Honolulu High-Capacity Transit Corridor Project

~~Draft~~ Financial Plan

August 12, 2008

~~**November 2007**~~

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Prepared for:
City and County of Honolulu

Prepared by:
PB Consult Inc.

Under Subcontract to:
PB Americas, Inc.

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Chapter 1 Introduction

This report provides a Financial Plan for implementing and operating the approximately 20-mile minimum operable segment ~~("the First Project")~~ of the City and County of Honolulu's ("the City's") High-Capacity Transit Corridor Project (HHCTCP), as well as operating and maintaining its existing public transportation system. This Financial Plan is a revision to the Draft Financial Plan submitted in November 2007~~was prepared~~ during the alternatives analysis (AA) phase of the Federal Transit Administration's (FTA's) New Starts project development process. It ~~and~~ supports the City's submittal to FTA for approval to advance the ~~First~~ Project to the Preliminary Engineering (PE) phase and also supplements the information provided in Chapter 6 of the Draft Environmental Impact Statement (DEIS) currently under development. The Financial Plan will continue to be updated during subsequent phases as changes occur to estimated costs, funding, or external factors that affect the City's finances. Unless otherwise noted, all amounts in this Financial Plan are presented on a City Fiscal Year (FY) basis, from July 1 to June 30. For example, FY2013 refers to the City's fiscal year starting on July 1, 2012 and ending on June 30, 2013.

Description of the Project Sponsor and Funding Partners

Project Sponsor

The City and County of Honolulu (City) is the project sponsor, through its Department of Transportation Services (DTS). The City is a body politic and corporate, as provided in Section 1-101 of the Charter of the City and County of Honolulu 1973, as amended (RCH). The City's governmental structure consists of the Legislative Branch and the Executive Branch. The legislative power of the City is vested in and exercised by an elected nine-member City Council whose terms are staggered and limited to no more than two consecutive four-year terms. The executive power of the City is vested in and exercised by an elected Mayor, whose term is limited to no more than two consecutive full four-year terms. The City is authorized under Chapter 51 of the Hawai'i Revised Statutes to "acquire, condemn, purchase, lease, construct, extend, own, maintain, and operate mass transit systems, including, without being limited to, motor buses, street railroads, fixed rail facilities such as monorails or subways, whether surface, subsurface, or elevated, taxis, and other forms of transportation for hire for passengers and their personal baggage." This authority may be carried out either directly, jointly, or under contract with private parties. The City is the designated recipient of FTA Urbanized Area Formula Funds apportioned to the Honolulu and Kailua-Kaneohe urbanized areas.

The DTS is authorized under RCH Chapter 17. The DTS consists of an appointed DTS Director who is the administrative head of the department, a transportation commission, and necessary staff. The DTS Director's powers, duties, and functions include planning, operating, and maintaining transportation, including transit, systems. The DTS Director reports to the City Managing Director who is the principal administrative aide to the Mayor. Section 2-12.1 of the Revised Ordinances of Honolulu, as amended (ROH), assigns to the DTS Director the responsibility of planning, designing, operating, and maintaining the automated fixed guideway rapid transit system and for planning, administering, and coordinating those programs and projects that are proposed to be funded under the Federal Transit Act, as amended.

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The DTS' Rapid Transit Division will be responsible for planning, designing, implementing, and operating the ~~First~~ Project. The DTS' Public Transit Division is responsible for the City's fixed route and paratransit services operated under contract by O'ahu Transit Services, Inc. The City's fixed route bus system is referred to as "TheBus," and it is currently the 20th most utilized transit system in the United States. Annual transit passenger miles per-capita are higher in Honolulu than in all other major U.S. cities without a fixed guideway transit system. TheBus serves the entire island of O'ahu, including the estimated 900,000 residents and 100,000 visitors to be on the island on an average day. TheBus has 91 bus routes and provides more than 70 million unlinked passenger trips each year. In 1997, O'ahu Transit Services was assigned operating responsibility for the City's paratransit services, referred to as the "TheHandi-Van." With more than 13,000 eligible customers, TheHandi-Van provides over 750,000 unlinked passenger trips per year.

Funding Partners

City and County of Honolulu

The dedicated local funding source for the ~~First~~ Project is an established one-half percent (0.5 percent) surcharge on the State of Hawai'i's General Excise Tax and Use (GET). In 2005, the Hawai'i State Legislature authorized the counties to adopt a surcharge on the GET of a maximum of 0.5 percent for public transportation projects (see Appendix C). Following this authorization, the City enacted Ordinance No. 05-027 (see Appendix C) establishing a 0.5 percent GET county surcharge for the City (GET surcharge). The GET surcharge commenced on January 1, 2007, and will be levied through December 31, 2022. Business activities that are subject to the 4% GE tax rate, such as retailing of goods and services, contracting, renting real property or tangible personal property, and interest income, are also subject to the GET surcharge. This source of revenue is to be exclusively used for operating or capital expenditures of a fixed guideway system. The Hawai'i State Department of Taxation is responsible for collecting the GET surcharge and remitting it to the City the net amount after retaining 10 percent of the gross proceeds for administrative purposes. The Financial Plan projects that revenues from the GET surcharge will be approximately $~~4 billion 3,900 million~~ in year of expenditure dollars (YOE $).

Federal Transit Administration

Federal funding assistance from the FTA is assumed in the Financial Plan. Approximately $1,200 million (YOE $) in FTA New Starts funding is anticipated to be available to implement the ~~First~~ Project. FTA Urbanized Area Formula funds and non-New Starts capital investment funds will continue to provide assistance for ongoing capital expenditures, including preventative maintenance.

Description of the HHCTCP ~~and First Project~~

The HHCTCP's east-west corridor stretches across southern O'ahu. The corridor is, at most, 4 miles wide because much of it is bounded by the Ko'olau and Wai'anae Mountain Ranges into the north and the Pacific Ocean into the south. Between Pearl City and 'Aiea the corridor's width is less than one mile between Pearl Harbor and the base of the Ko'olau Mountain Range. Figure 1-1~~, Project Corridor~~, is a map of the study corridor.

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Figure 1-1. Project Corridor

This corridor between Kapolei and the University of Hawai'i at ~~Manoa~~Mānoa is highly congested with more than 60 percent of O'ahu's population residing there[1]. The City and County of Honolulu General Plan (Honolulu General Plan) (DPP 1997a) directs future population growth to~~Furthermore,~~ the Ewa and Primary Urban Center (PUC) Development Plan and the Central O'ahu Sustainable Communities Plan area. The largest increases in population and employment growth are expected to occur in the 'Ewa, Waipahu, Downtown and Kaka'ako Districts, which are all located in the~~population within this particular~~ corridor.

According to the 2000 census, Honolulu ranks as the fifth densest city among U.S. cities is expected to grow faster than the rest of O'ahu. The biggest population growth is expected in the 'Ewa, Kapolei, and Makakilo communities with a population greater than 500,000. Among those, Honolulu is the only one without a transit system.

~~growing by 170 percent between 2000 and 2030[2].~~

Increasing traffic congestion has impacted the accessibility of the corridor, reduced mobility for people and goods, degraded transit performance, and increased cost. The longer travel times reduce the attractiveness of new developments emerging in Ewa/Kapolei. Average weekday peak-period speeds on Interstate Route H-1 (H-1 Freeway), which runs through the corridor with the H-2 and H-3 Freeways feeding into it, are currently less than 20 miles per hour (mph) in many places and will degrade further by 2030. Travelers on O'ahu's roadways currently experience 51,000 vehicle hours of delay, a measure of how much time is lost daily by travelers in traffic, on a typical weekday. This is expected to increase to 71,000 hours by 2030, assuming all planned improvements in the O'ahu

[1] www.honolulutransit.org
[2] ~~EIS Scoping Information Package, March 15, 2007~~

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Regional Transportation Plan are implemented (excluding a fixed guideway system). Without the improvements, the vehicle hours of delay could reach as high as 326,000 vehicle hours.[3]

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[3] EIS Scoping Information Package, March 15, 2007

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AA and Identification of the ~~First~~ Project

The AA process for the HHCTCP was initiated in August 2005 and the *Honolulu High-Capacity Transit Corridor Project Alternatives Analysis Report* was presented to the City Council in October 2006. The purpose of the report was to provide the City Council with the information necessary to select a mode and general alignment for high-capacity transit service on O‘ahu. On December 22, 2006, the City Council enacted Ordinance No. 07-001 (see Appendix A), which selected a fixed-guideway alternative from Kapolei to the University of Hawai‘i at ~~Manoa and Waikiki~~Mānoa and Waikīkī as the Locally Preferred Alternative (LPA). Ordinance 07-001 identified a specific alignment for the majority of the corridor but left options open in two locations. At the western end of the corridor, the LPA selection identified two alignments (described in the AA Report as Section I – Saratoga Avenue/North-South Road and Kamokila Boulevard), with the notation “as determined by the city administration before or during preliminary engineering.” In the center of the corridor, the LPA selection also identified two alignments (described in the AA Report as Section III – Salt Lake Boulevard and Aolele Street), also with the notation “as determined by the city administration before or during preliminary engineering.”

The LPA selection was made recognizing that revenues from the GET surcharge and FTA New Starts funds would not be sufficient to fund the capital cost of the LPA. On February 27, 2007, the City Council selected as the LPA’s minimum operable segment (MOS), East Kapolei to Ala Moana Center, via Salt Lake Boulevard (Resolution 07-039, FD1(c)) (see Appendix A). The MOS is referred to as the “~~First~~ Project” in this Financial Plan.

Project Sponsor’s Objectives

The City’s goal for the ~~First~~ Project is to provide high-capacity, high-speed transit in the congested east-west transportation corridor mentioned above, as specified in the 2030 O‘ahu Regional Transportation Plan (ORTP). The project is intended to provide faster, more reliable transportation in the corridor and to provide basic mobility in areas with diverse populations.

The following goals were used to select the LPA:

1. Improve corridor mobility
2. Encourage patterns of smart growth and economic development
3. Find a cost-effective solution
4. Provide equitable solutions
5. Develop feasible solutions
6. Minimize community and environmental impacts
7. Achieve consistency with other planning efforts

Implementation of the ~~First~~ Project, in conjunction with other improvements in the ORTP, would moderate the growth of anticipated traffic congestion in the corridor, provide an alternative to private automobile use, and improve transit linkages within the corridor. The ~~First~~ Project also supports the goals of ~~the~~ O‘ahu’s General Plan and the ORTP by serving areas designated for urban growth.

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Project Detail

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The Project, on which this Financial Plan is based, is a 19.5-mile portion of the LPA extending from East Kapolei in the west to UH Manoa with a branch line to Waikiki in the east and is represented by the blue line in Figure 1-2. The alignment would include 19 stations and is anticipated to be a dual guideway of which 18.0 miles are elevated, 1.2 miles are at-grade, and 0.3 mile is below-grade.

The Project would be constructed in phases, each with similar construction activities. The first phase would be a portion of the Project between the East Kapolei end of the Project and Leeward Community College. This phase also would include construction of the vehicle maintenance and storage facility. The remainder of the Project likely would be built in three overlapping phases continuing Koko Head from Leeward Community College first to Aloha Stadium, then to Kapālama, and finally to Ala Moana Center. Conceptual design for the Project is under way, and work on the first construction phase is anticipated to begin in 2009. Construction of the Project also would be completed in phases, with the entire Project operating in FY 2019. Individual construction phases would be opened as they are completed.

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Figure The First Project, on which this Financial Plan is based, is a 19.5-mile portion of the LPA extending from East Kapolei in the west to Ala Moana Center in the east and is represented by the blue line in Figure 1-2. The alignment is anticipated to be a dual guideway of which 18.0 miles are elevated, 1.2 miles are at-grade, and 0.3 mile is below-grade. The First Project is anticipated to be delivered in phases, with Phase I being locally funded and Phase II implemented with FTA New Starts assistance. It is important to note that due to the uncertainty around phasing approaches at the time of developing this draft, the present financial plan does not assume a phased implementation of the First Project. Rather, it assumes a single implementation phase and opening date for the entire alignment, with construction starting in FY2008 and continuing through FY2018. The phased implementation schedule will be integrated in the final iteration of this plan, with the formal PE application submittal, once capital and operating planning assumptions are known with greater certainty.

Phase I – East Kapolei to Leeward Community College

East Kapolei is the western terminus of the First Project. The alignment begins at North-South Road north of Kapolei Parkway. The alignment follows North-South Road in a northerly direction to Farrington Highway where it turns east following Farrington Highway and crosses Fort Weaver Road. The alignment is elevated along North-South Road and a combination of elevated and at-grade along Farrington Highway. The alignment continues in a northeasterly direction following Farrington Highway in an elevated structure. South of the H-1 Freeway, the alignment descends to at- and below-grade at the Navy Drum Site Maintenance Base and Storage Facility and from there continues on to Leeward Community College.

Phase II – Leeward Community College to Puʻuloa Road (Salt Lake)

The alignment returns to an elevated structure to cross the H-1 Freeway. North of the freeway, the alignment turns eastward along Kamehameha Highway. The alignment continues on an elevated structure along Kamehameha Highway to Aloha Stadium. Leaving Aloha Stadium, the alignment turns from Kamehameha Highway to follow Salt Lake Boulevard until it crosses Puʻuloa Road onto Pūkōloa Street.

Phase II – Puʻuloa Road (Salt Lake) to Nimitz Highway

The alignment crosses over Moanalua Stream, turning south to follow the Koko Head bank of Moanalua Stream until it turns southeast, crossing over the H-1 Freeway onto Dillingham Boulevard. The alignment is elevated throughout this section. The alignment proceeds southeast following Dillingham Boulevard and crosses Kapālama Canal, leaving Dillingham Boulevard at Kaʻaahi Street, and crosses Iwilei Road. The alignment is elevated throughout this section.

Phase II – Nimitz Highway to Ala Moana Terminus

After crossing Iwilei Road the alignment follows the Nimitz Highway to Halekauwila Street and continues southeast along Halekauwila Street past Ward Avenue where it transitions onto Queen Street. At the end of Queen Street the alignment crosses Waimanu

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Street and property on the north side of Waimanu Street that will be acquired to allow the alignment to cross over to Kona Street. The alignment then extends through Ala Moana Center and ends with a tail track along Kona Street. The alignment is elevated throughout this section.

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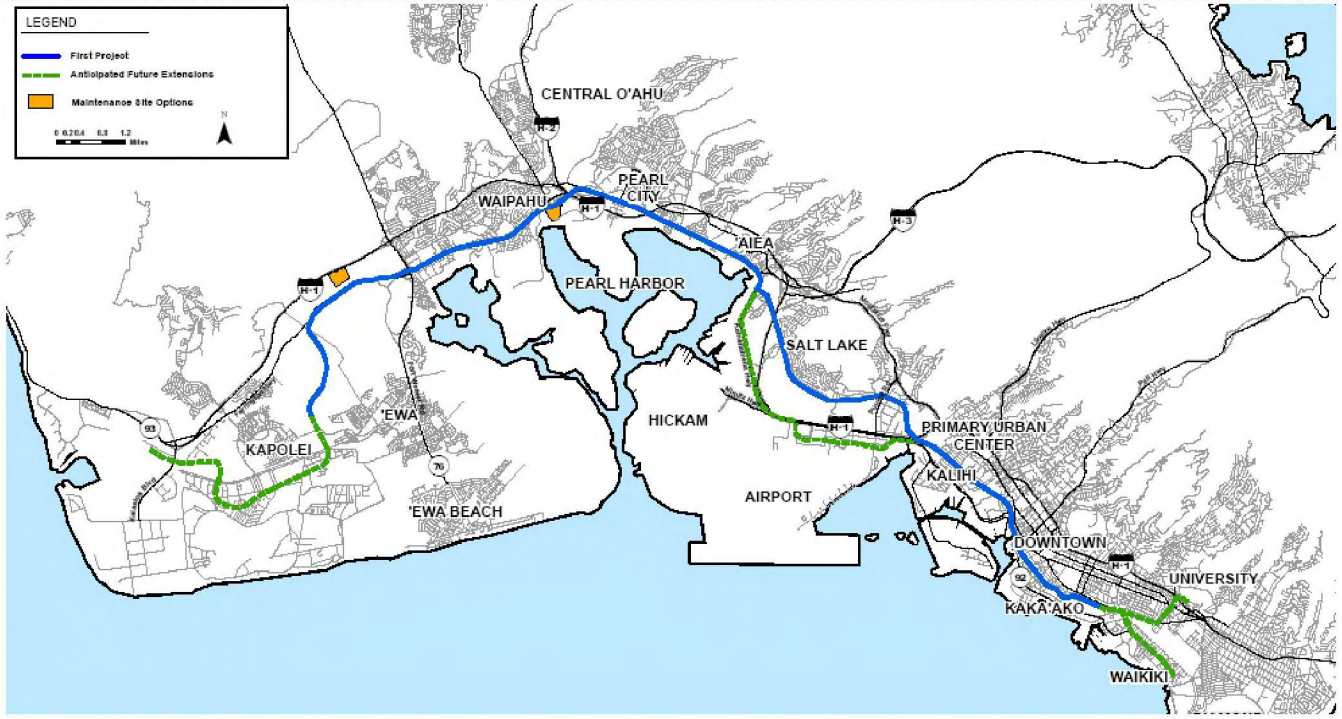
Figure 1-2. ~~First~~ Project Location



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Integration with the Existing System

The ~~First~~ Project will be fully integrated with TheBus system. ~~If fixed guideway service runs along an existing bus route, that route will be eliminated or modified.~~ Feeder bus service will be added to provide increased frequency and more transfer opportunities between bus and rail. Some bus routes would be reconfigured to bring riders on local buses to nearby fixed guideway transit stations.

The Financial Plan assumes fares will be consistent for both TheBus and the fixed guideway service, with free transfers and passes being allowed on both modes. Fare machines will also be available at all rail stations, and standard fareboxes will continue to be used on all buses. More information regarding the fare structure and fare revenues can be found in Chapter 3.

Project Timing

The City initiated technical and engineering work in support of the National Environmental Policy Act (NEPA) in early Fiscal Year (FY) 2008 and anticipates FTA approval to proceed into PE ~~later~~ in early FY 2009~~the fiscal year~~. FTA's Record of Decision is expected to be issued in FY 2010, after which the following are assumed to occur:

- Notice to proceed will be issued on a design-build contract for Phase I
- FTA will approve Phase II's entry into Final Design

This Financial Plan assumes that the City would sign a full funding grant agreement (FFGA) with FTA around February 2011 and start receiving New Starts funding for the implementation of phase II in FY2013. New Starts funding is expected to fund all aspects of capital costs starting in FY 2013, which is conservative considering that ~~same year. At~~ this is about 16 months later than ~~stage in~~ the ~~planning, specific construction phases of the project have not been defined; it is~~ assumed date for~~that the First Project will be completed and fixed guideway service will begin in 2019. Between the time when~~ the FFGA, in February 2011.Local ~~is signed and the start of operations, New Starts funding and local~~ funding is expected to fund all aspects of the capital costs throughout the system and is expected to be the sole source of funding during Phase I. Figure 1-3 provides more detail about the project schedule. The project schedule is subject to change as procurement~~, technology,~~ and phasing decisions are finalized.

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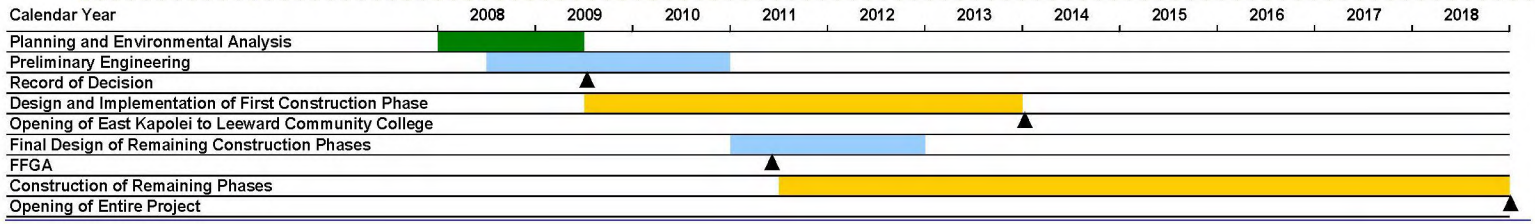
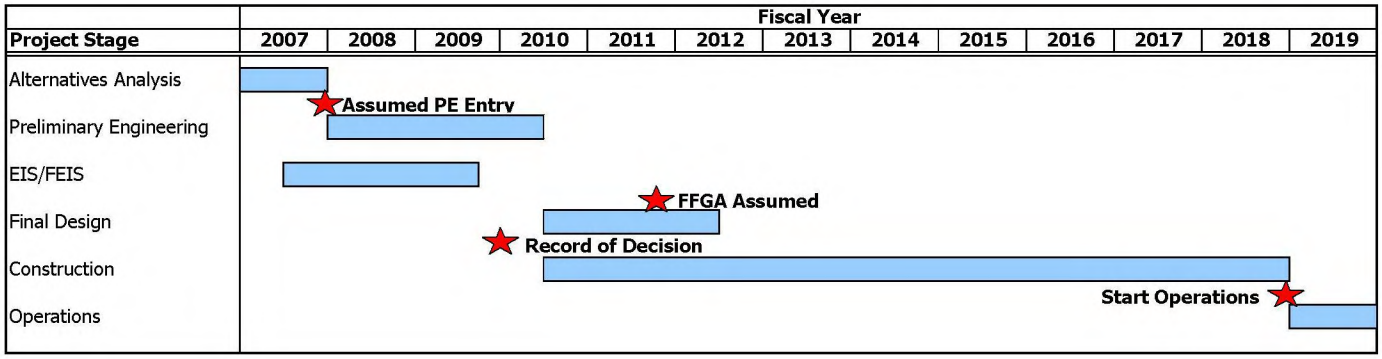
Figure 1-3. Project Schedule





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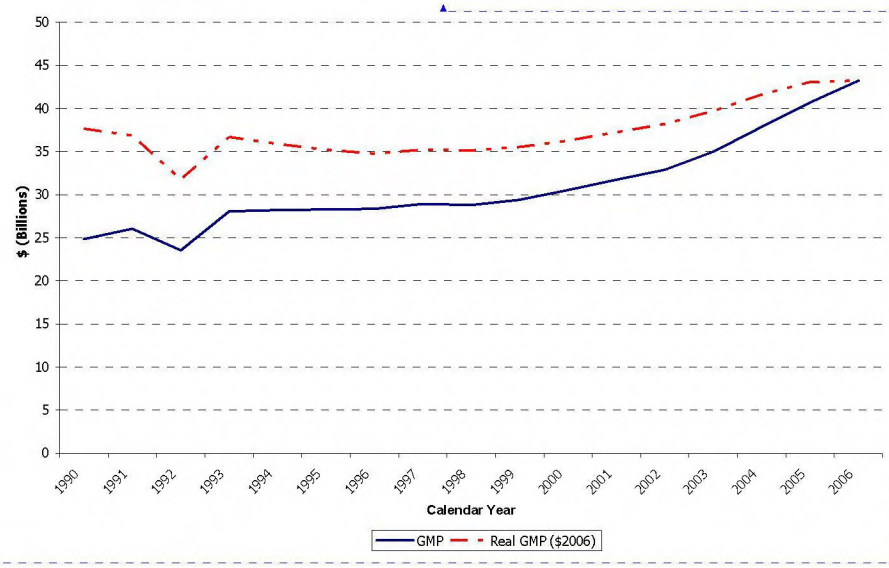
Regional Economic Conditions

Unlike a sales tax which is typically levied on retail activities only, GET is levied on most business transactions including retailing, services, contracting, Theater, Amusements & Radio, Interest, Commissions, Hotels, all other rentals and others. Honolulu's local economic situation is therefore a crucial factor in assessing the financial capacity of the ~~First~~ Project. The following section provides an overview of Honolulu's economy, based on the following trends: gross metropolitan product, employment (general and military), tourism, and property values.

A region's gross metropolitan product (GMP) is a measure of all goods and services produced within the area, and it is used to report an area's overall economic performance. As shown in Figure 1-4, Honolulu has experienced steady growth in GMP over the last 17 years. Even when this measure was adjusted to include inflation, the trend has generally increased since 1990.

Figure 1-4. Honolulu Gross Metropolitan Product (GMP)



Source: Global Insight, www.globalinsight.com

While tourism and military presence in Honolulu remain the main drivers of the local economy, steady growth in GMP, especially since 2000, can be partly explained by growth in the share of retirees, as shown in Figure 1-9. Additionally, the steady growth of Honolulu's GMP can be attributed to the two main drivers of the local economy – tourism and military presence. The trends in tourism and military employment are shown in Figure 1-5 and Figure 1-6, respectively, below.

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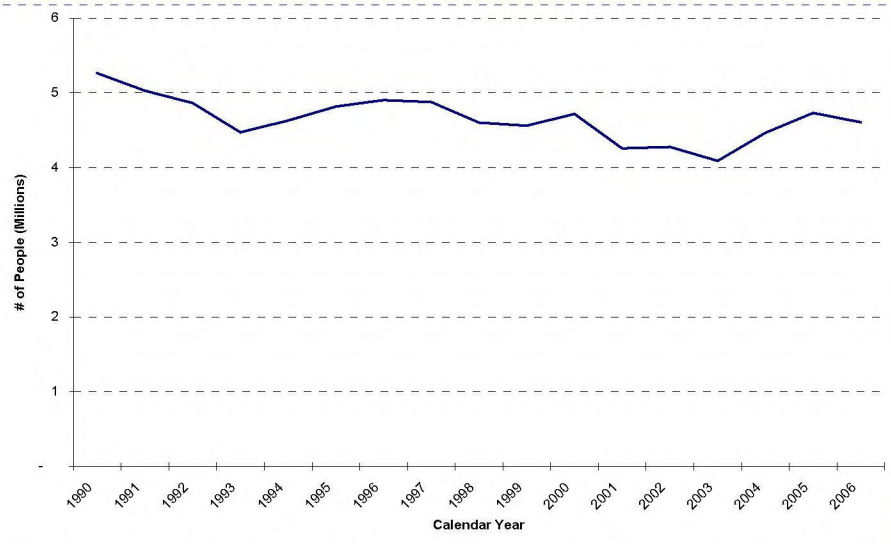
Figure 1-5. Honolulu Visitor Arrivals by Air (millions)



Source: Honolulu Department of Business, Economic Development and Tourism (DBEDT)

Tourism plays an important role in Hawai'i's economy, and historical data show there has been a strong correlation between retail sales and the number of visitors. In 1992, tourism activity in Honolulu was estimated to contribute directly to 22.5 percent of the total tax revenues. Today, the State of Hawai'i's Department of Business, Economic Development and Tourism (DBEDT) estimates that visitors are responsible directly or indirectly for about one quarter of all economic activity in the State.

As shown in Figure 1-5, the number of visitors has, for the most part, been consistent over the past 17 years. There have been some lows, specifically around September 11, 2001, but, in general, the long-term trend is generally consistent and steady. The tourism industry is strongly influenced by the economies of the US mainland and Japan. In 2006, tourists originatingMost visitors are from Japan accounted for approximately 18 percent of visitor arrivals while tourists originating from the US mainland accounted for 68%[4].. This partly explains why the Hawaiianand the U.S. mainland. When one country is experiencing a struggling

[4] Department of Business, Economy, Development and Tourism, http://www.hawaii.gov/dbedt/info/visitor-stats/visitor-research

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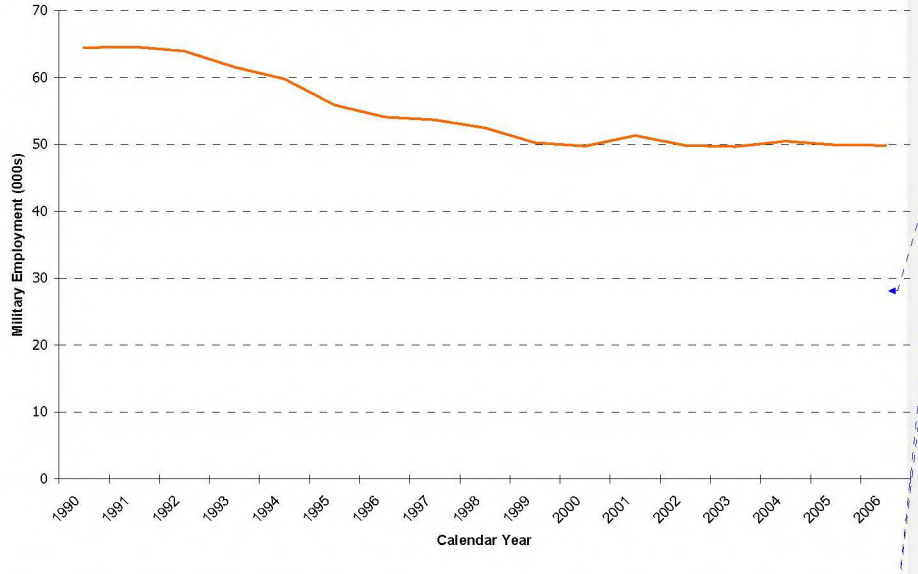
economy grew at a lesser rate than the one on the mainland in the 1990s, as the Japanese economy was facing a downturn., ~~it is often offset by the other country.~~

When the tourist industry decreased significantly in 2001, military employment increased. The sensitivity of Honolulu's tourism industry to the U.S. mainland and Japanese economic downturns and recessions is mitigated to a certain extent by the stability of the presence of the U.S. military. Even though it has declined by more than 20 percent in the last 10 to 15 years, it has maintained a consistent presence with about 50,000 members of the armed forces each year. Federal defense spending makes up approximately 8 percent of the Gross State Product, with most of the activity in the Honolulu metropolitan area[5] Figure 1-6 shows a decreasing trend in military employment between 1990 and 2000, although military employment has been relatively constant since then.

