit speeds by approximately 25 percent compared to the 2030 No Build Alternative (Figure 3-6 in Chapter 3), leading to higher transit ridership and travel time savings for existing and new transit users. Transit travel times between major destinations will decrease up to 60 percent compared to the No Build Alternative (Table 7-2). As transit becomes a faster, and thus more attractive, travel choice, ridership will increase. As shown in Table 7-2, transit ridership will increase by approximately 56,200 trips per day (25 percent) by 2030 with the Project compared to the No Build Alternative, and transit users will save more than 20 million equivalent hours of travel time per year by 2030.

Increases in transit ridership will benefit highway users as well by removing drivers from the roadways through better transit service. The Project will reduce traffic congestion and improve mobility compared to the No Build Alternative (Table 7-2). Daily VMT will decrease by 4 percent; VHT will decrease by 8 percent; and VHD will decrease by 18 percent.

7.2.2 Improve Corridor Travel Reliability

With the No Build Alternative, travel reliability for both drivers and transit riders would decrease by 2030. Because delay on the system is not predictable from one day to another, reliability for drivers would worsen. The large increase (46 percent) in VHD that would occur with the No Build Alternative includes an element of unpredictability that requires special accommodations in travel planning. Average travel times would increase somewhat under the No Build Alternative, but the impact on reliability would be more dramatic, especially in the morning. The reason is that drivers are forced to allocate more time to account for the possibility that unexpected delays will occur. These unknowns make it difficult to estimate a trip's duration when scheduling appointments.

All transit riders would experience similar decreases in reliability under the No Build Alternative. Problems with turnbacks and schedule adherence already plague the transit system. These reliability factors are expected to get worse

in the future as the highway system becomes more congested.

With the Project, reliability for transit riders will increase substantially as trips are moved from buses operating on streets in mixed traffic and congested freeways to the fixed guideway, which will provide a predictable travel time. Forty-three percent of transit trips and transit passenger miles will be carried on an exclusive fixed guideway that is not subject to traffic delay (Table 7-3).

With the Project, bus passengers will also realize service reliability as a result of route restructuring that replaces long-haul bus routes with shorter local routes integrated with the fixed guideway system. Driver and bus transit reliability will also improve as a result of reduced congestion and delay on the highway.

Table 7-3 Effectiveness of Alternatives in Improving Corridor Travel Reliability

Measure	2007 Existing Conditions	Alternative (2030)	
		No Build	Project
Percent of transit trips carried on fixed guideway	0%	0%	43%
Percent of transit passenger miles in exclusive right-of-way	1%	1%	43%

7.2.3 Improve Access to Planned Development to Support City Policy to Develop a Second Urban Center

A goal of the Project is to support urban development consistent with the City General Plan (DPP 2002a), which is the blueprint for future population and employment growth. By providing improved mobility and access, a fixed guideway transit facility can serve as a catalyst for shaping development patterns in a corridor.

Although both of the alternatives are generally consistent with Local, District, and State plans, the Project best serves the areas of O‘ahu designated for future growth and development.

Compared to the No Build Alternative, the Project will support a greater amount of development and redevelopment around stations by enhancing access and supplying a daily influx of transit riders and potential customers for businesses.

With the Project, approximately 60,000 additional residents and 27,000 new jobs will be located within walking distance to project stations in 2030. As shown in Table 7-2, the “second city” planned for Kapolei will experience transit travel times to Ala Moana Center that are reduced by 44 percent compared to the No Build Alternative. The improved transit conditions are further illustrated in Figure 7-1, which shows travel time savings for the majority of transit users in ‘Ewa and Central O‘ahu, which are areas planned for future development. Section 3.4.2 describes the travel time savings calculation. By providing better transit access, the Kapolei area will be better able to grow and develop than it would be if it remained isolated from the rest of the region by congested roadways.

