

PMOC REPORT

OP 52 – Readiness to Execute Full Funding Grant Agreement (FFGA)

**Honolulu Rail Transit Project
Honolulu Authority for Rapid Transportation (HART)
City and County of Honolulu
Honolulu, HI**

October 2012 (FINAL)

PMOC Contract Number: DTFT60-09-D-00012

Task Order Number 2: Honolulu

Work Order Number 3

Project No. DC-27-5140

OPs Referenced: OP 1, OP 52

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Length of Time Assigned: Five Years (November 18, 2009 through November 17, 2014)

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The City and County of Honolulu (“grantee”) is requesting that the Honolulu Rail Transit Project (“Project”) be granted a Full Funding Grant Agreement (FFGA) in accordance with the Federal Transit Administration (FTA) New Starts requirements. This report represents the Project Management Oversight Contractor’s (PMOC) assessment of the Project’s readiness to execute an FFGA.

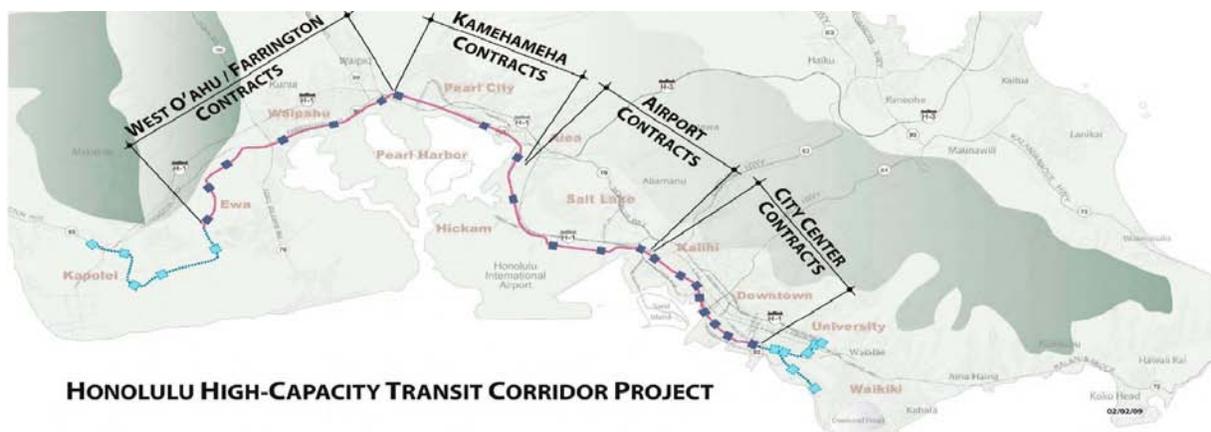
The Project is intended to provide improved mobility in the highly-congested east-west corridor along Oahu’s south shore. The Project would provide faster, more reliable public transportation services than those currently operating in mixed-flow traffic.

The Project is a 20-mile elevated fixed guideway driverless rail system along Oahu’s south shore between East Kapolei and Ala Moana Center. The alignment is elevated, except for a 0.6-mile at-grade portion at the Leeward Community College station. The proposed investment includes 21 stations (20 aerial and 1 at-grade), 80 driverless “light metro” rail transit vehicles, administrative/operations facilities, surface and structural parking, and a rail vehicle Maintenance and Storage Facility (MSF). The grantee plans to deliver the Project in four guideway segments, as shown in Figure 1:

- Segment I (West Oahu/Farrington Highway) – East Kapolei to Pearl Highlands (6 miles/7 stations)
- Segment II (Kamehameha Highway) – Pearl Highlands to Aloha Stadium (4 miles/2 stations)
- Segment III (Airport) – Aloha Stadium to Middle Street (5 miles/4 stations)
- Segment IV (City Center) – Middle Street to Ala Moana Center (4 miles/8 stations)

Segments III and IV are now planned to be combined into a single guideway construction contract.

Figure 1. Project Map Showing Line Segments



In addition, the project includes contracts for:

- Core Systems
 - Rail vehicles
 - Signals and communications
 - Operations Control Center
 - Traction Power
 - Security
 - Ticket vending
 - Operations
- Maintenance and Storage Facility (MSF)
 - Administration Building
 - Maintenance of Way Facility
 - Shops
 - Layover facility
- Stations
 - 21 stations
 - Pearl Highlands Garage and H-2 Ramps
- Elevators and Escalators

The grantee is utilizing traditional (Design/Bid/Build or DBB) and alternative (Design/Build, or DB, and Design/Build/Operate/Maintain, or DBOM) project delivery methods for the various contracts. The West Oahu-Farrington Highway (WOFH) Segment DB Contract, Kamehameha Highway Segment (KHG) DB Contract, the MSF DB Contract, and the Core Systems Contract (CSC) have all been awarded by the time of this report. The former three are all DB Contracts, while the latter, the CSC, is a DBOM-type contract. Under the CSC, the contractor will be responsible for designing and building the vehicles and the systems-related project elements while also being responsible for operations and maintenance of the same for up to a 10-year period. Construction contracts for the combined eastern line sections (Airport and City Center) and the stations have yet to be bid, as these are still under design using the traditional DBB method.

The grantee intends to begin revenue service in two increments:

- First incremental opening includes WOFH and KHG Segments and is scheduled for 2017
- Full revenue service will include Airport and City Center Segments and is scheduled for 2020.

Additional Project information:

- **Vehicles:** 80 “Light Metro” rail vehicles (identified as Heavy Rail in Standard Cost Category workbook), supplied by the CSC, which is also responsible for systems design and construction and operations.
- **Ridership Forecast:** Weekday boardings – 99,800 (2020); 114,300 (2030).
- **Base Cost Estimate (BCE):** \$5.122 billion in Year-of-Expenditure (YOE) dollars, including \$644 million in allocated and unallocated contingency (15%) and \$173 million financing costs.
- **Grantee Target Start of Revenue Operations for Full Alignment:** March 2019
- **PMOC Recommended FFGA Revenue Service Date (RSD):** January 31, 2020

1.2 PMOC Review

This report is essentially, in accordance with FTA Oversight Procedure (OP) 52, “an ‘update’ of prior reviews and risk assessments performed at entry to both preliminary engineering and final design.” This report represents the PMOC’s assessment of the Project’s readiness to execute an FFGA. The report provides analysis and conclusions as requested by FTA’s “*Oversight Procedure (OP) 52 – Readiness to Execute FFGA.*” This effort is supported by reports on specific aspects of the project that the PMOC prepared in advance of the grantee’s request for an FFGA:

- OP 20 – PMP Review
- OP 21 – Technical Capacity and Capability Review
- OP 22 – SSMP Review
- OP 23 – RAMP Review
- OP 24 – QA/QC Review
- OP 32A – Project Transit Capacity Review
- OP 32C – Project Scope Review
- OP 32D – Project Delivery Method Review
- OP 33 – Capital Cost Estimate Review
- OP 34 – Project Schedule Review
- OP 37 – Fleet Management Plan Review (Bus)
- OP 37 – Fleet Management Plan Review (Rail)
- OP 40 – Risk and Contingency Review

Appendix C of this report provides a summary of the requirements identified in the Final Design approval letter issued by the FTA on December 29, 2011, as well as their current status.

1.3 Findings

1.3.1 Scope

The scope, as contained in the Project’s Final Environmental Impact Statement (FEIS) and Record of Decision (ROD), is reflected in the current engineering plans, specifications, estimates, and the Project Management Plan (PMP).

The scope of the Project is well-defined and is generally at a level of completeness necessary to support an FFGA application. The Project final design phase and construction phase are concurrent to an extent as a result of the hybrid contract packaging strategy that contains work packages for DB, DBB, and DBOM. The awarded DB contracts are well into the design phase and field construction recently commenced on the WOFH contract, while other awarded DBB contracts remain in the early stages of final design. It is advisable to acknowledge the project risks in completing the project on schedule and within budget, given the varying level of completion of the final design documents. At a minimum, the grantee should have in place, on the day it receives an FFGA, all the means, methods, tools, and personnel necessary to meet the recommendations of this report and all controls it needs to successfully implement the agreed-to project within its budget and schedule.

The PMOC found no discrepancies in the Project documentation's internal consistency, compliance with laws, regulations, and policies, bid-ability, and constructability. The PMOC did, however, note the following:

- Coordination between the grantee and its various contractors and between different contractors remains one of the foremost challenges of the project.
- Station design must be progressed to achieve biddable construction packages for all 21 proposed stations.
- Agreements must be completed with all government bodies, public agencies, and utilities affected by the project.
- Procurement activities must adequately address Buy America and Ship America requirements for escalators and elevators, major system components (>\$100,000), rail, steel, and vehicles.

It is the PMOC's professional opinion that the scope of the Project is well-defined and is generally at a level of completeness necessary to execute an FFGA.

1.3.2 Schedule

The schedule review categories systematically characterized each element in the project/program schedule, from schedule development and performance measurement through post-project archive record documentation. The schedule review evaluated the efficiency and effectiveness of the grantee's project implementation during each phase of the project life cycle.

The Schedule Review validated the inclusivity of the Project scope and the characterization of individual project elements within the current Project phase. It also validated the grantee's program management readiness to execute the FFGA and implement the project.

The PMOC has identified recommendations and opportunities to strengthen the integrity of the grantee's project controls organization, procedures, plans, technical schedule input, and technical capacity and capability. The PMOC expects the grantee to incorporate these recommendations during the remainder of the final design and construction phases in support of FFGA.

The grantee submitted a Master Project Schedule (MPS) with a Data Date of March 30, 2012, which identified a target start for full revenue operations of March 2019. Based on an assessment of the schedule, the PMOC recommends the FFGA Revenue Service Date (RSD) should be January 31, 2020.

It is the PMOC's professional opinion that the current MPS is mechanically correct and fundamentally sound, and that it meets the FTA guidance and requirements necessary to execute an FFGA.

1.3.3 Cost Estimate

The PMOC evaluated the cost estimates for each Standard Cost Category (SCC) for mechanical soundness and consistency. These mechanical checks are used to determine if there are any

material inaccuracies within the estimate. The *2012 SCC Estimate*, which was dated June 20, 2012, was found to be mechanically correct in the tabulation of the unit cost, application of factors, and translation to the SCC workbook. The estimate reflects Project phasing and sequencing as identified in the Master Project Schedule (MPS) and described in the Basis of Schedule. Furthermore, no significant issues were identified for missing scope or erroneous schedule durations.

The grantee's cost estimate in YOE is \$5.122 billion, including \$644 million in allocated and unallocated contingency and \$173 million in financing costs.

It is the PMOC's professional opinion that the current cost estimate is mechanically and fundamentally sound and reasonable, and that it meets the FTA guidance and requirements necessary to execute an FFGA.

1.3.4 Project Risk and Contingency Review

Through the process of risk and contingency review, the PMOC attempted to aid the grantee in its efforts to better define the project's risks and to provide avenues for recovery should those risks become reality. The PMOC has provided recommendations for adjustments to scope, cost, and project delivery options and risk mitigation options and alternatives, particularly concerning contingencies, in order to respond to established project risks.

OP 52 guidance requests a "*characterization of significant uncertainties.*" While the risk register, risk workshops, and OP 40 review all dealt with the likelihood and consequences of numerous risk events, the Risk Management exercise and the recommendation for contingency and mitigation strategies are designed to plan for these uncertainties. The following table lists the Project's significant uncertainties as identified in the current Risk Register in terms of likelihood (probable, remote, improbable) and consequence (catastrophic, critical, serious, moderate, marginal).

Table 1. Significant Uncertainties Identified in Risk Register

Risk ID	Uncertainty	Likelihood	Consequence
60e	Given limited geotechnical information available at this time, additional costs may be incurred associated with final design through construction.	Probable	Serious
39	Contractors may not achieve contract required delivery dates of design information and construction interfaces to others.	Probable	Serious
14b	Hawaii Department of Transportation (HDOT) Use and Occupancy Agreement with utility owners could delay utility relocations in the state right of way (ROW).	Probable	Serious
116	Assumption is water mains will be relocated around columns by addition of bends, which may not be allowed by Board of Water Supply.	Probable	Moderate
36	Unanticipated litigation may add cost to the Project (e.g., protests from adversary groups, community groups, adjacent landowners, and other affected parties)	Probable	Moderate
58	City may require changes to baseline documents resulting in formal change orders.	Remote	Moderate
59d	Traffic disruptions may result in revised constraints imposed by City or HDOT (lane restrictions and peak time flow restrictions)	Remote	Moderate
44	Lack of bidders could increase cost.	Remote	Moderate
56	HDOT and/or BWS may not grant waiver to leave in place abandoned water pipes resulting in potentially costly removal and schedule disruption.	Remote	Moderate

Upon completion of the OP 40 Risk and Contingency Review, the PMOC offered the following:

- (1) The grantee’s total project estimate of \$5,122 million, including \$644 million in total contingency and \$173 million in finance charges, is acceptable to support an FFGA.
- (2) The Revenue Service Date identified in the FFGA should be January 31, 2020.
- (3) Strong controls must be put in place immediately to avoid future rapid contingency loss. The frequency upon which, and the levels of project management to which these statistics are reported should be improved and closely monitored. Such monitoring must occur monthly.
- (4) The grantee should develop more detail for the Secondary Mitigation items and attempt to identify secondary mitigation measures that approach a total value of \$149 million. Failure to do so will preclude the ability to develop these items in the design documents and include them as deductive alternates in construction contracting proposals.

1.3.5 Project Management Plan (PMP) Review

The PMP is generally a well written and thorough document that satisfies the FTA *Project and Construction Management Guidelines* and the FTA PMP requirements. It is the PMOC’s professional opinion that PMP Revision 5.0, which is dated June 29, 2012, meets the FTA guidance and requirements necessary to execute an FFGA.

1.3.6 Technical Capacity and Capability (TCC) Review

It is the PMOC's professional opinion that the grantee has demonstrated sufficient technical capacity and capability during the preliminary engineering and final design phases. HART has implemented several staff and procedural adjustments, many a result of FTA or PMOC recommendations that have improved HART's technical capacity and capability in preparation of the FFGA.

The PMOC has some concern that the grantee may continue experiencing difficulty attracting and retaining the experienced staff needed for long-term project assignment and permanent grantee employment (post-Project) given Hawaii's geographic isolation, salary limits, and high cost of living relative to the mainland. The grantee should adhere to the staffing plan to address the transition of staff during the final design and construction phases for positions currently occupied by Project Management Support Consultant (PMC) staff to grantee staff.

The PMOC will continue monitoring the grantee's project management process to ensure that it is effectively managing the project and continuing fiscal responsibility and accountability for all decisions affecting project design, cost, and schedule. The transition from PMC staff to full-time grantee staff must be closely monitored by the PMOC after receipt of an FFGA.

The grantee must issue comprehensive and timely Monthly Reports in accordance with the federal requirements. The PMOC will validate this requirement upon receipt and review of several months of consistently submitted status reports.