Figure 1-6. Military Employment in Honolulu (thousands)



Source: Global Insight, www.globalinsight.com

Another important indicator of economic health is the City's unemployment levels. As shown in Figure 1-7, Honolulu's unemployment peaked between 1996 and 1998, and,

[5] Fitch Ratings Report, October 27, 2005

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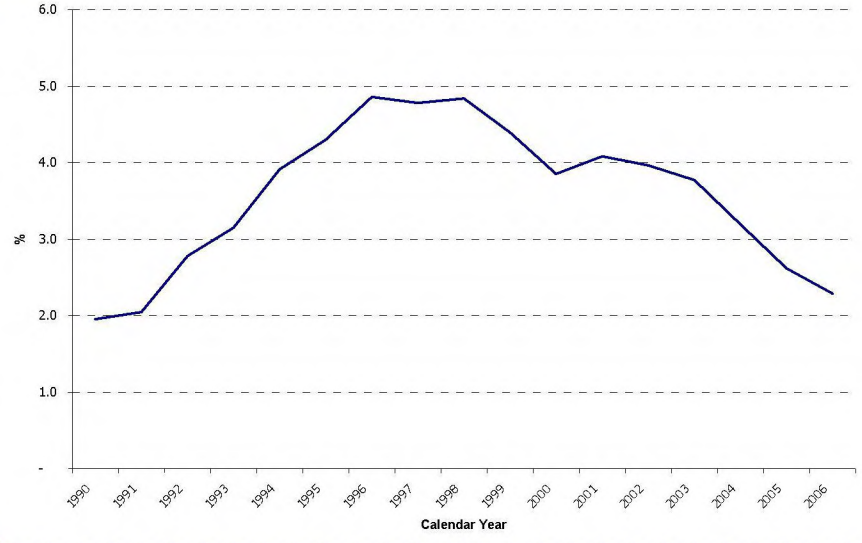
besides a peak in 2001, has been on a downward trend since then to reach 2.3 percent in calendar year 2006 corresponding to the lowest metropolitan area unemployment rate in the nation. Honolulu's employment levels are very closely tied to the tourism industry. Any peaks or valleys in the tourism industry have historically been consistent with employment levels. Moreover, increased employment also correlates with increased spending, which is directly related to GET surcharge revenues.

Figure 1-7. Honolulu Unemployment (%)



Source: Global Insight, www.globalinsight.com

Honolulu's unemployment trend is also relatively consistent with its ~~Honolulu's~~ Consumer Price Index (CPI). While the CPI had some significant fluctuations between 1990 and 1998, it has been on an upward trend since then. This is an important consideration since the inflation forecasts detailed later in this report incorporate both of these aspects of Honolulu's history. See Figure 1-8.

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Figure 1-8. CPI - Honolulu

Source: U.S. Department of Labor, Bureau of Labor Statistics, www.bls.gov

As mentioned earlier, it is also likely that a large contributor to Honolulu's strong real estate market is the growing amount of retirees. As shown in Figure 1-9, the percentage of Honolulu's population that is over 65 is forecasted to increase from 10 percent in 1980 to 20 percent in 2030. This growing segment of the population is expected to sustain Honolulu's growing economy.

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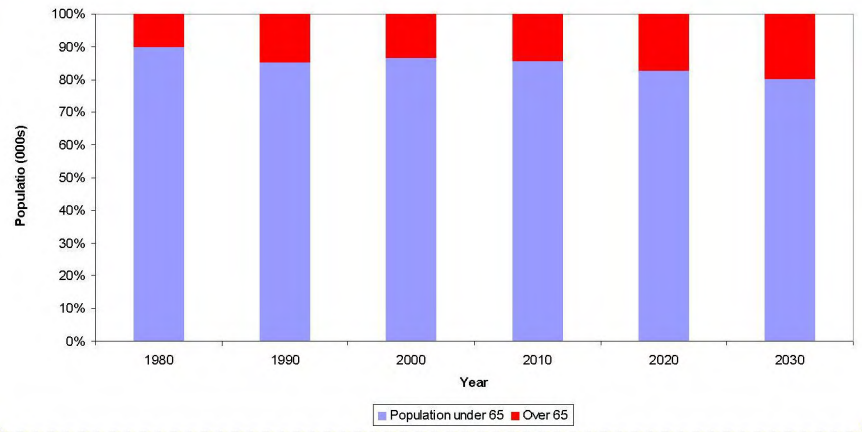
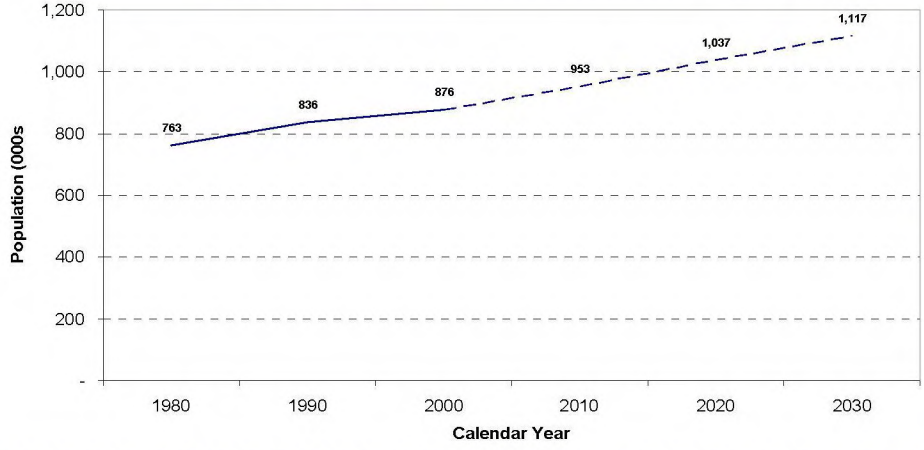
Figure 1-9. Historical and Projected Honolulu Population by Age (thousands)



Source: Honolulu Department of Business, Economic Development and Tourism (DBEDT)

As Figure 1-10 shows, the population increased by 15 percent between 1980 and 2000. Moreover, Honolulu's population is expected to increase by 47 percent between 1980 and 2030. This population increase reflects Honolulu's strong and growing economy.

Figure 1-10. Historical and Projected Honolulu Population ~~(~~ 1980 – 2030 (thousands)



Source: Honolulu Department of Business, Economic Development and Tourism (DBEDT)

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Another indicator of regional economic health is the ~~County's~~ City's real property value trends. This indicator is also essential to the public transportation as real property tax revenues account for about 70 percent of the City's General Fund revenues, used to subsidize transit operations. Since 2001, the total taxable market value of O'ahu's real estate has risen by 86 percent, with the largest contributors being tourism and second-home investment by the retiring "baby-boomer" generation. With limited available land on the island, increased demand in property has caused an increase in the property value. As shown in Figure 1-11 below, Hawai'i's property values have been relatively volatile since 1991; however, this volatility was due to a concentration of Japanese capital in the real estate market, which is now diminished. Standard & Poor's December, 2006 Ratings Report states that the current property values may be more sustainable than previous cycles due to a more stable source of investment, strong demand characteristics, and a more limited housing supply. This will need to be weighed against the recent slowdown in the housing market in future iterations of this Financial Plan.

Figure 1-11. Value of Net Taxable Real Property in Honolulu ($billions)

Source: Honolulu Department of Business, Economic Development and Tourism (DBEDT)

It is also worth noting that a large contributor to Honolulu's economy is the construction sector. As long as new real property continues to be on the rise, there will be an increase in the building permit growth, which fuels the demand for construction workers.

Together, all of these trends suggest that Honolulu's economy is strong and stable. Honolulu's GMP has been on an upward trend since 1990; the presence of visitors and the military has been relatively steady for years; and the City's unemployment levels have been

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decreasing since 2001. These factors, combined with increasing property values and strong population growth, demonstrate Honolulu's strong economic standing.

As stated in Standard & Poor's December 2006 report[6], the City's general obligation (GO) debt improved through strengthened financial reserve policies designed to provide credit stability and strength in the event of potential negative economic or fiscal events.

Factors that reflect this improvement include the following:

- The City's role as the service, trade, and government center for the state of Hawai'i, coupled with the anchoring presence of all four branches of the U.S. armed services
- A strong tourism sector, with strong visitor trends after some declines following September 11, 2001
- Very strong increases in property values since FY 2001, including more than 20 percent annual growth in FY 2006 and 2007
- Strong recent financial performance, including a solid general fund surplus in FY 2005 and projected FY 2006 (unaudited)
- A manageable debt burden, with no additional debt plans until FY 2007

Summary of the Financial Plan

Table 1-1 and Table 1-2 summarize the capital costs and sources and uses of funds for the project, as well as for the entire system. They are based on the baseline assumptions as defined in the subsequent chapters of this report and show that the City is expected to balance and sources on aggregate over the 2008-2030 period.

Table 1-1. Capital Cost Summary with Baseline Assumptions for the Project, YOE $millions

	Millions YOE DollarsCapital Cost
Excluding Finance Charges	4,772
Including Finance Charges through 2018*	5,121
Including Finance Charges through 2030	5,278

	~~Millions 2007 Dollars~~	~~Millions YOE Dollars~~
~~Excluding Finance Charges~~	~~3,727~~	~~4,684~~

[6] Standard & Poor's Upgrading of the City and County of Honolulu http://www.honolulu.gov/budget/honolulu_upgraded_5-dec-2006.pdf, December, 2006

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~~**Including Finance Charges through 2018***~~	~~3,918~~	~~4,940~~
~~**Including Finance Charges through 2030**~~	~~4,041~~	~~5,123~~

* Corresponds to the last year of construction and New Starts receipts
Note: finance charges include interest expense and issuance cost

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Table 1-2. Summary Sources and Uses of Funds with Baseline Assumptions, (YOE

SOURCES OF FUNDS	YOE $M	USES OF FUNDS	YOE $M
		Project Capital Uses of Funds	
		First Project Capital Cost	$4,772
		Commercial Paper Refinancing Amount	67
		Subtotal Project Uses of Funds	**$4,839**
Project Capital Sources of Funds			
Net GET Revenues	$4,054	**Debt Service & other Finance Charges**	
Bond Proceeds	2,244	Total Principal Payment on Long Term Debt	$2,244
Commercial Paper Proceeds	66	Total Interest Payment on Long Term Debt	462
FTA 5309 New Starts Revenues	1,200	Other Finance Charges	22
Interest Earnings	28	**Subtotal Debt Service & other Finance Charges**	**$2,728**
Debt Service Payments from Other Revenue Sources	0		
Subtotal Project Capital Sources of Funds	**$7,592**	**Subtotal Project Capital Uses of Funds**	**$7,568**
Ongoing Systemwide Capital Sources of Funds		**Ongoing Capital Uses of Funds**	
FTA 5309 Fixed Guideway Modernization	$119		
FTA 5309 Bus Discretionary	132	Total Bus Acquisition	$766
FTA 5307 Formula Funds	612	Other Ongoing Bus Capex	129
Transfer to State Vanpool program	(37)	Handi-Van Acquisition	104
City GO Bond Proceeds	252	Total Rail Rehab and Replacement	79
Subtotal Ongoing Systemwide Capital Sources of Funds	**$1,077**	**Subtotal Ongoing Capital Uses of Funds**	**$1,077**
TOTAL CAPITAL SOURCES OF FUNDS	**$8,669**	**TOTAL CAPITAL USES OF FUNDS**	**$8,645**
Operating Sources of Funds		**Operating Uses of Funds**	
Fare Revenues (Bus and Rail)	$2,073		
Fare Revenues (Handi-Van)	53		
Total Fare Revenue	**$2,127**	Total Bus O&M Cost	$6,070
FTA 5307 Formula Funds (used for preventative maintenance)	406	Handi-Van O&M Cost	769
City's Operating Subsidy	5,622	Total Fixed Guideway O&M Cost	1,316
TOTAL OPERATING SOURCES OF FUNDS	**$8,155**	**TOTAL OPERATING USES OF FUNDS**	**$8,155**

$millions)

~~SOURCES OF FUNDS~~	~~2008-2030 Total~~
~~*Capital Funding*~~	
~~GET Surcharge Revenues~~	~~3,930~~
~~FTA New Starts~~	~~1,200~~
~~Interest Income~~	~~9~~
~~**Subtotal First Project**~~	~~**5,139**~~
~~TheBus and TheHandi-Van Capital Funding~~	
~~Local Funds~~	~~334~~
~~FTA Non-New Starts Assistance~~	~~1,027~~
~~**Subtotal TheBus and TheHandi-Van**~~	~~1,361~~
~~**Total Capital Funding Sources**~~	~~**6,500**~~

~~USES OF FUNDS~~	~~2008-2030 Total~~
~~*First Project Capital Costs*~~	
~~Proposed First Project~~	~~4,684~~
~~Finance Charges~~	~~438~~
~~FY 2023 Ending Balance Transferred to Operations~~	~~17~~
~~**Subtotal First Project**~~	~~**5,139**~~
~~TheBus and TheHandi-Van Capital Costs~~	~~1,361~~
~~**Subtotal TheBus and TheHandi-Van**~~	~~1,361~~
~~**Total Capital Costs**~~	~~**6,500**~~

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Operating Funding	2008-2030 Total
FTA Preventive Maintenance Assistance	230
Farebox Revenues	2,289
City's Operating Subsidy	5,197
Transfer from FY 2023 Capital Ending Balance	17
Total Operating Funding Sources	**7,733**

Operating Costs	2008-2030 Total
Proposed First Project	1,158
TheBus and TheHandi-Van	6,574
-	-
Total Operating Costs	**7,733**

Note: Totals may not add up due to rounding

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Chapter 2 Capital Plan

The First Project is a fixed guideway system that extends from East Kapolei to UH Manoathe Ala Moana Center. Cost estimates in the Alternatives Analysis and the DEIS assumes that the First Project is a steel wheel on steelmodern light rail technologysystem operating on a combination of at-grade and elevated portions of guideway using high floor vehicles and a barrier-free fare collection system. All of these assumptions could change as the project evolves; however, the cost assumptions that follow are based on these project attributes.

The following chapter describes the capital costs and funding sources associated with both the First Project and the overall public transportation system. The chapter begins with the First Project's base year and year of expenditure capital costs, system-wide capital costs, and the Project project schedule. This is followed by a detailed explanation of the project funds, including forecasts and characteristics of each funding source and the required project financing. Finally, this chapter concludes with the system-wide capital funds available. The objective of this chapter is to demonstrate that there is an adequate level of funding available to address the capital costs associated with both the Projectproject and the system-wide needs.

First Project Capital Costs

Table 2-1 Capital Costs in Base Year Dollars

Table 2-1 presents total annual capital expenditures excluding finance charges in base year 20082007 dollars. The total capital costs for the proposed project are $4.053.73 billion in 20082007 dollars. These costs are inclusive of construction services, soft costs, unallocated contingency, and exclude finance charges that are detailed later in this chapter.

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Table 2-1. Annual Project Capital Cost (2007 $thousands), Excluding Finance Charges

Fiscal Year	Total Capital Cost (Base Year 2008 $M)	Total Capital Cost (YOE $M)
2008	3	3
2009	9	10
2010	255	273
2011	546	601
2012	824	933
2013	750	873
2014	471	563
2015	384	472
2016	349	441
2017	236	307
2018	162	216
2019	59	81
Total	**4,047**	**4,772**

Year	Total Capital Cost (2007 $thousands)
2008	31,000
2009	47,559
2010	293,847
2011	460,272
2012	527,148
2013	532,688
2014	516,319
2015	458,678
2016	383,039
2017	305,004
2018	170,973
Total	3,726,527

Capital Cost Estimating Sourcing

The 2006 FTA guidelines on cost estimating were used to calculate capital cost estimates for the proposed project. Initially, unit costs for specific items were established. For example, a cost for trench excavation per cubic yard and labor to install direct fixation rail were identified. Then, the composite section costs were calculated using the unit costs to obtain total costs for the project. This cost estimation process established unit costs that were used throughout the cost estimating process to provide uniformity and consistency

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throughout the analysis. Those unit costs were derived from a variety of sources, including the Hawai'i Department of Transportation and the Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, as well as historical sources from similar systems around the country adjusted to Hawai'i.

The 2006 FTA guidelines on cost estimating were used to generate capital cost estimates in 2006 dollars. These guidelines employ standard cost categories (SCC) to establish a consistent format for the reporting, estimating, and managing of capital costs for New Starts projects. The SCCs are divided into construction-related items (items 10 through 50) and project-related items (items 60 through 100). The items are broken down as follows:

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Construction-Related:
10: Guideway and Track Elements
20: Stations, Stops, Terminals, ~~Intermodals~~Intermodal Facilities
30: Support Facilities: Yards, Shops, Administration Buildings
40: Site Work and Special Conditions
50: Systems

Project-Related:
60: Right-of-Way, Land, Existing Improvements
70: Vehicles
80: Professional Services (design and soft costs)
90: Unallocated Contingency
100: Finance Charges

It is worth noting that the professional services soft costs (SCC item 80) are generally estimated as multipliers of the construction costs associated with them. Multipliers for professional services include preliminary engineering, final design, project management, and construction administration. The sum of all of the multipliers is 30 percent of the construction costs; the largest being 10 percent for construction administration and management. There are also specific professional services multipliers for vehicle cost (SCC 70) and right-of-way (SCC 60), which relate solely to the costs associated with those items.

The total costs in 2008~~2007~~ dollars, by category, are detailed in Table 2-2. Note that this table excludes finance charges.

Table 2-2. Total Project Capital Costs by Standard Cost Category, Excluding Finance Charges (2007 $thousands)

Standard Cost Category	Total Capital Cost (Base Year 2008 $M)	Total Capital Cost (YOE $M)
10 GUIDEWAY and TRACK ELEMENTS (route miles)	1,285	1,522
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	264	328
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMINISTRATION BLDGS	125	137
40 SITEWORK and SPECIAL CONDITIONS	693	781
50 SYSTEMS	248	307
60 ROW, LAND, EXISTING IMPROVEMENTS	142	159
70 VEHICLES (number)	276	330
80 PROFESSIONAL SERVICES	784	937
90 UNALLOCATED CONTINGENCY	229	270
Total Project Cost (10 - 90)	**4,047**	**4,772**

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Standard Cost Category	Capital Cost (2007 $thousands)
10 GUIDEWAY and TRACK ELEMENTS (route miles)	1,224,132
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	241,695
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMINISTRATION BLDGS	115,851
40 SITEWORK and SPECIAL CONDITIONS	642,566
50 SYSTEMS	222,827
60 ROW, LAND, EXISTING IMPROVEMENTS	84,360
70 VEHICLES (number)	250,039
80 PROFESSIONAL SERVICES	734,121
90 UNALLOCATED CONTINGENCY	210,935
Total Project Cost (10 - 90)	**3,726,527**

Contingencies

The cost estimates include a variety of contingencies to account for unforeseen, but expected, additional expenses related to each cost category. The design/estimating construction contingency percentages are inversely proportional to the level of design detail for each element. Other contingencies include change orders, vehicles, right-of-way and project reserve contingency. The average Table 2-3 presents each contingency for ~~factor, weighted by~~ the project is 21 percent ~~cost of the corresponding capital expenditures of each sub-category~~. For more details on contingency, refer to the Final Capital Costing Memorandum, dated October 23, 2006.

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Table 2-3. Weighted Average Contingency Factors

Cost Category	Weighted Average Contingency Factor
10 GUIDEWAY and TRACK ELEMENTS	25%
20 STATIONS, STOPS, TERMINALS, INTERMODAL	25%
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMINISTRATION BLDGS	25%
40 SITEWORK AND SPECIAL CONDITIONS	31%
50 SYSTEMS	25%
60 ROW, LAND, EXISTING IMPROVEMENTS	40%
70 VEHICLES (number)	10%
80 PROFESSIONAL SERVICES	4%
90 UNALLOCATED CONTINGENCY	6%

Project Capital Costs in Year of Expenditure Dollars

Inflation

Base year dollars reflect the total cost if all expenditures occurred in 20082007. YOE dollars, on the other hand, incorporate inflation to provide a sense of the costs in the year that the funds are actually expended. The Consumer Price Index for all urban consumers (CPI-U) in Honolulu is used as the baseline capital cost inflation growth rate. The Honolulu CPI-U through calendar year 2010 is based on the Hawai'i State Department of Business, Economic Development and Tourism's forecast, as published in its quarterly statistical and economic report as of second quarter of 2007 and is adjusted to an FY basis.[7] ~~The FY 2010 CPI-U is assumed to decline to 2.6 percent by FY 2013 with a transition at 3.10 percent in FY 2011 and 2.88 percent in FY 2012. The long-term rate of inflation is assumed to stabilize at 2.00 percent staring in FY 2016.~~

Due to near-term ~~the~~ uncertainty in labor and materials costs, capital cost was assumed to escalate at 1.10 percent above the CPI-U growth rate in FY 2009 and~~2008~~, 0.40 percent in

[7] http://www.hawaii.gov/dbedt/info/economic/data_reports/qser/outlook-economy

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FY ~~2009, 0.30 percent in FY~~ 2010, ~~and 0.25 percent thereafter~~. Although non-construction cost items, such as professional services, are likely to escalate at a lower rate than construction inflation, this plan conservatively applies a construction inflation rate uniformly across all capital cost items. The corresponding inflation rates are shown in Table 2-4, which presents the breakdown of annual capital cost ~~construction~~ inflation between the baseline CPI-U and the additional step-up for construction costs.

Table 2-4. Capital Cost Inflation Assumption

Fiscal Year	CPI-U Growth Rate	Step-up for Construction Costs	Total
2008	4.50~~15~~%	0.00~~1.10~~%	4.50~~5.25~~%
2009	3.75~~60~~%	1.10~~0.40~~%	4.85~~00~~%
2010	3.15~~30~~%	0.40~~30~~%	3.55~~60~~%
2011	2.90~~3.10~~%	0.00~~30~~%	2.90~~3.40~~%
2012	2.80~~88~~%	0.00~~25~~%	2.80~~3.13~~%
2013	2.80~~63~~%	0.00~~25~~%	2.80~~88~~%
2014	2.80~~38~~%	0.00~~25~~%	2.80~~63~~%
2015	2.80~~13~~%	0.00~~25~~%	2.80~~38~~%
2016	2.80~~00~~%	0.00~~25~~%	2.80~~25~~%
2017	2.80~~00~~%	0.00~~25~~%	2.80~~25~~%
2018	2.80~~00~~%	0.00~~25~~%	2.80~~25~~%

Project Schedule

The Preliminary Engineering (PE) phase is expected to extend through the middle of FY 2010, with the final design phase starting soon thereafter. Construction is expected to start in FY 2010 (once PE is complete), with mainly sitework and guideway elements. Annual capital expenditures are expected to increase significantly in 2011, and 50 percent of total capital cost should be incurred by FY 2013~~2014~~. Construction and start-up is expected to be completed by the end of calendar year ~~FY~~ 2018, with an opening year expected in FY 2019. Table 2-5 displays the total capital cost in YOE $ between 2008 and 2018.

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Table 2-5 Total Capital Cost Schedule, Excluding Finance Charges

Fiscal Year	Total Capital Cost (YOE $thousands)	Cumulative % of Total
2008	32,628	0.7%
2009	52,058	1.8%
2010	333,224	8.9%
2011	539,697	20.4%
2012	637,461	34.1%
2013	662,711	48.2%
2014	659,241	62.3%
2015	599,583	75.1%
2016	511,973	86.0%
2017	416,844	94.9%
2018	238,923	100.0%
Total	**4,684,343**	

Project Capital Cost (Year of Expenditure Dollars)

Figure 2-1 and Table 2-6 provide a breakdown of these expenditures by year. The largest cost item corresponds to the guideway and track elements, which accounts for approximately 3233 percent of total capital expenditures. Professional services accounts for approximately 2019 percent, while sitework and special conditions account for 1617 percent. All other cost items have a share of total capital cost of less than 7 percent.

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Figure 2-1. Capital Expenditure Schedule, by cost category, (YOE $Millions ~~millions)~~

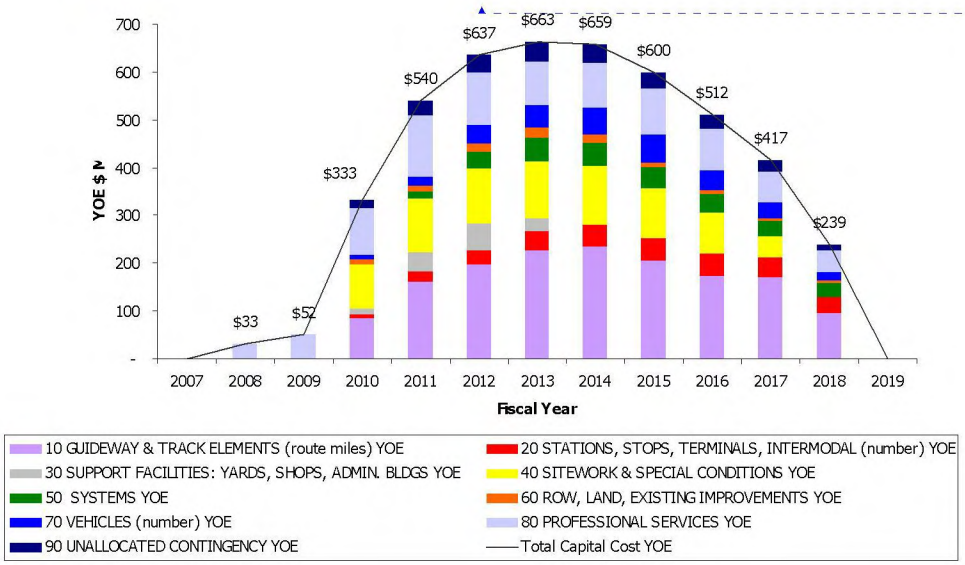

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Table 2-6. Capital Expenditure Schedule, by Cost Category Excluding Finance Charges, (YOE $Millionsthousands)

	Total	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
10 GUIDEWAY and TRACK ELEMENTS (route miles)	**1,522**	-	-	1	166	276	308	290	195	201	75	10
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	**328**	-	-	-	12	45	46	8	28	62	56	53
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMINISTRATION BLDGS	**137**	-	-	40	62	26	8	-	-	-	-	-
40 SITEWORK and SPECIAL CONDITIONS	**781**	-	-	85	163	302	212	20	-	-	-	-
50 SYSTEMS	**307**	-	-	-	7	52	37	12	26	50	65	46
60 ROW, LAND, EXISTING IMPROVEMENTS	**159**	-	-	33	39	41	42	6	-	-	-	-
70 VEHICLES (number)	**330**	-	-	-	-	33	76	106	106	9	-	-
80 PROFESSIONAL SERVICES	**937**	2	9	98	119	106	94	89	91	94	93	94
90 UNALLOCATED CONTINGENCY	**270**	0	1	15	34	53	49	32	27	25	17	12
Total Project Cost	**4,772**	**3**	**10**	**273**	**601**	**933**	**873**	**563**	**472**	**441**	**307**	**216**

	~~Total~~	~~2008~~	~~2009~~	~~2010~~	~~2011~~	~~2012~~	~~2013~~	~~2014~~	~~2015~~	~~2016~~	~~2017~~	~~2018~~
~~10 GUIDEWAY and TRACK ELEMENTS (route miles)~~	~~**1,552,693**~~	~~-~~	~~-~~	~~86,387~~	~~161,093~~	~~198,197~~	~~228,440~~	~~234,447~~	~~204,463~~	~~172,698~~	~~171,942~~	~~95,025~~
~~20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)~~	~~**312,126**~~	~~-~~	~~-~~	~~6,852~~	~~21,255~~	~~29,227~~	~~37,586~~	~~46,290~~	~~47,392~~	~~48,458~~	~~41,290~~	~~33,775~~
~~30 SUPPORT FACILITIES: YARDS, SHOPS, ADMINISTRATION BLDGS~~	~~**138,754**~~	~~-~~	~~-~~	~~13,138~~	~~40,753~~	~~56,038~~	~~28,826~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~
~~40 SITEWORK and SPECIAL CONDITIONS~~	~~**798,423**~~	~~-~~	~~-~~	~~91,084~~	~~113,017~~	~~116,555~~	~~119,911~~	~~123,065~~	~~104,995~~	~~85,886~~	~~43,909~~	~~-~~
~~50 SYSTEMS~~	~~**287,561**~~	~~-~~	~~-~~	~~-~~	~~13,064~~	~~33,682~~	~~48,513~~	~~49,789~~	~~43,692~~	~~37,229~~	~~30,453~~	~~31,139~~
~~60 ROW, LAND, EXISTING IMPROVEMENTS~~	~~**105,127**~~	~~-~~	~~-~~	~~9,566~~	~~12,365~~	~~17,852~~	~~20,990~~	~~16,157~~	~~11,028~~	~~8,457~~	~~5,765~~	~~2,947~~
~~70 VEHICLES (number)~~	~~**319,923**~~	~~-~~	~~-~~	~~9,924~~	~~19,057~~	~~37,795~~	~~46,661~~	~~55,869~~	~~57,199~~	~~41,775~~	~~34,172~~	~~17,471~~
~~80 PROFESSIONAL SERVICES~~	~~**903,720**~~	~~32,628~~	~~52,058~~	~~98,226~~	~~129,120~~	~~110,968~~	~~91,331~~	~~93,733~~	~~95,964~~	~~88,311~~	~~65,215~~	~~46,165~~
~~90 UNALLOCATED CONTINGENCY~~	~~**266,018**~~	~~-~~	~~-~~	~~18,047~~	~~29,973~~	~~37,146~~	~~40,453~~	~~39,891~~	~~34,851~~	~~29,159~~	~~24,097~~	~~12,402~~
~~**Total Project Cost**~~	~~**4,684,343**~~	~~**32,628**~~	~~**52,058**~~	~~**333,224**~~	~~**539,697**~~	~~**637,461**~~	~~**662,711**~~	~~**659,241**~~	~~**599,583**~~	~~**511,973**~~	~~**416,844**~~	~~**238,923**~~

Note: Totals may not add up due to rounding

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System-Wide and Ongoing Capital Cost

The Capital Plan includes ongoing costs to replace, rehabilitate and to maintain capital assets in a state of good repair throughout~~While~~ the forecast period.