7.2.4 Improve Transportation Equity

Equity relates to the fair distribution of a project’s benefits and impacts, so that no group would carry an unfair burden of a project’s negative environmental, social, or economic impacts or receive less than a fair share of a project’s benefits. This section focuses on considering the following evaluation criteria:

- Population segments benefiting from alternative investments
- Population segments paying for alternative investments
- Net benefits by population segment, compared to needs

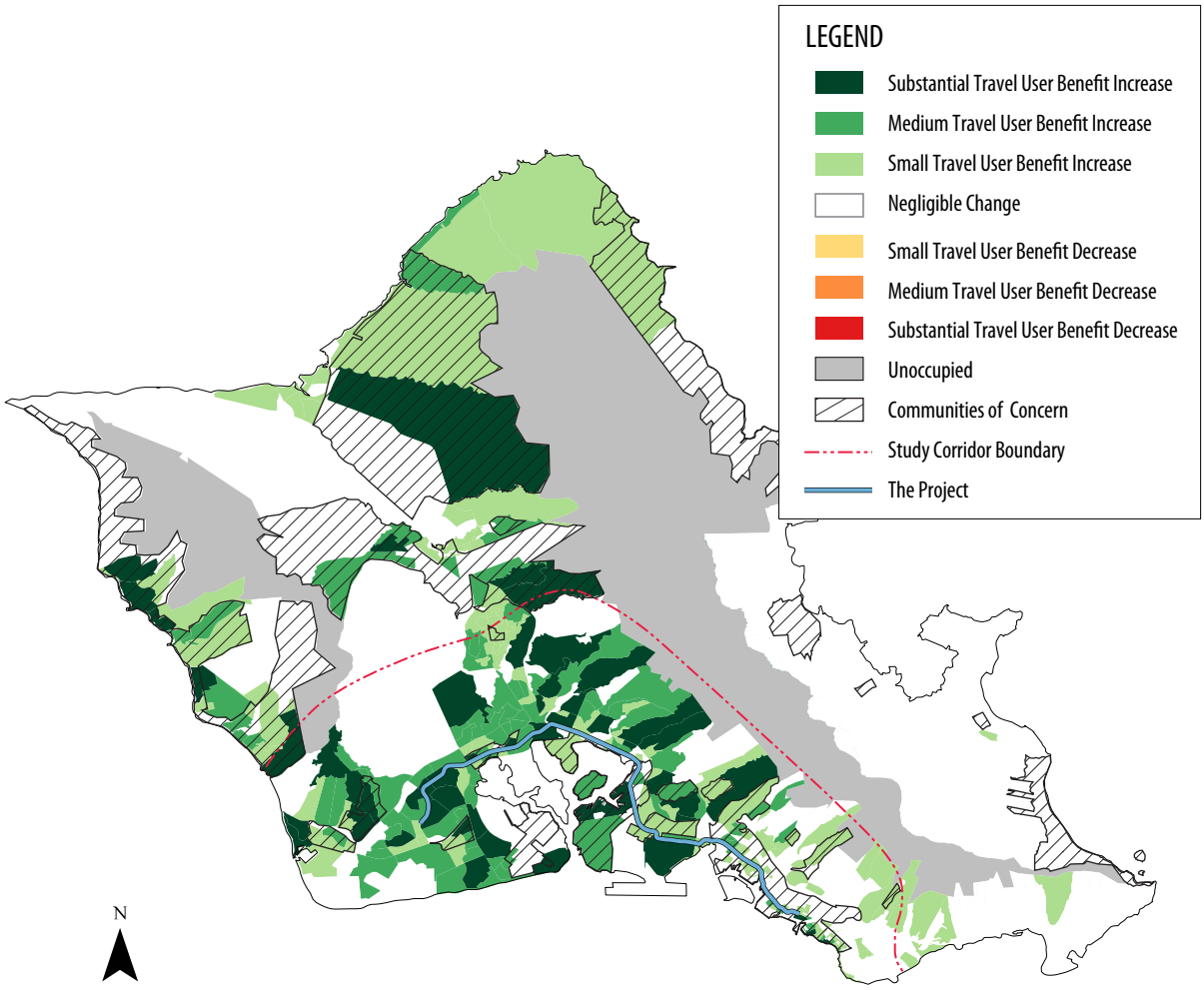

Figure 7-1 Communities of Concern and User Benefits for the Project Compared to the No Build Alternative

- Travel-time savings for transit-dependent populations

Approximately 35 percent of O'ahu's population currently lives in areas that have concentrations of communities of concern. Communities of concern are defined as concentrations of minority, low-income, transit-dependent, and linguistically isolated households (Figure 7-1).

The Project will provide service where the transit need is greatest, connecting areas that have the highest transit dependency, which includes communities of concern. Thirty-six percent of the population within communities of concern will be located within one-half mile of a transit station in 2030.