It is the PMOC's professional opinion that the grantee has demonstrated sufficient technical capacity and capability necessary to execute an FFGA.

1.4 Hawaii Supreme Court Ruling

On August 24, 2012, the Hawaii Supreme Court issued a ruling in *Kaleikini v. City and County of Honolulu* finding that the City and County of Honolulu (City) violated a State of Hawaii (State) historic preservation law (Hawaii Revised Statute (HRS) Chapter 6E) by approving the Project, and allowing construction to proceed, before completing an Archaeological Inventory Survey (AIS) for the entire Project. The ruling reversed a previous Circuit Court decision that had upheld the granting of City and State permits based on the phased completion of the AIS rather than on the completion of the AIS for the entire alignment. Currently, the HART is working to complete the AIS for the entire 20-mile alignment.

HART issued a partial suspension of construction work on August 24, 2012 for all ground-disturbing activities after a ruling by the Hawaii Supreme Court. On September 7, 2012, HART provided letters to their contractors to clarify that no construction activity would continue until future written notice is provided by HART. However, Final Design work is still proceeding on all contracts that have been awarded to date.

As a result of the State Supreme Court's ruling, it is anticipated that there will be significant impacts to both the project schedule and project budget. The grantee's preliminary analysis indicates that the cost impact for the three design-build contracts could range between \$64 and

\$95 million. However, this does not include additional cost impacts due to escalation for future contracts and extended agency and consultant staffing. The preliminary schedule analysis by the grantee indicates that there could be a nine to twelve-month impact on the interim opening but possibly no impact to the full Revenue Service Date. The PMOC will perform a thorough review of HART's assessment and Secondary Mitigation Strategies to determine the overall magnitude of impacts to the project schedule and project budget.

1.5 Conclusion

The PMOC has determined that the grantee has completed the following steps necessary to execute an FFGA: adequately defined the Project's scope, schedule, and cost; developed an approvable PMP and supporting documents; and, has demonstrated sufficient technical capacity and capability. The PMOC recommends that the FTA execute an FFGA with the grantee that identifies the following budget and completion milestone:

- Project budget of \$5.122 billion in YOY, including \$644 million in total contingency and \$173 million in financing costs.
- FFGA Revenue Service Date of January 31, 2020.

1.6 Recommendations

The PMOC recommends that the following items be addressed by the grantee following execution of an FFGA:

- Identify project management staff per the Staffing Plan and Transition Plans in order to maintain control of the various concurrent projects.
- Follow the staffing and succession plan for those key management positions that may be considered short term (three years or less) in order to ensure a successful "knowledge transfer" of project consultants' expertise to the grantee.
- Develop a Human Resources Management Plan (HRMP) that will function as a blueprint for the organizational development of HART to assist with transition of PMC positions to HART.
- Consistently issue comprehensive and timely Monthly Reports to the FTA and PMOC.
- Implement all schedule management procedures and guidelines as documented in the PMP and its respective project control companion documents.
- Revise its staffing plan when major revisions are made to the Project scope, schedule or budget, or when major project phases are complete (e.g. completion of major DB contracts) in order to synchronize resource allocation planning. Major revisions include significant delay to contract letting or execution, contract package revisions, changes to contract delivery methods, etc., or the addition of professional service contracts, etc.
- Develop Baseline Project Procedures that are denoted as "To Be Determined" and are critical to proper execution of construction.
- Complete any unfinished effort to acquire agreements with all affected agencies and begin the process of cooperation that those agreements entail.
- Continue the process of updating the Project budget and schedule, incorporating information from contracts-in-progress, any accepted cost reduction measures, and from completed tasks as they occur.

- Manage the schedule and budget by implementing controls as described in its project management plans throughout construction.
- Perform more meaningful and comprehensive analysis of the MPS critical and near-critical paths each month.
- Fully develop a “solid” program schedule baseline that incorporates approved contract baseline schedules.
- Continue to be proactive in assuring that all of its contractors meet the requirements of Buy America and Ship America.
- Continue to incorporate and implement the accepted Value Engineering (VE) proposals for the Stations and Airport/City Center segments.
- Emphasize the need for a safety and security professional to be assigned in Honolulu for the CSC to support the systems and operations responsibilities under the systems and operations and maintenance portions of their contract.
- Coordinate with the CSC to resolve any transit capacity issues.
- Develop more detail for the Secondary Mitigation items and attempt to identify secondary mitigation measures that approach a total value of \$149 million.
- Conclude Archaeological Inventory Surveys to comply with the Hawaii Supreme Court ruling and update analyses of that ruling’s cost, schedule, contingency, and mitigation implications.

2.0 INTRODUCTION

The Honolulu Authority for Rapid Transportation (HART) continues to advance development of its proposed Honolulu Rail Transit Project (“Project”), formerly known as the Honolulu High-Capacity Transit Corridor (HHCTC) Project, in accordance with the Federal Transit Administration (FTA) New Starts requirements. The Project is intended to provide improved mobility in the highly-congested east-west corridor along Oahu’s south shore between Kapolei and the Ala Moana Center. The Project would provide faster, more reliable public transportation services than those currently operating in mixed-flow traffic.

FTA assigned Jacobs as a Project Management Oversight Contractor (PMOC) on September 24, 2009, for the purpose of monitoring the Project and providing FTA with “information and well-grounded professional opinions regarding the reliability of the project scope, cost, and schedule” of the Project. That effort continues with this report, which represents the PMOC’s assessment of the grantee’s readiness to execute a Full Funding Grant Agreement (FFGA).

2.1 Project Sponsor

The City and County of Honolulu (“City”) is the overarching FTA grantee. The City’s Department of Transportation Services (DTS) and HART have executed a Memorandum of Understanding, which delineates each agency’s roles and responsibilities so as not to jeopardize the City’s standing as an FTA grantee. HART is responsible for the New Starts grants for the Project and may share responsibilities with DTS for grants using Section 5307 or other FTA funding sources.

2.2 Project Description

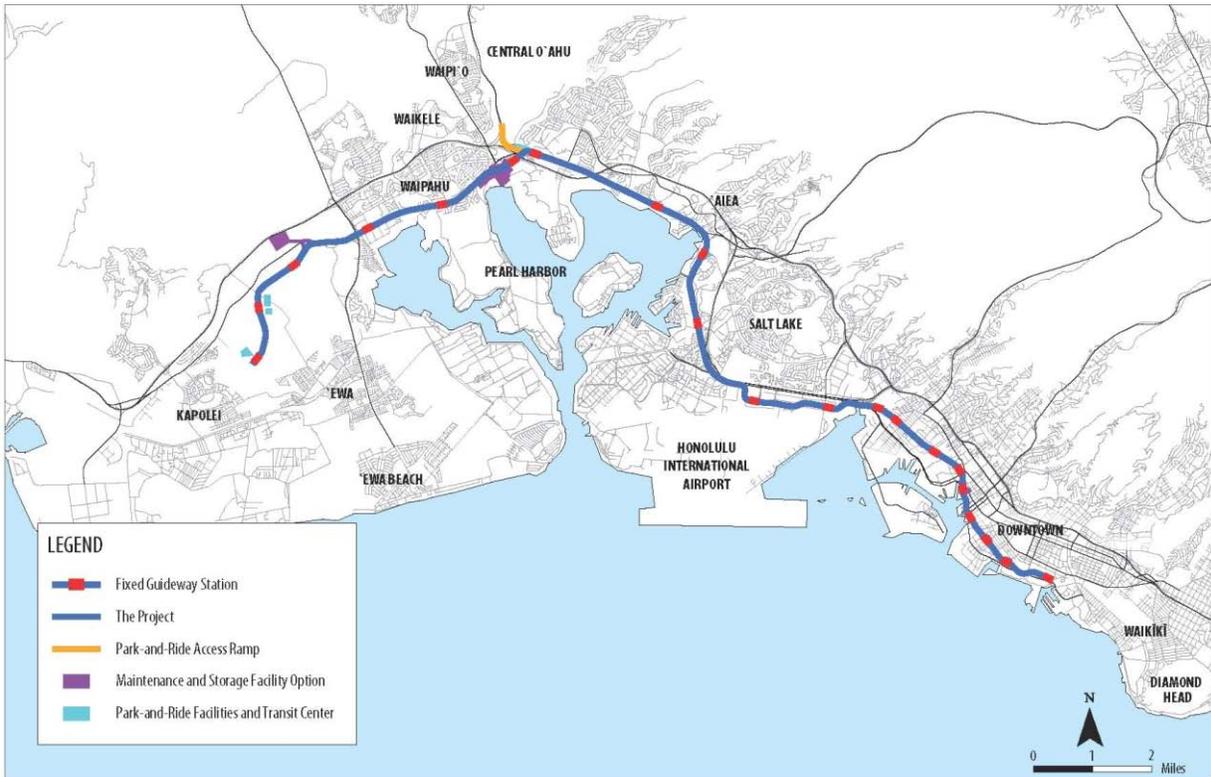
The proposed Project is a 20-mile light metro rail line in a grade-separated right-of-way that will provide high-capacity transit service on the island of Oahu from East Kapolei in the west to the Ala Moana Center in the east. The alignment is elevated except for a 0.6-mile at-grade portion adjacent to the Leeward Community College station. In addition to the guideway superstructure and trackwork, major physical elements of the Project include: 21 stations; one Maintenance and Storage Facility (MSF); numerous right-of-way parcel acquisitions; two park and ride lots, one park and ride structure and two bus transit centers and 80 driverless light metro vehicles and associated core systems.

The Project is planned to be delivered in four design and construction segments:

- Segment I (West Oahu/Farrington Highway) – East Kapolei to Pearl Highlands (7 miles/7 stations).
- Segment II (Kamehameha Highway) – Pearl Highlands to Aloha Stadium (4 miles/2 stations).
- Segment III (Airport) – Aloha Stadium to Middle Street (5 miles/4 stations).
- Segment IV (City Center) – Middle Street to Ala Moana Center (4 miles/8 stations).

It should be noted that HART has combined Segments III and IV into a single guideway construction contract. The Contract Packaging Plan has been updated to reflect this change.

Figure 2. Project as Identified in FEIS



East Kapolei is the western terminus of the Project. The alignment begins at North-South Road (Kualakai Parkway) 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 along Farrington Highway. The alignment continues in a north-easterly direction following Farrington Highway on an elevated structure. South of the H-1 Freeway, the alignment descends to grade as it runs alongside the MSF at the former Navy Drum Site. The alignment continues at-grade to Leeward Community College and then returns to an elevated configuration to cross over the H-1 Freeway. North of the Freeway, the alignment turns eastward along Kamehameha Highway. Segment I includes seven stations: East Kapolei, University of Hawaii at West Oahu, Ho’opili, West Loch, Waipahu Transit Center, Leeward Community College and Pearl Highlands.

Segment II carries the alignment from Pearl Highlands to Aloha Stadium, running mostly above the median of Kamehameha Highway. At the highway interchange ‘Ewa of the stadium, the alignment crosses over to the mauka side of Kamehameha Highway, in land adjacent to the roadway that is currently used for stadium parking. Segment II includes two stations: Pearl Ridge and Aloha Stadium. East of Aloha Stadium Station, the segment features a third track for temporary train layovers or storage.

The Airport Segment, or Segment III, takes the alignment from Aloha Stadium to Middle Street. This entirely elevated section of the route starts on the mauka side of Kamehameha Highway,

then transitions to the median of that street. As the route proceeds in the Koko Head direction, it leaves Kamehameha Highway to run on the makai side of the elevated H-1 Freeway. At Honolulu International Airport, the alignment swings out over the median of the H-1, then down Aolele Street to a station site adjacent to the main airport terminal. The route then continues Koko Head on Aolele and, eventually, the parallel Ualena Street to Lagoon Drive. At that point, the alignment crosses a corner of Ke'ehi Lagoon Park and threads through another highway interchange to Kamehameha Highway again at Middle Street. Segment III includes four stations: Pearl Harbor, Airport, Lagoon Drive, and Middle Street.

The City Center Segment, Segment IV, is also entirely elevated as it carries the alignment from Middle Street to the Ala Moana Center. Segment IV features guideway structures above Dillingham Boulevard, Nimitz Highway, Halekauwila Street, Queen Street, and Kona Street. Above Kona Street at the Ala Moana Center Station, the segment includes tail tracks beyond the station to provide operational flexibility and storage. The segment includes eight stations: Kalihi, Kapalama, Iwilei, Chinatown, Downtown, Civic Center, Kaka'ako, and Ala Moana.

The anticipated weekday boardings for the line are as follows:

- 99,800 (2020)
- 114,300 (2030)

2.3 Project Status

A Locally Preferred Alternative (LPA) was adopted by Oahu Metropolitan Planning Organization's 2030 Long Range Transportation Plan on May 4, 2007. The grantee was provided approval to begin preliminary engineering on October 16, 2009. The Final Environmental Impact Statement (FEIS) was published on June 14, 2010, and a Record of Decision (ROD) was issued on January 18, 2011. FTA granted approval to enter final design on December 29, 2011. The grantee has submitted an application for a Full Funding Grant Agreement in accordance with the FTA New Starts requirements.

2.4 Project Budget

The grantee's Base Cost Estimate (BCE), dated June 2012, is \$5.122 billion in Year-of-Expenditure (YOE) dollars, including \$644 million in allocated and unallocated contingency and \$173 million financing costs.