Rail rehabilitation and replacement costs: ongoing capital costs related to the fixed guideway project are~~First Project is not~~ expected to be incurred beginning 16 years after initial construction activities are completed. This long-term rail rehabilitation and replacement is estimated to be $79 million in YOE dollars through ~~incur any capital expenses between the opening year and~~ 2030, equal to approximately 2 percent of~~the~~ rest of the City's public transportation system (TheBus and TheHandi-Van) will continue to require regular replacement and new facilities. Figure 2-2 presents a schedule for ongoing system-wide capital expenditures, from FY 2008 to FY 2030. The average annual construction cost. ~~capital expenditure is around $60 million (YOE $) during that period.~~

TheBus and TheHandi-Van Vehicle Acquisition: Most changes in the transit network will result from adjustments to existing bus routes following the implementation of the fixed guideway project. Some would be re-routed to become feeder routes while others would be shortened where the fixed guideway provides improved service. To support this reconfiguration, the bus fleet is expected to grow from 525 buses in FY2007 to 563~~592~~ buses by FY2030.

Bus Facilities: Various facilities to accommodate ongoing operations are expected to be built simultaneously with the project. The Capital Plan recognizes expenditures for bus facilities programmed in the O'ahu FY 2008-2013 Transportation Improvement Plan. Examples of such projects include the design and construction of an intermodal center, maintenance facilities for TheBus and Handi-Van operations in West O'ahu, and transit security projects.

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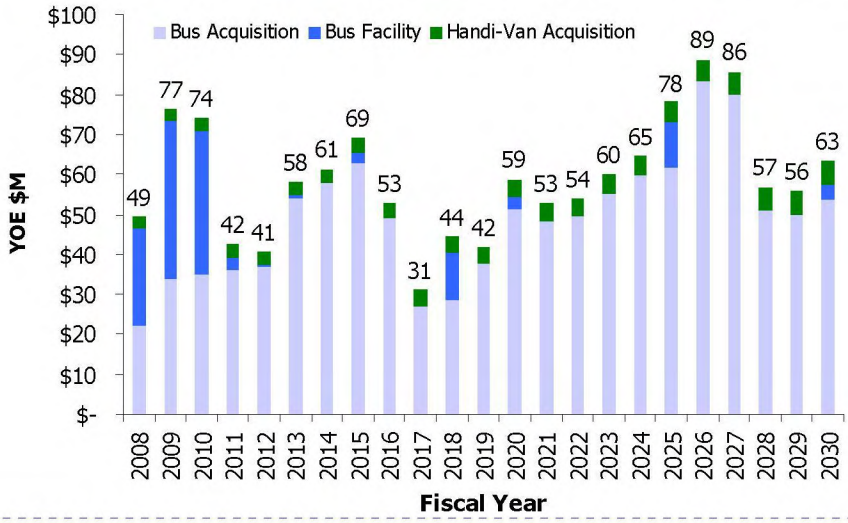
Figure 2-2. TheBus and TheHandi-Van Capital Expenditures (YOE $millions)



Capital Funding for the ~~First~~ Project

The ~~First~~ Project is expected to be entirely funded through two sources: Federal Section 5309 New Starts funds and revenues from the dedicated GET surcharge. System-wide capital costs are to be funded with FTA formula and bus allocation funds, and the City's general revenues.

FTA Section 5309 New Starts

As shown in Table 2-7, New Starts funding is assumed to fund a constant $200~~anywhere from $67~~ million per year from FY2013~~in FY 2018~~ to FY2018~~$186 million in FY 2013~~. This ~~amount corresponds to a constant 28 percent share from 2011 to 2018 and~~ totals $1,200 million (YOE $) corresponding to 25(~~26~~ percent of total capital costs excluding finance charges.
~~). This schedule enables the City to use New Starts money on a purely pay-as-you-go basis.~~

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Table 2-7. Capital Cost Excluding Finance Charges and Assumed 5309 New Starts Funding

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Fiscal Year	Capital Cost (YOE $millions)	5309 New Starts (YOE $millions)
2008	3	-
2009	10	-
2010	273	-
2011	601	-
2012	933	-
2013	873	200
2014	563	200
2015	472	200
2016	441	200
2017	307	200
2018	216	200
2019	81	-
2020	-	-
2021	-	-
2022	-	-
2023	-	-
Total	**4,772**	**1,200**

~~Fiscal Year~~	~~Capital Cost (YOE $millions)~~	~~5309 New Starts (YOE $millions)~~	~~Federal Share~~
~~**2008**~~	~~33~~	~~-~~	~~-~~
~~**2009**~~	~~52~~	~~-~~	~~-~~
~~**2010**~~	~~333~~	~~-~~	~~-~~
~~**2011**~~	~~540~~	~~152~~	~~28%~~
~~**2012**~~	~~637~~	~~179~~	~~28%~~
~~**2013**~~	~~663~~	~~186~~	~~28%~~
~~**2014**~~	~~659~~	~~185~~	~~28%~~
~~**2015**~~	~~600~~	~~169~~	~~28%~~
~~**2016**~~	~~512~~	~~144~~	~~28%~~
~~**2017**~~	~~417~~	~~117~~	~~28%~~
~~**2018**~~	~~239~~	~~67~~	~~28%~~
~~**2019**~~	~~-~~	~~-~~	
~~**2020**~~	~~-~~	~~-~~	
~~**2021**~~	~~-~~	~~-~~	
~~**2022**~~	~~-~~	~~-~~	
~~**2023**~~	~~-~~	~~-~~	
~~**Total**~~	~~**4,684**~~	~~**1,200**~~	~~**26%**~~

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Except for recent transit projects in New York City, this is an extraordinary level of New Starts funding. Nonetheless, it is worth noting that, after adjusting for construction inflation, the assumed $1.2 billion (YOE $) is approximately equivalent to the $618 million YOE amount authorized by the Intermodal Surface Transportation Efficiency Act for the Honolulu Rapid Transit Program in 1992. Moreover, the relatively low Federal share and the dedicated local GET surcharge is a testament to the commitment of the City to the implementation of this project.

As a Federal discretionary program, New Starts funding is dependent on reauthorization levels, appropriations by Congress, as well as the nationwide competitive landscape for funding major transit capital investments. For these reasons, the assumption on New Starts funding will be discussed more extensively in Chapter 4 on Risks and Uncertainties, where several scenarios are analyzed.

Local GET Surcharge

For the purposes of this Financial Plan, the GET tax base was forecasted for three different scenarios (referred to as Forecasts A, B, and C), leading to three different scenarios for GET surcharge revenues. **Figure 2-3** presents these tax base forecasts with ~~both~~ actual historical data through 2006, actual GET revenue collected for FY2007 and 2008 and forecasts from FY2009~~2007~~ to December 31, 2022. Per State legislation, the surcharge rate is not applicable to business sectors otherwise taxed at 0.5 percent, 0.15 percent, or exempted. The "relevant" tax base corresponds to those businesses taxed at the standard 4 percent. [8]

The three scenarios correspond to the following forecasting methodologies:

- Forecast A – statistical projection based on historical GET tax base for O'ahu since 1990
- Forecast B – projection through 2014~~2012~~ is based on the growth rates from the statewide forecast of GET revenues, as published by the Hawai'i Council on Revenues, which are then applied to O'ahu's relevant tax base. The relevant tax base is then assumed to grow with a growth stabilized to trend levels (as in Forecast A) through 2022.[9]
- Forecast C – projection through FY 2014~~2013~~ uses the same growth rates as in Forecast B. The relevant tax base is then assumed to grow at a more sustained growth rate through 2022.[10]

Forecast B is chosen as the baseline forecast and will be used throughout the remainder of this financial plan as it represents a good middle scenario, combining a relatively robust mid-term growth assumption, but a more conservative long-term growth. The two others will serve as a basis for sensitivity testing in the risks and uncertainty chapter.
Due to the current economic slowdown resulting from the credit crisis and the decline in the housing market, the potential for real increases (over and above projected inflation) was assumed to range from 1.4% to

---

8 For more information on the GET tax base, the reader can refer to the Funding options report dated August 7, 2006

9 Source: Mar 12, 2008May 21, 2007 forecast availableavailable at http://www.state.hi.us/tax/cor/2008gf03_with03142007gf05_with0523_Ltr2Gov-Final.pdf

10 Ibid

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1.8% depending on the scenario, yielding a nominal growth rate assumption ranging from 4.3% to 4.7%. Table 2-8 presents both real and nominal~~the corresponding~~ growth rates assumptions for the GET~~each~~ tax base forecasts between FY 2009 and FY 2022, along with the history from 2000 to 2006. The CPI-U for Honolulu, as defined in the capital cost section above, was used for escalating revenues from the GET surcharge. ~~forecast scenario, by time period. It is worth noting the Council on Revenues does not publish a forecast for the half-percent surcharge.~~

Table 2-8. ~~Nominal~~ Compound Average Annual Growth Rates ~~(CAGR)~~ for Three Tax Base Forecast Scenarios during Different Time Periods and history between 2000 and 2007

~~Forecast~~ Scenario	~~1990~~-2000-2007	2008-2022~~2000-2006~~	2008-2014~~2006-2012~~	2014~~2012~~-2022
~~Forecast A~~	~~0.71%~~	~~6.68%~~	~~3.90%~~	~~3.34%~~
Nominal Annual Growth Rates				
Forecast A	6.6%	4.3%	4.5%	4.3%
Forecast B		4.5%	4.9%	4.3%
Forecast C		4.7%	4.9%	4.6%
Real Annual Growth Rates				
Forecast A	3.6%	1.4%	1.4%	1.4%
Forecast B		1.6%	1.8%	1.4%
Forecast C		1.8%	1.8%	1.8%

Forecast B	0.71%	6.68%	5.41%	3.34%
Forecast C	0.71%	6.68%	5.41%	4.02%

The CPI-U for Honolulu, as defined in the capital cost section above, was used for escalating revenues from the GET surcharge. Figure 2-3 presents the corresponding relevant tax base forecasts in millions of YOE $.

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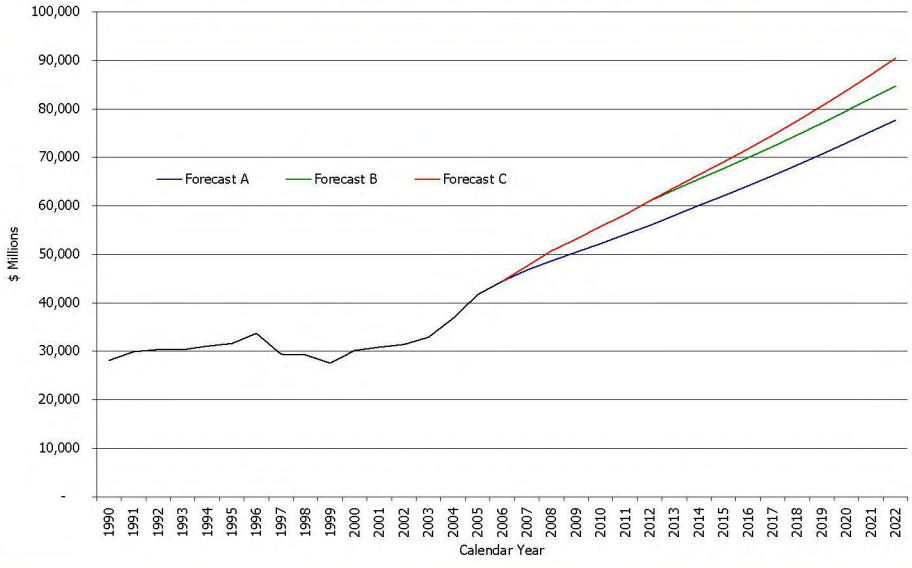
Figure 2-3. General Excise and Use Tax Relevant Tax Base, 1990- 2022, YOE $millions



Adjustments

To forecast the surcharge revenues presented in Table 2-9 below, two additional adjustments were made:

1) Generally, the GET surcharge is levied on gross income earned from any transaction related to an O'ahu customer. When computing their GET payments, taxpayers must identify their gross incomes earned from O'ahu transactions and apply the 0.5 percent surcharge rate to that amount. To estimate the amount attributable to the O'ahu transactions, the relevant tax base was reduced by 17 percent. The 17 percent adjustment represents O'ahu's share of the State's de facto population (67 percent on average over the next 30 years)[11] and O'ahu's share of the State's GET tax base (around 80.1 percent).[12] The adjustment is conservative in the sense that it assumes the GET-related economic activity per capita is the same on O'ahu as on the neighbor islands – whereas, in actuality, activity is likely more dense in O'ahu due to the enhanced productivity of the Honolulu central business district.

[11] Contrary to the resident population, the de facto population includes military personnel, tourists and visitors from other counties residing even temporarily in O'ahu.

[12] 17 percent= 100 percent minus (67 percent divided by 81 percent)

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2) State legislation stipulates that 10 percent of the annual tax revenues would be withheld by the State for tax collection and administration purposes.

The total impact of these two adjustments is a reduction of 25.3 percent in annual GET surcharge revenues. The resulting net annual revenues are presented in Table 2-9 for the three scenarios in 2008~~2006~~ and YOE $. In the remainder of this report, as in Table 2-9, the net GET revenues will be displayed on a cash basis. In FY 2007 (ending on June 30, 2007), GET surcharge cash revenues collected by the City totaled $12.79 million , equivalent to the revenues collected during the first~~are expected to total one~~ quarter of calendar year 2007.. This number excludes the quarterly and semi-annual ~~expected~~ tax filers that account for about 7 percent of businesses. The number also excludes February tax returns due to the fact that the corresponding tax returns were not due until April 2nd and March tax returns, which were not due until Aril 30th. These reasons explain the relatively low revenue collection for that period. The State of Hawaii Department of Taxation also indicated that "approximately 15 percent of tax returns received through March 2007 left blank the section where taxpayers report their county surcharge". [13]

The State subsequently issued additional guidance on the most common errors to avoid when filing GET tax returns and has expressed its commitment to recover the uncollected amounts. Without specific information on timing for this recovery to occur, the financial analysis presented herein conservatively assumes that the money is not recovered.

The first full fiscal year of GET surcharge revenues was FY2008, with a total of $161 million. In ~~. Similarly, in~~ FY 2023 (from July 1, 2022 to June 30, 2023), net GET surcharge cash revenues are expected to total three quarters worth of tax collection. The forecast below is expected to be refined regularly as more tax collection data becomes available. As shown in Table 2-9, Forecast B is projected to total $3.9 billion (YOE $). ~~This scenario will be the one used throughout the remainder of this report. The two others will serve as a basis for sensitivity testing in the risks and uncertainty chapter.~~

[13] News Release dated April 17, 2007 available at http://www.state.hi.us/tax/media/2007-04-17-fst_qtr_csurchg_collections.pdf

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Table 2-9. Annual Net GET Surcharge Revenues (Cash Basis), 2007-2023

Fiscal Year	Forecast A		Forecast B		Forecast C	
	20082007	YOE $million	20082007	YOE $million	2008200	YOE $million
2007	13 ~~42~~	13 ~~43~~	13 ~~43~~	13 ~~44~~	13 ~~43~~	13 ~~44~~
2008	161 ~~162~~	161 ~~172~~	161 ~~167~~	161 ~~178~~	161 ~~167~~	161 ~~178~~
2009	183 ~~163~~	190 ~~179~~	181 ~~171~~	188 ~~189~~	181 ~~171~~	188 ~~189~~
2010	187 ~~163~~	200 ~~186~~	185 ~~173~~	198	185 ~~173~~	198
2011	188 ~~164~~	207 ~~193~~	188 ~~177~~	207	188 ~~177~~	207
2012	191 ~~166~~	216 ~~200~~	189 ~~180~~	214 ~~217~~	189 ~~180~~	214 ~~217~~
2013	195 ~~167~~	227 ~~207~~	196 ~~183~~	228 ~~227~~	196 ~~184~~	228
2014	195 ~~170~~	233 ~~215~~	202 ~~186~~	242 ~~236~~	202 ~~188~~	242 ~~238~~
2015	198 ~~172~~	244 ~~223~~	206 ~~189~~	253 ~~245~~	206 ~~192~~	253 ~~248~~
2016	202 ~~174~~	256 ~~231~~	210 ~~191~~	265 ~~253~~	209 ~~196~~	264 ~~259~~
2017	203 ~~177~~	264 ~~238~~	211 ~~194~~	274 ~~261~~	213 ~~199~~	277 ~~269~~
2018	206 ~~179~~	275 ~~246~~	213 ~~196~~	285 ~~270~~	217 ~~203~~	289 ~~280~~
2019	211 ~~181~~	289 ~~254~~	218 ~~199~~	300 ~~279~~	220 ~~207~~	303 ~~291~~
2020	211 ~~183~~	298 ~~262~~	219 ~~201~~	309 ~~288~~	224 ~~211~~	317 ~~303~~
2021	214 ~~186~~	310 ~~271~~	221 ~~204~~	321 ~~297~~	228 ~~216~~	331 ~~315~~
2022	218 ~~188~~	325 ~~280~~	226 ~~206~~	337 ~~307~~	232 ~~220~~	347 ~~327~~
2023	164 ~~141~~	251 ~~215~~	170 ~~155~~	261 ~~235~~	177 ~~166~~	272 ~~253~~
Total	**3,140** ~~2,777~~	3,~~959~~ ~~616~~	3,~~208~~ ~~014~~	**4,054** ~~3,930~~	3,~~241~~ ~~093~~	4,~~102~~ ~~043~~

As mentioned earlier, Forecast A is based on a historical trend from 1990. While the period between 1990 and 2000 saw negative real growth and a low rate of inflation, the previous decade was one of strong economic growth, mainly fueled by foreign investment in real estate. During that decade, GET grew by more than 8 percent, and even more than 10 percent in the second half of the decade. Forecast A is the most pessimistic forecast under the current conditions. Forecast B, which exhibits more sustained growth, is chosen as the base case in the remainder of this Chapter, and Forecast C will be considered as a potential optimistic scenario in Chapter 4 on risks and uncertainties.

Construction~~While almost entirely used for capital purposes in this case, the phased implementation of the First Project would~~

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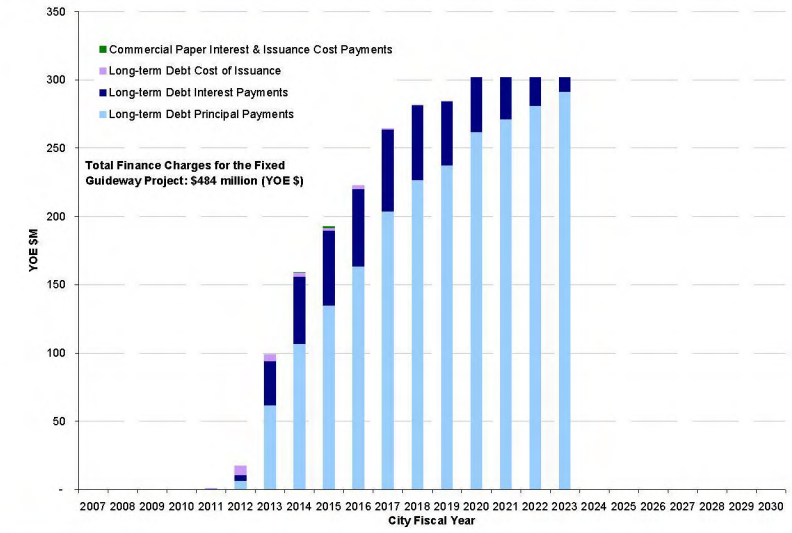
Project Financing

~~The First Project has the benefit of a dedicated local source of revenues.~~ In the base case (GET Forecast B and $1,200 million in New Starts), the project exhibits a positive cash balance through 2012 without the need for debt financing. Starting in 2012, GO Bonds would be issued every year through the last year of construction in 2018 and repaid ~~first~~ with GET surcharge revenues~~.~~ complemented by additional City revenues in case of a funding shortfall scenario. The cash flow available for debt service is constrained by the fact that the surcharge is expected to expire on December 31, 2022 (FY 2023~~)~~, ~~therefore)~~. ~~Therefore,~~ any bond issuance is assumed to mature no later than that date. Since a general obligation pledge is assumed, no coverage or debt service reserve fund was assumed on bond proceeds. A conventional mortgage-type amortization schedule with a level debt service repayment is assumed for each bond issue, which implies an increasing total debt service profile through FY 2023, as shown in Figure 2-4~~.~~. This construct allows testing the Financial Plan feasibility by measuring the amount of revenues required over and above GET revenues. These financing assumptions will be refined and other scenarios will be evaluated in future iterations of the Financial Plan.

Figure 2-4. Principal and Interest Payments on Bond Proceeds and Commercial Paper Proceeds, (YOE $Millions~~millions~~)



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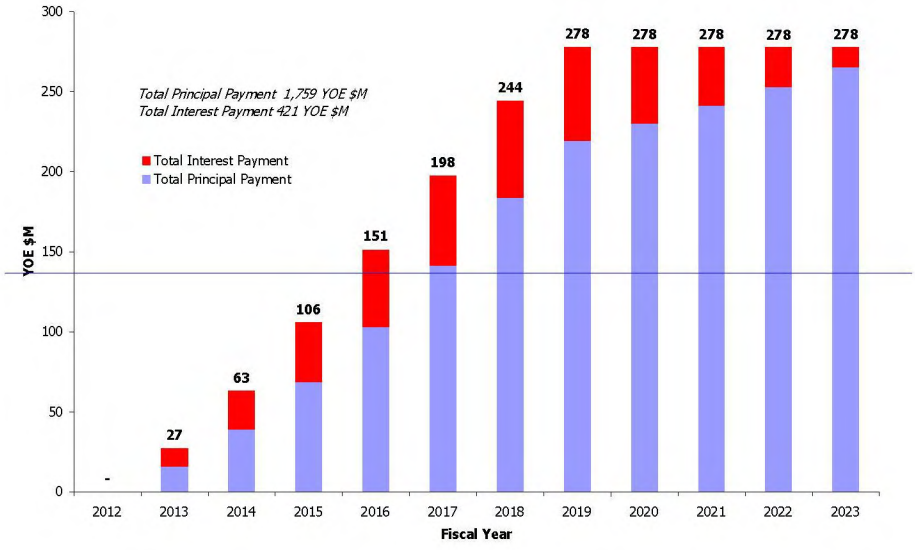

Finance Assumptions

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This financial analysis assumes that GET surcharge revenue will be the only source of funding through FY2012, with FTA New Starts funding assumed to start in FY2013.

In years where GET surcharge revenues and/or New Starts funding are not by themselves sufficient to meet the cash flow requirement to cover capital expenditures, a mix of City GO Bonds and short-term borrowing would be used to bridge the funding gap. The weighted average interest rate on long term debt is 3.71 percent, consistent with the City's current AA rating and is based on rates as of Jul 17, 2008. All GO debt is assumed to mature in FY2023, corresponding to the last fiscal year of receipt of GET revenues. The use of short-term debt (assumed to be Tax-Exempt Commercial Paper (TECP)) during construction is advantageous because debt instruments of shorter maturity generally have lower interest rates than longer term debt. TECP provides a particularly low-interest form of borrowing in which interest-only payments are made and the principal balance is simply refinanced annually during construction, and ultimately refinanced with longer term debt towards the end of the construction period.

Finance charges incurred for the Project are $484 million for the issuance of GO Bonds and short-term debt. The vast majority of the finance charges correspond to interest payments on GO Bonds. The remainder is composed of finance charges related to the cost of issuance of GO Bonds and short-term debt as well as interest expense of commercial paper.

~~Bond sizing and interest rates were calculated based on the following assumptions:~~

~~*Interest rate:* The interest rate assumed is based on the Municipal Market Data AA yield curve as of April 16, 2007. An additional percentage point was added uniformly to the yield curve, to account for~~

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potential interest rate increases as well as potential fluctuation in the City's credit rating. The average life of the debt is approximately eight years, which corresponds to an interest rate of 4.87 percent.

Interest income: This Financial Plan assumes a 1 percent interest earnings rate. Investment income is mainly accrued during the first years of the project, when the cash balance is positive. This assumed interest earnings rate is consistent with the yield earned on funds invested by the City at the end of FY 2004.[44]

Bond sizing: Bond proceeds were sized for the following uses of funds:

- Local funding requirement: current year's debt service from previous bond issues plus capital costs minus the current year's assumed New Starts revenues, pay-as-you-go (PAYGO) financing from GET revenues and investment income, if any.
- Issuance cost: assumed at 1 percent of total bond proceeds, which includes costs such as legal fees, underwriter fees, investment banker fees, etc.

Other Potential Capital Sources

Based on the forecasted GET surcharge revenues and the assumed New Starts funding level, the project is not expected to require any other source of funds. However, the First Project may require additional support from the City if these assumptions prove to be overly optimistic. This support could come from the issuance of General Obligation Bonds (GO Bonds), which is the typical way in which the City funds capital improvements for mass transit projects. This source of funds is limited by various debt margins requirements and other bond tests. A high level analysis of the City's financial situation is provided at the end of this Chapter.

Private sources of funds or non-cash contributions could be another potential source. This Financial Plan conservatively assumes that no private sources would be available, but opportunities for private-public participation along the corridor are possible, and this source of funds will be further explored in future phases of the First Project.

A third option would be to direct other Federal funding (such as Section 5307 formula funds) toward the proposed project. This option, however, would have to be compensated by an increase in the City's contribution to necessary capital improvements to the rest of the system. Therefore, other FTA programs were not envisioned to be used for the implementation of the Projectproposed project. Other potential mitigation strategies are discussed in the Risks and Uncertainties Section in Chapter 4.

Project Sources and Uses

Table 2-10 summarizes the sources and uses of funds for the project.

[44] City and County of Honolulu General Obligation Bonds Series 2005E and Series 2005 F Official Statement, page 21.

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Table 2-10. Total Sources and Uses of Funds for the ~~First~~ Project (YOE $millions)

SOURCES AND USES (YOE $ M)	
SOURCES:	
Federal:	
New Starts Sec. 5309	1,200
Total Federal	**1,200**
Non Federal:	
Bond Proceeds	1,759
GET Surcharge Revenues (PAYGO)	1,743
Total Non-federal	**3,502**
Total Sources	**4,702**
USES:	
Capital Cost (excluding Interest Expenses)	4,684
Issuance Cost	18
Total Uses	**4,702**
Total Interest Expenses	421

Figure 2-5 provides more details on the breakdown of sources of funds between bond proceeds, New Starts, and GET on a pay-as-you-go basis. In the base case, the amount of bond proceeds used, as a percentage of total uses of funds, equals 31~~37~~ percent, while the amount of pay-as-you-go funding~~financing~~ totals 69~~63~~ percent (this includes GET used as pay-as-you-go as well as New Starts revenues and interest earnings).