The Project will provide transit travel-time savings to approximately 61 percent of the islandwide population in 2030 compared to the No Build Alternative (Table 7-4). Of the 35 percent of the island's population that resides in areas containing concentrations of communities of concern, over half would realize a substantial transit travel-time savings. The rest of the island's population that resides in areas with concentrations of communities of concern will experience little change in transit travel time as a result of the

Table 7-4 Equity Comparison of 2030 Transit Travel-time Savings for the Project Compared to the No Build Alternative

Percent of Islandwide Population	That will experience	Percent of Population within Category	
		Within Communities of Concern	Outside Communities of Concern
61%	Travel-time savings compared to the No Build Alternative	34%	66%
39%	Negligible travel-time change compared to the No Build Alternative	36%	64%
0%	Travel-time increase compared to the No Build Alternative	0%	0%

Project. None of the population will experience an increase in travel times.

Tourists pay approximately 30 percent of the General Excise and Use Tax (GET) surcharge collected, which is the Project's local funding source. The remaining local transit investment costs are distributed throughout the island in proportion to how much each individual expends on goods and services.

The Project will substantially improve transportation equity compared to the No Build Alternative. Based on demographics within the study corridor, the demand and need for public transit on O'ahu is greatest within the areas served by the Project (Figure 1-8 in Chapter 1).

7.3 Transportation and Environmental Consequences

The Project's effect on transportation and the environment would differ substantially from the No Build Alternative.

7.3.1 Transportation

The Project will have a positive effect on transit use within the study corridor, which will help reduce delay in the transportation system as a whole, regardless of travel mode (Table 7-2).

The Project will affect parking availability, both during construction and permanently, once the Project is complete and in operation. The Project will remove approximately 865 parking spaces, most of which will not be replaced. Landowners will be paid fair market value for the land, including lost parking spaces, which is consistent with the requirements of the U.S. Uniform Relocation Assistance and Real Property Acquisition Policies Act. On-street parking spaces will generally not be replaced; however, there is available parking nearby to accommodate drivers currently using these spaces. The City will conduct surveys to determine the extent of spillover parking near stations and implement mitigation strategies as needed. Potential strategies include the addition of parking supply, parking restrictions, and shared parking arrangements.

During the construction period, lanes will be closed for construction of the overhead guideway located in the median of existing roadways. Although the time to build these improvements will be kept as short as possible, one or more lanes in sections of major highways will be closed while columns are placed and the guideway erected.

7.3.2 Environmental Consequences

The Project will convert 160 acres of land to transportation use. This includes approximately 88 acres of currently prime, unique, or important farmland. However, all of this land is already planned for conversion to non-farm use by other projects, including the Ho'opili Development. The Project will acquire land from 204 properties (Table 4-4 in Chapter 4, Environmental Analysis, Consequences, and Mitigation).

With mitigation, Project-generated noise will not exceed the FTA impact criteria at any location.

Construction of the Project could encounter contaminated soils. Six potentially contaminated sites will be acquired by the Project and other sites are near the Project. Any contamination encountered during construction will be treated in accordance with Federal and State regulations.

The Project will require removal of approximately 550 street trees and pruning of approximately 100 additional street trees. Approximately 55 percent of the removed trees are anticipated to be able to be transplanted.

Archaeological resources and burials are anticipated to be encountered. The area Koko Head of Moanalua Stream has the highest potential for effects to archaeological resources and burials. The Project will adversely affect 33 historic resources.

The Project will reduce air pollution, energy consumption, and water pollution compared to the No Build Alternative.

7.4 Cost-effectiveness

The cost-effectiveness analysis considers whether the Project's benefit would justify its capital and operating costs.

Cost-effectiveness is one of the key criteria that FTA uses to evaluate projects proposed for Section 5309 New Starts funding. The FTA's cost-effectiveness index is a ratio formed by adding an alternative's annualized capital cost to its year 2030 operating and maintenance cost and dividing the total by user benefits. Costs and benefits were both calculated compared to a New Starts baseline alternative that represents the best that can be done to improve transit service in the study corridor without building a fixed guideway transit facility. The baseline alternative includes all projects in the ORTP.

The cost-effectiveness indices for the Project compared to the baseline is within the "medium" range established by FTA for its New Starts ratings, which, along with other considerations, is currently required to qualify for New Starts funding (Table 7-5).