Table 3. 2012 Adjusted Base Cost Estimate (June 20, 2012 SCC)¹

SCC	Description	BCE	Allocated Contingency	Total w/o Contingency	Adjustments ²	Adjusted BCE
10	Guideway & Track Elements	1,275,329,000	161,113,818	1,114,215,182	0	1,114,215,182
10.04	Guideway: Aerial structure	1,175,328,000	152,947,514	1,022,380,486	0	1,022,380,486
10.08	Guideway: Retained cut or fill	8,077,000	584,450	7,492,550	0	7,492,550
10.09	Track: Direct fixation	86,332,000	6,894,823	79,347,177	0	79,347,177
10.11	Track: Ballasted	3,551,000	256,910	3,294,090	0	3,294,090
10.12	Track: Special (switches, turnouts)	2,041,000	340,121	1,700,879	0	1,700,879
20	Stations, Stops, Terminals, Intermodals	506,166,000	84,360,947	421,805,053	9,505,345	431,310,398
20.01	At-grade station	7,334,000	1,222,266	6,111,734	327,096	6,438,830
20.02	Aerial station	353,476,000	58,912,691	294,563,309	9,178,249	303,741,558
20.06	Automobile parking multi-story structure	79,691,000	13,281,753	66,409,247	0	66,409,247
20.07	Elevators, escalators	65,665,000	10,944,237	54,720,763	0	54,720,763
30	Support Facilities: Yards, Shops, Admin.	99,425,000	6,890,443	92,534,557	0	92,534,557
30.02	Light Maintenance Facility	8,161,000	569,392	7,591,608	0	7,591,608
30.03	Heavy Maintenance Facility	40,907,000	2,807,751	38,099,249	0	38,099,249
30.04	Storage or Maintenance of Way Building	8,382,000	584,810	7,797,190	0	7,797,190
30.05	Yard and Yard Track	41,975,000	2,928,490	39,046,510	0	39,046,510
40	Sitework & Special Conditions	1,103,868,000	123,297,838	980,570,162	5,737,998	986,308,160
40.01	Demolition, Clearing, Earthwork	34,696,000	4,715,645	29,980,355	463,012	30,443,367
40.02	Site Utilities, Utility Relocation	350,695,000	51,245,046	299,449,954	4,167,939	303,617,893
40.03	Haz. material, contaminated soil removal/mitig	7,229,000	638,393	6,590,607	41,931	6,632,538
40.04	Environmental mitigation	30,842,000	3,862,784	26,979,216	545,133	27,524,349
40.05	Site structures (retaining walls, sound walls)	8,638,000	638,622	7,999,378	0	7,999,378
40.06	Pedestrian / bike access, landscaping	48,263,000	7,188,919	41,074,081	0	41,074,081
40.07	Automobile, bus accessways (roads, parking)	212,536,000	30,556,812	181,979,188	519,983	182,499,171
40.08	Temporary Facilities/other indirect costs	410,969,000	24,451,617	386,517,383	0	386,517,383
50	Systems	247,461,000	26,176,478	221,284,522	0	221,284,522
50.01	Train control and signals	91,493,000	9,509,976	81,983,024	0	81,983,024
50.02	Traffic signals and crossing protection	12,524,000	2,065,784	10,458,216	0	10,458,216
50.03	Traction power supply: substations	32,874,000	3,373,007	29,500,993	0	29,500,993
50.04	Traction power distribution	36,426,000	3,548,136	32,877,864	0	32,877,864
50.05	Communications	59,889,000	6,197,895	53,691,105	0	53,691,105
50.06	Fare collection system and equipment	10,222,000	1,062,476	9,159,524	0	9,159,524
50.07	Central Control	4,033,000	419,024	3,613,796	0	3,613,796
	CONSTRUCTION SUBTOTAL (10 - 50)	3,232,249,000	401,839,524	2,830,409,476	15,243,343	2,845,652,819

SCC	Description	BCE	Allocated Contingency	Total w/o Contingency	Adjustments	Adjusted BCE
60	ROW, Land, Existing Improvements	221,188,000	24,790,439	197,397,561	0	197,397,561
60.01	Purchase or lease of real estate	201,659,000	22,298,243	179,360,757	0	179,360,757
60.02	Relocation of existing households/businesses	20,529,000	2,492,196	18,036,804	0	18,036,804
70	Vehicles	208,501,000	21,672,166	186,828,834	0	186,828,834
70.01	Light Rail	186,061,000	19,339,681	166,721,319	0	186,721,319
70.06	Non-revenue vehicles	16,011,000	1,664,243	14,346,757	0	14,346,757
70.07	Spare parts	6,429,000	668,242	5,760,758	0	5,760,758
80	Professional Services	1,183,826,000	93,387,212	1,090,438,788	0	1,090,438,788
80.01	Preliminary Engineering	95,120,000	1,065,222	94,054,778	0	94,054,778
80.02	Final Design	257,935,000	29,613,276	228,321,724	0	228,321,724
80.03	Project Management for Design/Construction	385,826,000	19,367,231	366,458,769	0	366,458,769
80.04	Construction Administration & Management	218,156,000	18,499,024	199,656,976	0	199,656,976
80.05	Professional Liability/Non-Construction Insurance	52,138,000	5,588,306	46,549,694	0	46,549,694
80.06	Legal; Permits; Review Fees by other agencies	76,135,000	8,494,119	67,640,881	0	67,640,881
80.07	Surveys, Testing, Investigation, Inspection	24,955,000	3,195,992	21,759,008	0	21,759,008
80.08	Start up	73,561,000	7,564,042	65,996,958	0	65,996,958
	SUBTOTAL (10 - 80)	4,846,764,000	541,689,341	4,305,074,669	15,243,000	4,320,318,002
90	Unallocated Contingency	101,871,000	101,871,000		0	
90	Latent Contingency				0	
	SUBTOTAL (10 - 90)	4,948,635,000	643,560,511		15,243,000	4,320,318,002
100	Finance Charges	173,058,000			0	
	TOTAL PROJECT COST (10 - 100)	5,121,693,000	643,560,511		15,243,000	4,320,318,002

Notes

¹All values shown are in YOE \$.

²The PMOC recommended an adjustment to the base cost estimate in the amount of \$15.24 million to account for insufficient contractor markup that was identified in several construction contracts.

2.5 Project Schedule

The following table presents the grantee's target dates for key milestones of this New Starts Project as identified in its Master Project Schedule (MPS):

Table 2. Grantee Target Milestone Dates

Milestone Description	Grantee Target Date
FTA Award Full Funding Grant Agreement	06-Oct-12
WOFH/KH Revenue Service	29-Jun-16
Airport/City Center Revenue Service (RSD)	12-Mar-19

Note: MPS Data Date of March 30, 2012

2.6 Project Management Oversight Contractor (PMOC)

This report represents the PMOC's assessment of the Project's readiness to execute an FFGA. The following deliverables, as governed by the applicable FTA Oversight Procedures (OP), were provided by the PMOC:

- OP 20 – PMP Review
- OP 21 – Technical Capacity and Capability Review
- OP 22 – SSMP Review
- OP 23 – RAMP Review
- OP 24 – QA/QC Review
- OP 32A – Project Transit Capacity Review
- OP 32C – Project Scope Review
- OP 32D – Project Delivery Method Review
- OP 33 – Capital Cost Estimate Review
- OP 34 – Project Schedule Review
- OP 37 – Fleet Management Plan Review (Bus)
- OP 37 – Fleet Management Plan Review (Rail)
- OP 40 – Risk and Contingency Review

2.7 Final Design Approval Letter Requirements

Appendix C of this report provides a summary of the requirements identified in the final design approval letter issued by the FTA on December 29, 2011, as well as their current status.

2.8 Evaluation Team

The following table presents the PMOC Evaluation Team and their respective roles associated with the assessment of the Project.

Table 3. PMOC Evaluation Team

Name	Location	Role
Jacobs		
Tim Mantych	St. Louis, MO	Program Manager
Bill Tsiforas	Las Vegas, NV	Task Order Manager
Keith Konradi	St. Louis, MO	Rail Engineering
Bob Niemietz	St. Louis, MO	Structural Engineering
Ahmad Hasan	St. Louis, MO	Geotechnical Engineering
Allan Zreet	Dallas, TX	Architect
Charles Neathery	Dallas, TX	Construction Management, Project Controls, Schedule Risk Assessment
Tim Morris	Dallas, TX	Cost Estimating
Brian Carpenter	Dallas, TX	Cost Estimating, Scheduling
Steve Rogers	Dallas, TX	Cost Estimating
Albert Amos	Austin, TX	Economics
David Nelson	Boston, MA	Operations, Transit Capacity
Tracey Lober	St. Louis, MO	QA/QC
Joe Leindecker	St. Louis, MO	Planning
Virginkar and Associates, Inc.		
Arun Virginkar	Brea, CA	Vehicle Engineer, Buy America
Hal Edris	Spring Grove, PA	Systems Integration Manager
Triunity Engineering Management Inc.		
Jonnie Thomas	Denver, CO	Systems (Communications)
Interactive Elements Inc.		
Dennis Newman	New York, NY	Safety
Dorothy Schulz	New York, NY	Security
LS Gallegos Inc.		
JR Casner	Centennial, CO	Construction Management, QA/QC
OR Colan & Associates		
Bob Merryman	St. Louis, MO	Real Estate
Kowalenko Consulting Group Inc.		
Emma Kowalenko	Chicago, IL	Planning/Environmental
Independent Contractor		
David Sillars	Corvallis, OR	Risk Manager

2.9 Documents Reviewed

Appendix B provides a listing of the project-related documents that were utilized during development of this Spot Report.

2.10 OP 52 Report Format

For each item identified in OP 52, PMOC maintains a similar analytical approach to assure that all federal requirements are met and that the resulting conclusions are supported, complete, and clear:

- PMOC Assessment
- OP 52 Guidance/PMOC Response (if applicable)
- Conclusion

3.0 SCOPE

The PMOC followed the requirements outlined in *OP 32A: Project Transit Capacity Review*, *OP 32C: Project Scope Review*, and *OP 32D: Project Delivery Method Review*, all dated May 2010, to verify that the scope of the project:

- Is represented by the totality of all contract plans and specifications.
- Is internally consistent.
- Is defined to a level appropriate for the project development phase.
- Is consistent with the estimated cost and schedule.
- Is consistent with all National Environmental Policy Act (NEPA) documents.

3.1 PMOC Assessment

The scope as contained in the Project's FEIS and ROD is reflected in the current engineering plans, specifications, estimates, and the Project Management Plan (PMP).

The drawings for the four line segments present right-of-way plans, drainage plans and details, demolition plans, guideway plans and profiles, typical cross sections, utility plans, roadway plans, signing and striping plans, maintenance of traffic plans, traffic signal plans, street lighting plans, structural drawings, landscaping plans, station drawings, and contact rail installation plans. The West Oahu/Farrington Highway (WOFH), Kamehameha Highway (KHG), and MSF DB contracts have progressed beyond the others as they near completion of final design.

The current design meets the capacity and operational objectives established in the FEIS, although details are subject to modification following the November 28, 2011 execution of the Core Systems Contract (CSC) with Ansaldo Honolulu Joint Venture (AHJV). Although the ROD was issued with the expectation of 76 vehicles, the Best and Final Offer (BAFO) by the selected CSC includes 80 vehicles. Increasing the number of vehicles from 76 to 80 allowed AHJV to propose a minimum headway reduction from 3 minutes to around 2-1/2 minutes, while still meeting the Project's capacity and operational objectives. The PMOC OP 32A report on Transit Capacity noted the following:

- The grantee's 2009 Fleet Sizing Plan showed how it expected to carry the projected 2030 peak surge load with all passengers traveling with at least 3.4 square feet of space per standing passenger. However, later specifications issued to bidders for the CSC simplified and smoothed the 2009 plan such that it falls consistently 9% short of the promised standard designed to address the peak surge.
- Close inspection of the forecast pattern of boardings and alightings indicates that the average passenger trip length and duration will be longer than most other rapid transit networks and that the number of seats per car and per train will be very low compared with other systems with long average trip lengths.
- AHJV's proposal established a Minimum Operating Headway of 155 seconds, but AHJV's proposal and HART's operating plan do not meet that minimum for the eighth and subsequent years of full operation. As the design year approaches, HART's operating plan shows trains operating every 147 seconds with no downward adjustment in running times or increase in trains required to sustain necessary headways.

- While HART and the PMOC agree on estimated dwell times for peak trips, the addition of platform screen gates to the Project may increase that dwell time.
- The PMOC has found no evidence that the timing and sequencing of turnbacks at terminal stations were considered in making fleet size calculations.
- The PMOC calculated the maximum person capacity of the system to be 13,381 persons per hour. This provides for 50% growth over the design-year peak flow of 8,982 passengers.

HART must coordinate with AHJV to resolve any transit capacity or operational issues identified above as soon as possible.

Attachment A to the ROD, dated January 2011, listed 197 mitigations to which the Project is committed. These mitigations deal with subjects such as real estate acquisitions, easements, relocations, landscaping, design details, protection of historic and environmentally sensitive resources, noise abatement, lighting, safety, security, public health, and the treatment of Hawaiian iwi. The grantee is committed to implementing all mitigation measures specified by the ROD and all terms of the Project's Programmatic Agreement (PA), also instituted in January 2011. The grantee has hired a Kako'o Consultant to ensure compliance with the PA. While the actual implementation of many of the detailed mitigations will not occur until final design and construction, the grantee has included requirements for their design in RFPs already issued. Thus, the grantee has contractual assurances that the ROD's requirements will be met.

The grantee and its consultants and contractors are actively working to acquire other necessary permits and approvals from federal, local, and state agencies.

In order to minimize the risk normally related to differing site conditions, the grantee's engineers have conducted site reconnaissance, subsurface investigation, and field and laboratory testing, and prepared geotechnical data and baseline reports. Buried structure and utilities have been identified to the extent known. The location of potential contaminated soils has been identified in general.

Much of the work for subsurface investigation was intended to take place during the final design phase. A comprehensive geotechnical investigation began on the WOFH DB Contract, KHG DB Contract, and MSF DB Contract. However, all ground disturbance activities have been suspended as a result of the Hawaii Supreme Court's decision regarding the AIS. For site work, the current drawings and reports show a sufficient amount of project definition to justify execution of an FFGA.

While these do not fall into the category of "*discrepancies and deficiencies*", the PMOC has nevertheless identified the following issues:

- (1) The grantee has developed an extensive Contract Packaging Plan that will require significant management effort to ensure that proper coordination occurs.
- (2) Cost and schedule controls, particularly associated with the DB contracts that have been awarded, must be effectively managed since final design will overlap with early construction.

- (3) The configuration of Ala Moana Station (terminal) must be finalized with acceptance by the station's real estate owners and input from the CSC.
- (4) The grantee has not fully incorporated and designed the Value Engineering (VE) and cost reduction alternatives proposed for the stations.
- (5) The grantee has not finalized several third-party agreements.

Through plans and performance specifications, the grantee has provided enough project information to fully illustrate the scope, capacity, level of service, functionality, and expected reliability of the completed project. The plans and specifications sufficiently characterize elements of the design for execution of an FFGA.

The PMOC found no discrepancies in the Project documentation's internal consistency, compliance with laws, regulations, and policies, bid-ability, and constructability. The PMOC did, however, note the following:

- Coordination between the grantee and its various contractors and between different contractors remains one of the foremost challenges of the project.
- Station design must be progressed to create biddable construction packages for all 21 proposed stations.
- Agreements must be completed with all government bodies, public agencies, and utilities affected by the project.
- Procurement activities must adequately address Buy America and Ship America requirements for escalators and elevators, major system components (>\$100,000), rail, steel, and vehicles.

3.2 OP 52 Guidance/PMOC Response

In accordance with the OP 52 Guidance, the PMOC here updates previous reviews (the *OP 51 Readiness to Enter Final Design* being the latest).

- (1) *Definition of the project (i.e., scope) contained in the project ROD/FONSI and most recent New Starts submittal agree with the scope as developed in preliminary engineering materials, including the approved PMP and the engineering design plans and specifications. Discrepancies or unclear scope items in the plans should be noted.*

The scope as contained in the project ROD, dated January 18, 2011, is reflected in the preliminary engineering plans, specifications, estimates, and the PMP.