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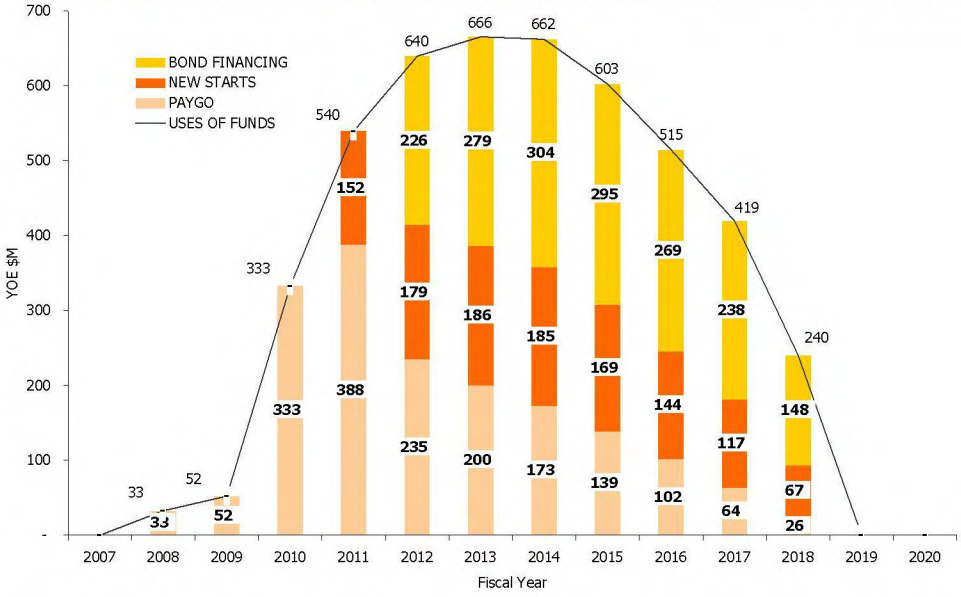
Figure 2-5. Proposed ~~First~~ Project Sources and Uses of Funds (YOE $millions)



Note: Totals may not add up due to rounding.

Project Cash Flow

Table 2-10 presents ~~the~~an ~~illustrative~~ summary cash flow and cash balance for the stand-alone project with the Forecast B GET revenue scenario. This results in the ~~The Forecast B revenue scenario would imply that the~~ project being ~~can be~~ funded on a ~~through~~ pay-as-you-go basis~~financing~~ through FY 2010~~2011~~. Starting in FY 2011~~2012~~, bond proceeds become necessary. The level of debt service also rises accordingly and the cash balance does not rise again until FY 2020~~2019~~, when the fixed guideway is introduced. The positive cash balance between 2019 and 2023 is used to repay part of the last year's debt service, which explains the decrease in cash in the last year. To maximize the use of all revenues available, bond proceeds are sized such that the cash balance at the project level is equal to zero at the end of each FY. The remaining $24 million cash balance from GET in FY 2023 could ~~is assumed to~~ be transferred to operations of the Project or set aside in a rail rehab and maintenance fund for future use. Consistent with the spirit of the State legislature,. As mentioned earlier, it is important to note that this amount can only be used toward capital or operating expenses f fixed guideway projects..

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Tablecash flow will be refined for the PE application submittal, as the phased implementation schedule is integrated into the financial analysis. The cash flows presented herein assume that the entire First Project is built in a single phase and opening date for the entire alignment.

Figure 2-11. Cash Flow and Balance for the First Project Sources and Uses of Funds (YOE $millions)

	UNIT	2007-2030 TOTAL																	
City Fiscal Year			**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Project Funding Sources																			
Net GET Revenues	YOE $M	4,054	13	161	188	198	207	214	228	242	253	265	274	285	300	309	321	337	261
Bond Proceeds	YOE $M	2,244	-	-	-	-	96	737	507	252	211	266	98	13	66	-	-	-	-
Commercial Paper Proceeds	YOE $M	66	-	-	-	-	-	-	38	28	-	-	-	-	-	-	-	-	-
FTA 5309 New Starts Revenues	YOE $M	1,200	-	-	-	-	-	-	200	200	200	200	200	200	-	-	-	-	-
Interest Earnings	YOE $M	28	-	0	5	11	9	-	-	-	-	-	-	-	-	-	0	1	2
Additional Capital Revenues	YOE $M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Project Sources of Funds	**YOE $M**	**7,592**	**13**	**161**	**193**	**208**	**312**	**951**	**972**	**721**	**664**	**731**	**571**	**497**	**365**	**309**	**322**	**338**	**262**
Project Capital Uses of Funds																			
Project Capital Cost	YOE $M	4,772	-	3	10	273	601	933	873	563	472	441	307	216	81	-	-	-	-
Commercial Paper Refinancing Amount	YOE $M	67	-	-	-	-	-	-	-	-	-	67	-	-	-	-	-	-	-
Total Capital Uses of Funds	**YOE $M**	**4,839**	**-**	**3**	**10**	**273**	**601**	**933**	**873**	**563**	**472**	**508**	**307**	**216**	**81**	**-**	**-**	**-**	**-**
Debt Service																			
Total Principal Payment on Long Term Debt	YOE $M	2,244	-	-	-	-	-	6	61	107	135	163	204	226	237	262	271	281	291
Total Interest Payment on Long Term Debt	YOE $M	462	-	-	-	-	-	4	33	49	55	57	60	55	47	40	31	21	11
Other Finance Charges	YOE $M	22	-	-	-	-	1	7	5	3	2	3	1	0	1	-	-	-	-
Total Project Uses of Funds	**YOE $M**	**7,568**	**-**	**3**	**10**	**273**	**602**	**951**	**972**	**721**	**664**	**731**	**571**	**497**	**365**	**302**	**302**	**302**	**302**
Project Cash Balance																			
Cash Balance Beginning			**-**	**13**	**171**	**355**	**290**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**7**	**27**	**63**
Additions (deletions) to cash			**13**	**159**	**184**	**(64)**	**(290)**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**7**	**20**	**36**	**(39)**
Cash Balance Ending			**13**	**171**	**355**	**290**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**7**	**27**	**63**	**24**

Notes:
- Amounts are presented on a cash basis
- Totals may not ad due to rounding

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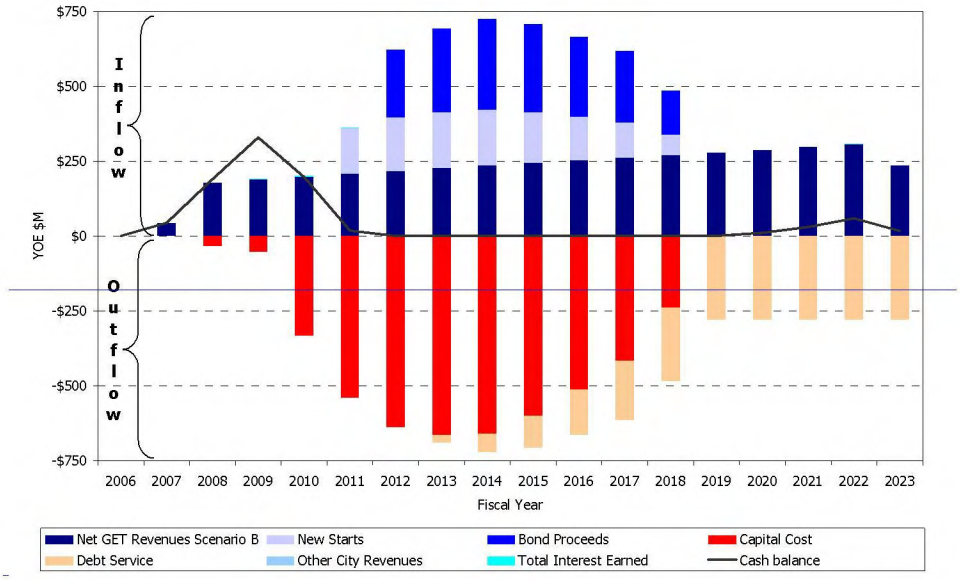

Table 2-12 summarizes the Federal and non-Federal funds described above and projected in the base case to fund the ~~First~~ Project.

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Table 2-12. Summary of Federal and Non-Federal Fund Sources

Sources of Funds	Funding Level (base case), YOE $million	Funding Share	Level of Commitment	Evidence of Commitment
Federal: FTA 5309 New Starts	**$1,200**	22.8%~~7~~ %	N/A	N/A
Non Federal: ~~General Excise and Use Tax 0.5 percent surcharge~~General Excise and Use Tax 0.5 percent surcharge	**$4,054~~083~~**	77.2%~~3~~ %	Committed and dedicated to a fixed guideway project	Enabling legislation: • State Act HB 1309 CD-1 (see Appendix C) ; • City and County of Honolulu Ordinance 05-027 (see Appendix C) • Selection of a fixed guideway system for an LPA (see Appendix A)
Total Project Budget	**$5,254~~283~~**	**100%**		

Capital Funding Sources for the System

While the New Starts funding and GET surcharge revenues are projected to be adequate to fund the project costs, other sources of funding will continue to be relied upon to fund the existing TheBus and TheHandi-Van systems. The following section discusses these federal funding and local funding sources.

Federal Funds

The three main sources for federal funds are as follows:

- FTA Urbanized Area Formula Program (49 U.S.C. Section 5307)
- FTA Capital Investment Grants (49 U.S.C. Section 5309) – Fixed Guideway Modernization Program
- FTA Capital Investment Grants – Bus and Bus-Related Equipment and Facilities Program

The City should expect to see increases in the levels of these funding sources once the ~~First~~ Project is implemented. Each of the following sections details the expected revenues from each source before and after the ~~First~~ Project is in operation.

FTA Urbanized Area Formula Program (Section 5307)

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Section 5307 funds are apportioned on the basis of legislative formula. The City is the designated recipient for Section 5307 funds apportioned to the Honolulu and Kailua-Kaneohe (Kailua) urbanized areas.

For areas of 50,000 to 199,999 in population (such as the Kailua-Kaneohe urbanized area), the formula is based on population and population density.

For areas with populations of 200,000 and more (such as the Honolulu urbanized area), the formula is based on a combination of bus revenue vehicle miles, bus passenger miles, fixed guideway revenue vehicle miles, and fixed guideway directional route miles, as well as population and population density. The term "fixed guideway" refers to any transit service that uses exclusive or controlled rights-of-way or rails, entirely or in part. The term includes that portion of transit service operated on exclusive or controlled rights-of-way and high-occupancy vehicle (HOV) lanes. In Honolulu, this currently includes bus service operating on the Fort Street Transit Mall, the H-1 zipper lane, and HOV lanes on various roadways.

Activities eligible for Section 5307 funds include planning, engineering design, and evaluation of transit projects and other technical transportation-related studies; capital investments in bus and bus-related activities, such as replacement of buses, overhaul of buses, rebuilding of buses, crime prevention and security equipment, and construction of maintenance and passenger facilities; capital investments in new and existing fixed guideway systems; and preventive maintenance.

Table 2-13 displays the City's historical and forecasted vehicle revenue miles. The existing bus system is assumed to grow as it was expected to do under the "No Build" scenario. TheBus system will be re-aligned with new and reconfigured bus routes to accommodate service associated with the ~~First~~ Project. The years between 2019 and 2030 reflect minimal changes in total vehicle revenue miles.

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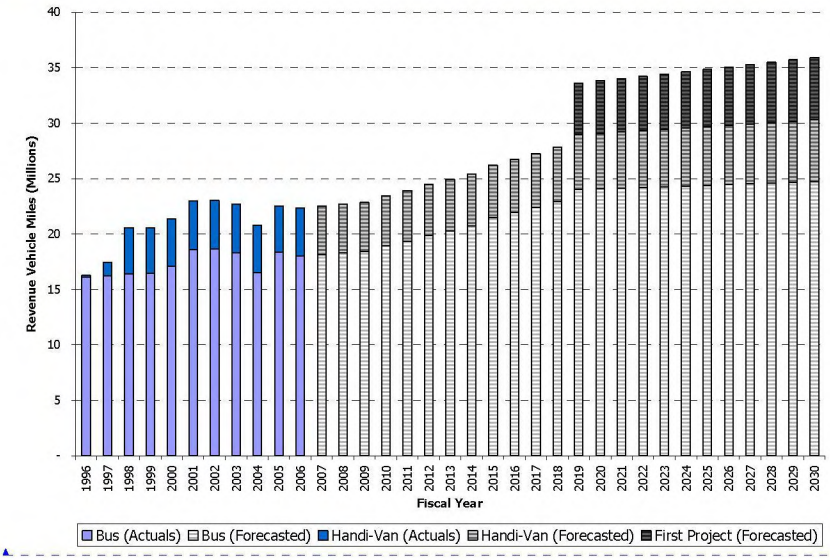
Table~~Figure~~ 2-13: ~~-~~ Revenue Vehicle Miles 2007, 2030~~(Historical and Forecasted)



Estimated apportionments have been made by FTA for years 2008 and 2009.[15] For all subsequent years, the methodology used to forecast 5307 funds is as follows:

Step 1 – The total national funding available for the 5307 program was projected. A constant 1.8 percent annual growth rate was applied starting in FY 2010. This growth rate is consistent with the Congressional Budget Office forecast of the Highway Trust Fund revenues through 2017 and is assumed to remain the same through 2030.[16]

Step 2 – Honolulu and Kailua's share of the total nationwide amount was assumed to remain equal to its 14-year average of 0.76~~77~~ percent. This assumption appears to be reasonable because the share has remained relatively stable between 1996 and FTA's 2009 estimate. It reached a minimum of 0.65 percent in FY 2006 due to a 34-day strike in 2004, and a maximum of 0.86 percent in 2000 (see Figure 2-6).

[15] Revised March 20, 2007

[16] CBO testimony: Status of the highway trust fund : 2007, March 27, 2007

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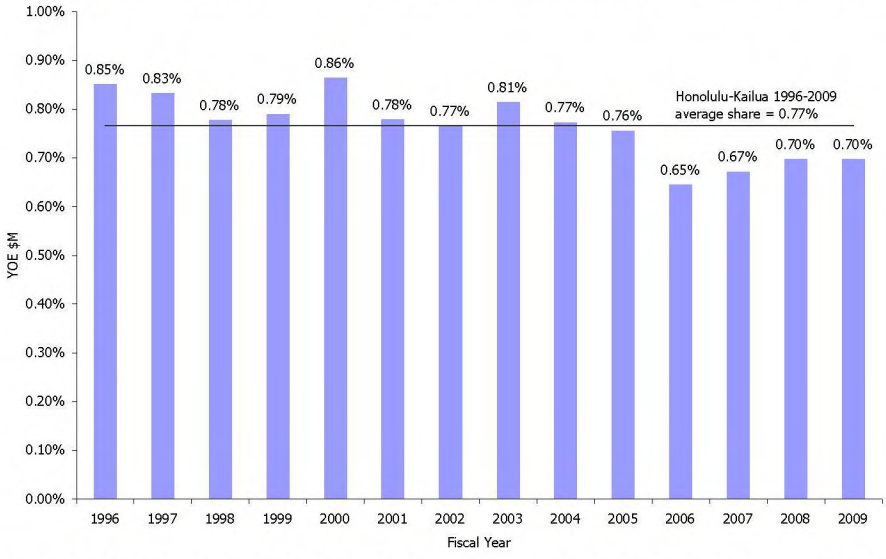
Figure 2-6. Honolulu and Kailua's Share of Nationwide 5307 Program Amount



Step 3 – The 0.77% average from Step 2 was applied to the forecasted national amount from Step 1. An adjustment was then made by deducting a funding transfer to the State for its vanpool program. This transfer totaled $1.1 million in FY 2006 and is expected to grow at the same rate as the national total (1.8 percent).

Step 4 – In addition to the base growth rate obtained with the first three steps, 5307 revenues are further increased two years after the introduction of the fixed guideway system. The corresponding net increase is estimated at 18 percent in FY 2021. To a lesser extent, a similar jump occurs in FY 2025, following the implementation of a new two-lane HOV facility, consistent with the O'ahu long range transportation plan. This also explains the slightly higher CAGR of 2.03 percent observed between 2021 and 2030 compared to 1.79 percent ~~the~~ 2010-2018 period (see Figure 2-7)

Year-by-year Section 5307 revenues are presented in the summary capital funding sources in Figure 2-13.

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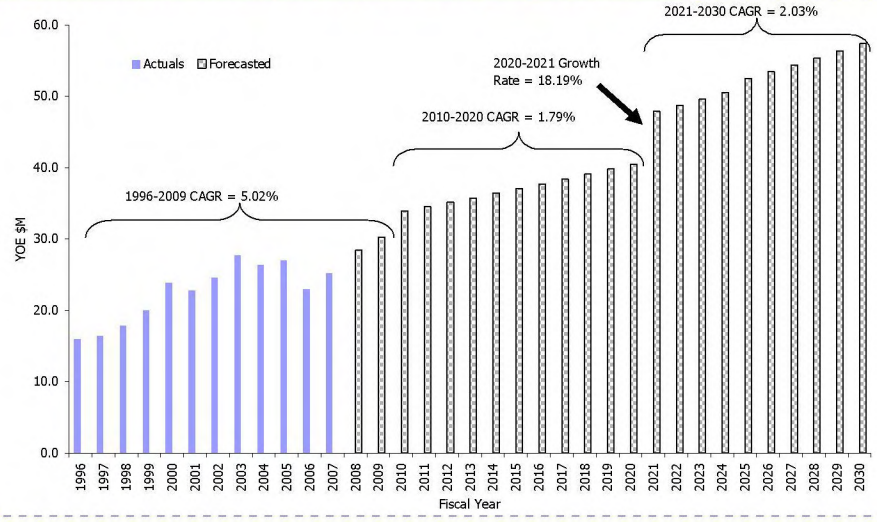
Figure 2-7. FTA Section 5307 Formula Funds

Historical and Projected Apportionments, 5309 FGM Historical and Projected Apportionments and FTA 5309 Bus Discretionary[17][18] (YOE $millions)



Under Federal law, it is possible for 5307 funds to be used for preventative maintenance needs, which is part of a transit system's operations and maintenance (O&M) cost. In Honolulu, as a general rule, 5307 funds are first applied to capital needs, with any surplus being transferred to preventative maintenance. Based on historical trends, it is assumed that a maximum of 20 percent of the total operating and maintenance expenditures can be covered by 5307 funds.

Section 5309 Capital Investment Grants – Fixed Guideway Modernization Program (FGM)

Similar to Section 5307 funds, FGM funds are apportioned using a federal formula specified by law. Honolulu's apportionment is based on the amount of fixed guideway directional and revenue vehicle miles on facilities in operation at least seven years.

Figure 2-8 presents historical and forecasted directional fixed guideway route miles, which play an important role in the formula for calculating Section 5309 FGM apportionments. In addition to the increase due to the ~~First~~ Project, a new HOV project is assumed to be introduced in FY 2023, thereby increasing the directional route miles in that year.

[17] Starting in FY 2006, includes 5340 (high density and growing States UZA funding)

[18] Starting in FY 2006, includes 5340 (high density and growing States UZA funding)

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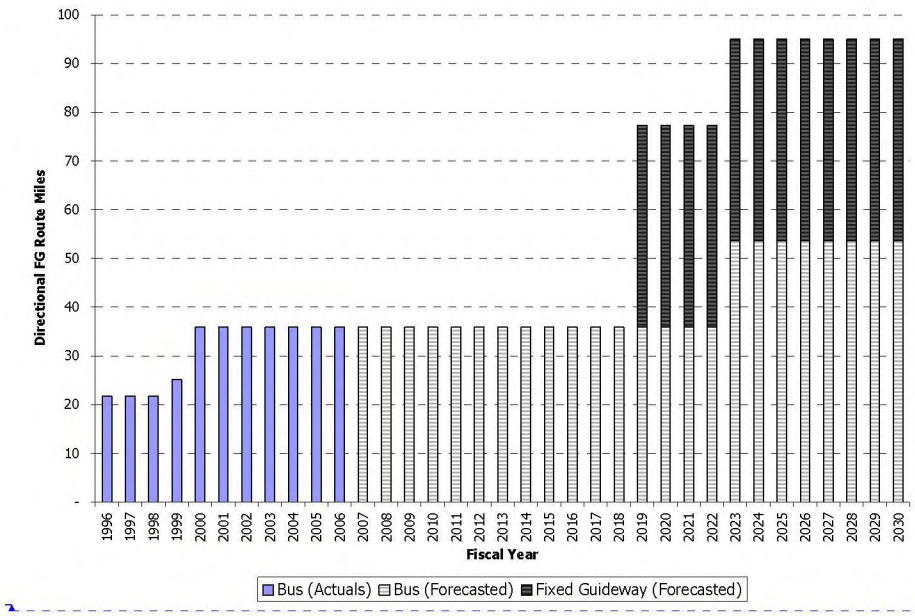
Figure 2-8. Fixed Guideway Directional Route Miles



Apportionment amounts for FYs 2008 and 2009 reflect FTA's estimates. For FYs 2010 to 2030, the apportionment amounts are assumed to grow at an annual rate of 1.8 percent, consistent with the Congressional Budget Office forecast of the Highway Trust Fund revenues through 2017, extended through 2030. As with the Section 5307 funds, the Project will lead to an increase in the formula apportionment amount due to the increased amount of service on fixed guideway facilities. As shown in Figure 2-7, the change in FGM funds occurs seven years after the introduction of the fixed guideway system. The implementation of the HOV lanes in FY 2023 has an impact on the FY 2030 apportionment estimate.

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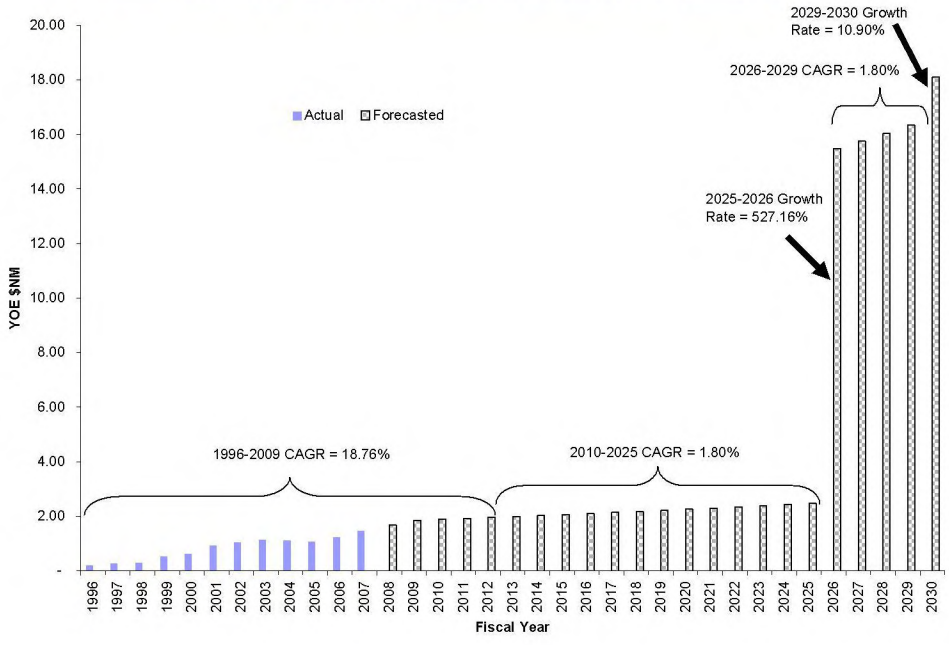
Figure 2-9. FTA FGM Funds
Historical and Projected Apportionments (YOE $millions)



FTA Section 5309 Bus and Bus-Related Facilities Program (Bus Capital)

Bus Capital funds can be allocated at the discretion of the Secretary of the U.S. Department of Transportation, although Congress has been fully earmarking all available funding. Eligible purposes for this funding source include: acquisition of buses for fleet and service expansion; bus maintenance and administrative facilities; transfer facilities; bus malls; transportation centers; intermodal terminals; park-and-ride stations; acquisition of replacement vehicles; bus rebuilds; bus preventative maintenance; passenger amenities, such as passenger shelters and bus stop signs; accessory and miscellaneous equipment, such as mobile radio units; supervisory vehicles; fareboxes; and computers, shop, and garage equipment. All bus-related elements of the ~~First~~ Project are eligible for Bus Capital funds, if so allocated by Congress.

The discretionary nature of this program makes the level of funding difficult to predict. Based on Honolulu's success at receiving earmarks in the past, this analysis assumes that Honolulu's Bus Capital allocations between 2008 and 2030 will be equal to the average of the allocations between 1996 and 2007. See Figure 2-7 for historical.

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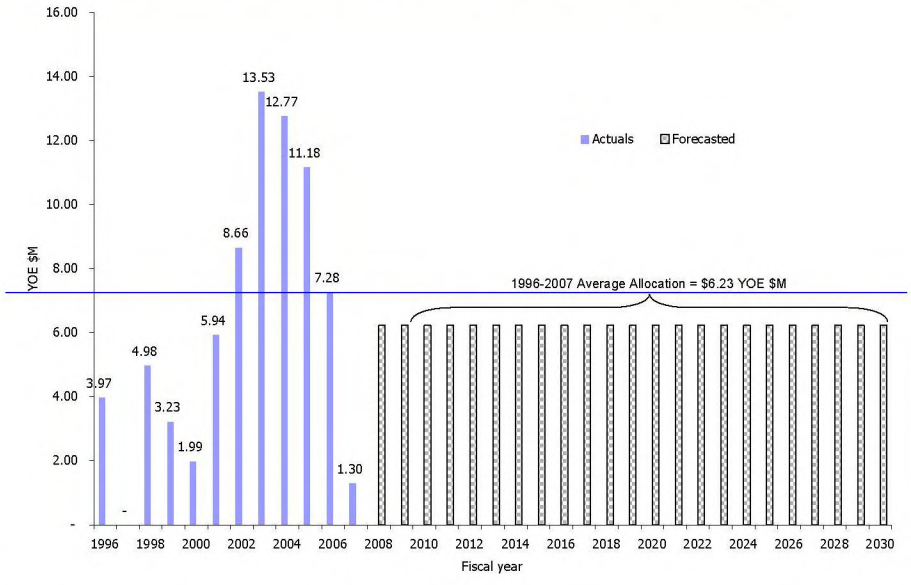
Figure 2-10. FTA 5309 Bus and projected federal apportionments Bus Facility Funds Honolulu Historical and Projected Allocations (YOE $millions)



Local Capital Assistance for the System

The City will issue GO Bonds to construct bus facilities and to purchase equipment and rolling stock. The City is required to match all FTA funding programs with at least 20 percent of local funds. This Financial Plan, therefore, assumes that at least 20 percent of each year's ongoing capital needs is matched at that level. This excludes the capital needs for the ~~First~~ Project since it has the benefit of a dedicated source of revenue that cannot be directed to another purpose. With the FTA revenues described above, the City is sometimes required to contribute more funds to ensure that projected capital needs are met. As shown in Figure 2-11, that is especially true in the years prior to completion of the ~~First~~ Project.

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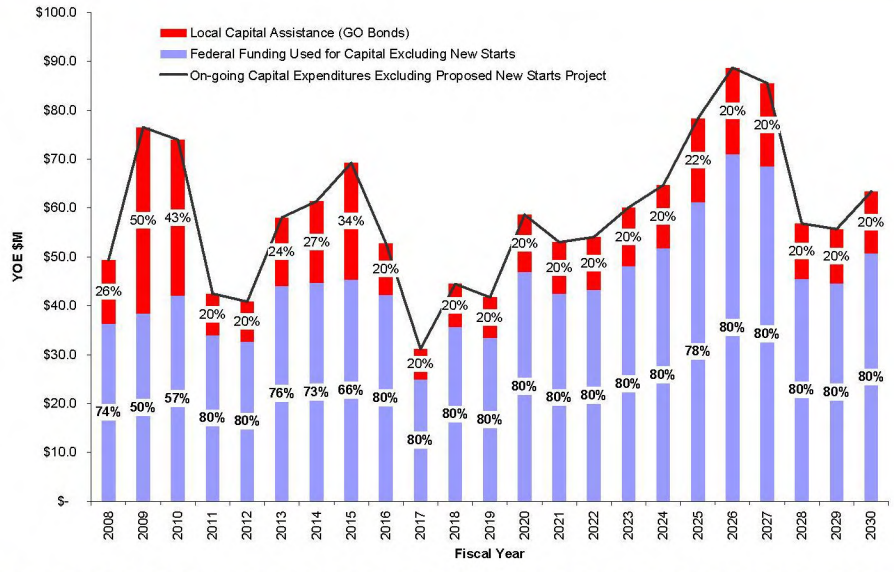
Figure 2-11. Ongoing Capital Sources of Funds for the System Excluding the First Project (YOE $millions)



Borrowing, Debt Level, and Ratings

As mentioned previously, local capital assistance may be needed in the event that GET surcharge revenues and New Starts funds are insufficient to meet the capital requirements of the ~~First~~ Project. The city's ability to issue debt and maintain its current credit rating depends in large part on its ability to follow the following rules and guidelines:

- **Legal Debt Limit:** The State of Hawai'i Constitution (Act VII, Section 12 and 13) requires any one county to have a total outstanding funded debt equal to no more than 15 percent of that county's total assessed value of real property for tax purposes.
- **City Council "Affordability Guidelines":** To preserve its credit quality, the City Council further developed affordability guidelines, last amended by Resolution 03-59, CD1, "which may be suspended for emergency purposes or because of unusual circumstances." These guidelines include the following:
  - Debt service for general obligation bonds, including self-supported bonds and enterprise and special revenue funds, should not exceed 20 percent of the City's total operating budget.
  - Debt service on direct debt, excluding self-supported bonds, should not exceed 20 percent of the General Fund revenues.
  - Other guidelines include a limitation on the City's variable debt rate and debt refunding policy.