Table 7-5 2030 Cost-effectiveness of the Project

Measure	Project
Cost per hour of transportation system user benefits	$16.24

7.5 Financial Feasibility

7.5.1 Measure of Capital Financial Feasibility

The primary source of capital for the Project is the GET surcharge revenue. This source will fund more than 70 percent of the cost of the Project. The remainder of project funding will be from Federal transit sources, primarily from the Section 5309 New Starts program, supplemented as necessary by formula Section 5307 funds. While the financial plan is balanced, any capital funding shortfalls, including any shortfall on debt repayment incurred from the issuance of bonds, would need to be covered using additional revenues from other as-yet-unidentified sources. Possible sources are listed in Section 6.3.3 of this Final EIS. The amount of other revenues required over and above GET surcharge and New Starts revenues provides a measure of the relative financial feasibility of the Project. Operating costs for the transit system as a whole represent an average of 13.8 percent of the City's annual operating budget between 2019 and 2030 (Table 7-6). The Project represents approximately 25 percent of that amount.

Table 7-6 2030 Financial Feasibility

Measure	No Build Alternative	Project
Other City revenues required for capital (million year-of-expenditure dollars)	n/a	$0
Average percentage of City General and Highway Funds needed for operating and maintenance	12%	14%

The Project is financially feasible based on this measure because it would not require additional funding sources beyond the GET surcharge revenues and Federal funds.

7.5.2 Measure of City Financial Contribution for Operating and Maintenance

Fare revenues will need to be supplemented to cover total future operating and maintenance costs. As with the current bus transit system, additional funding will be obtained through an allocation from the City's General and Highway Funds. Between fiscal years 1994 and 2007, an average of 11 percent of the total revenue from General and Highway Funds revenues was spent on transit (the maximum was 15 percent in 2001). A measure of the relative operating financial feasibility for the Project is the City's contribution to transit operations as a percentage of total forecast General and Highway Funds revenues.

7.5.3 Comparison of Alternatives

The Project will be financially feasible with the currently identified capital revenue sources. It will increase the total operating and maintenance subsidy from the City's General and Highway Funds by about 2 percent.

7.6 New Starts Program

The Section 5309 "New Starts" program is the Federal government's primary program for providing financial support to locally planned, implemented, and operated fixed-guideway transit major capital investments. FTA documents the New Starts evaluation as part of the National Environmental Policy Act process, for which this EIS is being prepared. This section describes how FTA evaluates projects for its New Starts funding recommendations and provides the ratings for this Project. Section 5307 formula allocation funds have been used for repair and replacement of buses. A portion of these funds will be dedicated to the Project to cover any shortfall after the GET surcharge and New Starts funding have been applied. Section 5307 funds will increase as a result of implementation of the Project, which makes it a reasonable project funding option.

7.6.1 Background

Each year, FTA submits its Annual Report on New Starts to Congress as a companion document to the annual budget submitted by the President. The report provides recommendations for the allocation of New Starts funds under Section 5309 of Title 49 of the United States Code. As required by the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU) (PL 2005), FTA uses the following project justification criteria to evaluate New Starts projects: mobility improvements, cost-effectiveness, operating efficiencies, land use and economic development, environmental factors, and other factors. FTA must also consider the local financial commitment for the proposed project.

FTA reviews the project justification and local financial commitment criteria for each candidate project and assigns a rating for each criterion. For some of the project justification criteria, the proposed project is compared against a baseline alternative. A candidate project is given an overall rating of "High," "Medium-High," "Medium," "Medium-Low," or "Low" based on ratings assigned by FTA to each of the project justification and local financial commitment criteria described above. FTA will not recommend funding for projects that are rated "Medium-Low" or "Low."

A rating of "High," "Medium-High," or "Medium" does not automatically translate into a funding recommendation, although the potential for receiving New Starts funding is much greater.

Project evaluation is an on-going process. FTA evaluation and rating occurs annually in support of budget recommendations presented in the *Annual Report on New Starts* and when projects request FTA approval to enter into Preliminary Engineering or Final Design. Consequently, as proposed New Starts projects proceed through the project development process, information concerning costs, benefits, and impacts is refined and the ratings updated to reflect new information.

7.6.2 Ratings for the Project

FTA approved the Project's entry into Preliminary Engineering on October 16, 2009, giving the Project an overall rating of "Medium," which is sufficient for the Project to be advanced in the Federal project development process and for the Project to be recommended for Federal funding. If these results hold up through subsequent phases of project development, along with other FTA considerations, the Project will be in the competitive range for funding consideration. Funding recommendations are made each year from among the projects that have completed the planning and project development process, including the National Environmental Policy Act process. These recommendations reflect the merits of the projects competing for available Federal funds at the time, as well as the availability of New Starts funding authorization.