- (2) *Basic quantities, such as number and locations facilities, peak and total vehicles, etc., identified in the environmental document and ROD/FONSI are the same as assumed in the current project definition.*

The only item that changed since the ROD is the total number of vehicles. At the time of the ROD, it was expected that the number of vehicles would be 76, but the BAFO by the selected CSC contractor includes 80 vehicles. That is not considered a scope change since the CSC bidders were allowed flexibility in order to meet the ridership projections defined in the CSC RFP document and amendments.

- (3) *The current project design satisfies the capacity and operational objectives established in the approved environmental document.*

The current design meets the capacity and operational objectives established in the FEIS, although details are subject to modification following the recent execution of the CSC. Thus, although the number of vehicles may change from 76 to 80 and the minimum headway may change from 3 minutes to approximately 2½ minutes, the capacity and operational objectives are still met.

- (4) *Mitigations committed to in the ROD (or project mitigation plans), when involving a physical or operational feature of the project, are incorporated, or are in the process of being incorporated, into the engineering design, proposed construction program, and/or other implementation plans. Mitigations could include changes in design, use of different types of material, modified traffic control, restricted construction activities, etc.*

Attachment A to the ROD, dated January 2011, listed 197 mitigations to which the Project is committed. These mitigations deal with subjects such as real estate acquisitions, easements, relocations, landscaping, design details, protection of historic and environmentally sensitive resources, noise abatement, lighting, safety, security, public health, and the treatment of iwi.

The grantee is committed to implementing all mitigation measures specified by the ROD and all terms of the Project's PA, also instituted in January 2011. The grantee has hired a Kako'o Consultant to ensure compliance with the PA.

While the actual implementation of many of the detailed mitigations will not occur until final design and construction, the grantee has included requirements for its design in RFPs already issued. Thus, the grantee has contractual assurances that the ROD's requirements will be met.

- (5) *Environmental and related early permits and approvals for project development have been executed or are in the approval process. Pre-construction, site reconnaissance and geotechnical surveys are complete.*

The FEIS was published on June 25, 2010, and a ROD was issued on January 18, 2011. The grantee and its consultants and contractors are actively working to acquire other necessary permits and approvals from federal, local, and state agencies.

In order to minimize the risk normally related to differing site conditions, the grantee's engineers have conducted site reconnaissance, subsurface investigation, and field and laboratory testing, and prepared geotechnical data and baseline reports. Buried structure and utilities have been identified to the extent known. The location of potential contaminated soils has been identified in general.

Much of the work for subsurface investigation was intended to take place during the final design phase, although a comprehensive geotechnical investigation began on the WOFH DB Contract, KHG DB Contract, and MSF DB Contract. However, all ground disturbance activities have been suspended as a result of the Hawaii Supreme Court's decision regarding the AIS. For site work, the drawings and reports have done a sufficient amount of work to provide project definition and justify execution of an FFGA.

- (6) *PMOC shall examine the grantee's preliminary engineering plans for clarity, accuracy, and level of detail for a project at or beyond the schematic design level.*

The drawings, specifications and other documentation far exceed the "schematic" threshold stated as a minimum requirement. The project was well-defined for a preliminary engineering-level design and several segments have progressed nearer to completion of final design. The PMOC's OP 32C – Project Scope Review describes the status of the project documentation and how it defines the scope of the project at the current level. The following table presents the PMOC assessment of Design Checklist items identified in Appendix C of OP 51.

Table 4. Design Checklist (OP 51 Appendix C)

Requirement	Compliance
Grantee accepted design standards and performance requirements	✓
Digitized aerial photogrammetry	✓
Photo-simulations and/or schematic renderings	✓
Guideway general notes, standard abbreviations and symbols	✓
Guideway key map; horizontal and vertical controls	✓
Guideway alignment geometry (plan and profile)	✓
Guideway curve data (table and/or included in drawings)	✓
Typical sections	✓
Guideway drainage plans, including key map, notes and symbols	✓
General layouts of each grade crossing (MSF Yard only)	✓
Maintenance of traffic for special situations	✓
Pedestrian connections to the public way, transit accessways, auto parking, railroad crossings (latter for MSF Yard only)	✓
Bridge and wall nomenclature, symbols and abbreviations, and general notes	✓
Bridge and wall general plans and sections	✓
Bridge foundation, abutment, bent plans and deck plans	✓
Load diagrams for structures (e.g., aerial guideway)	✓
Retaining walls, including typical wall sections	✓
Tunnel layout plans	N/A
Tunnel structural plans and typical sections	N/A
Tunnel excavation plans, approach wall plans and sections	N/A
Other tunnel detail	N/A
Station and finishes general information, including notes and legend	✓
Architectural design of building/facilities plans, including footprint, floor plans, sections	✓
Station layout plans, sections, elevations	✓
Platform details	✓
Grading and drainage plans, site cross sections	✓
Urban design/general landscaping features	✓
Utilities, landscaping	✓
Paving for pedestrian access, transit access, and parking plans	✓
Aerial station plans showing basic structural and architectural elements, including platform details	✓
Tunnel (underground) station plans	N/A
Right of way limits	✓
Parcel/property acquisitions and easements, if known	✓
Roadway key map showing roadways plan with signalized and other intersections	✓
Roadway/pedestrian access plans and profiles	✓
Roadway typical sections	✓
Roadway drainage plans	✓
Signing plans	✓

- ✓ - Indicates compliance with FTA expectations
- × - Indicates non-compliance with FTA expectations

3.3 Conclusion

It is the PMOC’s professional opinion that the scope of the Project is well-defined and is generally at a level of completeness necessary to execute an FFGA.

It should be noted that portions of the project, specifically the DB contracts, are significantly more advanced than other portions of the project (e.g. stations and DBB guideway segments). The scope of the Project is well-defined and is generally at a level of completeness necessary to support an FFGA application. The Project final design phase and construction phase are concurrent to an extent as a result of the hybrid contract packaging strategy that contains work packages for DB, DBB, and DBOM. The awarded DB contracts are well into the design phase and field construction had recently commenced on the WOFH contract (before being suspended as a result of the recent Hawaii Supreme Court ruling), while other awarded DBB contracts remain in the early stages of final design. It is advisable to acknowledge the project risks in completing the project on schedule and within budget, given the varying level of completion of the final design documents. At a minimum, the grantee should have in place, on the day it receives an FFGA, all the means, methods, tools, and personnel necessary to meet the recommendations of this report and all controls it needs to successfully implement the agreed-to project within its budget and schedule.

4.0 PROJECT SCHEDULE

The PMOC followed the requirements outlined in the *FTA OP 34 – Project Schedule Review*, dated May 2010, to assess and evaluate the grantee’s project schedule. The schedule review evaluates the efficiency and effectiveness of the grantee’s project implementation during each phase of the project life cycle. The schedule review validates the inclusivity of the Project scope and the characterization of individual project elements within the current Project phase. It also validates the grantee’s program management readiness to execute the FFGA and implement the project. The review of the Project schedule addresses seven subcategories:

- Schedule.
- Technical Review.
- Resource Loading.
- Project Calendars.
- Interfaces.
- Project Critical Path.
- Critical Areas of Concern.

4.1 PMOC Assessment

The PMOC reviewed nine project schedule submittal packages and conducted four forensic scheduling workshops in an effort to support the grantee’s development of the master schedule, procedures, and modifications to the project controls organizational structure. Through numerous reviews documented in the PMOC’s OP 34 deliverable, the PMOC determined the grantee met the requirements related to “*completeness, adequacy, consistency, and level of detail.*”

The PMOC Schedule Review report format is consistent with OP 34 and addresses the following subcategories:

- Technical Review
 - Format
 - Structure, quality, and detail
 - Mechanical soundness
 - WBS
 - Phasing and sequencing
 - Hierarchy
 - Cost and resource loading
 - Schedule Contingency
 - Constraints
 - Schedule Control
- Project Activities and Constraints
 - Sequencing
 - Resource Loading
 - Schedule Elements

The Schedule Review validates the inclusivity of the Project scope and characterizes individual project elements within the current Project phase. It also validates the program management’s

readiness to enter and implement the next major program phase, application for an FFGA. The report findings result in a compilation of tabular and graphical reports and conclude with a list of PMOC findings and recommendations for grantee action.

The PMOC has identified a significant number of recommendations and opportunities to strengthen the integrity of the grantee’s project controls organization, procedures, plans, technical schedule input, and technical capacity and capability. The PMOC expects the grantee to incorporate these recommendations shortly after execution of an FFGA.

The following table presents the PMOC assessment of Schedule Checklist items identified in Appendix C of OP 51.

Table 5. Schedule Checklist (OP 51 Appendix C)

Requirement	Compliance
All major final design activities indicated	✓
For each design discipline (civil, structural, systems, other) detail provided on scope/main tasks	✓
All early permits identified as a milestone or more detailed activity if possible	✓
Carryover/incomplete activities from preliminary engineering identified	✓
Milestones for 60%, 90%, and 100% (or similar percent) complete indicated	✓
o Logic ties to predecessor activities shown	✓
o Required reviews and approvals indicated	✓
Logic ties between other major activities shown	✓
Advertise and Bid for construction packages indicated; single activity for advertise/bid acceptable	✓
Logic ties provided from design to advertise/bid and from advertise/bid to construction	✓
Construction outline level of detail, including	✓
o Each construction package indicated	✓
o Five to 15 activities per package, depending on size	✓
Utilities outline level of detail, including	✓
o Which utilities affected by project	✓
o Estimated timeframe/duration of utility work	✓
o Design detail included in final design section of schedule	✓
Real Estate level of detail, including	✓
o Several basic activities included for each construction package	✓
o Logic ties shown from design to real estate and from real estate to construction	✓
Final Testing and Startup single activity indicating duration and predecessor logic acceptable	✓
For phased openings, preliminary detail (e.g., milestones) provided	✓
Placeholder for safety certification acceptable”	✓

✓ - Indicates compliance with FTA expectations
 × - Indicates non-compliance with FTA expectations

4.2 OP 52 Guidance/PMOC Response

- (1) *The PMOC shall determine whether the level of detail (number of activities) and logic (activity interrelationships) are reasonable and sufficient for project design. Assessment will be made of major activity and overall project durations, leading to a conclusion on whether the project can be completed as planned;*

The PMOC found that the number of activities and the relationship between them are reasonable and sufficient for execution of an FFGA.

Though a dynamic process, the grantee has demonstrated that the MPS and BOS contain a sufficient amount of duration (production, efficiency, contingency) for each project life cycle phase. The PMOC risk assessment accounted for contingencies, or lack thereof, for the current planning and final design phases.

- (2) *Risks to the schedule will be identified and areas requiring clarification and/or additional detail described;*

The PMOC conducted qualitative brainstorming sessions with the grantee and its consultants during several Risk Workshops in 2011 and 2012. The purpose of the workshops was to identify a listing of program risks with both cost and schedule impacts. Prior to the workshops, the PMOC reviewed and modified a risk register prepared by the grantee. The PMOC noted that the grantee's risk register was very detailed and contained a considerable number of risks also identified by the PMOC risk assessment team.

- (3) *Consistency between the time sensitive variables in the capital cost estimate, including year of expenditure assumptions, and durations incorporated into the master schedule shall be examined;*

The estimate is reflective of the sequencing identified in the MPS. The schedule was used to calculate escalation at reasonable rates and for the durations contained in the MPS activity codes.

- (4) *A Work Breakdown Structure (WBS) has been developed and a base Critical Path Method (CPM) schedule and budget are in place and are consistent with the project plans. The WBS must be consistent with the analyzed plan and program for all project participants' agreed upon roles, responsibilities, capabilities and capacities.*

The grantee has developed a WBS and a base CPM schedule and budget that are consistent with the project plans. In addition, the grantee's schedule is reflective of the project scope represented in the plans and is congruent with the project estimate. The data below the summary levels generally provide adequate detail to differentiate between major project segments and contracting areas. The MPS can be sorted by project phase (preliminary engineering / Design / Construction / Startup & Testing), Project Segment, or by Project Contract, as identified in the Contract Packaging Plan. The MPS activity detail is sufficient to determine the type of work that is being performed and is traceable and transparent with the Contract Packaging Plan. The MPS can be organized and sorted by contract, project segment, and opening, and is flexible and robust enough to project executive summary level reporting.

4.3 Conclusion

It is the PMOC's professional opinion that the current MPS is mechanically correct and fundamentally sound, and that it meets the FTA guidance and requirements necessary to execute an FFGA.

5.0 PROJECT COST

The PMOC followed the requirements outlined in the *FTA OP 33 – Capital Cost Estimate Review*, dated May 2010, to assess and evaluate the grantee’s cost estimate. Specifically, the review addresses:

- Soundness of the grantee’s cost estimating methods and processes compared with proven professional quantity surveying and cost estimating practices for projects of this scale
- Congruence of the project cost estimate with the project scope and schedule
- Reliability of the estimate for procurements, contract bids, and contract closeout

In March 2012, the grantee submitted an estimate that incorporated value engineering changes for the stations (modular station concept), some pending change orders for the DB Contracts, and an update to the project Cash Flow/Escalation model. This 2012 *Standard Cost Category (SCC)* totaled \$5.122 billion in Year-of-Expenditure (YOE) dollars, including \$544 million in allocated and unallocated contingency and \$173 million in financing costs.

However, following a Risk Assessment Workshop in April 2012, a revised estimate was submitted by the grantee on May 15, 2012. The revised estimate included three grantee-proposed cost reduction measures: (1) combining the separate City Center & Airport Guideway segments into one construction contract; (2) reducing the number of revenue service openings from three to two; and (3) reducing SCC 80 Soft Costs through reorganization of the project team. The revised *2012 SCC Estimate* totaled \$5.126 billion in Year-of-Expenditure (YOE) dollars, including \$644 million in allocated and unallocated contingency and \$177 million in financing costs.

The estimate was slightly adjusted again on June 20, 2012, as the financing cost was adjusted. The current estimate in YOE is \$5.122 billion, including \$644 million in allocated and unallocated contingency and \$173 million in financing costs.

5.1 PMOC Assessment

The PMOC evaluated the cost estimates for each SCC for mechanical soundness and consistency. These mechanical checks are used to determine if there are any material inaccuracies within the estimate. The *2012 SCC Estimate* was found to be mechanically correct in the tabulation of the unit cost, application of factors, and translation to the SCC workbook. The PMOC randomly sampled cost estimate line items to determine if the cost estimate backup cross-walked into the SCC workbook. In each instance, the PMOC found the calculated values translated to the SCC workbook and back to the cost estimate backup without variance or mechanical issues.

The estimate is reflective of the sequencing identified in the MPS. The schedule was used to calculate escalation at reasonable rates and for the durations contained in the MPS. The bids contain YOE escalation, so the grantee was able to develop base year and YOE costs mathematically for the *2012 SCC Estimate* from a combination of bids and estimate values.

The PMOC did not find any significant discrepancies between the MPS and cost estimate line items organized and sorted by SCC or contract package WBS. Furthermore, no significant issues were identified for missing scope or erroneous schedule durations.