Assuming the City's Standard & Poor's credit rating of AA is maintained and the affordability guidelines are applicable in future years, the limitations on GO debt can be calculated for future years

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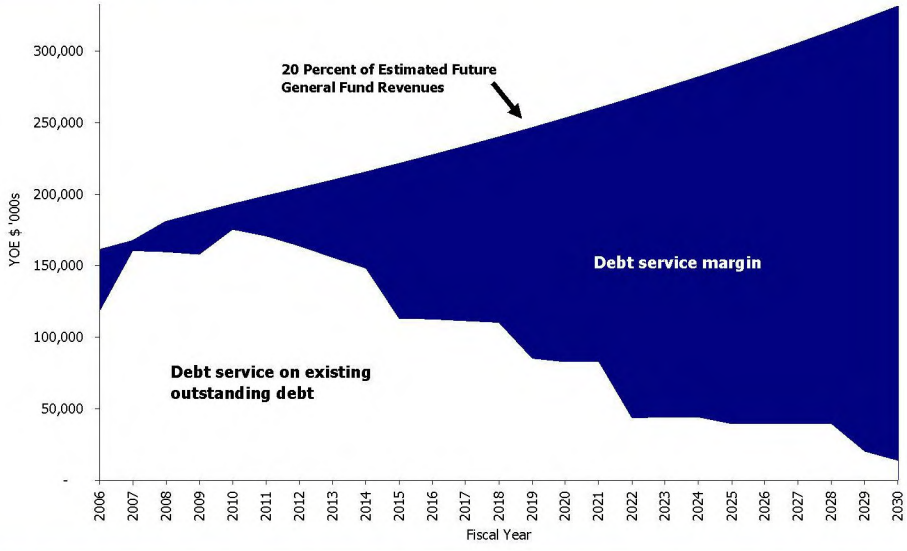
based on growth assumptions in assessed property values, General Fund revenues, and the Operating Budget. This analysis reveals that the affordability guideline on the percentage of General Fund revenue mentioned above is expected to be the most limiting factor in calculating the debt margin.

Figure 2-12. Debt Margin Calculation with Debt Service on Existing Debt (YOE $thousands)



The ~~First~~ Project would need to compete with other City projects requiring debt financing. The debt limits above are applicable to any projects being financed by the City and County of Honolulu, given that the debt is not self-supported or in the form of revenue bonds. The extent to which the City can issue debt for the ~~First~~ Project will depend on how much debt issuance is needed for other high priority projects. The major capital improvements that the City is likely to undertake in the coming years are sanitation projects, such as sewage collection and disposal projects. The bond proceeds used to fund these capital investments are expected to be self-supported by increases in sewer service charges and are unlikely to require the issuance of GO debt.

Note on the City's Credit Rating:

Honolulu's debt rating was recently upgraded on December 5, 2006 by Standard & Poor's from AA- to AA due to its financial transparency and responsibility. The potential for economic growth resulting from the investment in a fixed-guideway system also played a part in the upgrade.

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Summary of Capital Plan

Figure 2-13. Summary of Capital Funding Sources and Uses of Funds, (YOE $millions)

Fiscal Year	Actual 2001	Actual 2002	Actual 2003	Actual 2004	Actual 2005	Actual 2006	Budget 2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Non-Federal Capital Funds																
Balance from Operations	(0)	0	0	(0)	(0)	(2)	-	-	-	-	-	-	-	-	-	-
Net GET Revenues	-	-	-	-	-	-	44	178	189	198	207	217	227	236	245	253
Bonds Outstanding	-	-	-	-	-	-	-	-	-	-	-	226	279	304	295	269
Interest Earnings	-	-	-	-	-	-	-	0	2	3	2	0	0	0	0	0
Local Capital Assistance						35	7	13	38	32	8	8	14	17	24	11
Total Non-Federal Sources	**(0)**	**0**	**0**	**(0)**	**(0)**	**34**	**51**	**192**	**229**	**233**	**218**	**451**	**520**	**557**	**564**	**533**
Federal Funds																
Section 5307/5340 - Formula Funds	23	25	28	26	27	24	26	30	32	35	36	37	37	38	39	39
Transfer to the State Vanpool Program	-	-	-	-	-	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Section 5309 - Bus Discretionary Program	6	9	14	13	11	7	1	6	6	6	6					
Section 5309 - Rail Modernization	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2
Section 5309 - Proposed New Start	-	-	-	-	-	-	-	-	-	-	152	179	186	185	169	144
Total Federal Funds	**30**	**34**	**42**	**40**	**39**	**32**	**28**	**36**	**38**	**42**	**194**	**216**	**224**	**224**	**208**	**184**

Fiscal Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total 2006-2030
Non-Federal Capital Funds															
Balance from Operations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**(2)**
Net GET Revenues	261	270	279	288	297	307	235	-	-	-	-	-	-	-	**3,930**
Bonds Outstanding	238	148	-	-	-	-	-	-	-	-	-	-	-	-	**1,759**
Interest Earnings	0	0	0	0	0	0	1	-	-	-	-	-	-	-	**9**
Local Capital Assistance	6	9	8	12	11	11	12	13	17	18	17	11	11	13	**376**
Total Non-Federal Sources	**506**	**426**	**287**	**300**	**308**	**318**	**248**	**13**	**17**	**18**	**17**	**11**	**11**	**13**	**6,073**
Federal Funds															
Section 5307/5340 - Formula Funds	40	41	41	42	50	50	51	52	54	55	56	57	58	59	**1,080**
Transfer to the State Vanpool Program	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	**(39)**
Section 5309 - Bus Discretionary Program															**34**
Section 5309 - Rail Modernization	2	2	2	2	2	2	2	2	2	15	16	16	16	18	**123**
Section 5309 - Proposed New Start	117	67	-	-	-	-	-	-	-	-	-	-	-	-	**1,200**
Total Federal Funds	**158**	**108**	**42**	**43**	**50**	**51**	**52**	**53**	**55**	**69**	**70**	**71**	**73**	**76**	**2,694**

Note: Totals may not add up due to rounding

Dollar amounts are presented on a cash basis

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Figure 2-14. Summary of the Capital Plan (YOE $millions)

Fiscal Year	Actual 2001	Actual 2002	Actual 2003	Actual 2004	Actual 2005	Budget 2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Capital Expenditures																
Proposed New Start	-	-	-	-	-	-	-	33	52	333	540	637	663	659	600	512
Bus Purchases/Overhaul	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	22	34	35	36	37	54	58	63	49
Bus Facility	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	24	40	36	3	1	1	-	3	-
Handi-Van Acquisition	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	3	3	3	3	3	4	4	4	4
Total Capital Expenditures	**23**	**36**	**23**	**53**	**17**	**45**	**34**	**82**	**129**	**407**	**582**	**678**	**721**	**721**	**669**	**565**
Debt Service Costs	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**27**	**63**	**106**	**151**
Capital Funding Sources																
Total Non-Federal Sources	(0)	0	0	(0)	(0)	34	51	192	229	233	218	451	520	557	564	533
Total Federal Funds	30	34	42	40	39	32	28	36	38	42	194	223	230	230	214	190
Total Capital Revenue	**30**	**34**	**43**	**40**	**39**	**65**	**79**	**228**	**267**	**275**	**412**	**674**	**751**	**787**	**778**	**723**
Beginning Cash Balance							75	119	265	404	272	102	97	100	103	106
Change to Cash Balance							44	146	139	(132)	(170)	(5)	3	3	3	7
Closing Cash Balance	**-**	**-**	**-**	**-**	**-**	**75**	**119**	**265**	**404**	**272**	**102**	**97**	**100**	**103**	**106**	**113**

Fiscal Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total 2006-2030
Capital Expenditures															
Proposed New Start	417	239	-	-	-	-	-	-	-	-	-	-	-	-	**4,684**
Bus Purchases/Overhaul	27	28	37	51	48	49	55	60	62	83	80	51	50	54	**#N/A**
Bus Facility	-	12	-	3	-	-	-	-	11	-	-	-	-	4	**#N/A**
Handi-Van Acquisition	4	4	4	4	5	5	5	5	5	5	6	6	6	6	**#N/A**
Total Capital Expenditures	**448**	**283**	**42**	**59**	**53**	**54**	**60**	**65**	**78**	**89**	**86**	**57**	**56**	**63**	**6,125**
Debt Service Costs	**198**	**244**	**278**	**278**	**278**	**278**	**278**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**348**
Capital Funding Sources															
Total Non-Federal Sources	506	426	287	300	308	318	248	13	17	18	17	11	11	13	**6,073**
Total Federal Funds	164	115	48	49	56	57	58	59	61	75	76	78	79	82	**2,516**
Total Capital Revenue	**670**	**541**	**335**	**349**	**364**	**375**	**306**	**72**	**78**	**93**	**94**	**89**	**90**	**94**	**8,589**
Beginning Cash Balance	113	137	150	166	177	211	254	222	229	229	234	241	274	308	
Change to Cash Balance	24	13	15	12	33	43	(32)	7	-	4	8	32	34	31	**264**

Note: Totals may not add up due to rounding

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Chapter 3 Operations & Maintenance Plan

This chapter describes how the City intends to meet the operating and maintenance (O&M) costs associated with the ~~First~~ Project and the resulting transit system. It begins with a summary of the O&M cost estimate, and then presents the planned funding sources for O&M. Levels of funding from the City's General and Highway Funds are compared with historical levels of transit funding from this source.

O&M Costs

O&M costs associated with the ~~First~~ Project include all costs associated with labor, fuel, electricity, and other costs inherent in providing the rail and bus service that is part of the locally preferred alternative. The following section describes the methodology and estimates used in this analysis.

O&M costs for the ~~First~~ Project include the cost to maintain and operate the fixed guideway system in addition to the existing bus system and the cost of maintaining fully developed support functions and departments for both bus and fixed guideway, such as legal, finance, marketing, public relations, human resources/administration, etc. It is assumed that one organization will be responsible for maintaining the support functions/departments for both modes so that overall operation is more efficient. It is estimated that the cost to run these support functions and departments for a fixed guideway O&M organization are generally around 30 percent of the total O&M expenses and the City could realize a savings of 15 percent if these services are consolidated under one organization[19].

Existing bus service is expected to be reconfigured and enhanced to bring riders on local buses to nearby transit stations. Alternatively, some routes are being discontinued since they duplicate the fixed guideway service. Overall, there is a net increase in the bus service and this "ramping up" will occur even before the fixed guideway service begins operations.

Bus operating and financial data were obtained from both DTS and National Transit Database (NTD). The data were collected from detailed budget statements and operating reports from a recent, stable, and representative year from the system. More information about the O&M costing methodology can be found in the *Draft Operating and Maintenance Cost Estimating Methodology Report* from January 5, 2006.

O&M Costing Methodology

The O&M costs for the Project were developed based on historical operating costs for an existing transit property having similar characteristics and operating in a similar environment to the Project.

[19] Source: Honolulu High-Capacity Transit Corridor Project Alternatives Analysis Operations and Maintenance Cost Results Report – November 15, 2006

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Historic costs were determined for each service characteristic. These costs were calibrated and validated against past performance of the representative system. The costs were then adjusted, based upon regional cost of living indices, to reflect O'ahu's higher costs for the fixed guideway service levels to meet their respective travel demand forecasts.

A cost allocation model was used to estimate O&M costs for each bus system component. Cost allocation models assign each O&M cost item to one of several variables. The costs assigned to each variable were summed and divided by the annual total for the variable. The aggregate unit costs were applied to data taken from the transit service plan and forecast model output for each alternative.

~~The resource build-up approach to estimating O&M costs was used to develop the O&M cost model, which is consistent with the approach required by the FTA. This approach allows the model to compute O&M labor and material costs for each mode by calculating unit costs based on historical data, and then applying the unit costs to estimated future operating statistics. A single O&M cost model was developed that accounts for the City's current transit services as well as the additional service that would be provided based on the proposed project.~~

~~Each labor and non-labor cost item for all divisions and departments related to transit operations was modeled. The model is based on the City's current organizational structure, staffing plans, labor productivity, and non-labor consumption rates. Because operator wages and benefits typically constitute 50 percent or more of total operating costs, specific line items were included for each unique labor position (e.g., operator, mechanic) and non-labor expense (e.g., energy (fuel), parts) for the operations divisions.~~

~~The City operates diesel motor buses in its paratransit and standard bus operations, and also contracts for demand response service. Contracted demand response costs were calculated as a percentage of total O&M costs since these costs fluctuate with the size of the transit system. The model was developed to differentiate between buses by technology type, energy source, and between rail technologies. O&M costs associated with all current and planned maintenance facilities are also included.~~

The same inflation rates described in the "Capital Costs" chapter are used in calculating O&M costs. Additionally, the model was validated by entering service characteristic data for DTS' past two fiscal years to determine if the model estimates for staffing levels and costs are close to the actual data of those years.

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Unit Costs

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TheBus, Handi-Van and Rail operating costs were ~~The O&M cost estimates are~~ based on operating plans prepared for each alternative using the methodology described above. This financial analysis assumes that level of service for both TheBus and Rail grows proportionally every year through FY2030. ~~developing unit costs specified in the *Revised Final Operations and Maintenance Costing Methodology Report* dated April 2, 2006, where detailed budgets are used to develop unit costs by assigning driving variables to each of the budget line items. So, for example, the cost of bus operator wages is most strongly influenced by the variable "annual revenue vehicle hours." In cases where detailed budgets were not available, data from the NTD tables were used to develop the unit costs.~~

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Detailed bus budgetary and operating data were obtained from O'ahu Transit Services for FY 2004-2005, and the associated unit costs were developed for that year. These FY 2004-2005 costs were escalated one year by 4.32 percent[20] to standardize bus costs in 2006 dollars.

Service Levels

The operating driving variables are: unlinked passenger trips, bus routes/rail lines, vehicles operated in maximum service, maintenance facilities, vehicle revenue miles, vehicle revenue hours, directional route miles, and passenger stations. The financial driving variables are: bus capacity-miles, rail capacity-miles, salary adjustment, fringe rate (for bargaining and non-bargaining employees, salaried and hourly), and alternate year.

Cost estimates for the fixed guideway and the rest of the **system -are based on the levels of service in 2030.** Table 3-1 displays these data.

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[20] This is the actual inflation rate based on changes in the CPI from June 2005 to June 2006. Source: http://inflationdata.com/inflration/inflation_rate/inflationcalculator.asp

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Table 3-1. System 2030 Service Levels by Mode

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TheBus		
	Annual Revenue Vehicle Miles	20,304,619
	Peak Revenue Vehicles	469
	Annual Vehicle Revenue Hours	1,565,692
	Annual Unlinked Passenger Trips	107,708,832
	Maintenance Facilities	2
	Service Centers	1
Fixed Guideway		
	Annual Train Revenue Hours	109,105
	Annual Vehicle Revenue Miles	5,538,470
	Stations	19
	Route Miles	39
Handi-Van		
	Annual Revenue Vehicle Miles	5,565,000

~~*. Fixed Guideway System 2030 Service Levels*~~

~~Time Period~~		~~Levels of Service~~	
		~~Headway (Minutes)~~	~~# Cars on Train~~
~~*Weekdays (20-hour Operating Day)*~~			
	~~Peak (5 hours)~~	~~3~~	~~2~~
	~~Off-Peak (9 hours)~~	~~6~~	~~2~~
	~~Base (3 hours)~~	~~6~~	~~1~~
	~~Owl (3 hours)~~	~~10~~	~~1~~
~~*Saturdays/State Holidays (19 Hour Operating Day)*~~			
	~~Off-Peak (11 hours)~~	~~6~~	~~2~~
	~~Base (2 hours)~~	~~6~~	~~1~~
	~~Owl (6 hours)~~	~~10~~	~~1~~
~~*Sunday/Federal Holidays (18 Hour Operating Day)*~~			
	~~Off-Peak (12 hours)~~	~~6~~	~~1~~
	~~Owl (6 hours)~~	~~10~~	~~1~~

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~~The levels-of-service data provided daily service level data for revenue vehicle miles and revenue vehicle hours and these needed to be annualized to determine O&M costs. The factors used for this service level data were 246 weekdays, 57 Saturdays and state holidays (52 + 5), and 62 Sundays and federal holidays (52 + 10).~~

~~The total fleet size is based on limiting the average annual vehicle mileage to 80,000, and is calculated by dividing the annual revenue vehicle miles by this number.~~

O&M Cost Results

Figure 3-1, shown below, graphically displays the historical and forecasted total O&M costs for the system. The graphic shows total O&M costs increasing annually by about 5 percent on average between 1996 and 2018. Once the fixed guideway service begins, the O&M costs increase by 16.5~~37~~ percent in FY 2019 and then an average of 3 percent each year thereafter.

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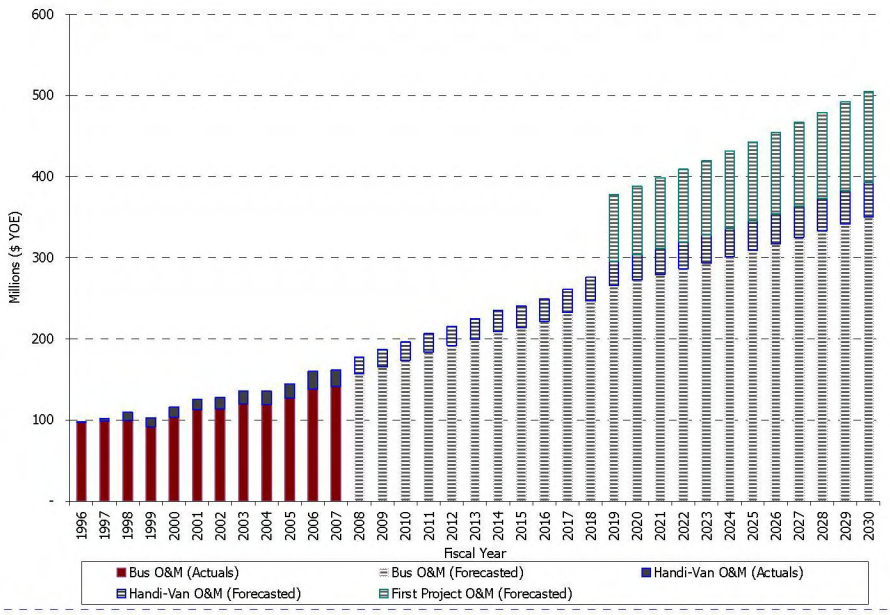
Figure 3-1. System wide O&M Costs ($ YOE millions)



A uniform CPI-based inflation rate was applied to the total O&M costs. The extent to which different escalation factors should be used for individual O&M categories will be explored in future analysis.

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Revenues for O&M Costs

The following section describes the operating revenues and non-operating revenues that the City intends to use to fund the O&M costs for the ~~First~~ Project and the transit system as a whole. Revenues are projected annually through the year 2030. Operating~~Two categories of operating~~ revenues include~~are discussed –~~ passenger fares while, non~~and other operating revenues (such as advertising). Non~~-operating revenues are expected to come from the City's General and Highway Funds and from Section 5307 formula funds (for preventative maintenance).

Passenger Fares ~~and Other Operating Revenues~~

Table 3-2 presents the current fare structure for TheBus. As shown, there are a variety of fare discounts, including monthly/annual passes and student and elderly discounts. Free transfers are allowed between routes. In 2007, TheBus carried~~expects to carry~~ 56.47 trips at an average fare per trip of $0.77~~60~~. Based on the City's operating budget, fares are expected to remain constant through 2008.

Table 3-2. "TheBus" Current Fare Structure

Fare Type	Fare
Adult cash fare	$2
Youth cash fare	$1
Senior cash fare	$1
Disabled cash fare	$1
Adult monthly pass	$40
Youth monthly pass	$20
Senior monthly pass	$5
Disabled monthly pass	$5
Adult annual pass	$440
Youth annual pass	$220
Senior annual pass	$30
Disabled annual pass	$30
Senior/Disabled ID Card	$10

Source: 2008 City and County of Honolulu Operating Budget

Ridership estimates used in the financial analysis were developed from the travel demand model. Approximately 273,000 linked trips per day are forecasted in 2030, with approximately 363,000 daily boardings on TheBus and approximately 90,000 daily boardings on the rail system. Once the fixed guideway~~First Project~~ is operational, transfers between TheBus and the fixed guideway system would also be free and seamless. Both TheBus and the fixed guideway system would operate under a unified fare structure. This yields projected farebox revenues of $140 million in FY 2030.

In 2001 the ~~To project fare levels in the future, this Financial Plan assumes adherence to a~~ City Council passed a resolution~~policy~~ requiring that the City maintain a farebox recovery ratio between 27 and 33 percent.

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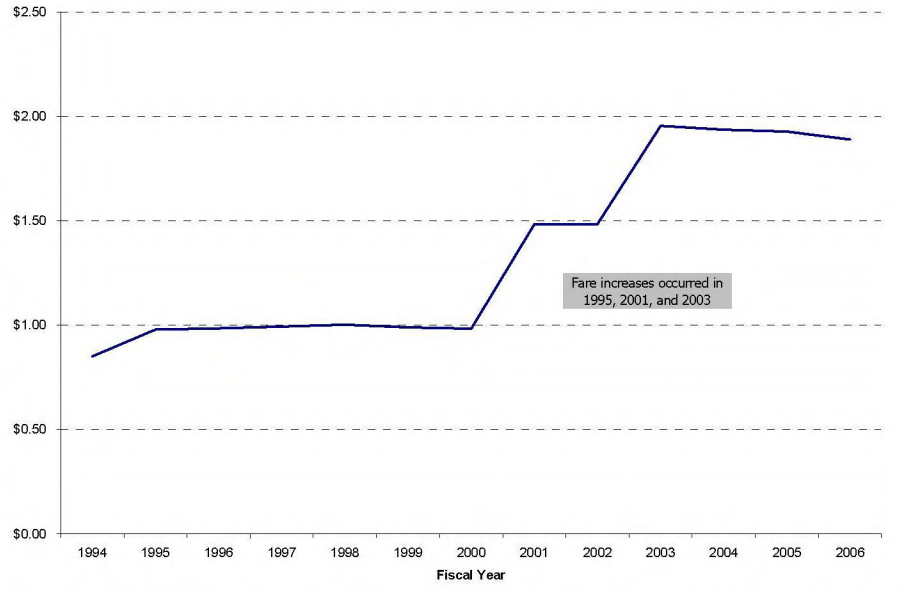
See Appendix D for this Honolulu City Council Resolution, which was adopted in February of 2000. Fares were increased in 1995, 2001, and 2003. Fares were increased in 2001 and 2003 to meet the City's recovery ratio guidelines and address a new labor agreement that ended a month-long transit strike. Figure 3-2 details the historical trend of the adult single cash fare in real terms.

Figure 3-2. System-wide Adult Single Cash Fare Levels (Constant 1994 Dollars)



Source: The State of Hawai'i Data Book 2005, http://www.Hawaii.gov/dbedt

~~For purposes of this analysis, it is assumed that the fare is established at a rate expected to recover 33 percent of the operating costs, and then, over time, the recovery ratio declines as costs increase. Once the farebox recovery ratio gets down to 27 percent, the fare is adjusted to go back up to a 33 percent recovery ratio. In general, fare revenues are estimated by multiplying the current average fare, adjusted for inflation, by the number of expected riders.~~ Figure 3-3 presents~~shows~~ the historical and ~~expected~~forecasted farebox recovery ratio (FRR) through 2030 for combined bus and rail modes. The City council resolution mentioned above does apply in most years, but needs to be balanced with an average fare that is assumed to follow the CPI inflation. In 2030, the FRR reaches about 30%.~~trend.~~

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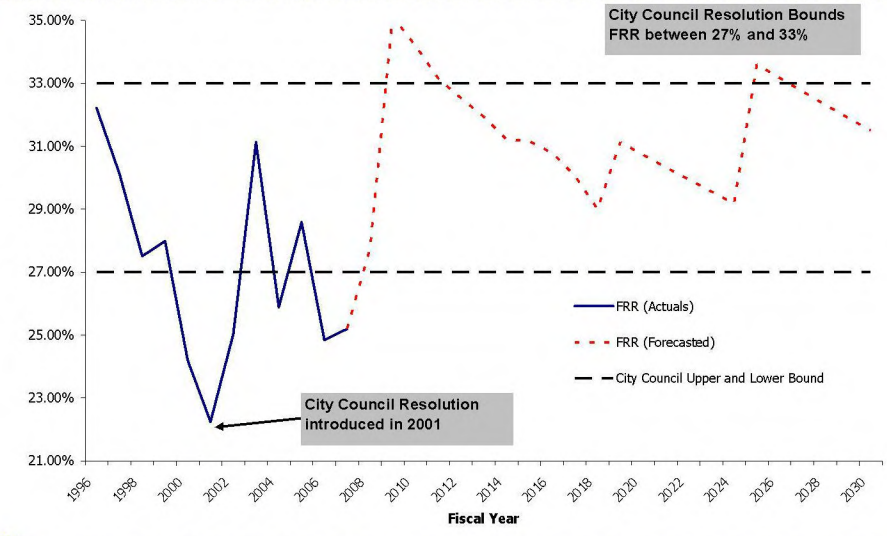
Figure 3-3. Farebox Recovery Ratio



Source: National Transit Database (historical data)

To maintain consistency with travel demand analysis, the actual 2007 average fare of $0.77 per linked trip was assumed to grow with inflation throughout the forecast period, as shown in ~~As shown above, the farebox recovery ratio dropped significantly between 2000 and 2001 and then again in 2003; however, fare increases in those years contributed to the spikes that occurred after the dips. Since the City Council resolution was adopted in 2000, two fare increases were required to maintain the farebox recovery ratio within the defined range.~~

~~In this Financial Plan, fare levels are assumed to be adjusted as the farebox recovery ratio approaches the 27 percent minimum. As shown in~~ Figure 3-4, ~~. In actuality, fares are more likely to be increased in steps, the average fare level is also~~ consistent with historical data and FTA guidance. ~~Due to the similarity in fare structure this financial analysis assumes that the same average fare per linked trip will apply to both fixed guideway and bus trips. CPI inflation. This is likely to change if O&M cost escalation assumptions are refined in later phases.~~

It is expected that this will require a 25 percent increase in FY 2009, a 20 percent increase in FY 2018, and a 16.7 percent increase in FY 2024. Figure 3-4 provides historical and forecasted average fares between 1996 and 2030 and compares this fare level to 1996 and 2006 on an inflation-adjusted basis. As shown prior to the recent series of fare increases, historical average fares were generally below the 1996 inflation-adjusted fare level. This Financial Plan assumes future fares increase to keep fare levels consistent with the 2006 inflation-adjusted fare level.