Mobility Improvements

The mobility improvement rating considers the number of transit trips using the Project; user benefits per project passenger mile; number of trips by transit-dependent riders using the Project; transit-dependent user benefits per project passenger mile; and share of user benefits received by transit-dependent riders compared to share of transit-dependent individuals in the region (Table 7-7).

Table 7-7 Mobility Improvements (2030)

Measure	Project
Number of transit trips using the Project	116,300
Increase in transit ridership	20%
User benefits per project passenger mile	3.6
Number of trips by transit-dependent riders using the Project	18,600
Transit-dependent user benefits per project passenger mile	3.1
Share of user benefits received by transit-dependent riders compared to share of transit-dependent individuals in the region	12.4%

Cost-effectiveness

The Project is rated "Medium" for cost-effectiveness. The cost-effectiveness rating considers the incremental cost per hour of user benefits and the incremental cost per incremental passenger in 2030 (Table 7-8).

Table 7-8 Cost-effectiveness (2030)

Measure	Project
Incremental cost per hour of user benefits	$16.24
Incremental cost per incremental passenger in 2030	$16.17

Operating Efficiencies

The Project is rated "Medium" for operating efficiency. The operating efficiencies rating considers the ratio between the increase in passenger miles and the increase in operating and maintenance costs (Table 7-9).

Table 7-9 Operating Efficiencies (2030)

Measure	Project
Cost per passenger mile (New Starts baseline)	$0.41
Cost per passenger mile (Project)	$0.34
Difference in cost per passenger mile	$0.07 cost savings

Land Use and Economic Development

The Project is rated "Medium" for Land Use and "Medium-High" for Economic Development. The land use rating considers existing land use, transit-supportive plans and policies and performance and impacts of policies (Table 7-10).

Table 7-10 Land Use and Economic Development (2030)

Measure	Project
Population in corridor	764,640
Employment in corridor	524,240
Corridor population as percentage of metropolitan area	68%
Corridor employment as percentage of metropolitan area	83%
Corridor population density (persons per square mile)	5,054
Corridor employment density (persons per square mile)	3,465

Environmental Benefits

The Project is rated "Medium" for environmental benefits because O'ahu is in attainment for all transportation-related air pollutants.

Local Financial Commitment

Overall the Project is rated "Medium" for local financial commitment. The GET surcharge that was enacted in 2005 provides a local funding source that will cover more than 70 percent of total project costs. The combination of local tax revenue and Federal Section 5309 and 5307 funds will provide a stable capital financing plan for the entire transit system. Fares and property and gas taxes support the system's operating financial plan (Table 7-6).

7.7 Important Trade-offs

In selecting the Airport Alternative for the Project, DTS considered the evaluation results presented in the Draft EIS, comments from agencies and the public, and City Council Resolution 08-261.

This Final EIS evaluates the Project in comparison to the No Build Alternative. This trade-off analysis highlights the areas that are distinctly different between the No Build Alternative and the Project (Table 7-11). The Project will meet the project goals and objectives identified in Chapter 1 of this Final EIS. The Project will improve corridor mobility, corridor travel reliability, access to planned development to support City policy to develop a second urban center, and transportation equity. The Project will achieve the Purpose and Need in a cost-effective manner. Although implementation of the Project will require a substantial investment, it is financially feasible.

7.8 Unresolved Issues

As identified in Section 4.21, Anticipated Permits, Approvals, and Agreements, of this Final EIS, several permits are still required for construction of the Project. Many of the permits will be sought in the Final Design phase after the Federal Record of Decision has been issued. The permits may place additional conditions on the Project.

Federal funds from the Section 5309 New Starts program have not been committed. They will be committed by FTA at completion of the Full-funding Grant Agreement.

Table 7-11 Trade-offs

Measure	No Build Alternative	Project
Goals and Objectives		
Improve corridor mobility		✓
Improve corridor travel reliability		✓
Improve access to planned development to support City policy to develop a second urban center		✓
Improve transportation equity		✓
Transportation		
Transit travel time		✓
Transit ridership		✓
Systemwide traffic congestion		✓
Environmental		
Displacements	✓	
Visual and aesthetic conditions	✓	
Air quality		✓
Noise	–	–
Energy		✓
Water quality		✓
Historic resources	✓	
Cultural resources	✓	
Financial		
Financial feasibility	–	–
Cost-effectiveness		✓

✓ = Causes least damage or best protects, preserves, or enhances resource.

– = No difference between alternatives.

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