The following items summarize specific PMOC observations of the *2012 SCC Estimate* per the OP 33 requirements:

- (1) The PMOC concludes that the estimate is consistent with the project scope identified in the FEIS and ROD.
- (2) The PMOC has characterized the project cost data as an Association for the Advancement of Cost Engineering (AACE) Class 2” estimate due to the bottoms-up style of estimate and receipt of bids for design build portions of the project scope. At the time of issuance of this report, the grantee has awarded \$2.562 billion of the \$4.983 billion of planned contracts, or 51.8%, including \$178.1 million in allocated contingency. Without considering allocated contingency, the percentage is 54.3%.
- (3) Soundness & reliability of the Grantee’s Estimate – The grantee’s *2012 SCC Estimate* was prepared utilizing standard industry practices combined with highly regarded Timberline estimating software and a reasonable and reliable data base. The database contains adjusted local rates which include constructions, environmental, real estate, permitting, bonds, insurance, and related general conditions and soft cost markup factors. It has been proven reliable thus far, as awards of approximately 52% of the planned contracts have occurred. The project budget has been reviewed by the PMOC for congruence, incorporation and coordination of the project scope & schedule, and found to fall within a reasonable range.
- (4) The PMOC accepts the percentages used by the grantee for escalation in its *2012 SCC Estimate*.
- (5) The PMOC verified that the grantee appropriately included the General Excise Tax in its estimate as it has not received exemption from this requirement.
- (6) The PMOC verified that the grantee included an appropriate level of detail and supportable justification in the Basis of Estimate for general condition costs.
- (7) The cost estimate contained some line item “Allowance” costs that contained minimal quantification or detail backup. The Allowance line item total just under \$580 million or 11.71% of the total Project estimate. The PMOC found the use of Allowance line items acceptable and not excessive.
- (8) The PMOC evaluated the design-build bids and the grantee’s approach for contract evaluation, post bid analysis and award.
 - The grantee has awarded two design-build guideway sections; one was substantially less than the engineer’s estimate (WOFH) and one was not (KHG). The MSF bid was within the budget, and the DBOM contract for the CSC was less than the estimate. However, risk still exists for these projects due to pending court cases for the CSC bid and delays in Notices to Proceed (NTP) for the remaining bids. The PMOC accounted for these risks in its analysis sensitive to the information available at the time of the modeling.
 - The grantee is following their outlined procurement process, which has proven successful to date.

- Because the bids are prepared using lump sum line items, the SCC format distributions are provided after NTP, which makes spot checking awarded contract line item quantification and unit pricing difficult.
- (9) With the exception of the adjustment of \$15.24 million for “Contractor Markups”, the PMOC has determined the current cost estimate to be mechanically and fundamentally sound and reasonable and that it meets the FTA guidance and requirements necessary for an FFGA. The grantee’s 2012 SCC Estimate was prepared utilizing standard industry practices combined with highly regarded Timberline estimating software and a reasonable and reliable data base. The estimate is substantiated in part from bid results obtained from the award of the design-build portions of the work during 2010/2011.
 - (10) The escalation rate used by HART for professional services is below average when compared to United States mainland professional services historical data. In recent years, wage rates for professional services have increased at a faster rate nationally as compared to the State of Hawaii. The PMOC estimates that a 0.5% difference in escalation rates for professional services could result in \$10 million in higher costs, overall. However, when taken in context of the overall cost estimate for the project, the PMOC did not recommend an adjustment of this item.

5.2 OP 52 Guidance/PMOC Response

Following are specific items identified in OP 52 and the corresponding PMOC response:

- (1) *The PMOC shall evaluate the project cost estimate and verify that it is in general agreement with the latest Standard Cost Category cost information contained in the grantee’s most recent New Starts submission.*

The PMOC concludes that the estimate is consistent with the project scope identified in the FEIS and ROD. The PMOC did not find any significant discrepancies between the MPS and cost estimate line items organized and sorted by SCC or contract package WBS.

- (2) *The PMOC shall determine whether the cost estimate is consistent with the project scope as defined in the drawings and specifications.*

The PMOC concludes that the estimate is consistent with the project scope identified in the FEIS and ROD.

The review of the cost estimate revealed that each of the major elements for the project included an estimated cost. As noted within this report, the PMOC checked a sampling of quantities from the cost estimate. The values were found to be consistent with the scope drawings. Quantity take offs were performed by the grantee estimating team. Documentation of these take-offs was supplied to the PMOC via the Timberline cost estimate electronic file.

- (3) *The PMOC shall assess whether the estimate includes sufficient detail to establish a reasonably accurate cost for project development through construction and start-up. If*

based on quantities/activities and unit costs, are the quantities/activities adequately defined? What prices are lump sums versus based on market research or quotes from potential suppliers/vendors? Further, the PMOC shall ascertain that the grantee has sought and received “industry review” of the construction/procurement schedule and interfaces contracting terms, special conditions and baseline estimating for a representative sample of major construction and equipment procurement contract packages planned.

With the exception of the adjustments listed in its OP 33 deliverable, the PMOC determined that the current cost estimate is mechanically and fundamentally sound and reasonable as it meets the FTA guidance and requirements necessary to support a FFGA.

- (4) *Allocated and unallocated contingencies shall be identified and a professional judgment offered as to the adequacy of contingencies, given project risks, complexity, and other factors.*

Risk analyses (per the requirements of OP 33 and OP 40) have confirmed that adequate allocated and unallocated contingencies have been included in the total project cost based on the perceived project risk.

5.3 Conclusion

It is the PMOC’s professional opinion that the current cost estimate is mechanically and fundamentally sound and reasonable, and that it meets the FTA guidance and requirements necessary to execute an FFGA.

6.0 PROJECT RISK

The PMOC followed the requirements outlined in the *FTA OP 40 Risk and Contingency Review*, dated May, 2010, to complete a risk analysis of the Project. This review requires an evaluation of the reliability of the grantee's project scope, cost estimate, and schedule, with special focus on the elements of uncertainty associated with the effectiveness and efficiency of the grantee's project implementation and within the context of the surrounding project conditions.

6.1 PMOC Assessment

(1) Cost Risk Assessment:

- The PMOC has refreshed its earlier risk review and presented its preliminary results to the grantee in April 2012. Concern was expressed over the rate of project cost contingency usage.
- The grantee responded with revised plans, estimates, and schedules to address the contingency shortfall.
- The PMOC has prepared this risk refresh based upon the grantee's revisions.
- The PMOC separated the project into three distinct risk profiles to better model the effect of risk upon the project.
- The PMOC found that the grantee's risk identification effort, including its risk mitigation activities, generally conforms to its documented processes.
- The cost risk assessment found few exceptional cost risks. No Beta value changes impacting all SCCs were included as a result of the grantee's prior lack of contingency management since there is increased emphasis on cost and schedule controls included in the RCMP.

(2) Project Cost Estimate:

- The grantee's estimate is \$4,949 million, which includes a stripped estimate of \$4,305 million plus a contingency of \$644 million.
- The PMOC recommended estimate is \$4,978 million, which includes a stripped estimate of \$4,305 million, plus \$15 million in cost adjustments for "Contractor Markups" as detailed in the OP 33 report, and plus a recommended contingency of \$658 million.
- The recommended estimate represents the median value from the FTA risk assessment model, when adjusted for the specifics of this project. The historic trend indicates that 80% of similarly-scoped projects have fallen within the range of \$4,497 million to \$5,789 million.
- The grantee's estimate varies from the PMOC-recommended estimate by \$29 million (\$15 million in recommended adjustments and \$14 million in recommended contingency).
- The difference between the grantee's project estimate of \$4,949 million and the PMOC's recommended estimate of \$4,978 million is 0.6%.
- It is observed that significant contingency reduction occurred since the recent prior risk review, to a point where contingency is below accepted control levels. The grantee has identified a total of \$644 million in contingency. This is \$222 million less than the amount of contingency of \$866 million identified

- during the prior review to support the request to enter into Final Design.
 - It is recognized that efforts have been made to recover contingency levels through cost reduction measures, value engineering, and revised project delivery strategies.
 - The grantee's estimated finance charges for the project are \$173 million.
- (3) Risk and Contingency Management Plan (RCMP):
- Organizational structure identified in the RCMP has been adjusted to improve risk management throughout the project life.
 - RCMP includes more refined plans for the grantee to monitor and mitigate high-risk rated items.
 - RCMP demonstrates that risk identification, assessment, and mitigation continue as a part of the project management process.
 - Some strengthening of the risk contingency tracking, custody, and reporting is indicated in the updated RCMP. A revised contingency draw-down curve has been included in the RCMP. This revised curve was required due to a significant use of contingency that violated earlier contingency draw-down controls.
 - This strengthening includes plans for more frequent (monthly) reviews of the remaining cost and schedule contingencies to ensure they are within the control limits set by the cost and schedule contingency draw-down curves.
 - This strengthening of the contingency tracking and control is welcomed. However, diligence and vigilance must be applied to this effort to avoid a high rate of contingency use that could ultimately leave the project unprotected.
- (4) Secondary Mitigation Measures:
- RCMP includes several potential Secondary Mitigation options. However, there is a lack of detailed development of plans and cost estimates for the items identified in the RCMP.
 - The amount of secondary mitigation identified in the RCMP is assessed by the PMOC to be approximately \$106 million.
 - The PMOC recommended amount of secondary mitigation is \$149 million.
- (5) Project Schedule:
- The Grantee's target Revenue Service Date is March 2019.
 - The PMOC recommends that the FFGA Revenue Service Date should be January 31, 2020.

6.2 Conclusion

- (1) The grantee's total project estimate of \$5,122 million, including \$644 million in total contingency and \$173 million in finance charges, is acceptable to support an FFGA.
- (2) The Revenue Service Date identified in the FFGA should be January 31, 2020.
- (3) Strong controls must be put in place immediately to avoid future rapid contingency reduction. The frequency and the levels of project management to

- which these statistics are reported should be improved and monitored monthly.
- (4) Prior to execution of an FFGA, the grantee should develop more details for the Secondary Mitigation items and attempt to identify secondary mitigation measures that approach a total value of \$149 million. Doing so will strengthen the ability to develop these items in the design documents and include them as deductive alternates in construction contracting proposals.

7.0 PROJECT MANAGEMENT PLAN REVIEW

7.1 Project Management Plan

The PMOC followed the requirements outlined in the “*FTA OP 20 – Project Management Plan Review*”, dated May 2010, to assess and evaluate the grantee’s Project Management Plan, Revision 5.0 dated June 29, 2012.

The FTA requires that grantees develop and implement a written Project Management Plan (PMP) for any major capital project funded by FTA. Specifically, Title 49 of the United States Code Section 5327 of Chapter 53, entitled “Project Management Oversight (PMO)” requires a PMP as a condition of Federal financial assistance for major capital projects. The required elements of a PMP are stipulated in the Code of Federal Regulations:

Title 49 – Transportation
Part 633 – Project Management Oversight
Subpart C – Project Management Plans
Section 633.25 – Contents of a Project Management Plan

At a minimum, 49 Code of Federal Regulations (CFR) Part 633 requires that a recipient's PMP include the following items:

- (1) *A description of adequate recipient staff organization, complete with well-defined reporting relationships, statements of functional responsibilities, job descriptions, and job qualifications*
- (2) *A budget covering the project management organization, appropriate consultants, property acquisition, utility relocation, systems demonstration staff, audits, and such miscellaneous costs as the recipient may be prepared to justify*
- (3) *A design management process encompassing Preliminary Engineering and Final Design*
- (4) *A construction schedule*
- (5) *A document control procedure and record-keeping system*
- (6) *A change order procedure that includes a documented, systematic approach to the handling of construction change orders*
- (7) *A description of organizational structures, management skills, and staffing levels required throughout the construction phase*
- (8) *Quality control and quality assurance programs*
- (9) *Material testing policies and procedures*
- (10) *Plan for internal reporting requirements including cost and schedule control procedures*
- (11) *Criteria and procedures to be used for testing the operational system or its major components;*
- (12) *Periodic updates of the Plan*
- (13) *The recipient’s commitment to make monthly submission of project budget and project schedule to the Secretary*

Additional requirements are outlined in Section 633.27 of 49 CFR 633 (Subpart C) regarding the implementation of a project management plan as follows:

- (1) *Upon approval of a project management plan by the Secretary the recipient shall begin implementing the plan.*
- (2) *If a recipient must modify an approved project management plan, the recipient shall submit the proposed changes to the Secretary along with an explanation of the need for the changes.*
- (3) *A recipient shall submit periodic updates of the project management plan to the Secretary that include, but are not limited to, the following:*
 - (a) *Project budget*
 - (b) *Project schedule*
 - (c) *Financing, both capital and operating*
 - (d) *Ridership estimates, including operating plan*
 - (e) *Where applicable, the status of local efforts to enhance ridership when estimates are contingent, in part, upon the success of such efforts*
- (4) *A recipient shall submit current data on a major capital project's budget and schedule to the Secretary on a monthly basis.*

7.1.1 PMOC Assessment

Through review of the grantee's PMP, the PMOC was able to assess the ability of the grantee and its project management approach to take the project successfully from entry to final design through award of the FFGA. In doing so, the PMOC found that the PMP at this phase demonstrates a well-conceived plan for project bidding and construction.

The PMOC has reviewed the PMP to ensure adequacy and soundness of the grantee's plans and procedures for:

- NEPA coordination. The PMOC reviewed the grantee's Mitigation Monitoring Program that has been developed for managing and implementing mitigation actions into the design documents, cost estimates and schedules and has no further comments.
- Design control. The grantee has established and is implementing the plans and procedures for design control including reviews for design, value engineering, life-cycle cost considerations, constructability, and safety.
- Project controls. The PMOC reviewed the grantee's baselines for capital cost estimate and schedule. The grantee has accepted the PMOC recommendation of combining all various schedules into one all-encompassing schedule file, thus creating a true MPS. The Scheduling Procedures and PMP require revision to address any Schedule Breakdown Structure changes. The grantee's approach and plans for risk identification, assessment, and mitigation, and the development of adequate contingencies are acceptable.
- Project Delivery and Procurement. The PMOC reviewed the grantee's contracting plan for project delivery and procurement and evaluated the soundness and adequacy of the its approach to bidding and awarding of contracts, procurement of materials, equipment and vehicles, and the construction administration and construction management of the Project, and the PMOC has no further comments. The selected project delivery methods and contract packaging strategies are reflected in project schedules and cost estimates.

7.1.2 PMP Sub-Plans

Sub-plan documents are referenced in the PMP but require additional detail and information, which can more easily be recorded and referenced in a stand-alone document. The Table below provides a listing of the sub-plans. The table includes the document revision and status pursuant to PMOC review and comment. Note that the table does not include the numerous Procedures that are also developed and implemented by the grantee to further support the function, integration, and execution of the various plans.