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Figure 3-4. Average Fare (Nominal) with Inflation (dollars per unlinked trip)

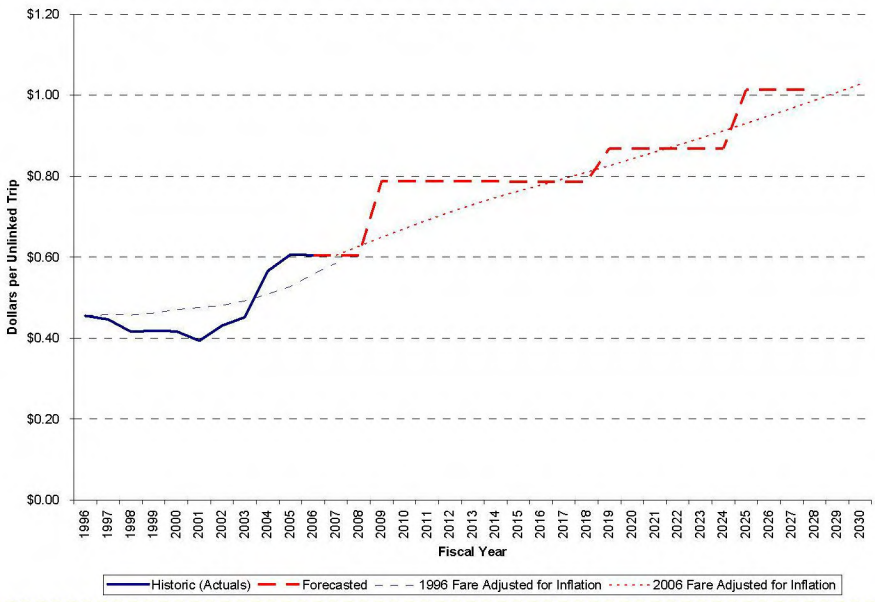

Figure 3-5 illustrates the City's historical and forecasted linked trips. This figure shows an increase~~a decrease~~ in ~~bus~~ linked trips ~~beginning in 2018. This is because a portion~~ of 22 percent ~~bus riders are expected to become bus and fixed-guideway riders starting~~ in 2019 when the ~~. These riders are counted as an additional~~ fixed -guideway becomes operational. Due to the similar fare structure, ~~linked trip and they are decreased from the bus unlinked trip count. It is worth noting here that the cost to~~ transfer ~~(~~between the two~~any~~ modes is expected of transit~~)~~ ~~will continue to be free, and park-and-rides will continue~~ to be free and seamless.

~~21~~

~~21 Source: Alternatives Analysis: Detailed Definition of Alternatives, November, 2006~~

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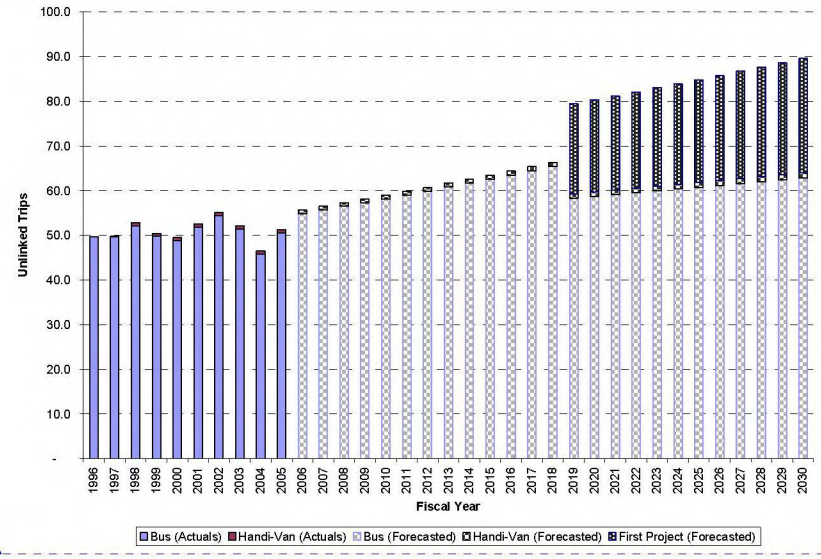
Figure 3-5. Linked Trips (millions)



Source: National Transit Database (Historical Data)

Figure 3-6 shows total farebox revenues based on the forecasted year of expenditure dollars. Farebox revenues are expected to increase by 25 percent in 2019 because of a significant increase in ridership once the fixed guideway service begins operations.

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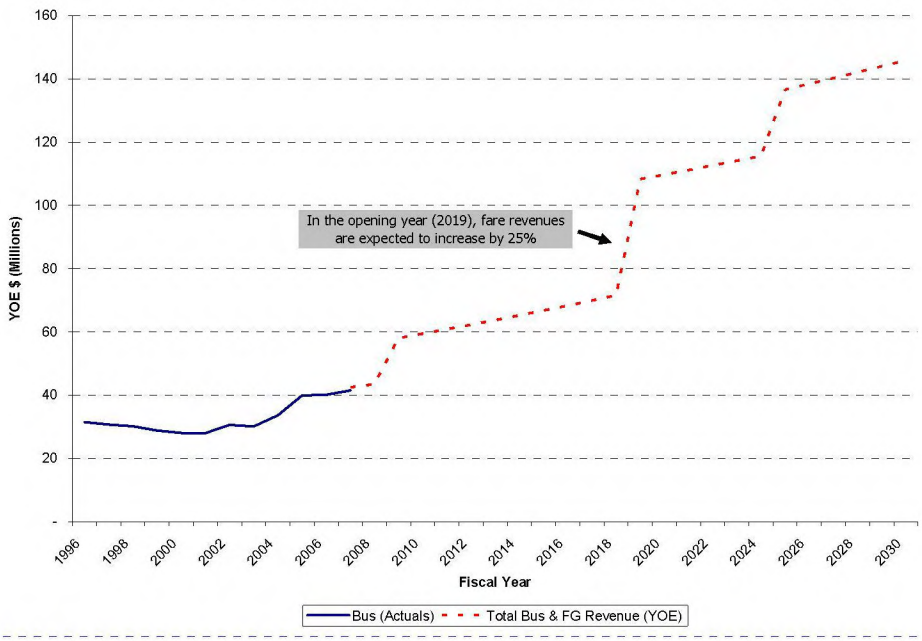
Figure 3-6. System-Wide Farebox Revenues (YOE $millions)



Source: DTS Operating Budgets

~~Other Operating Revenues~~

~~Other operating revenue sources include advertising, employee parking charges, bus royalty income, and other miscellaneous items. These sources provide a very small portion of the overall operating revenues, and they are forecasted to equal 1 percent of the total passenger fare revenues each year.~~

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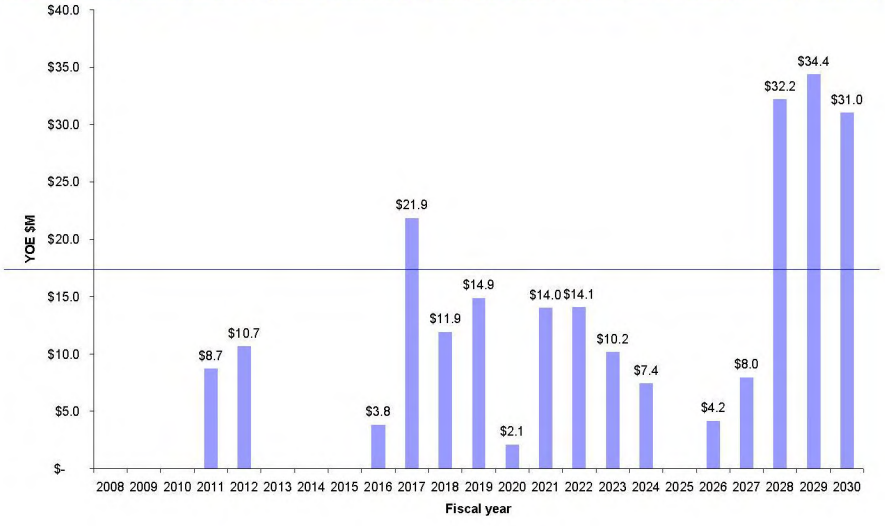
Non-Operating Revenues

Federal Funds

The City currently receives federal funds through FTA's Section 5307 Urbanized Area Formula Program. As mentioned in the system-wide capital plan chapter of this Financial Plan, the majority of Section 5307 funds are used for capital purposes; however, when these funds are not needed for capital assistance, they can also be used for preventative maintenance (a portion of O&M costs), which the federal transportation act considers eligible under this program.

Once the ~~First~~ Project is operational, Honolulu should receive additional Section 5307 funds based on a larger amount of fixed guideway vehicle and revenue miles. This Financial Plan assumes that Honolulu will distribute Section 5307 funds first to reimburse all capital expenditures, and then allocate any remainder to cover preventative maintenance costs up to the 20 percent described above. Increased Section 5307 funding attributable to the ~~First~~ Project does not become available until 2021 because of the two-year lag between the start of service and the reporting of that service increase in the National Transit Database. **Figure 3-7** Below ~~below~~ shows when the Section 5307 funds would be available for preventative maintenance. Over the long term, the City is expected to receive a cumulative amount of approximately $1.0 Billion

Figure 3-7. Section 5307 Funds Used for Preventive Maintenance (YOE dollars) through FY2030 from this funding program, $650 million of which is assumed to be used for capital needs and the remainder ($350 million) going to preventative maintenance. $ millions)



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City Contribution

The City's contribution to transit operating and maintenance is funded using local revenues from the General Fund and the Highway Fund.

The General Fund is comprised of revenues from the following taxes:

- Real Property Tax – a tax on real property based on an assessed value. Rates vary depending on property class.
- Transient Accommodations Tax – a 7.25 percent tax on a dwelling that is occupied for less than 180 consecutive days. The City and County of Honolulu receives a portion of these revenues.
- Public Service Company Tax – the City and County of Honolulu receives 1.885 percent of all public service companies' gross income.

The Highway Fund is comprised of revenues from the following taxes:

- Fuel Tax – a 16.5 cent per gallon tax on all fuel sold or used within the City's jurisdiction.
- Vehicle Weight Tax – a tax on the net weight of all passenger and non-commercial vehicles (3 cents per pound) and motor vehicles and non-passenger-carrying vehicles (3.5 cents per pound).
- Public Utility Franchise Tax – a 2.5 percent tax on all electric power and gas companies' gross sales receipts.

During the 1994 to 2006 period, revenues from these sources totaled $9.3 billion, of which $1.0 billion (11 percent) went to transit. As shown in Figure 3-8, revenues from these two funds were relatively constant in nominal (YOE) terms between 1994 and 2003. This is demonstrated by a 0.5 percent CAGR between 1994 and 2003. Since 2003, however, revenues have increased dramatically (a 12.1 percent CAGR) due to large increases in real estate values and property tax revenues on O'ahu. These increases were due, in part, to an increased amount of second-home investment by the retiring "baby-boomer" generation.

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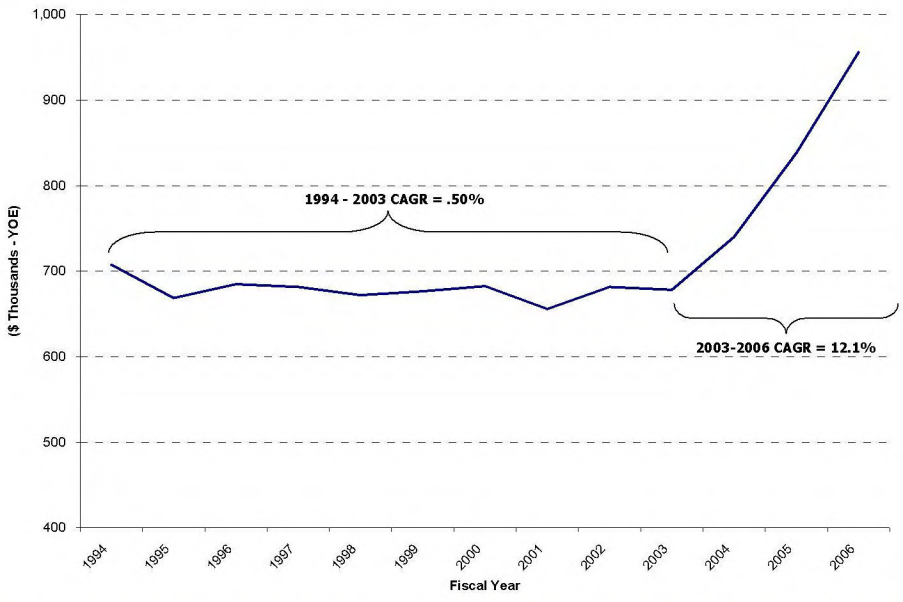
Figure 3-8. Total Highway and General Fund Actual Revenues (YOE $millions)



Source: 1996 – 2006 Comprehensive Annual Financial Reports (Historical Data)

These two city funds were forecasted to predict the amount of funding that might be available for transit operations. The 2007 and 2008 revenues are based on the City's forecast, and the 2009-2030 revenues are based on an analysis that incorporates inflation and real growth. The real growth rate is assumed to be 1.5~~40.05~~ percent each year, which is the historical compound annual growth rate between 1994 and 2007 ~~2006~~ of the two city funds. The inflation rates are based on the DBEDT's inflation forecast between 2008 ~~2007~~ and 2011~~2010~~, and then this analysis assumed the 2012~~2011~~ to 2030 inflation rate to be constant at 2.8~~0~~ percent. ~~The long-term inflation rate of 2.0 percent is conservative based on the most recent increases.~~ Table 2-4 details the ~~actual and~~ forecasted inflation trend.

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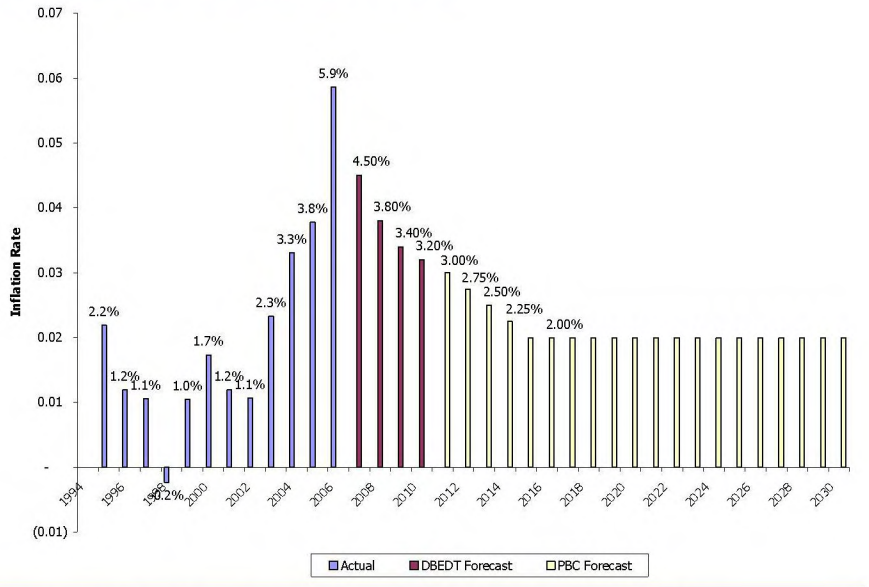
Figure 3-9. Honolulu Annual Inflation Rates



Source: Actuals and DBEDT Forecast – Department of Business, Economic Development, & Tourism

Additionally, property taxes are estimated to account for 84 percent of the General Fund's revenues in FY 2008 and, as shown in Chapter 1, property values have increased rapidly in the last five years.

Based on these assumptions, the total amount of General and Highway Funds are forecasted to total almost $6635.2 billion between 2007 and 2030 (see Figure 3-10).

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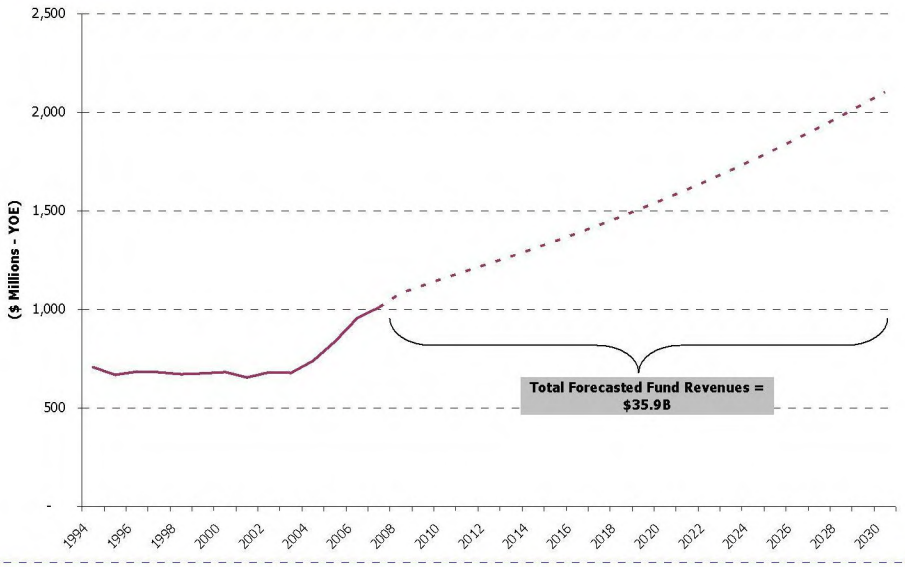
Figure 3-10. Actual and Forecasted General Fund and Highway Fund Revenues (1994 – 2030 (YOE $millions)



Between 1994 and 2006, transit received, on average, 1110.9 percent of these funds' revenues. To meet the O&M funding requirements for the First Project and planned bus system, the City contribution is assumedwill need to increase to anywhere between 11.3 and 16.618.2 percent (see Figure 3-11), averaging about 13.8 percent between 2007 and 2030.. While higher than historical average, such an amount is not unprecedented. In 2001, the City spent about 15 percent of its General and Figure 3-12). The First Project can be successfully implemented and the current transit system can continue operating only if the City increases the transit share of General and Highway Fund revenues to pay for transit.

The City receives about $375,000 annuallyAs shown in transit related advertising revenues, but this analysis conservatively did not assume operating revenues from advertising or parking. In the event more such revenues are made availablethese figures, the City's required operating subsidy would be proportionally lower.

contribution is expected to peak between 2019 and 2027. After 2027, it is expected that the City's Section 5309 Fixed Guideway Modernization apportionment will increase due to a seven-year lag after fixed guideway service initiation. The availability of 5309 funds for capital assistance starting in 2027 enables more of the 5307 funds to be applied to the preventative maintenance portion of O&M cost, thereby decreasing the share of General Fund and Highway Fund revenues required for transit operating subsidy.

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Figure 3-11. Transit Contribution from City's Highway and General Funds (YOE $millions)

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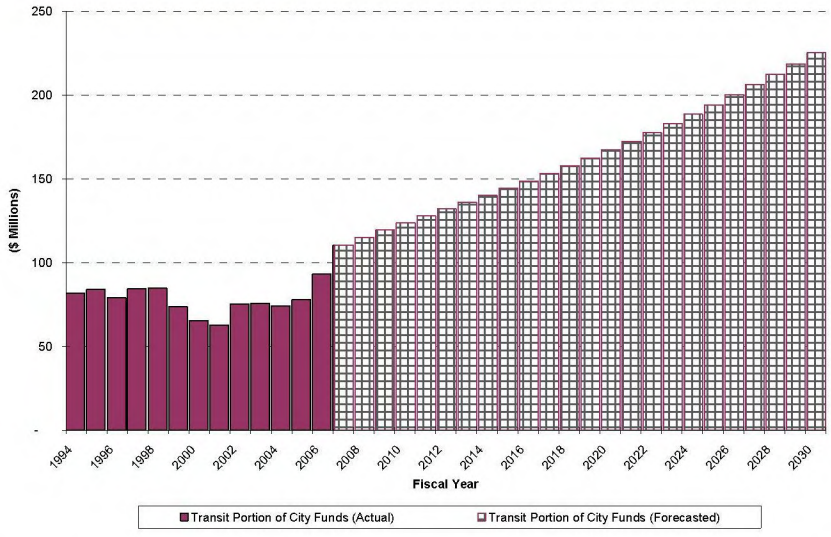

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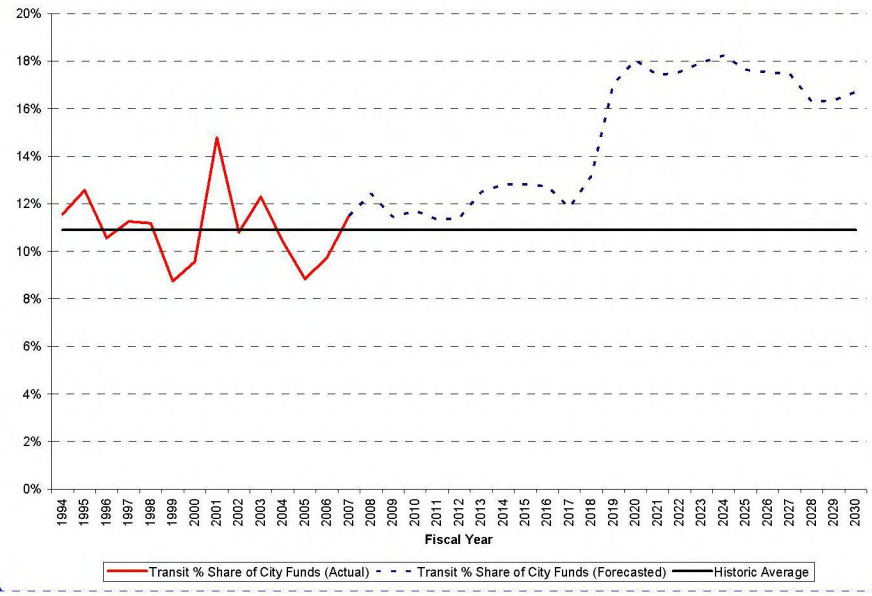
Figure 3-12 Transit Portion of the City's Highway and General Funds Projected Revenues



Agency-Wide Operating Plan

Given the assumptions chosen in this analysis, the federal and local revenues are assumed to be enough to operate and maintain the ~~First~~ Project while maintaining the existing bus and paratransit system. These assumptions assume that the City will significantly increase its portion of General and Highway Fund revenues toward transit. Between 2007 and 2030, the City is expected to contribute 69 percent of the total operating costs while fare revenues comprise 29 percent. ~~See Figure 13 for a break down of all operating revenues.~~

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Figure 3-13. Operating Costs and Revenues (YOE $millions)

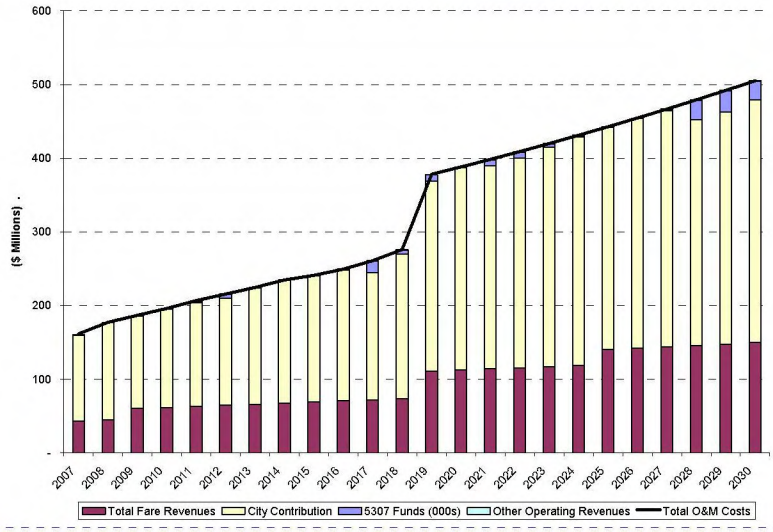

Table 3-3 and Table 3-4 summarize the Operating Plan for the overall system and key the level of service variables used to derive it..

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Table 3-3. Fares, O&M Plan Summary (YOE $millions, except for linked trips and service efficiency variables)

Fiscal Year	Actual 2001	Actual 2002	Actual 2003	Actual 2004	Actual 2005	Budget 2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Linked Trips - Existing Bus	52	54	51	46	51	55	56	56	57	58	59	60	61	62	63	63
Linked Trips - Handi-Van	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Linked Trips - New Start	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Linked Trips	**53**	**55**	**52**	**46**	**51**	**56**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**63**	**64**
Annual % Change	6.2%	4.9%	-5.5%	-10.7%	10.3%	8.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
Fare Revenues - Existing Bus and New Starts	28	31	30	34	40	42	43	43	58	59	61	62	64	65	67	68
Fare Revenues Handi-Van	-	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2
Total Fare Revenue	**28**	**32**	**32**	**35**	**41**	**43**	**44**	**45**	**60**	**61**	**63**	**64**	**66**	**67**	**69**	**71**
Annual % Change	-0.3%	14.4%	-1.4%	11.2%	17.9%	4.1%	2.3%	2.3%	33.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%
Average Fare	0.53	0.58	0.61	0.75	0.81	0.77	0.78	0.79	1.03	1.04	1.05	1.06	1.07	1.08	1.09	1.09
Annual % Change	-	8.34%	4.11%	19.70%	6.42%	-	0.85%	0.80%	23.89%	0.82%	0.82%	0.82%	0.82%	0.82%	0.82%	0.82%
Service Efficiency:																
Bus O&M Cost/Vehicle Revenue Miles	6	6	7	7	7	8	8	9	9	9	9	10	10	10	10	10
Handi-Van O&M Cost/Vehicle Revenue Miles	3	3	4	4	4	5	5	5	6	6	6	6	6	6	7	7
New Starts O&M cost/Vehicle Revenue Miles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Fiscal Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	TOTAL 2008-2030
Linked Trips - Existing Bus	64	65	58	59	59	60	60	60	61	61	62	62	62	63	1,396
Linked Trips - Handi-Van	1	1	1	1	1	1	1	1	1	1	1	1	1	1	22
Linked Trips - New Start	-	-	**20**	**21**	**21**	**22**	**22**	**23**	**23**	**24**	**24**	**25**	**25**	**26**	274
Total Linked Trips	**65**	**66**	**79**	**80**	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**1,692**
Annual % Change	1.47%	1.47%	19.74%	1.10%	1.10%	1.10%	1.10%	1.11%	1.10%	1.10%	1.10%	1.10%	1.11%	1.10%	
Fare Revenues - Existing Bus and New Starts	70	72	108	110	111	113	114	116	137	138	140	142	144	146	2,208
Fare Revenues Handi-Van	2	2	3	3	3	3	3	3	4	4	4	4	4	4	63
Total Fare Revenue	**72**	**74**	**111**	**113**	**114**	**116**	**117**	**119**	**140**	**142**	**144**	**146**	**148**	**150**	
Annual % Change	2.3%	2.3%	50.5%	1.3%	1.3%	1.3%	1.3%	1.3%	18.2%	1.3%	1.3%	1.3%	1.3%	1.3%	
Average Fare	**1.10**	**1.11**	**1.40**	**1.40**	**1.40**	**1.41**	**1.41**	**1.41**	**1.65**	**1.66**	**1.66**	**1.66**	**1.67**	**1.67**	
Annual % Change	0.82%	0.82%	20.41%	0.21%	0.21%	0.21%	0.21%	0.21%	14.47%	0.22%	0.22%	0.21%	0.22%	0.22%	
Service Efficiency:															
Bus O&M Cost/Vehicle Revenue Miles	10	11	11	11	12	12	12	12	13	13	13	14	14	14	
Handi-Van O&M Cost/Vehicle Revenue Miles	7	7	8	8	8	8	8	9	9	9	10	10	10	10	
New Starts O&M cost/Vehicle Revenue Miles	-	-	**18**	**18**	**18**	**18**	**18**	**19**	**19**	**19**	**19**	**19**	**20**	**20**	

Note: Totals may not add up due to rounding

Table 3-4. Operating Variables, O&M Expenses, and Average Fare

City Fiscal Year	UNIT	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
LEVEL OF SERVICE																									
Annual Linked Trip	trips	54,011,495	54,605,400	55,205,836	55,812,874	56,426,587	57,047,048	57,674,332	58,308,513	58,949,668	59,597,873	60,253,205	60,915,744	74,512,602	75,331,936	76,160,278	76,997,729	77,844,389	78,700,358	79,565,740	80,440,637	81,325,154	82,219,398	83,123,474	84,037,492
TheBus																									
Bus Annual RVH	hours	1,251,096	1,290,573	1,330,049	1,369,526	1,409,003	1,448,480	1,487,956	1,527,433	1,566,910	1,606,387	1,645,863	1,685,340	1,675,369	1,665,399	1,655,428	1,645,457	1,635,487	1,625,516	1,615,545	1,605,575	1,595,604	1,585,633	1,575,663	1,565,692
Bus Annual UPT	trips	71,749,376	74,783,945	77,818,515	80,853,084	83,887,654	86,922,223	89,956,793	92,991,362	96,025,932	99,060,501	102,095,071	105,129,640	105,344,573	105,559,505	105,774,438	105,989,371	106,204,303	106,419,236	106,634,169	106,849,101	107,064,034	107,278,967	107,493,899	107,708,832
Bus Annual RVM	miles	17,429,135	17,874,661	18,320,187	18,765,713	19,211,239	19,656,765	20,102,290	20,547,816	20,993,342	21,438,868	21,884,394	22,329,920	22,161,145	21,992,370	21,823,595	21,654,820	21,486,045	21,317,270	21,148,494	20,979,719	20,810,944	20,642,169	20,473,394	20,304,619
The Handi-Van																									
Handi-Van Annual RVM	miles	4,368,000	4,414,000	4,461,000	4,508,000	4,556,000	4,604,000	4,653,000	4,702,000	4,752,000	4,802,000	4,853,000	4,904,000	4,956,000	5,009,000	5,062,000	5,115,000	5,169,000	5,224,000	5,279,000	5,335,000	5,392,000	5,449,000	5,506,000	5,565,000
Total Bus & Handi-Van RVM	miles	21,797,135	22,288,661	22,781,187	23,273,713	23,767,239	24,260,765	24,755,290	25,249,816	25,745,342	26,240,868	26,737,394	27,233,920	27,117,145	27,001,370	26,885,595	26,769,820	26,655,045	26,541,270	26,427,494	26,314,719	26,202,944	26,091,169	25,979,394	25,869,619
Fixed Guideway																									
Annual Revenue Vehicle Miles	miles	-	-	-	-	-	-	1,702,724	1,753,806	1,806,420	1,860,612	1,916,431	3,884,571	4,001,109	4,121,142	4,244,776	4,372,119	4,503,283	4,638,381	4,777,533	4,920,859	5,068,485	5,220,539	5,377,155	5,538,470

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Fiscal Year	Actual 2001	Actual 2002	Actual 2003	Actual 2004	Actual 2005	Actual 2006	Budget 2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total Linked trips (millions)	52	54	51	46	51	55	56	56	57	58	59	60	61	62	63	63
Annual % Change	6.2%	4.9%	-5.6%	-10.9%	10.5%	8.6%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
Avg Fare per Passenger	0.54	0.56	0.59	0.74	0.79	0.76	0.76	0.77	1.01	1.02	1.03	1.04	1.05	1.06	1.07	1.08
Directional Route Miles																
Bus	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
Rail (New Starts)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicles in Maximum Service																
Bus	442	427	427	425	416	420	420	425	425	434	441	449	455	462	475	482
Handi Van	127	124	124	116	157	171	146	147	149	150	152	153	155	157	158	160
Vehicle Revenue Miles (million)																
Bus	19	19	18	17	18	18	18	18	18	19	19	20	20	21	21	22
Handi Van	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5
New Start	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unlinked Trips (million)																
Unlinked Trips - Bus	70	74	69	61	67	70	72	74	75	77	79	81	83	85	87	89
Unlinked Trips - Handi-Van	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Unlinked Trips - New Starts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Fiscal Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total Linked trips (millions)	64	65	58	59	59	60	60	60	61	61	62	62	62	63
Annual % Change	1.5%	1.5%	-10.9%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
Avg Fare per Passenger	1.08	1.09	1.86	1.87	1.88	1.89	1.90	1.92	2.25	2.26	2.28	2.29	2.31	2.32
Directional Route Miles														
Bus	36	36	36	36	36	36	54	54	54	54	54	54	54	54
Rail (New Starts)	-	-	41	41	41	41	41	41	41	41	41	41	41	41
Vehicles in Maximum Service														
Bus	489	496	464	467	469	472	474	477	480	482	485	488	491	493
Handi Van	162	163	165	167	169	170	172	174	176	178	180	182	183	185
Vehicle Revenue Miles (million)														
Bus	22	23	24	24	24	24	24	24	24	24	25	25	25	25
Handi Van	5	5	5	5	5	5	5	5	5	5	5	5	6	6
New Start	-	-	5	5	5	5	5	5	5	5	5	5	6	6
Unlinked Trips (million)														
Unlinked Trips - Bus	91	93	107	108	109	110	112	113	114	116	117	118	120	121
Unlinked Trips - Handi-Van	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Unlinked Trips - New Starts	-	-	20	21	21	22	22	23	23	24	24	25	25	26

Note: Totals may not add up due to rounding

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Table 3-5. Operating Plan Summary (YOE $millions)

Fiscal Year	Actual 2001	Actual 2002	Actual 2003	Actual 2004	Actual 2005	Actual 2006	Budget 2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Operating Revenue																
Existing Bus and New Starts Fare Revenues	28	31	30	34	40	42	43	43	58	59	61	62	64	65	67	68
Handi-Van Fare Revenues	-	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2
Total Operating Revenues	**28**	**32**	**32**	**35**	**41**	**43**	**44**	**45**	**60**	**61**	**63**	**64**	**66**	**67**	**69**	**71**
Annual % Change	-0.3%	14.4%	-1.4%	11.2%	17.9%	4.1%	2.3%	2.3%	33.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%
Federal Assistance	#N/A	22	21	23	28	22	1	-	-	-	9	11	-	-	-	4
Operating & Maintenance Expenses																
Existing Bus O&M	113	114	120	119	127	138	141	157	165	174	183	191	200	209	214	222
Existing handi Van O&M	13	14	16	17	18	22	20	20	21	22	23	24	25	26	27	28
New Start O&M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total O&M Expenses	**126**	**128**	**136**	**136**	**145**	**160**	**162**	**177**	**187**	**196**	**207**	**216**	**225**	**235**	**241**	**249**
Balance from Existing Operations		-	(74)	(157)	(235)	(310)	(405)	(522)	(654)	(781)	(916)	(1,051)	(1,191)	(1,350)	(1,517)	(1,689)
Operating Subsidy Requirement		74	83	77	75	95	117	132	127	135	135	141	159	167	172	175
Balance from Operations	**-**	**(74)**	**(157)**	**(235)**	**(310)**	**(405)**	**(522)**	**(654)**	**(781)**	**(916)**	**(1,051)**	**(1,191)**	**(1,350)**	**(1,517)**	**(1,689)**	**(1,864)**
Farebox Recovery Ratio	**24.8%**	**26.8%**	**25.2%**	**28.3%**	**31.4%**	**30.1%**	**30.1%**	**27.7%**	**35.1%**	**34.2%**	**33.2%**	**32.5%**	**31.9%**	**31.2%**	**31.2%**	**30.8%**

Fiscal Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	TOTAL 2008-2030
Operating Revenue															
Existing Bus and New Starts Fare Revenues	70	72	108	110	111	113	114	116	137	138	140	142	144	146	**2,208**
Handi-Van Fare Revenues	2	2	3	3	3	3	3	3	4	4	4	4	4	4	**63**
Total Operating Revenues	**72**	**74**	**111**	**113**	**114**	**116**	**117**	**119**	**140**	**142**	**144**	**146**	**148**	**150**	**2,271**
Annual % Change	2.3%	2.3%	50.5%	1.3%	1.3%	1.3%	1.3%	1.3%	18.2%	1.3%	1.3%	1.3%	1.3%	1.3%	
Federal Assistance	22	12	15	2	14	14	10	7	-	4	8	32	34	31	**230**
Operating & Maintenance Expenses															
Existing Bus O&M	232	247	266	272	279	287	294	301	309	317	325	333	342	350	**5,870**
Existing handi Van O&M	28	29	30	31	32	33	34	35	36	37	38	40	41	42	**705**
New Start O&M	-	-	82	84	87	89	92	95	97	100	103	106	109	113	**1,158**
Total O&M Expenses	**261**	**276**	**378**	**388**	**398**	**409**	**420**	**431**	**443**	**454**	**467**	**479**	**492**	**505**	**7,733**
Balance from Existing Operations	(1,864)	(2,031)	(2,221)	(2,473)	(2,747)	(3,017)	(3,296)	(3,589)	(3,894)	(4,196)	(4,505)	(4,819)	(5,120)	(5,430)	
Operating Subsidy Requirement	167	190	252	273	270	279	293	305	302	308	315	301	310	324	**5,232**
Balance from Operations	**(2,031)**	**(2,221)**	**(2,473)**	**(2,747)**	**(3,017)**	**(3,296)**	**(3,589)**	**(3,894)**	**(4,196)**	**(4,505)**	**(4,819)**	**(5,120)**	**(5,430)**	**(5,754)**	
Farebox Recovery Ratio	**30.1%**	**29.0%**	**31.1%**	**30.7%**	**30.3%**	**30.0%**	**29.6%**	**29.2%**	**33.6%**	**33.2%**	**32.8%**	**32.3%**	**31.9%**	**31.5%**	

Note: Totals may not add up due to rounding

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Chapter 4 Cash Flow Risks and Uncertainties

The foregoing analysis presented the Financial Plan with baseline assumptions for revenues and costs. This chapter presents the corresponding operating and capital cash flows for the entire system and discusses the risks and uncertainties around many of the key assumptions. Several alternative funding and financing scenarios are tested to show the impact on the overall Financial Plan.

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Cash Flow

The capital and operating plans from the previous chapters were consolidated into a 20-year cash flow, which is presented in Table 4-1. It summarizes the results from the previous chapters and gives a general overview of the Financial Plan assuming the baseline assumptions. Baseline assumptions are as follows:

- GET forecast is based on Forecast B (see Chapter 2 for more information)
- $1.2 billion in New Starts Funding
- Interest rates based on the City's AA Bond Rating as of April 16, 2007
- Additional 1 percent on interest rates for contingency purposes

This table shows how the assumed capital and operating revenues are sufficient to fund the City's forecasted costs. This is shown each year by the "Balance from Operations" totaling zero. Another key measure is the "Local Capital Assistance for the Proposed New Starts Project (excluding net GET Revenues)," which also totals zero each year.

As mentioned earlier, the working capital, cash balances, and debt coverage ratios, which are typical measures used to assess the reasonableness of a Financial Plan, are not appropriate measures for the City. This is because DTS is an integral part of the City's services, so it does not have an independent working capital, cash balance, or debt coverage ratio. The cash flow, therefore, presents the beginning cash balance and working capital corresponding to the amounts presented in the City's *FY 2006 Comprehensive Annual Financial Report* for proprietary funds.[22]

[22] City and County of Honolulu FY 2006 Comprehensive Annual Financial Report, page 43

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Table 4-1. 2001-2030 System-wide Cash Flow (YOE $millions)

Fiscal Year	Actual 2001	Actual 2002	Actual 2003	Actual 2004	Actual 2005	Actual 2006	Budget 2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Operating Revenue																
Farebox Revenue	28	32	32	35	41	43	44	45	60	61	63	64	66	67	69	71
Other Operating Revenue	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
Total System Revenue	29	32	32	35	42	44	45	46	61	62	64	65	67	68	70	71
Federal Assistance	#N/A	22	21	23	28	22	1	-	-	-	9	11	-	-	-	4
Transfer from Capital																
Local Operating Assistance	97	74	83	77	74	93	116	131	126	134	134	140	158	167	171	174
Total Other Operating Assistance	#N/A	96	104	100	102	115	117	131	126	134	143	150	158	167	171	178
Total Operating Revenue	**#N/A**	**128**	**136**	**135**	**144**	**158**	**162**	**177**	**187**	**196**	**207**	**216**	**225**	**235**	**241**	**249**
O&M Expenses																
Bus O&M Cost	113	114	120	119	127	138	141	157	165	174	183	191	200	209	214	222
Handi-Van O&M Cost	13	14	16	17	18	22	20	20	21	22	23	24	25	26	27	28
New Starts Project O&M Cost	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total O&M Expenses	126	128	136	136	145	160	162	177	187	196	207	216	225	235	241	249
Balance from Operations	**#N/A**	**0**	**0**	**(0)**	**(0)**	**(2)**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Capital Revenue																
Balance from Operations	#N/A	0	0	(0)	(0)	(2)	-	-	-	-	-	-	-	-	-	-
New Starts Revenues	-	-	-	-	-	-	-	-	-	-	152	179	186	185	169	144
Other Federal Fund Revenues	23	13	-	29	1	10	27	36	38	42	34	33	44	45	45	42
Net GET Revenues	-	-	-	-	-	-	44	178	189	198	207	217	227	236	245	253
Interest Earnings	-	-	-	-	-	-	-	0	2	3	2	0	0	0	0	0
Local Capital Assistance for the Proposed New Starts Project (excluding net GET Revenues)							-	-	-	-	-	-	-	-	-	-
Local Capital Assistance for Other Capital Needs	-	23	23	23	16	35	7	13	38	32	8	8	14	17	24	11
Transfer to Operations																
Total Capital Revenue	**#N/A**	**36**	**23**	**53**	**16**	**44**	**78**	**228**	**267**	**275**	**404**	**437**	**472**	**483**	**482**	**450**
Bonds Outstanding	-	-	-	-	-	-	-	-	-	-	-	226	279	304	295	269
Capital Expenditures								49	77	74	42	41	58	61	69	53
Proposed New Start Project	-	-	-	-	-	-	-	33	52	333	540	637	663	659	600	512
Bus Acquisition	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	22	34	35	36	37	54	58	63	49
Bus Facility	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	24	40	36	3	1	1	-	3	-
Handi-Van Acquisition	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	3	3	3	3	3	4	4	4	4
Total Capital Expenditures	**23**	**36**	**23**	**53**	**17**	**45**	**34**	**82**	**129**	**407**	**582**	**678**	**721**	**721**	**669**	**565**
Debt Service Costs	-	-	-	-	-	-	-	-	-	-	-	-	27	63	106	151
Working Capital Account																
Beginning Cash Balance	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	6	50	196	334	202	24	8	11	14	17
Change in Working Capital	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	44	146	139	(132)	(179)	(15)	3	3	3	3
Working Capital Balance	**#N/A**	**#N/A**	**#N/A**	**#N/A**	**#N/A**	**6**	**50**	**196**	**334**	**202**	**24**	**8**	**11**	**14**	**17**	**20**

Fiscal Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total 2008-2030
Operating Revenue															
Farebox Revenue	72	74	111	113	114	116	117	119	140	142	144	146	148	150	2,271
Other Operating Revenue	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18
Total System Revenue	73	75	112	113	115	116	118	119	141	143	145	147	149	151	2,289
Federal Assistance	22	12	15	2	14	14	10	7	-	4	8	32	34	31	230
Transfer From Capital							17								17
Local Operating Assistance	166	189	251	273	270	279	275	304	302	307	314	300	309	323	5,197
Total Other Operating Assistance	188	201	266	275	284	293	302	312	302	312	322	332	343	354	5,444
															-
Total Operating Revenue	**261**	**276**	**378**	**388**	**398**	**409**	**420**	**431**	**443**	**454**	**467**	**479**	**492**	**505**	**7,733**
O&M Expenses															
Bus O&M Cost	232	247	266	272	279	287	294	301	309	317	325	333	342	350	5,870
Handi-Van O&M Cost	28	29	30	31	32	33	34	35	36	37	38	40	41	42	705
New Starts Project O&M Cost	-	-	82	84	87	89	92	95	97	100	103	106	109	113	1,158
Total O&M Expenses	261	276	378	388	398	409	420	431	443	454	467	479	492	505	7,733
Balance from Operations	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Capital Revenue															
Balance from Operations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Starts Revenues	117	67	-	-	-	-	-	-	-	-	-	-	-	-	1,200
Other Federal Fund Revenues	25	36	33	47	42	43	48	52	61	71	68	45	45	51	1,027
Net GET Revenues	261	270	279	288	297	307	235	-	-	-	-	-	-	-	3,887
Interest Earnings	0	0	0	0	0	0	1	-	-	-	-	-	-	-	9
Local Capital Assistance for the Proposed New Starts Project (excluding net GET Revenues)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Local Capital Assistance for Other Capital Needs	6	9	8	12	11	11	12	13	17	18	17	11	11	13	334
Transfer to Operations							(17)								(17)
Total Capital Revenue	**410**	**381**	**320**	**346**	**350**	**361**	**279**	**65**	**78**	**89**	**86**	**57**	**56**	**63**	**6,440**
Bonds Outstanding	238	148	-	-	-	-	-	-	-	-	-	-	-	-	1,759
Capital Expenditures															
Proposed New Start Project	417	239	-	-	-	-	-	-	-	-	-	-	-	-	4,684
Bus Acquisition	27	28	37	51	48	49	55	60	62	83	80	51	50	54	1,123
Bus Facility	-	12	-	3	-	-	-	-	11	-	-	-	-	4	137
Handi-Van Acquisition	4	4	4	4	5	5	5	5	5	5	6	6	6	6	101
Total Capital Expenditures	**448**	**283**	**42**	**59**	**53**	**54**	**60**	**65**	**78**	**89**	**86**	**57**	**56**	**63**	**6,045**
Debt Service Costs	198	244	278	278	278	278	278	-	-	-	-	-	-	-	2,180
Working Capital Account															
Beginning Cash Balance	20	22	24	24	34	53	82	23	23	23	23	23	23	23	
Change in Working Capital	2	1	1	10	19	29	(59)	-	-	-	-	0	-	0	(26)
Working Capital Balance	**22**	**24**	**24**	**34**	**53**	**82**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	

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Note: Totals may not add up due to rounding

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Measures of Financial Plan Feasibility

Three measures (for both capital and operating) are the key success factors associated with this Financial Plan. For the capital plan, the amount of additional capital revenues ~~city funds~~ required over and above GET revenues and New Starts is one of these key indicators. For the operating plan, the key measures are both the farebox recovery ratio and the City's operating subsidy as a percentage of the expected general and highway fund revenues.

The baseline assumptions led to the conclusion that no additional ~~City~~ funds would be necessary to fund the ~~First~~ Project's capital costs in the base case. While no upper bound has officially been set, any capital funding requirement from the City beyond the dedicated GET surcharge would have an impact on various aspects of the City's finances, including the following:

- Reducing the amount of funds available for other City projects, thus potentially delaying or even canceling projects seen as less essential
- Pushing the city to raise property taxes, the main source of the City's general revenues, to meet the additional needs
- Impacting the City's capacity to issue debt while maintaining its current credit rating, implying a higher cost of borrowing

For the operating plan, two key measures will be tracked as certain assumptions are tested: the system-wide farebox recovery ratio and the City's subsidy to fund mass transit operations as a percentage of General and Highway Fund revenues. The City is required to maintain a farebox recovery ratio between 27 and 33 percent, so it is essential~~vital~~ that the ratio between the farebox revenues and operating and maintenance costs stay within a reasonable range. Additionally, the City will be required to significantly increase the percentage of its General and Highway Fund revenues. This chapter will address the risk associated with the funds not increasing at the forecasted rate, in addition to the City not being willing to contribute the level of funding required due to competing demands.

Table 4-2 summarizes the key measures that will be tracked when running sensitivity scenarios for the Financial Plan. These measures will be referred to throughout this chapter as different sensitivity analyses are considered.

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Table 4-2. Financial Plan's Key Indicators

	Capital	Operations	
Measure	City revenues (excluding GET surcharge) required	Farebox recovery ratio	Operating subsidy as percentage of the General and Highway Fund revenues
Baseline	$0	Around~~Required~~ 27 to 33%[23]	2007-2030: Avg: 13.8~~15~~% 2007-2030: Max 16.6%~~18%~~

Project Risks and Uncertainties

Project risks can be divided into the following categories:

- Changes in project scope
- Changes in unit prices
- Changes in project schedule
- Changes in the assumed procurement approach
- Changes in financial assumptions (e.g., availability of capital and operating revenue, interest rates, system-wide O&M costs)

Some of these categories are project-specific and can be directly or indirectly influenced by the project sponsor or other parties involved in the implementation process; others may be influenced by external local and macroeconomic factors. These risk categories are discussed in more detail below.

Scope Uncertainty

Most projects, especially large infrastructure projects such as this one, have uncertainties associated with the definition of the project. At this stage of project planning, there can be numerous decisions and project refinements that will be made later in project development. For this Project, while certain fixed guideway transit technologies and station locations have been assumed, these assumptions will be revisited and confirmed or modified during Preliminary Engineering. Scope changes may also result from the following:

- Physical barriers, such as unexpected utility locations or ground water

[23] This is based on the City's requirement. See Appendix D for more information.

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- Environmental impacts and mitigation measures
- Community involvement
- Changes in political leadership
- Budget constraints that lead to scope reductions
- Choice of technology and grade separation

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Uncertainties still exist regarding the level of automation of the Project as well as the power generation source (overhead vs. third-rail powered). The former could increase capital costs but reduce the O&M portion. However, implementation of a third-rail technology is expected to have a limited impact on capital cost, as the current Project already assumes a mostly grade-separated, elevated structure.

Unit-Price Uncertainty

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A driving factor in both the capital and operating cost models are the unit prices, which are used to calculate annual costs for each variable. For example, a unit price is associated with each labor position's salary, bus purchase, and foot of steel. A small change in the unit price can have a significant effect on the overall project costs. Factors influencing unit cost include the following:

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- Exchange rates, especially when raw materials or equipment need to be shipped from abroad, as may be the case in Honolulu
- Construction cost inflation due to supply-demand imbalance for raw materials, energy, equipment, or labor

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Those risk factors can be somewhat mitigated by the procurement strategy and by the fact that CPI-based inflation would impact costs and revenues in similar but inverse fashions, thereby limiting the impact on the overall Financial Plan. Only the incremental inflation specific to construction could add pressure to the Financial Plan. The availability of, and local demand for, construction labor plays an important role in unit price uncertainty, especially as the number of public works projects increases. In Honolulu, specifically, this is relevant for the many sewer capital improvements. A shortage in labor force could lead to higher wages and a greater exposure to inflationary risk due to delay in construction.

Other issues that can affect the accuracy of unit cost include the bid climate during the construction period (i.e., the level of competition among contractors), and fluctuations in basic material prices. As a project evolves, these assumptions and their associated costs could change. Additionally, changes in design standards during later phases of project development can also lead to changes in project cost. Examples of changes in design standards would be replacing high floor vehicles with low floor vehicles, using a more sophisticated signal system, or changing from a barrier-free fare collection system to the use of fare gates.

Note that the unit prices will be analyzed in much more significant detail during later phases of this Project.

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Schedule Uncertainty

Scheduling delays, the availability of skilled labor, and unforeseen construction challenges can all lead to cost increases that may challenge the Financial Plan for a project. Schedule changes might result from project changes, local decision-making processes, equipment malfunctions, and construction delays. As a project becomes more complex, tasks become larger and they often have more dependencies. Every task's duration is dependent on factors that can be out of a project manager's control.

Additionally, any change in the level of funding sources can drastically affect a project schedule. The level of FTA funds is subject to annual appropriations and to program reauthorizations approximately every six years. The analysis assumes that future FTA funding levels will have the same growth trends as in the recent past. Future reauthorization legislation may result in different growth levels. Additionally, all projects following FTA's New Starts process compete for a limited amount of New Starts funds. The total amount of New Starts funds pledged to a project is not finalized until just prior to entering into a Full Funding Grant Agreement (FFGA), and annual funding apportionments depend on congressional appropriations each year.

This Project is expected to "break ground," or begin construction before the FFGA is completed, and the initial stages of the Project are likely to be locally funded. If, for some reason, the FFGA does not get completed as scheduled, this has the potential to delay the project.

Other examples of schedule hindrances are related to election cycles, testing and commissioning, and project reviews.

The above-mentioned factors may also affect the scheduled opening year and its potential phasing. If the Project were to open in phases, the schedule of operating revenues would be impacted accordingly. Phasing is expected to be further refined in future stages of the Project.

Procurement

The choice between different procurement mechanisms may have an impact on the phasing of the project as well as the timing of capital outlays. Some efficiencies may be gained from using an innovative procurement approach such as design build or design build operate maintain. Depending on the general approach that the City decides to pursue, this procurement method could change at various milestones throughout the Project.

Financial Uncertainty

Budget issues can arise in the event of cash flow shortages, financing fluctuations, and/or economic downturns. The following section describes the uncertainty around the main drivers behind the capital and operating Financial Plan. For the capital plan, the main drivers are GET surcharge revenues, New Starts funding, and interest rate fluctuations. In the operating plan, the main drivers are ridership and the level of the City's General and Highway Fund revenues.

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Capital Revenues Uncertainty

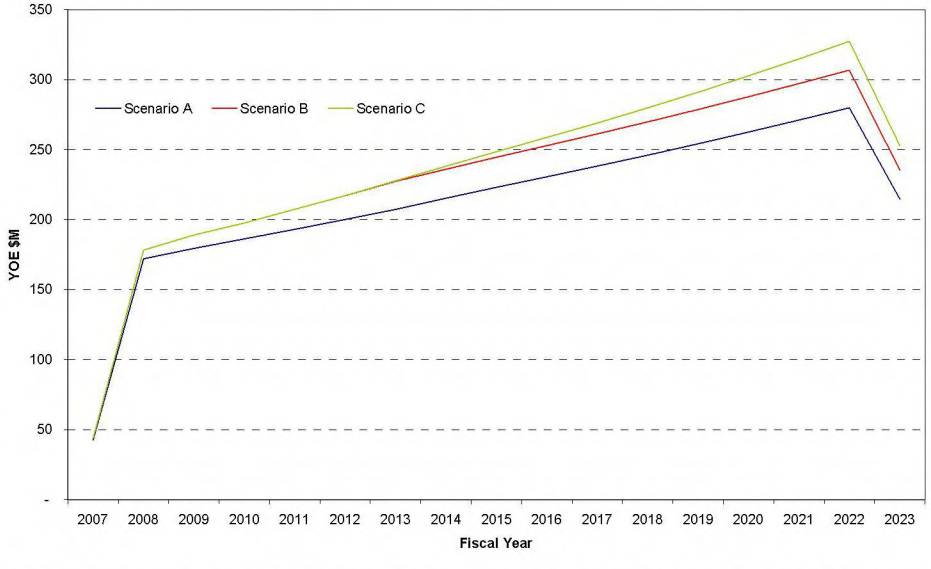
GET Surcharge Revenues

The Financial Plan assumes three different scenarios for GET revenues, which are more extensively discussed in Chapter 2 of this report. Nonetheless, there are many potential results, depending on factors outside of the City's direct control, such as a downturn in the local economy leading to a drop in GET revenues. Unlike most sales taxes, GET has the benefit of being levied on a broad range of business activities. This diversification is usually seen positively by the investment community and is usually associated with greater stability. However, Hawai'i's economy is heavily based on tourism and military activities, which makes it more prone to an economic downturn in the event of a decline in the U.S. and/or East Asian economic cycles.

In addition to the risk of economic slowdown or downturn, other risks should be considered. Inflation plays an important role in forecasting GET revenues, as this source of funds is very much dependent on local prices. Additionally, this Financial Plan assumes a reduction of 25 percent in annual GET revenues as a result of business behavior and the State-dedicated portion for administrative and collection purposes. Both of these factors may change as businesses familiarize themselves with the new surcharge and the number of erroneous tax filings is reduced.

Figure 4-1, shown below, presents the three revenue scenarios on a cash basis described in the Chapter 2 and presented in Table 2-9. There are smaller amounts of GET revenues in FY 2008 and FY 2023 because those are not full years of tax collection. Forecasts A, B, and C are $3.~~96~~ billion (YOE $), ~~$3.9 billion (YOE $) and~~ $4.0 billion (YOE $) and $4.1 billion (YOE $), respectively.

Figure 4-1. Net GET Surcharge Revenues, Cash Basis (YOE $millions)



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The Financial Plan assumes that Forecast B is the baseline scenario. Forecast C assumes a higher level of GET revenues, so it is not considered in detail in this sensitivity analysis since it would only decrease other funding requirements. Forecast A, on the other hand, projects a lower level of GET revenues, so it is considered in 4-3 below. As shown in this figure, there are a few key differences from the baseline in the financing requirements and the impact on the cash flows needed from the City.

1. Forecast A implies an earlier use of debt financing (in FY 2011 instead of FY 2012 for Forecast B). This, in turn, increases the amount of debt service required to be repaid through FY 2023.

2. The lower annual revenues from GET surcharge in Forecast A results in a higher overall use of debt. The total use of bond proceeds increases from $2.2 billion~~37 percent~~ in Forecast B to $2.3 billion~~43~~ percent in Forecast A. As shown in 4-3, this results in additional capital~~City~~ funds required to pay for the additional debt service staring in FY 2018 through 2023. The total additional revenues~~city funds~~ are expected to amount to approximately $80~~340~~ million (YOE $).