Table 6. PMP Sub-Plans

Sub-Plan	Revision No.	Date	Notes
Quality Management Plan (QMP)	1	15-Feb-12	Acceptable for FFGA
Real Estate Acquisition and Management Plan (RAMP)	5	01-Jun-12	Acceptable for FFGA
Bus Fleet Management Plan (BFMP)	3	Mar-12	Acceptable for FFGA
Rail Fleet Management Plan (RFMP)	0.1	Mar-12	Acceptable for FFGA
Safety and Security Management Plan (SSMP)	3A	28-Feb-12	Acceptable for FFGA
Safety and Security Certification Plan (SSCP)	2A	01-Mar-12	Acceptable for FFGA
Configuration Management Plan	0.2	07-Feb-12	Acceptable for FFGA
Staffing and Succession Plan	5	25-May-12	Acceptable for FFGA
Risk and Contingency Management Plan (RCMP)	0	29-Jun-12	Acceptable for FFGA/Revision pending to reflect updated Secondary Mitigation Measures
Operating Plan	0.2	29-Jun-12	Acceptable for FFGA
Force Account Plan	0.3	05-Jan-12	Acceptable for FFGA
Mitigation Monitoring Program	0	15-Mar-12	Acceptable for FFGA
Interface Management Plan	0.1	17-Jan-12	Acceptable for FFGA
Contract Packaging Plan	3.0	30-Mar-12	Acceptable for FFGA
Claims Avoidance Plan	0.1	24-Jan-12	Acceptable for FFGA
Construction Management Plan (CMP)	0.1	03-Feb-12	Acceptable for FFGA
Contract Resident Engineer Manuals (DB & DBOM)	0.1	Feb-12	Acceptable for FFGA
Contract Resident Engineer Manuals (DBB)	A	15-Mar-12	Acceptable for FFGA
Project Procedures			Acceptable for FFGA

7.1.3 Conclusion

The PMP is generally a well written and thorough document that satisfies the FTA *Project and Construction Management Guidelines* and the FTA PMP requirements. It is the PMOC's professional opinion that PMP Revision 5.0, dated June 29, 2012, meets the FTA guidance and requirements necessary to execute an FFGA.

7.2 Design Control

7.2.1 Value Engineering

The grantee sponsored VE workshops on station design (April 2010) and on the Airport and City Center Guideway Segments (April 2011), which cover virtually the entire portion of the Project

that is to be delivered by the traditional DBB method. The Project also benefited from a program of Alternative Technical Concepts (ATC) that were received from bidders on the project’s DB and DBOM contracts. The grantee has accepted or conditionally accepted 79 of 154 such VE and ATC proposals, with an estimated value of up to \$310 million in net savings. Such savings, of course, depend on the actual implementation of the changes and may be affected by the “conditions” in the “conditionally accepted” category and the amount of overlap between similar VE or ATC proposals. PMOC does not expect the savings or the implementation percentage to meet the projected totals, but does feel that the efforts were effective in at least inducing serious study of the project’s assumptions.

It is the PMOC’s opinion that the grantee began adequately addressing the VE element of the Project in preliminary engineering and will continue to do so through completion of final design of all elements of the Project.

7.2.2 Coordination Review – Third Party Agreements

The grantee has identified all third party agreements needed for the Project. PMOC has tracked the status of the third-party agreements during the monthly review meetings. The grantee will need to negotiate, finalize, or update agreements with Hawaii Department of Transportation (HDOT), Honolulu International Airport (HNL), the Federal Aviation Administration (FAA), the Department of Hawaiian Homelands (DHHL), United States Navy (USN), and all the various utility companies. While most of these agencies have shown a willingness to cooperate with the grantee, nothing can be guaranteed about the success of these relationships until agreements are in place.

It must be noted that many third party agreements have yet to be executed, as typically required for an FFGA. However, it is the opinion of the PMOC that the grantee has sufficiently identified and managed the numerous third party agreements in a manner necessary to execute an FFGA.

Table 7. Third Party Agreements

Agreement	Segment/ Contract	Target Date	Completion Date	Status
University of Hawaii Master Agreement	WOFH, KHG, City Center	Nov 2012	Pending	Tentative agreement is in place on path forward to secure access to the property
Leeward Community College Sub-agreement	WOFH	Nov 2012	Pending	Property appraisal complete.
UHWO Sub-agreement	WOFH	Nov 2012	Pending	Property appraisal complete.
Department of Education Master Agreement and Consent to Construct	WOFH	-	Feb 8, 2011	Executed
DR Horton Consent to Construct	WOFH	-	Mar 7, 2012	Executed

Agreement	Segment/ Contract	Target Date	Completion Date	Status
DR Horton Master Agreement	WOFH		Pending	HART has permission to construct along WOFH Segment. Master Agreement will be required to address a permanent easement or dedication to the City and County of Honolulu
DHHL Master Agreement	WOFH and MSF	-	Mar 10, 2010	Executed
DHHL Consent to Construct	WOFH and MSF	-	Dec 1, 2011	Executed
DHHL License or Property Transfer	WOFH and MSF	Dec 2012	Pending	DHHL reviewing license and discussions continuing with City on property transfer.
HDOT Master Agreement for WOFH	WOFH	-	Oct 31, 2011	Executed
HDOT Use and Occupancy Sub-agreement for WOFH	WOFH	-	April 5, 2012	Executed
UH Urban Garden Sub-agreement	KHG	Nov 2012	Pending	Property appraisal complete.
HDOT Master Agreement for KHG	KHG	Nov 2012	Pending	HART has received comments and is resolving issues.
HDOT Use and Occupancy Sub-agreement for KHG	KHG	Nov 2012	Pending	Will complete after KHG Master Agreement is completed
Aloha Stadium/ Department of Accounting and General Services (DAGS)	KHG	Nov 2012	Pending	Finalized agreement. Aloha Stadium Board review and approval is pending.
Navy/General Services Administration (GSA)	Airport	N/A	Pending	Navy will provide consents to enter until all required easements are in place. Progressing fee taking of Pearl Harbor Station site.
US Post Office Honolulu Processing and Distribution Center	Airport	Nov 2013	Pending	Initiated request to secure an easement for Post Office Property.
FAA Master Agreement	Airport	Jul 2013	Pending	As design progress a determination will be made if an agreement is required.
HDOT Master Agreement for Airport	Airport	Apr 2013	Pending	Pending completion of KHG Master Agreement
HDOT Joint Use and Occupancy Sub-agreement for Airport	Airport	May 2013	Pending	Will complete after Airport Master Agreement is completed
HDOT Master Agreement for City Center	City Center	Jun 2013	Pending	Pending completion of KHG Master Agreement
HDOT Joint Use and Occupancy Sub-agreement for City Center	City Center	Jul 2014	Pending	Pending completion of City Center Master Agreement
Honolulu Community College Sub-agreement	City Center	May 2014	Pending	Property appraisal completed.

Agreement	Segment/ Contract	Target Date	Completion Date	Status
Federal Court House/GSA	City Center	Oct 2014	Pending	HART is reviewing GSA draft agreement and conducts monthly meetings with parties
Hawaii Community Development Agreement (HCDA)	City Center	Oct 2014	Pending	Awaiting final design requirements for guideway
DAGS	City Center	Oct 2014	Pending	Awaiting final design requirements for guideway

7.2.3 Constructability Review

The grantee has developed a Contract Packaging Plan. As part of the Risk Assessment, the PMOC reviewed the constructability of the Project and the Contract Packaging Plan.

The design oversight provided by the grantee will be a continuous process throughout the final design phase of the various contracts. The grantee will implement frequent design reviews, constructability reviews, peer reviews, and value engineering. The PMOC will continue to monitor these efforts.

The PMOC generally concurs with the grantee’s logic in the selection of the proposed contract packaging approach. Each proposed package is well-reasoned from a location, contract size, and work management standpoint. The PMOC is of the opinion that the contract delivery methodology proposed by the grantee can be successfully executed. The grantee has the statutory authority to award the contract types currently under consideration.

It is the opinion of the PMOC that the grantee has sufficiently defined its Design Control process to meet the FTA guidance and requirements necessary to execute an FFGA.

7.3 Technical Capacity and Capability

7.3.1 FTA Guidance

Per FTA Oversight Procedure 21, Grantee Technical Capacity and Capability Review, the PMOC will perform evaluations and render professional opinions regarding both the grantee’s Technical Capacity and Capability (TCC) to successfully implement, manage, and complete a major Federal-assisted capital project and the grantee’s ability to recognize and manage project risk factors and implement mitigation measures. The evaluations cover the following:

- Organization, Personnel Qualifications and Experience
- Grantee’s approach to the work, ability to perform the work, including its methods, policies, and procedures for developing and updating reasonable and realistic project cost estimates and schedules, and the grantee's abilities to identify, analyze, manage and mitigate project risks.

7.3.2 PMOC Assessment

The PMOC has some concern that the grantee may continue experiencing difficulty attracting and retaining the experienced staff needed for long-term project assignment and permanent grantee employment (post-Project) given Hawaii's geographic isolation, salary limits, and high cost of living relative to the mainland. The grantee should adhere to the staffing plan to address the transition of staff during the final design and construction phases for positions currently occupied by PMC staff to grantee staff.

The grantee must strive to transition the key management positions currently occupied by the PMC and General Engineering Consultant (GEC) as early as possible. This transition is necessary in order for the grantee to have more ownership and maintain stronger continuing control of the project without having to rely too heavily on the PMC and GEC. The grantee recently submitted a Staffing and Succession Plan Revision 5, dated May 25, 2012, to support the basis for the base soft cost reductions that were incorporated into the Capital Cost Estimate. The grantee reduced the PMC and GEC contract duration for some key staff positions to transfer to HART, but the Staffing and Succession Plan did not include some key positions that are needed by HART to complete the project by the Revenue Service Date.

The PMOC will continue monitoring the grantee's project management process to ensure that it is effectively managing the project and continuing fiscal responsibility and accountability for all decisions affecting project design, cost, and schedule. The transition from PMC staff to full-time grantee staff must be closely monitored by the PMOC after receipt of an FFGA.

The grantee must issue comprehensive and timely Monthly Reports in accordance with the federal requirements. The PMOC will validate this requirement upon receipt and review of several months of consistently submitted status reports.

7.3.3 Conclusion

It is the PMOC's professional opinion that the grantee has demonstrated sufficient TCC necessary to execute an FFGA.

7.4 QA/QC Plan Review

The FTA requires a grantee undertaking a major capital program to prepare a PMP that includes a Quality Assurance/Quality Control (QA/QC) Plan. The development of a project QA/QC Plan should be an outgrowth of a functioning quality management system. A comprehensive quality management system is comprised of a written quality policy, a written plan, written procedures, a management that supports and takes responsibility for quality, and personnel who will undertake quality assurance and quality control activities. The required elements of a QA/QC Plan are stipulated in FTA-IT-90-5001-02, *Quality Assurance and Quality Control Guidelines*, dated February 2002.

The PMOC followed the requirements outlined in the *FTA OP 24 – QA/QC Review*, dated May 2010, to assess and evaluate the grantee's Quality Management Plan (QMP) Revision 1.A, dated February 15, 2012. The objective of this review is to assess and evaluate the adequacy and

soundness of the grantee's QA/QC program and the grantee's implementation of such program over the course of the Project.

7.4.1 PMOC Assessment

The PMOC assessed and evaluated the adequacy and soundness of the grantee's QA/QC program and the implementation of the program. The PMOC determined that each of the following OP 24 categories was satisfactorily addressed:

- Quality Management
- Document Control
- Design Control
- Procurement
- Construction/Inspection
- Operations, Startup, and Testing

7.4.2 Conclusion

It is the PMOC's professional opinion that QMP Rev. 1.A, dated February 15, 2012, meets the FTA guidance and requirements necessary to execute an FFGA.

7.5 Safety and Security Management Plan

The FTA requires a grantee undertaking a major capital program to prepare a PMP that includes a Safety and Security Management Plan (SSMP). The grantee developed an SSMP according to the most recently available FTA guidance, *Safety and Security Management Guidance for Major Capital Projects*, FTA C 5800.1, dated August 1, 2007.

The PMOC followed the requirements outlined in the *OP 22 – Safety and Security Management Plan Review*, dated May 2010, to assess and evaluate the grantee's SSMP, Revision 3.0A, dated February 29, 2012.

7.5.1 PMOC Assessment

The PMOC assessed the SSMP using criteria identified in Items 1 through 12 in OP 22, which are also listed in Circular 5800.1, Pages II-4 and II-5, and against the specific section-by-section requirements identified in C5800.1 Chapter IV.

The PMOC review found that SSMP Revision 3.0A, dated February 29, 2012, is a significantly improved document over the previous submission. It contains, by inclusion or implication, all sections specified in FTA Circular 5800.1, and is compliant or acceptable for an FFGA. The PMOC review also found, however, a need for revision in some plan sections and appendices for both minor (correction of typographical errors and omissions) and major reasons. As a result of its findings, the PMOC has reached the following conclusions:

- The content of all plan sections and support appendices of the SSMP is compliant with requirements for an FFGA.

- The SSMP Adherence Review proceeded smoothly in large part due to the cooperation of the interviewees and all HART staff involved in supporting the review.
- For the most part, HART, PMC, and GEC personnel displayed a good understanding of the SSMP and their safety and security roles described in it. The actual performance of these activities aligned well with their SSMP descriptions.
- There are currently two vacant Construction Safety and Security Compliance Officer (CSSCO) positions that report to the GEC Construction Safety and Security Manager (CSSM), only one of which is planned for filling by the GEC in the near future. The second CSSCO position provides a good opportunity to hire a HART safety professional to be trained and mentored by the GEC CSSM in construction safety and security oversight and management. The PMOC believes that the timetable for some of the staffing recommendations identified in the OP 22 report may be affected by the current suspension of construction activities.
- There is also a current vacancy for a System Security Specialist (SSS) that reports to the GEC System Safety and Security Manager (SSSM) that is not programmed for filling in the near future. The SSS position provides a good opportunity to hire a HART security professional to be trained and mentored by the SSSM and the existing well-seasoned GEC senior security specialist in security oversight and management. The PMOC believes that the timetable for some of the staffing recommendations identified in the OP 22 report may be affected by the current suspension of construction activities.
- The SSMP currently identifies the Chief Safety and Security Officer (CSSO) as a “technical resource” to the Change Control Board (CCB); the CSSO should be a full member of the CCB.
- The PMOC observed that some plans and procedures reviewed were not up-to-date and others were filed as red-lined versions for extended periods while waiting for finalization. The PMOC will include review of all documents submitted in red-lined versions to assure they are in final format, including that recommended changes have been accepted or a rationale for non-acceptance provided, and that all are properly named, labeled, dated, and signed.
- The PMOC noted during interviews that there was some confusion as to the role of GEC personnel in the HART integrated safety and security organization. While GEC personnel coordinate with, provide information to, and receive information from HART, they are not integrated into the HART organization. They work solely for the GEC Project Manager under terms of their contract with HART. A clearer delineation of GEC project roles is needed.
- There are no full time security professionals in the combined HART organization. Although there is one GEC security professional assigned to the project, his assignment is on a part-time basis. Since GEC personnel report to a separate chain of command, the possibility exists that his availability may not be guaranteed over the life of the project.
- The CSC has not yet provided a safety and security professional on-site in Honolulu, and communication with off-site personnel is proving difficult due to the time difference between locations.
- The Safety and Security Certification Manager (SSCM) position that reports to the CSSO remains vacant, with certification efforts expected to increase in the near future.

- The HART Quality Assurance Manager (QAM) does not include auditing of the safety and security department's adherence to the SSMP and associated plans and procedures requirements in his audit program.

7.5.2 State Safety Oversight Agency (SSOA)

- The FTA, HART and PMOC participated in the first monthly roadmap call with HDOT on March 6, 2012 and subsequent roadmap calls are scheduled the first Tuesday of every month. HDOT also provided a letter to FTA on January 3, 2011 identifying a funding source for the SSOA once the Project is in operations.
- HART and HDOT executed the Memorandum of Agreement (MOA) on December 23, 2011. However, the MOA needed to be revised due to a potential conflict of interest and for HART to provide the technical funding directly to HDOT, which, in turn, will contract directly with the SSOA consultant. The revised MOA was executed between HART and HDOT on February 3, 2012, removing the potential conflict of interest and providing the technical funding from HART directly to HDOT, which will then contract directly with the SSOA consultant.
- An interim HDOT SSOA Project Manager has been working part-time since April 2011. HDOT anticipates hiring a full-time SSOA Project Manager by the end of 2012. HDOT is in the process of revising the job posting to eliminate the Professional Engineer license requirement to broaden the pool of applicants. Given the status of this Project, it is critical that a permanent lead be identified as soon as possible.
- HDOT awarded a consultant contract to Dovetail, Inc. in July 2012 to develop the System Safety and Security Program Standards (SSSPS), which will become an important part of HDOT's comprehensive safety and security assessment that formalizes the safety and security duties and responsibilities of the transit organization and ensures a process for identifying and correcting safety and security hazards.

7.5.3 Conclusion

It is the PMOC's professional opinion that SSMP Revision 3.0A, dated February 29, 2012, meets the FTA guidance and requirements necessary to execute an FFGA.

7.6 Real Estate Acquisition and Management Plan (RAMP)

The PMOC followed the requirements outlined in the *OP 23 – Real Estate Acquisition and Management Plan Review*, dated May 2010, to assess and evaluate the grantee's RAMP Revision 5, dated June 1, 2012. The review process consisted of identifying references for assessment of the plan contents and performing a review as needed to validate claims made by the grantee in the RAMP. Following are the objectives of the OP 23 review:

- Evaluation and continuous oversight of the grantee's RAMP including real estate acquisition; project scope; estimated cost; overall schedule and critical path; and the relocation plan.
- Evaluation of the real estate schedule for completeness, adequacy, consistency, appropriateness of level of detail given the phase; identification of risks inherent in the schedule and evaluation of the impact of these on project scope and cost.

- Characterization of the grantee’s ability to meet the requirements of Federal laws, regulations, and guidance when acquiring real estate.
- Determination of grantee’s compliance with all governing requirements during the implementation phase of the real estate acquisition program.
- Based on observations of the project, timely reporting by the PMOC of recommended improvements, lessons learned, and best practices.

7.6.1 PMOC Assessment

Each of the following elements of the RAMP was reviewed per the requirements of OP 23 and found to be adequately addressed:

- Organizational Structure
- Document Control
- Property Management Plan
- Acquisition Plan
- Ownership and title information
- Appraisal
- Establishment of Offer of Just Compensation
- Negotiations
- Closing/Escrow
- Condemnation
- Disposition Plan
- Relocation Assistance Plan
- Staffing and Administration
- Appeals
- Third Party Real Estate Agreements
- Real Estate Cost Estimate
- Acquisition and Relocation Schedule

7.6.2 Conclusion

It is the PMOC’s professional opinion that RAMP Revision 5, dated June 1, 2012, meets the FTA guidance and requirements necessary to execute an FFGA.

7.7 Bus Fleet Management Plan

The PMOC followed the requirements outlined in the *OP 37 – Fleet Management Plan Review*, dated May 2010, to assess and evaluate the grantee’s Bus Fleet Management Plan (BFMP) “red-lined” draft, dated March 2012.

7.7.1 PMOC Assessment

The PMOC’s review process consisted of identifying references for assessment of the plan contents and performing an as-needed analysis to validate calculations and claims made by grantee in the BFMP. Review of this document concentrated on the impacts and grantee plans for bus service that may result from the Project.

The BFMP presents empirical data for operations of the current system through 2010 and provides projections through 2022. It satisfactorily addresses vehicles and service types in operation and anticipated to be in operation, as well as factors that are relevant to the grantee's determinations of current and future equipment needs.

The PMOC findings include:

- Grantee has met the intent of the requirement for a BFMP, as well as demonstrating grantee's ability to properly plan for and carry out the overall management of its Bus fleet.
- BFMP addresses operating policies (level of service requirements); peak vehicle requirements (PVR); inspection and maintenance program; system and service expansions; vehicle procurements and related schedules; and operating spare ratio (OSR) justification.
- Information in Table 4-3 Bus Acquisition and Replacement Costs & Revenues in this BFMP is based on the grantee's previous Financial Plan and must be revised based on the updated Financial Plan to show annual budgetary information for the projected cost of Bus Acquisition and Replacement from 2011-2020.
- The plan addresses the composition of the fleet, operating conditions, and facilities.

7.7.2 Conclusion

It is the PMOC's professional opinion that red-lined" draft BFMP, dated March 2012, meets the FTA guidance and requirements necessary to execute an FFGA.

When the BFMP is baselined, Table 4-3 Acquisition and Replacement Costs & Revenues should be based on the updated Financial Plan to show annual budgetary information for the projected cost of Bus Acquisition and Replacement from 2011-2020.

7.8 Rail Fleet Management Plan

The PMOC followed the requirements outlined in the *OP 37 – Fleet Management Plan Review*, dated May 2010, to assess and evaluate the grantee's Rail Fleet Management Plan (RFMP) "red-line" draft dated March 2012.

7.8.1 PMOC Assessment

The PMOC reviewed this red-lined RFMP document to assess compliance with appropriate FTA Guidance and found that the document generally followed FTA's 8-step process for OSR computation. The PMOC noted that the grantee has complied with OP 37 guidance, satisfactorily addressed the majority of the PMOC's previous comments, and agreed to update the remaining open items in the next revision of the RFMP.

The PMOC anticipates that the next revision of the RFMP would be available after the FFGA when AHJV progresses its work (i.e. within one year of initial Notice to Proceed). That revision should address and/or provide additional detail on the following topics:

- Service operations and vehicle demand forecasting.

- Planned fleet Maintenance practices and management staffing that will be provided through CSC.
- Planned use of Maintenance Statistics and Maintenance Strategy as provided through the CSC.
- MSF functionality and vehicle availability.

In addition to providing additional detail in the areas noted above, the grantee should address, in the next update of the RFMP, PMOC's comments as annotated in this report as well as those in "*Appendix B: OP 37, Appendix B FMP Checklist – Grantee Compliance*" of the PMOC's report.

7.8.2 Conclusion

It is the PMOC's professional opinion that red-lined" draft RFMP, dated March 2012, meets the FTA guidance and requirements necessary to execute an FFGA.

The PMOC also recommends that a workshop be conducted with the grantee to discuss the details needed in the next update of the RFMP to ensure compliance during implementation of the Project.

8.0 HAWAII SUPREME COURT RULING

On August 24, 2012, the Hawaii Supreme Court issued a ruling in *Kaleikini v. City and County of Honolulu* finding that the City and County of Honolulu (City) violated a State of Hawaii (State) historic preservation law (Hawaii Revised Statute (HRS) Chapter 6E) by approving the Project, and allowing construction to proceed, before completing an Archaeological Inventory Survey (AIS) for the entire Project. The ruling reversed a previous Circuit Court decision that had upheld the granting of City and State permits based on the phased completion of the AIS rather than on the completion of the AIS for the entire alignment. Currently, the HART is working to complete the AIS for the entire 20-mile alignment.

HART issued a partial suspension of construction work on August 24, 2012 for all ground-disturbing activities after a ruling by the Hawaii Supreme Court. On September 7, 2012, HART provided letters to their contractors to clarify that no construction activity would continue until future written notice is provided by HART. However, Final Design work is still proceeding on all contracts that have been awarded to date.

As a result of the State Supreme Court's ruling, it is anticipated that there will be significant impacts to both the project schedule and project budget. The grantee's preliminary analysis indicates that the cost impact for the three design-build contracts could range between \$64 and \$95 million. However, this does not include additional cost impacts due to escalation for future contracts and extended agency and consultant staffing. The preliminary schedule analysis by the grantee indicates that there could be a nine to twelve-month impact on the interim opening but possibly no impact to the full Revenue Service Date. The PMOC will perform a thorough review of HART's assessment and Secondary Mitigation Strategies to determine the overall magnitude of impacts to the project schedule and project budget.

9.0 CONCLUSION/RECOMMENDATIONS

9.1 Conclusion

The PMOC has determined that the grantee has completed the following steps necessary to execute an FFGA: adequately defined the Project's scope, schedule, and cost; developed an approvable PMP and supporting documents; and, has demonstrated sufficient technical capacity and capability. The PMOC recommends that the FTA execute an FFGA with the grantee that identifies the following budget and completion milestone:

- Project budget of \$5.122 billion in YOE, including \$644 million in total contingency and \$173 million in financing costs.
- FFGA Revenue Service Date of January 31, 2020.

9.2 Recommendations

The PMOC recommends that the following items be addressed by the grantee following execution of an FFGA:

- Identify project management staff per the Staffing Plan and Transition Plans in order to maintain control of the various concurrent projects.
- Follow the staffing and succession plan for those key management positions that may be considered short term (three years or less) in order to ensure a successful “knowledge transfer” of project consultants’ expertise to the grantee.
- Develop a Human Resources Management Plan (HRMP) that will function as a blueprint for the organizational development of HART to assist with transition of PMC positions to HART.
- Consistently issue comprehensive and timely Monthly Reports to the FTA and PMOC.
- Implement all schedule management procedures and guidelines as documented in the PMP and its respective project control companion documents.
- Revise its staffing plan when major revisions are made to the Project scope, schedule or budget, or when major project phases are complete (e.g. completion of major DB contracts) in order to synchronize resource allocation planning. Major revisions include significant delay to contract letting or execution, contract package revisions, changes to contract delivery methods, etc., or the addition of professional service contracts, etc.
- Develop Baseline Project Procedures that are denoted as “To Be Determined” and are critical to proper execution of construction.
- Complete any unfinished effort to acquire agreements with all affected agencies and begin the process of cooperation that those agreements entail.
- Continue the process of updating the Project budget and schedule, incorporating information from contracts-in-progress, any accepted cost reduction measures, and from completed tasks as they occur.
- Manage the schedule and budget by implementing controls as described in its project management plans throughout construction.
- Perform more meaningful and comprehensive analysis of the MPS critical and near-critical paths each month.
- Fully develop a “solid” program schedule baseline that incorporates approved contract baseline schedules.

- Continue to be proactive in assuring that all of its contractors meet the requirements of Buy America and Ship America.
- Continue to incorporate and implement the accepted Value Engineering (VE) proposals for the Stations and Airport/City Center segments.
- Emphasize the need for a safety and security professional to be assigned in Honolulu for the CSC to support the systems and operations responsibilities under the systems and operations and maintenance portions of their contract.
- Coordinate with the CSC to resolve any transit capacity issues.
- Develop more detail for the Secondary Mitigation items and attempt to identify secondary mitigation measures that approach a total value of \$149 million.
- Conclude Archaeological Inventory Surveys to comply with the Hawaii Supreme Court ruling and update analyses of that ruling's cost, schedule, contingency, and mitigation implications.

10.0 APPENDICES

Appendix A: List of Acronyms

AACE	▪ Association for the Advancement of Cost Engineering
AHJV	▪ Ansaldo Honolulu Joint Venture
AIS	▪ Archaeological Inventory Survey
ATC	▪ Alternative Technical Concept
BAFO	▪ Best and Final Offers
BCE	▪ Base Cost Estimate
BFMP	▪ Bus Fleet Management Plan
CCB	▪ Change Control Board
CFR	▪ Code of Federal Regulations
CMP	▪ Configuration Management Plan
CPM	▪ Critical Path Method
CSC	▪ Core Systems Contract
CSSCO	▪ Construction Safety and Security Compliance Officer
CSSM	▪ Construction Safety and Security Manager
CSSO	▪ Chief Safety and Security Officer
DB	▪ Design-Build
DBB	▪ Design-Bid-Build
DBOM	▪ Design-Build-Operate-Maintain
DHHL	▪ Department of Hawaiian Homelands
DTS	▪ Department of Transportation Services
FAA	▪ Federal Aviation Administration
FEIS	▪ Final Environmental Impact Statement
FFGA	▪ Full Funding Grant Agreement
FTA	▪ Federal Transit Administration
GEC	▪ General Engineering Consultant
HART	▪ Honolulu Authority for Rapid Transportation
HDOT	▪ Hawaii Department of Transportation
HHCTCP	▪ Honolulu High Capacity Transit Corridor Project
HNL	▪ Honolulu International Airport
HRMP	▪ Human Resources Management Plan
HRS	▪ Hawaii Revised Statute
KHG	▪ Kamehameha Highway Guideway
LONP	▪ Letter of No Prejudice
LPA	▪ Locally Preferred Alternative
MOA	▪ Memorandum of Agreement
MPS	▪ Master Project Schedule
MSF	▪ Maintenance and Storage Facility
NEPA	▪ National Environmental Policy Act
NTP	▪ Notice to Proceed
OP	▪ Oversight Procedure
OSR	▪ operating spare ratio
PA	▪ Programmatic Agreement
PMC	▪ Project Management Support Consultant
PMOC	▪ Project Management Oversight Contractor
PMP	▪ Project Management Plan
PVR	▪ Peak Vehicle Requirement
QA/QC	▪ Quality Assurance/Quality Control
QAM	▪ Quality Assurance Manager
QMP	▪ Quality Management Plan
RAMP	▪ Real Estate Acquisition and Management Plan
RCMP	▪ Risk and Contingency Management Plan