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Table

Figure 4-3. Cash Flow and Balance for the First Project (YOE $millions) (Sensitivity Analysis: Net GET Scenario A)

City Fiscal Year	UNIT	2007-2030 TOTAL	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Project Funding Sources																			
Net GET Revenues	YOE $M	3,959	13	161	190	200	207	216	227	233	244	256	264	275	289	298	310	325	251
Bond Proceeds	YOE $M	2,310	-	-	-	-	92	734	507	259	220	278	111	29	81	-	-	-	-
Commercial Paper Proceeds	YOE $M	66	-	-	-	-	-	-	38	28	-	-	-	-	-	-	-	-	-
FTA 5309 New Starts Revenues	YOE $M	1,200	-	-	-	-	-	-	200	200	200	200	200	200	-	-	-	-	-
Interest Earnings	YOE $M	25	-	0	5	11	9	-	-	-	-	-	-	-	-	-	-	-	0
Additional Capital Revenues	YOE $M	80	-	-	-	-	-	-	-	-	-	-	-	-	4	17	5	-	54
Total Project Sources of Funds	**YOE $M**	**7,641**	**13**	**161**	**195**	**211**	**307**	**950**	**972**	**721**	**664**	**733**	**575**	**503**	**375**	**315**	**315**	**325**	**305**
Project Capital Uses of Funds																			
Project Capital Cost	YOE $M	4,772	-	3	10	273	601	933	873	563	472	441	307	216	81	-	-	-	-
Commercial Paper Refinancing Amount	YOE $M	68	-	-	-	-	-	-	-	-	-	68	-	-	-	-	-	-	-
Total Capital Uses of Funds	**YOE $M**	**4,840**	**-**	**3**	**10**	**273**	**601**	**933**	**873**	**563**	**472**	**509**	**307**	**216**	**81**	**-**	**-**	**-**	**-**
Debt Service																			
Total Principal Payment on Long Term Debt	YOE $M	2,310	-	-	-	-	-	6	61	106	135	164	206	231	245	274	283	294	304
Total Interest Payment on Long Term Debt	YOE $M	468	-	-	-	-	-	4	32	49	55	57	60	56	49	42	32	22	11
Other Finance Charges	YOE $M	23	-	-	-	-	1	7	5	3	2	3	1	0	1	-	-	-	-
Total Project Uses of Funds	**YOE $M**	**7,641**	**-**	**3**	**10**	**273**	**602**	**950**	**972**	**721**	**664**	**733**	**575**	**503**	**375**	**315**	**315**	**315**	**315**
Project Cash Balance																			
Cash Balance Beginning			**-**	**13**	**171**	**356**	**295**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**10**
Additions (deletions) to cash			**13**	**159**	**185**	**(62)**	**(295)**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**10**	**(10)**
Cash Balance Ending			**13**	**171**	**356**	**295**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**10**	**-**

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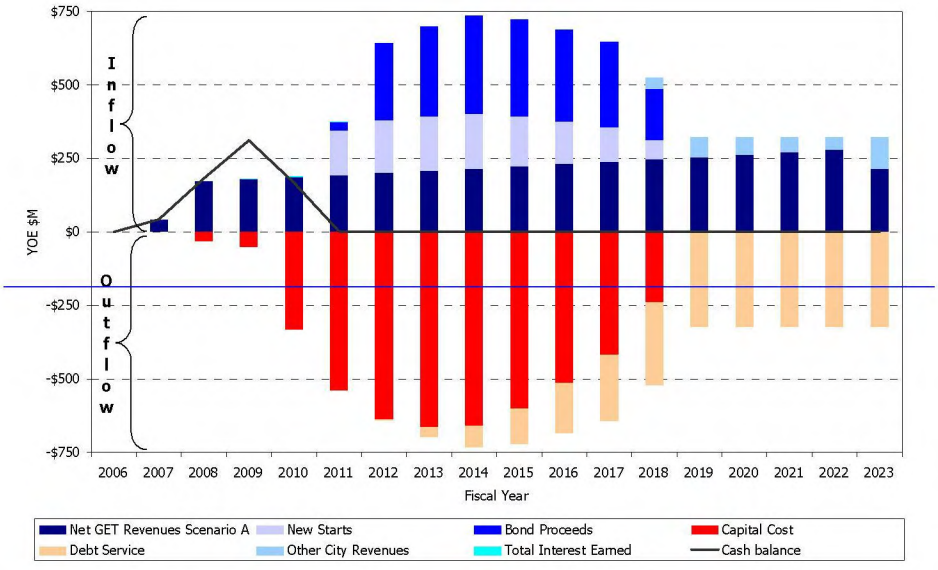

A summary of this sensitivity analysis is detailed in Table 4-4

Table 4-4. Sensitivity Analysis on GET Surcharge

	Capital	Operations	
Measure	Additional capital~~City~~ revenues (excluding GET surcharge and New Starts) required (YOE $millions)	Farebox recovery ratio	Operating subsidy as percentage of projected General and Highway Fund revenues
Baseline (GET Forecast B)	$0	Around~~Required~~ 27 to 33%[24]	2007-2030: Avg: 13.8~~15~~% 2007-2030: Max 16.6%~~18%~~
GET Forecast A	$80~~340~~	No change from	No change from

[24] ~~This is based on the City's requirement. See Appendix D for more information.~~

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		baseline	baseline

The uncertainty around the level of GET surcharge revenues could also be to the upside if the State legislation were to be amended. An extension of the surcharge after December 31, 2022, would allow for an increase in revenues. Additionally, another similar increase could fund a greater portion of the Locally Preferred Alternative, if needed. Additionally, there is a potential for the State to reduce its 10 percent takedown, thereby increasing the revenues available to fund the Project.

It is important to note that this Financial Plan does not assume any revenues from private sources. This could also be seen as a mitigation strategy in the event of lower-than-expected GET revenues. This source of revenues will be further explored during the Preliminary Engineering phase.

Finally, the City as a general purpose local government may have the opportunity to raise other local tax revenues to be pledged toward the project.

New Starts Uncertainty

Revenues from the Federal New Starts program are expected to comprise 25.5 percent of the total cost of the Project (excluding finance charges). As mentioned in the Capital Plan, the $1.2 billion assumption in New Starts funding is unprecedented except for a single project in New York,[25] so it is important to understand the competitive landscape that the City will be joining. Additionally, this section addresses how the political situation will affect the dependability of this funding source as well.

To further assess the reasonableness of this assumption, an analysis of the current pipeline of projects in the New Starts process was undertaken. The output of this analysis is a projection of expected requests in New Starts money through the end of the next authorization cycle, assumed to start in 2010 and end in 2015.

Table 4-5 presents the results of this analysis, assuming a 20 percent increase in authorization level to $10.5 billion, compared to $8.7 billion for the current SAFETEA-LU cycle. Considering the current New Starts pipeline, if all projects currently in Preliminary Engineering and Final Design were funded, a little more than $1 billion would be available for additional projects. FTA funding for Honolulu is expected to go beyond the next authorization cycle for which FTA has the ability to make a contingent commitment of funds. Under this set of assumptions, it is possible to see how the baseline $1.2 billion could be accommodated within the New Starts program.

In addition to the uncertainty in the availability of New Starts money from competition nationwide, the authorization level is also dependant on political outcomes that are outside the control of the City and County of Honolulu. The Federal General Fund, which has recently become the source of funding for the New Starts program, also adds pressure to the amount available for public transportation capital investment.

[25] The East Side Access Project in New York recently signed an FFGA of $3.6 billion corresponding to 50 percent of estimated capital cost.

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Table 4-5. Expected New Starts Requests in the Next Authorization as of June 2006

Current FTA Stage	Number of Projects	Estimated New Starts Funding Request FY 2010-2015 (YOE $millions)
Existing FFGA	21	$2,000
Pending FFGA	2	$270
Proposed FFGA	2	$1,520
Other New Starts Projects in Final Design and Preliminary Engineering	13	$5,680
TOTAL	**38**	**$9,470**
Assumed Authorization Amount for New Starts (2010-2015)		**$10,500**
Balance New Starts Fund Available		**$1,030**

Source: PB Consult Inc.

Considering the above analysis, several New Start scenarios were run for each GET revenue scenario. The result is shown in Table 4-6, which presents the amount of additional City contribution, other than GET surcharge, that would be required depending on the GET revenue scenario and the amount of New Starts.

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Table 4-6. Sensitivity of the Financial Plan to New Starts and Net GET Revenues Assumptions (Amounts in YOE $millions)

New Starts Scenario	Additional Capital Revenues
GET Scenario A	
$800	$526
$900	$413
$1,000	$301
$1,100	$191
$1,200	$80
GET Scenario B	
$800	$427
$900	$314
$1,000	$201
$1,100	$91
$1,200	$0
GET Scenario C	
$800	$379
$900	$267
$1,000	$153
$1,100	$42
$1,200	$0

BASE CASE

New Starts Scenario	Additional City Support	Additional City Support as % of Total Uses of Funds
GET Scenario A		
$800	$747	15.9%
$900	$647	13.7%
$1,000	$547	11.6%
$1,100	$447	9.5%
$1,200	$336	7.1%
GET Scenario B		
$800	$478	10.2%
$900	$365	7.8%
$1,000	$249	5.3%
$1,100	$126	2.7%
$1,200	$0	0.0%
GET Scenario C		
$800	$378	8.0%
$900	$261	5.6%
$1,000	$145	3.1%
$1,100	$12	0.3%
$1,200	$0	0.0%

BASE CASE

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Additionally, Federal funds used for ongoing capital needs are also subject to annual appropriations by Congress. These funding sources are primarily supplied through the Federal Highway Trust Fund

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(HTF). The HTF is mostly funded by an 18.4 cents per gallon federal tax on gasoline and gasohol and 24.4 cents per gallon federal tax on diesel and kerosene fuel, which has not been increased since 1993. According to the Congressional Budget Office, the HTF has the potential to face a deficit as early as 2010 or 2011, and even 2008 in a more pessimistic scenario.[26]

Interest Rate Uncertainty

As in any capital project requiring the issuance of debt, the project is subject to uncertainty around fluctuations in interest rates. These fluctuations are influenced by the credit rating of the issuer of the bonds (the City) and by external factors that are not directly under the control of the City, such as market risks.

1. Credit Rating

As mentioned in the Capital Plan, this Financial Plan assumes that the credit quality of the City and County of Honolulu will remain at its current Standard & Poor's AA rating. Adverse economic conditions or shifts in the City's debt policies could impact its credit rating and increase the cost of borrowing accordingly. Most importantly, the credit quality of the City is likely to be influenced by the size of the City's capital program and its ability to remain below the current affordability guidelines set by the City Council.

2. Market Uncertainty

Like any interest rates, the assumed yield curves on the municipal securities used in this Financial Plan are subject to global market conditions. The recent turmoil in the credit markets is a case in point and has prompted the Federal Reserve to react with a series of interest rate cuts that influence the market in general and the finance cost for the ~~First~~ Project in particular. This uncertainty is further enhanced by the fact that, given baseline assumptions, the first debt issuance is not expected to occur before 2011 or 2012 depending on the revenue scenario.

The current average life of the debt issued for the project is nine~~eight~~ years. The corresponding interest rate is 3.71~~4.87~~ percent per year. ~~Another (including 1 percent contingency). While this scenario can already be seen as fairly conservative, another~~ scenario was run with an assumption of 4.71~~5.87~~ percent. Table 4-7 shows that the City would be expected to add $231~~96~~ million (YOE dollars) to meet the funding shortfall resulting from an increase in interest rates of 1 percent. Table 4-7 details the key measures for several sensitivity analyses where the only change in the baseline assumptions are the interest rates.

[26] CBO testimony: Status of the highway trust fund : 2007, March 27, 2007, page 10

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Table 4-7. Sensitivity Analysis on Interest Rate

	Capital	Operations	
Measure	City revenues (excluding GET surcharge) required (YOE $millions)	Farebox recovery ratio	Measure
Baseline (Interest Rate: 4.87%)	$0	Required 27 to 33%[27]	2007-2030: Avg: 15% 2007-2030: Max 18%
Interest Rate – Baseline + 0.5%	15444.8	No change from baseline	No change from baseline
Interest Rate – Baseline +1%	23195.5	No change from baseline	No change from baseline

Operating Plan Uncertainty

The two major sources of uncertainty in the operating plan revenues relate to the ridership forecast and the corresponding fare revenues, as well as the level of City General and Highway Fund revenues available for operating subsidy. The main source of uncertainty related to the operating cost estimates is that the analysis did not consider sensitivities surrounding escalation for some of the more volatile unit costs, such as fuel and transit employee benefits. These assumptions will be further refined for the formal PE application submittal. It is also important to note that, at this point, no assumption has been made on the potential involvement of the private sector such as joint development opportunities.

The fare revenue forecast is based upon the travel demand modeling done during the AA phase and reflects the methods and assumptions underlying the demand forecast. Even the best demand forecasts are inherently uncertain. Transit projects elsewhere in the U.S. have experienced actual ridership that deviated from the forecast by 20 percent or more. If this were to happen in Honolulu, there would be a commensurate impact on fare revenues.

Currently, the City has an established fare policy to maintain the farebox recovery ratio between 27 and 33 percent (see Operating Plan for more details). To maintain that level, this Financial Plan assumes fare increases that are in line with this policy and past experience, although there is no certainty that these increases will occur as scheduled. A variety of sensitivity analyses will be tested in the next iterations to determine the impact of fare increases on ridership and the overall operating plan.

[27] This is based on the City's requirement. See Appendix D for more information.

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The historical share of General and Highway Fund revenues used for transit operations has been approximately 11 percent over the last 10 years. The City has demonstrated its commitment to fund transit operations. Although the operating plan shows an increase in the operating needs after the introduction of a fixed guideway system, it is not unreasonable to assume the City's continued commitment. As previously indicated, the City is a general purpose local government with the ability to raise General and Highway Fund revenues for transit operating subsidies.

As shown in Table 4-8, the base case projects General and Highway Fund revenues to increase at the historical real growth rate of 0.50 percent. However, historical data also show that the annual growth rate in General and Highway Fund revenues has been lower than inflation in some years. Table 4-8 also presents the resulting average and maximum share of revenues used toward transit operations in the case where those revenues would simply grow at the rate of inflation (0 percent real growth). The average share is expected to rise by 1 percent, from 15 to 16 percent, and the maximum would reach 20 percent, from 18 percent.

Table 4-8. Sensitivity Analysis on General and Highway Fund Revenues

	Capital	Operations	
Measure	City revenues (excluding GET surcharge) required (YOE $millions)	Farebox recovery ratio	Operating subsidy as percentage of the General and Highway Fund revenues
Baseline (0.50% Funds' Real Growth)	$0	Required 27 to 33%[28]	2007-2030: Avg: 15% 2007-2030: Max 18%
0% Real Growth	No change from baseline	No change from baseline	2007-2030: Avg: 16% 2007-2030: Max 20%

Conclusion

Chapters 2 and 3 of this Financial Plan describe how the City and County of Honolulu expects to fund the capital and operating costs associated with a new fixed guideway system in addition to maintaining the existing system. This Plan is based on a set of baseline assumptions that are reasonable expectations that may or may not bear out over time. This chapter addressed the level of risks and uncertainties around the key assumptions in the analysis. Sensitivity analyses were conducted around

[28] This is based on the City's requirement. See Appendix D for more information.

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the level of New Starts funding, GET surcharge revenues, growth rate in General and Highway Fund revenues, and interest rate. A summary of these sensitivity analyses is presented in Table 4-9.

Table 4-9 Sensitivity Analyses Summarized

	Capital	Operations	
Measure	City revenues (excluding GET surcharge) required (YOE $millions)	Farebox recovery ratio	Operating subsidy as percentage of the General and Highway Fund revenues
Baseline	$0	Required 27 to 33%[29]	2007-2030: Avg: 13.8~~15~~% 2007-2030: Max 16.6%~~18%~~
GET Scenario A	$80~~340~~	No change from baseline	No change from baseline
Varying New Starts Levels	~~See~~ See Table 4-6	No change from baseline	~~No change from baseline~~
Interest Rate – Baseline + 0.5%	15~~44.8~~	No change from baseline	~~No change from baseline~~
Interest Rate – Baseline +1%	23~~195.5~~	No change from baseline	~~No change from baseline~~
0% Real Growth in General and Highway Fund Revenues	No change from baseline	No change from baseline	2007-2030: Avg: 16% 2007-2030: Max 20%

As shown in this chapter, any changes to the level of federal funding, GET surcharge revenues, fare revenues, or General and Highway Fund revenues can have a negative impact on the Project. In the event of funding shortfalls, many mitigation strategies can be considered in later financial analysis. Examples include the following:

[29] This is based on the City's requirement. See Chapter 3 for more information.

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- Private involvement, such as joint development, which would generate revenues from the sale or lease of development rights associated with real property owned or operated by the City, including fixed guideway stations
- Various procurement options leading to potential cost efficiencies
- Innovative finance options, such as Tax Increment Financing (TIF), which reallocates a portion of future property tax growth toward the Project based on increases in assessed values for parcels well served by transit, compared to increases in the assessed value of other properties
- Increased City support through the General Fund and the Highway Fund
- Delayed schedule/project phasing that could reduce the cost of borrowing by allowing greater use of pay-go financing
- Decreased levels of service
- Changes to the project scope
- Extending the duration of the GET surcharge beyond 2022
- More aggressive use of advertising and other non-fare operating revenues that are both currently excluded from the analysis.

Because a level of uncertainty exists around both the cost and the revenues, it is possible that higher-than-expected costs could be mitigated with equally higher-than-expected revenues.

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Chapter 5: Alternatives

Under the Airport and Salt Lake and Airport alignments, feeder bus connections would be provided from the rail stations to locations along Salt Lake Boulevard. The total guideway length for the Airport Alternative would be approximately 20 miles and would include 21 stations. The Fixed Guideway Alternative would be approximately 42 miles and would include 22 stations.

Capital Plan

Capital costs for all build alternatives are presented in Table 5-1 below. Capital cost estimates excluding finance charges, range from $3.9 billion for the Salt Lake alternative as presented in the previous chapters to $4.8 billion for the combined Airport and Salt Lake alignment as of December 2007. The capital cost for the Airport is estimated to be approximately $400 million higher than the Salt Lake alternative.

Table 5-1: Capital Costs by Standard Cost Categories, December 2007 $ Millions and YOE $ Millions.

	Salt Lake Alternative		Airport Alternative		Airport and Salt Lake Alternative	
	2008 $M	YOE $M	2008 $M	YOE $M	2008 $M	YOE $M
10 GUIDEWAY and TRACK ELEMENTS (route miles)	1,285	1,522	$1,349	$1,547	$1,694	$1,961
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	264	328	308	359	337	396
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMINISTRATION BLDGS	125	137	125	138	125	138
40 SITEWORK and SPECIAL CONDITIONS	693	781	689	763	759	849
50 SYSTEMS	248	307	282	341	341	417
60 ROW, LAND, EXISTING IMPROVEMENTS	142	159	155	174	163	183
70 VEHICLES (number)	276	330	285	333	285	333
80 PROFESSIONAL SERVICES	784	937	824	972	975	1,129
90 UNALLOCATED CONTINGENCY	229	270	241	278	281	324
Total Cost Excluding Finance Charges	**$4,047**	**$4,772**	**$4,258**	**$4,903**	**$4,960**	**$5,729**
Finance Charges	360	484	425	568	610	825
Total Cost	**$4,407**	**$5,256**	**$4,683**	**$5,472**	**$5,570**	**$6,554**

The Capital Plan also estimates ongoing costs for replacing, rehabilitating, and maintaining capital assets in a state of good repair through FY2030 for all 3 build alternatives. Rail rehabilitation and replacement costs are expected to begin 16 years after initial construction activities are completed. These costs are estimated to range from $79 million to $120 million in YOE dollars in FY2030.

Current bus and TheHandi-van service would also need to be restructured and expanded to support the fixed guideway system. **Table 5-2** and

Figure 5-1show the fixed guideway implementation, rehabilitation and replacement costs as well as ongoing capital costs for TheBus and TheHandi-Van

Table 5-2: Project and Ongoing Capital Costs in YOE dollars, FY2007 – FY2030

Alternative	Fixed Guideway Implementation	Fixed Guideway Rehab and Replacement	TheBus and TheHandi-Van Expansion and	Total
No Build Alternative	$0	$0	$1,051	**$1,051**
Salt Lake Alternative	$4,772	$79	$999	**$5,849**
Airport Alternative	$5,177	$109	$1,051	**$6,336**
Airport and Salt Lake Alternative	$6,029	$120	$1,051	**$7,200**

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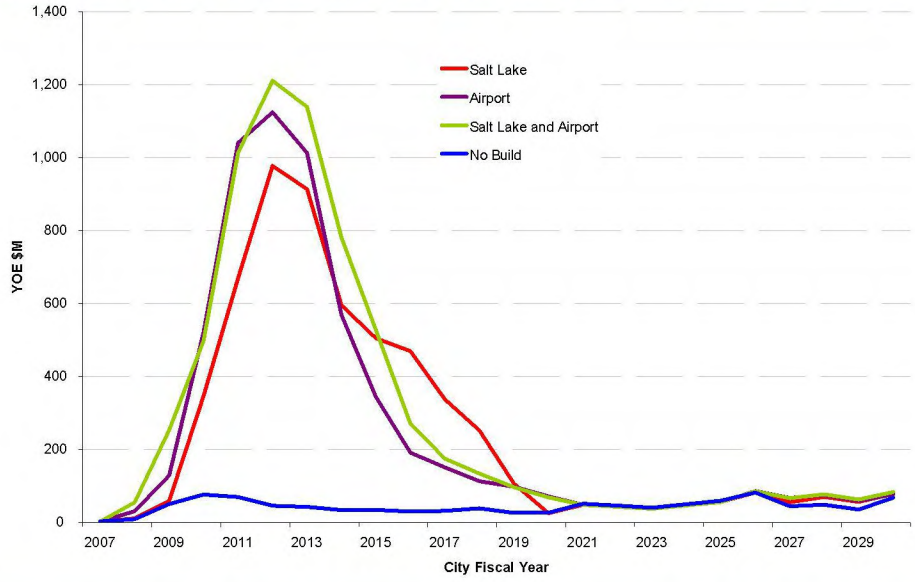
Figure 5-1: Project and Ongoing Costs in YOE dollars, FY2007 – FY2030, YOE $millions



Financing assumptions for the other build alternatives are expected to be the same as the selected Salt Lake Alternative. Table 5-3 and Table 5-4 below shows the project related sources and uses of funds and ongoing capital costs for all three build alternatives, respectively

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Table 5-3: Project Sources and Uses of Funds for all Alternative, Total FY2007 – FY2030, YOE $millions

	Salt Lake Alternative	Airport Alternative	Airport and Salt Lake Alternative
FIXED GUIDEWAY SOURCES AND USES OF FUNDS	**YOE $M**	**YOE $M**	**YOE $M**
FUNDING SOURCES			
Net GET Revenues	$4,054	$4,054	$4,054
Bond Proceeds	2,244	3,370	4,626
Commercial Paper Proceeds	66	645	743
FTA 5309 New Starts Revenues	1,200	1,200	1,200
Interest Earnings	28	13	7
Debt Service Payments from Other Revenue Sources	0	725	1,834
TOTAL FUNDING SOURCES	**$7,592**	**$10,006**	**$12,463**
USES OF FUNDS			
Capital Expenses			
First Project Capital Cost	$4,772	$5,177	$6,029
Commercial Paper Refinancing Amount	67	689	791
Total Capital Expenses	**$4,839**	**$5,866**	**$6,820**
Debt Service & other Finance Charges			
Total Principal Payment on Long Term Debt	$2,244	3,370	4,626
Total Interest Payment on Long Term Debt	462	736	971
Other Finance Charges	22	34	46
Total Debt Service and Other Finance Charges	**$2,728**	**$4,139**	**$5,643**
TOTAL USES OF FUNDS	**$7,568**	**$10,006**	**$12,463**

Table 5-4: Ongoing Capital Sources and Uses of Funds for all Alternatives, Total FY2007 – FY2030, YOE $millions

	No Build	Salt Lake Alternative	Airport Alternative	Airport and Salt Lake Alternative
ONGOING CAPEX SOURCES AND USES	**YOE $M**	**YOE $M**	**YOE $M**	**YOE $M**
FUNDING SOURCES				
FTA 5309 Fixed Guideway Modernization	$53	$119	$120	$134
FTA 5309 Bus Discretionary	132	132	132	132
FTA 5307 Formula Funds	640	612	669	667
Transfer to State Vanpool program	(37)	(37)	(37)	(37)
City GO Bond Proceeds	264	252	277	275
Total Funding Sources for Ongoing Capital Cost	**$1,051**	**$1,077**	**$1,160**	**$1,171**
USES OF FUNDS				
Total Bus Acquisition	$818	$766	$818	$818
Other Ongoing Bus Capex	129	129	129	129
Handi-Van Acquisition	104	104	104	104
Total Rail Rehab and Replacement	-	79	109	120
Total Ongoing Capex	**$1,051**	**$1,077**	**$1,160**	**$1,171**

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Operations and Maintenance Plan

Table 5-5 below summarizes O&M costs in throughout the forecast period in YOE dollars for each Build Alternative, by travel mode. Total O&M costs for the Salt Lake Alternative would be $108 million (YOE dollars) higher than for the No Build in FY2030. The O&M costs for the Airport and Airport & Salt Lake Alternatives would be $110 and $122 million higher in FY2030 than the No Build, respectively.

Table 5-5: O&M Costs for all Alternatives by Travel Mode, FY2007, FY 2030, and FY2007 – FY2030, YOE $millions

	TheBus (YOE $M)			Fixed Guideway (YOE $M)			TheHandi-Van (YOE $M)			Total (YOE $M)		
ALTERNATIVE	2007	2030	2007-2030	2007	2030	2007-2030	2007	2030	2007-2030	2007	2030	2007-2030
No Build Alternative	142	360	6,007	-	-	-	20	48	769	162	408	6,776
Salt Lake Alternative	142	345	6,070	-	123	1,316	20	48	769	162	516	8,155
Airport Alternative	142	341	6,041	-	128	1,366	20	48	769	162	518	8,176
Airport and Salt Lake Alternative	142	339	5,955	-	142	1,482	20	48	769	162	529	8,205

Operating revenue sources for the other build alternatives are the same as for the Salt Lake Alternative. The projected transit contribution from the general fund will be different for the three alternatives due to the difference in O&M costs. The figure below illustrates this difference.

Figure 5-2: Transit Portion of the City's Highway and General Funds for all Alternatives

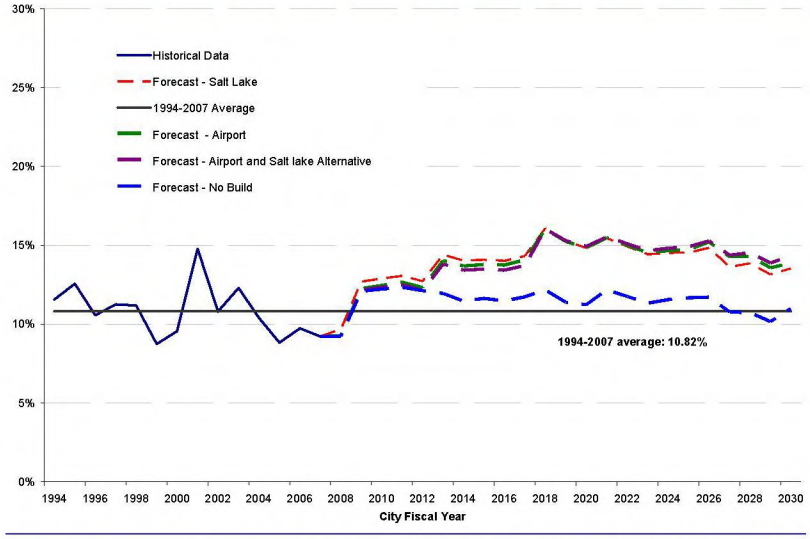

Table 5-6 shows all of the operating expenses and funding sources for all of the Build alternatives and the No Build.

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Table 5-6: Operating Sources and Uses of Funds for all Alternatives, YOE $millions

OPERATING SOURCES AND USES	No Build YOE $M	Salt Lake Alternative YOE $M	Airport Alternative YOE $M	Airport and Salt Lake Alternative YOE $M
FUNDING SOURCES				
Fare Revenues (Bus and Rail)	$1,804	$2,073	$2,260	$2,254
Fare Revenues (Handi-Van)	53	53	53	53
Total Fare Revenue	**$1,857**	**$2,127**	**$2,313**	**$2,307**
FTA 5307 Formula Funds (used for preventative maintenance)	313	406	319	320
City's Operating Subsidy	4,607	5,622	5,831	5,846
Total Revenues for Operations	**$6,778**	**$8,155**	**$8,462**	**$8,473**
USES OF FUNDS				
Total Bus O&M Cost	$6,009	$6,070	$6,327	$6,222
Handi-Van O&M Cost	769	769	769	769
Total Fixed Guideway O&M Cost	-	1,316	1,366	1,482
Total O&M Costs	**$6,778**	**$8,155**	**$8,462**	**$8,473**

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Appendix A

~~Fixed Guideway Legislation~~

Project Selection

Appendix A includes:

1. ~~Bill for an~~City Ordinance 07–001 for Honolulu's Locally Preferred Alternative Selection
2. City Resolution for Minimum Operable Segment

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Appendix B

Maps

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Appendix B includes:

1. Locally Preferred Alternative Map
2. New Start Project Map

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Appendix C

GET Legislation

Appendix C includes:

1. State of Hawai‘i Bill Authorizing Counties to Establish Surcharge
2. ~~Bill for an~~ City Ordinance ~~by the City of Honolulu to establish~~05–027 establishing the GET surcharge on O‘ahu

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Appendix D

Farebox Recovery Ratio Resolution

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1. City Bus System Operating Cost Policy

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