RFMP	▪ Rail Fleet Management Plan
RFP	▪ Request for Proposals
ROD	▪ Record of Decision
ROW	▪ Right-of-Way
RSD	▪ Revenue Service Date
SCC	▪ Standard Cost Category
SSCM	▪ Safety and Security Certification Manager
SSCP	▪ Safety and Security Certification Plan
SSMP	▪ Safety and Security Management Plan
SSOA	▪ State Safety Oversight Agency
SSS	▪ System Security Specialist
SSSPS	▪ System Safety and Security Program Standards
SSSM	▪ System Safety and Security Manager
TCC	▪ Technical Capacity and Capability
USN	▪ United States Navy
VE	▪ Value Engineering
WBS	▪ Work Breakdown Structure
WOFH	▪ West Oahu/Farrington Highway
YOE	▪ Year of Expenditure

Appendix B: Documents Reviewed

Document	Rev. No.	Date
Management Plans/Administrative		
Final Environmental Impact Statement (FEIS)	-	25-Jun-10
Programmatic Agreement (PA)	-	18-Jan-11
Record of Decision (ROD)	-	18-Jan-11
Project Management Plan (PMP)	5.0	29-Jun-12
Quality Management Plan (QMP)	1	05-Feb-12
Real Estate Acquisition and Management Plan (RAMP)	5	31-Jan-12
Bus Fleet Management Plan (BFMP)	3	Mar-12
Rail Fleet Management Plan (RFMP)	0.1	Mar-12
Safety and Security Management Plan (SSMP)	3A	28-Feb-12
Safety and Security Certification Plan (SSCP)	2A	01-Mar-12
Configuration Management Plan	0.2	07-Feb-12
Staffing and Succession Plan	5	25-May-12
Operating Plan	0.2	29-Jun-12
Force Account Plan	0.3	05-Jan-12
Mitigation Monitoring Program	0	15-Mar-12
Interface Management Plan	0.1	17-Jan-12
Risk Contingency Management Plan	0	29-Jun-12
Contract Packaging Plan	3	30-Mar-12
Claims Avoidance Plan	0.1	24-Jan-12
Construction Management Plan (CMP)	0.1	03-Feb-12
Contract Resident Engineer Manuals (DB & DBOM)	0.1	Feb-12
Contract Resident Engineer Manual (DBB)	A	15-Feb-12
1.PP-01 – Procedures Index	0	15-Mar-12
1.PP-02 – Procedure Development Process	0.1	12-Mar-12
1.PP-03 – Standard Terms, definitions, and Acronyms	0.1	12-Mar-12
1.PP-04 – Baseline Documents Revision and Control	0.1	12-Mar-12
1.PP-05 – Identification of Badge Policy	0.1	15-Mar-12
2.PA-01 – Security Sensitive Information (SSI)	0.1	12-Mar-12
2.PA-02 – Procurement Control	0.1	12-Mar-12
2.PA-03 – Email Management	0.1	12-Mar-12
2.PA-04 – Project Wide Document Control	0.1	12-Mar-12
2.PA-05 – Project Library	0.1	12-Mar-12
2.PA-06 – Community Relations and Media Contacts	0.1	12-Mar-12
2.PA-07 – RTD Training Procedure	0.1	12-Mar-12
2.PA-08 – Policy for Safeguarding Protected Information	0.1	12-Mar-12
2.PA-09 – Permit Procedures	0	15-May-12
3.PM-01 – Contract Management System	1.1	14-Mar-12
3.PM-04 – Public Information Communication	0.1	15-Mar-12
3.PM-05 Meeting/Minutes	2.1	12-Mar-12
4.PC-02 – Project Management Control	0.1	15-Mar-12
4.PC-03 – Project Progress Reports	0.1	15-Mar-12
4.PC-04 – Program Scheduling	0.1	15-Mar-12
4.PC-05 – Project Accounting	0.1	12-Mar-12
4.PC-06 – Cost Estimating	0.1	12-Mar-12
4.PC-07 – Cost Control	0.1	12-Mar-12
4.PC-08 – Risk Management	0.1	12-Mar-12
4.PC-09 – Contingency Management	1	15-Mar-12
5.CA-01 – Contract Administration	0.1	15-Mar-12
5.CA-02 – Contract Change Management	0.1	14-Mar-12

Document	Rev. No.	Date
5.CA-03 – Contractor Progress Payments	0.1	13-Mar-12
5.CA-04 – Contractor Progress Reports	0.1	13-Mar-12
5.CA-05 – Contract Change Orders	0.1	13-Mar-12
5.CA-06 – Contract Closeout	0.1	13-Mar-12
5.CA-07 – Claims and Disputes Resolution	0.2	14-Mar-12
5.CA-08 – CACO and Contract Amendment Procedure	0	14-Mar-12
6.CM-01 – Submittal Procedure	1.1	14-Mar-12
6.CM-02 – RFI Procedure	2.1	14-Mar-12
6.CM-03 – RFC Procedure	0.2	14-Mar-12
6.CM-05 – Interface Management and Coordination Procedure	0.1	12-Mar-12
7.GA-01 – Board – Staff Interaction	0	17-July-11
7.GA-04 – Petty Cash Fund	0	17-July-11
7.GA-06 - Travel	0	17-July-11
7.GA-07 – Preparation of Board Materials	0	20-July-11
Technical		
Design Criteria		
Chapter 1 – General		15-Mar-12
Chapter 2 – Operations		15-Mar-12
Chapter 3 – Environmental Considerations		15-Mar-12
Chapter 4 – Track Alignment and Vehicle Clearances		14-Feb-12
Chapter 5 – Trackwork		15-Mar-12
Chapter 6 – Civil		15-Mar-12
Chapter 7 – Traffic		15-Mar-12
Chapter 8 – Utilities		15-Mar-12
Chapter 9 – Structural		15-Mar-12
Chapter 10 – Architecture		10-Feb-12
Chapter 11 – Landscape Architecture		15-Mar-12
Chapter 12 – Passenger Vehicles		10-Feb-12
Chapter 13 – Traction Electrification		15-Mar-12
Chapter 14 – Train Control		15-Mar-12
Chapter 15 – Communications and Control		15-Mar-12
Chapter 16 – Fare Vending		15-Mar-12
Chapter 17 – Corrosion Control		15-Mar-12
Chapter 18 – Maintenance & Storage Facilities (MSF)		14-Feb-12
Chapter 19 – Facilities Mechanical		15-Mar-12
Chapter 20 – Facilities Electrical		15-Mar-12
Chapter 21 – Fire and Intrusion Alarm Systems		15-Mar-12
Chapter 22 – Elevators and Escalators		15-Mar-12
Chapter 23 – Fire/Life Safety		15-Mar-12
Chapter 24 – Systems Assurance		10-Feb-12
Chapter 25 – System Safety and Security		15-Mar-12
Chapter 26 – Sustainability		14-Feb-12
HART Directive Drawings		3-Nov-10
H RTP Standard Specifications		15-Feb-12
West Oahu/Farrington Station Highway Final Design Drawings		Various
Geotechnical Data Report (WOFH)		27-Mar-09
Supplement to Geotechnical Data Report (WOFH)		15-May-09
Geotechnical Baseline Report (WOFH)	2.0	Aug-09
Kamehameha Highway Interim Design, Advanced Interim Design, and Final Design Drawings		Various
Kamehameha Highway Segment Geotechnical Baseline Report	1.1	07-May-10
Kamehameha Highway Geotechnical Data Report		16-Feb-10

Document	Rev. No.	Date
Kamehameha Highway Geotechnical Data Report Addendum		7-May-10
Airport Preliminary Engineering Drawings, Volumes 1-3		1-Oct-10
Airport Geotechnical Data Report		8-Feb-10
Airport Fixed-Guideway Foundation Technical Memorandum		6-Feb-10
City Center Preliminary Engineering Drawings, Volumes 1-4		6-Oct-10
City Center Geotechnical Data Report		26-Feb-10
City Center Fixed-Guideway Foundation Technical Memorandum		26-Feb-10
East Kapolei Station Updated Design Plans		9-Mar-12
UH West Oahu Station Updated Design Plans		9-Mar-12
Hoopili Station Updated Design Plans		9-Mar-12
West Loch Station In-Progress Submission		29-Feb-12
Waipahu Transit Center Station In-Progress Submission		29-Feb-12
Leeward Community College Station In-Progress Submission		29-Feb-12
Pearl Highlands Station Updated Design Plans		9-Mar-12
Pearlridge Station Updated Design Plans		9-Mar-12
Aloha Stadium Station Updated Design Plans		9-Mar-12
Airport Station Group Updated Design Plans		9-Mar-12
Dillingham Station Group Undated Design Plans		9-Mar-12
Kaka'ako Station Group Updated Design Plans		9-Mar-12
Ala Moana Station Updated Design Plans		9-Mar-12
Guideway Superstructure Study – Summary Report		22-May-08
Structures Workshop Summary Report		7-10-Jan-08
Systems Workshop Presentation		22-Aug-08
Transportation Technical Report		1-Aug-08
Construction Workshop Frequently Asked Questions (FAQ)		12-Jun-08
Construction Workshop Presentation		12-Jun-08
Environment Condition of Property, NAVFAC (Navy Drum Site)		Mar-09
Final Evaluation of Project Delivery Options		2-Nov-06
Fixed Guideway Fleet Sizing Report		Jun-09
Value Engineering – Stations Report		Sep-10
Value Enhancement Summary Report		Sep-10
Contracts		
West Oahu/Farrington Highway Design-Build – RFP, Addenda, Proposal and Contract Documents		Various
Kamehameha Highway Design-Build – RFP, Addenda, Proposal and Contract Documents		Various
Maintenance and Storage Facility Design-Build – RFP, Addenda, Proposal and Contract Documents		Various
Core Systems DBOM – RFP, Addenda, Proposal and Contract Documents		Various
General Conditions of Design-Build Contracts, Honolulu		Feb-09
Financial/Cost		
FFGA Capital Cost Estimate Basis and Assumptions		9-May-12
FFGA Main Worksheet – Build Alternative		14-May-12
FFGA Cash Flows Worksheet		14-May-12
FFGA H RTP SCC Cost Workbook		14-May-12
HART Capital Cost by Contract by SCC Workbook		20-Mar-12
Price Proposals (post bid) Kiewit WOFH		11-Nov-09
Price Proposals (post bid) Kiewit MSF		16-Mar-11
Price Proposals (post bid) Kiewit Kamehameha		16-Mar-11
Price Proposals (post bid) Ansaldo Core Systems		16-Mar-11
General Excise and Use Tax in Hawaii		16-Feb-06
Schedule		

Document	Rev. No.	Date
HRTTP Baseline Progress Schedule REV.04.xer		13-Jun-12
HART FFGA BASELINE PMOC Review.plf		13-Jun-12
Basis of Schedule 062012.pdf (Rev 3.0)	3.0	20-Jun-12

Note: The above list includes all key documents reviewed by the PMOC for preparation of the various OP deliverables.

Appendix C: Final Design Approval Letter Requirements

No.	Item	Completion Date	Comments
Financial Capacity Assessment			
1	The financial plan states that additional revenues may be obtained from an extension of the General Excise Tax or implementation of value capture mechanisms. However, these revenue sources require actions by the State of Hawaii and/or the City that have not been taken and which are beyond HART's ability to control. Prior to the Projects consideration for an FFGA, HART should demonstrate the availability of additional revenue sources that could be tapped should unexpected events such as cost increases or funding shortfalls occur.	Jun-12	Closed
2	HART made assumptions in three areas that require further justification or amendment: (1) the containment of bus and HandiVan operating expenses; (2) the increasing share of the City's annual budget required to fund the transit system; and (3) the diversion of Section 5307 funds from preventive maintenance to the Project. Prior to the Projects consideration for an FFGA, HART should either provide further documentation justifying the reasonableness of these assumptions or consider revising these assumptions to more closely follow historical patterns.	Jun-12	Closed
Project Scope, Cost, Schedule, Risk and Technical Capacity			
3	At present HART is the project sponsor for the Project and the City is the direct recipient of FTA grant funds. It has not yet been decided if the grantee responsibilities will transition from the City to HART. Early in final design, the City and HART will need to notify FTA of a final decision regarding grantee responsibility so that any necessary preparations can be made in advance of the Project's consideration for an FFGA.	Jul-12	Closed
4	Project Scope: Resolve the Ala Moana Station design and the location of the pre-cast yard and ensure all contractors meet Buy America and Ship America requirements	May-12	Closed
5	Project Management Plan (PMP): Update the PMP to address the creation of HART; expand staff as planned, revise the staffing plan, and update the final design organization chart to include the positions identified in the PMOC report; expand the sections on construction management and testing and start up; and update and develop the Design-Bid-Build resident Engineer and Inspection Manual.	Feb-12	Closed

No.	Item	Completion Date	Comments
6	Technical Capacity and Capability: Develop a succession plan to ensure knowledge transfer for key management positions considered short term and hire a real estate acquisition consultant knowledgeable about requirements of the Uniform Relocation Act and the FTA real estate requirements.	Feb-12	Closed
7	Real Estate Acquisition and Management Plan (RAMP): Ensure that all real estate activities comply with the Record of Decision and update the RAMP to reflect the creation of HART.	Feb-12	Closed
8	<p>The Project capital cost of \$5,125.96 million assumes \$104 million in cost savings from eight proposed cost reduction measures. FTA has accepted the cost reduction measures for purposes of moving forward with final design approval. However, additional supporting documentation regarding these cost reduction measures will need to be provided to FTA for review and validation. HART should provide the following to FTA:</p> <ol style="list-style-type: none"> 1. Documentation to support the cost and schedule impacts of the cost reduction measures. 2. Information to verify that other aspects of the Project are not degraded as a result of implementing the cost reduction measures, such as safety and security, transit capacity, operations, maintainability, and service to the community. <p>HART must ensure that the project design changes comply with the Americans with Disabilities Act and provide for appropriate emergency evacuation. FTA and HART will work together to determine if any environmental impacts resulting from Project changes related to cost reduction measures need to be addressed.</p>	Jun-12	Closed
Safety and Security			
9	The Hawaii Department of Transportation should accelerate the hiring process and select a qualified State Safety Oversight Agency project manager.	Dec-12	Open – Jadine Urasaki named as Interim Project Manager
10	HDOT and HART should execute a memorandum of agreement, and HDOT should identify staff or select an SSOA consultant to work on SSOA issues.	Feb-12	Closed
11	Specifically regarding the safety and security of the proposed cost reduction measures, HART should conduct hazard and threat/vulnerability analyses to ensure that the design criteria, as well as the design, construction, safety and security certification, and startup of the Project, conform to local, state and national codes of standards.	Aug-12	Closed (hazard and threat/vulnerability analyses are under review)

No.	Item	Completion Date	Comments
Civil Rights			
12	Title VI program must be submitted to FTA at least 30 calendar days prior to June 10, 2013 which is the expiration of the current Title VI approval.	May-13	Open
13	The City will need to perform a Title VI service and fare equity analysis six months prior to revenue operations of the Project.	Jun-14	Open
14	The City must submit the revised DBE program and draft Project goal to the FTA's Office of Civil Rights within 60 days of receipt of the final design letter.	Jul-12	Closed