FEDERAL TRANSIT ADMINISTRATION

PROJECT MANAGEMENT OVERSIGHT PROGRAM

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Spot Report #2R
Preliminary Engineering (PE) Entry Readiness Report

Grantee: City and County of Honolulu

Honolulu High-Capacity Transit Corridor Project

Spot Report #2R
Preliminary Engineering (PE) Entry Readiness Report
July 2009
FINAL

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LIST OF ACRONYMS

AA	Alternatives Analysis
BFMP	Bus Fleet Management Plan
DB	Design-Build
DBB	Design-Bid-Build
DBOM	Design-Bid-Operate-Maintain
DEIS	Draft Environmental Impact Statement
DTS	City and County of Honolulu Department of Transportation Services
EIS	Environmental Impact Statement
FD	Final Design
FEIS	Final Environmental Impact Statement
FFGA	Full Funding Grant Agreement
FMOC	Financial Management Oversight Contractor
FTA	Federal Transit Administration
GCM	General Construction Manager
GEC	General Engineering Consultant
GET	State of Hawai`i General Excise and Use Tax
HHCTC	Honolulu High-Capacity Transit Corridor (Project)
HDOT	State of Hawai`i Department of Transportation
LONP	Letter of No Prejudice
LPA	Locally Preferred Alternative
MOS	Minimum Operating Segment
MPS	Master Project Schedule
NEPA	National Environmental Policy Act
NTP	Notice to Proceed
PB	PB Americas, Inc.
PDP	Project Development Plan
PE	Preliminary Engineering
PMO	Project Management Oversight
PMOC	Project Management Oversight Contractor
PMP	Project Management Plan
PMSC	Project Management Support Consultant
QA/QC	Quality Assurance / Quality Control
QMP	Quality Management Plan
RAMP	Real Estate and Acquisition Management Plan
RFI	Request for Information
RFMP	Rail Fleet Management Plan
RFP	Request for Proposal
RFQ	Request for Qualifications
ROD	Record of Decision
RTD	DTS Rapid Transit Division
SCC	Standard Cost Category
SSMP	Safety and Security Management Plan
SSOA	State Safety Oversight Agency
SSORC	Safety and Security Oversight and Review Committee
UH	University of Hawai`i
YOE	Year of Expenditure

1. INTRODUCTION

Report Date	**FINAL** - July 20, 2009
Project Name / Location	Honolulu High-Capacity Transit Corridor Project Honolulu, Hawai`i
Project Sponsor	City and County of Honolulu
Project Management Oversight Contractor (PMOC) firm	Booz Allen Hamilton
Person (and affiliation if different from PMOC firm) providing this report	Justine Belizaire, with input from Frank McCarron, Scott Kiefer, Robert Mowry, John Simon, John Gutierrez, Margie Newman (H.C. Peck), and Kris Kim (KKCS)
Length of time PMOC has been assigned to this project:	Booz Allen has been assigned for 26 months. Justine Belizaire has been assigned for 26 months.
Date when project sponsor's cost estimate was prepared:	June 9, 2009
Date shown on project sponsor's Standard Cost Category (SCC) worksheets:	June 9, 2009

The purpose of this report, Spot Report #2R, is to document the PMOC's review of the technical capacity and capability of the City and County of Honolulu (City) to enter into Preliminary Engineering (PE) for the Honolulu High-Capacity Transit Corridor (HHCTC) Project in accordance with the Federal Transit Administration (FTA) New Starts requirements and to provide an overall project status. The HHCTC Project is a candidate for the FTA New Starts program.

Spot Report #2 was issued as Final on October 31, 2008 and reflected project status and document review through September 2008. On January 28, 2009 the City revised the Minimum Operating Segment (MOS) alignment for the Project, prompting the City to reissue several FTA deliverables including the Project Management Plan (PMP), to update the project description and delivery methods due to the change in alignment. Other major changes to the Project from September 2008 include the following:

- Revised MOS from the Salt Lake to the Airport alignment
- Revised and more clearly defined project delivery methods and interfaces
- Updated organizational chart reflecting current City, Project Management Support Consultant (PMSC) and General Engineering Consultant (GEC) key staff
- Updated and resubmitted the PMP, Quality Management Plan (QMP), Document Control Procedures Plan, and the Real Estate Acquisitions Management Plan (RAMP)
- Updated Project Cost Estimate and Master Project Schedule based on the revised MOS.

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2. EXECUTIVE SUMMARY

The City and County of Honolulu (City) is requesting to enter into Preliminary Engineering (PE) for the Honolulu High-Capacity Transit Corridor (HHCTC) Project in accordance with the Federal Transit Administration (FTA) New Starts requirements. Before entering into PE, FTA requires projects to complete the appropriate steps in the areas of project development, financial management, and technical capacity and capability. The project development and financial management requirements are being reviewed by FTA. This Project Management Oversight Contractor (PMOC) report only addresses the review of the latter requirement.

This report documents: 1) the PMOC's review of the technical capacity and capability of the City to enter into PE for the HHCTC Project; and 2) the overall project status with regards to scope, cost, and schedule. To develop this report, the PMOC used the *PMO Program Operating Guidance* and the *New Starts Project Planning and Development Checklist of Project Sponsor Submittals to FTA to Enter Preliminary Engineering* issued by FTA in July 2008.

2.1. TECHNICAL CAPABILITY AND CAPACITY

In order to demonstrate technical capacity and capability, the PMOC performed a detailed review of the City's organization and of the professional expertise assembled to develop the requirements necessary for progressing the Project from inception to Revenue Service, including the deliverables required by the FTA New Starts Project Planning and Development. The PMOC has evaluated the City's technical capacity and capability to enter into PE through meetings and workshops with the City management, staff and consultants; documentation reviews; and site visits and tours. Based on a thorough evaluation and document review, ***it is the PMOC's professional opinion that the City has demonstrated that it has the technical capacity and capability to implement the PE phase of project development.***

The PMOC recommends that the PMP be updated in the early part of PE to include a Project Development Plan (PDP) as a sub-plan to the PMP, a new organization chart to reflect changes in staff, and a staffing plan to address concerns with the transition of positions currently occupied by the Project Management Support Consultant (PMSC) to full-time City staff during the PE and Final Design (FD) phases of the Project, including the dates by which the City intends to staff each of the positions.

2.2. PROJECT STATUS

2.2.1 PROJECT SCOPE

The City intends to implement the Project in four segments, in accordance with the Contract Packaging Plan developed by the City and received for review on February 19, 2009. A summary of the Contract Packaging Plan for PE is currently included in the PMP as the project delivery approach for the Project. The four segments and method of delivery identified are:

- **Segment I** – East Kapolei to Pearl Highlands – Design-Build
- **Segment II** – Pearl Highlands to Aloha Stadium – Design-Bid-Build

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- **Segment III** – Aloha Stadium to Middle Street Station – Design-Bid-Build
- **Segment IV** – Middle Street Station to Ala Moana Center – Design-Bid-Build

The project guideway and station locations are being finalized; however, architectural and structural alternatives for the guideway and stations are still being evaluated to further define the scope of the project. The City will continue to evaluate the architectural and structural alternatives, perform additional geotechnical/soils and environmental testing in an effort to further define the project scope, and interface with the local communities to finalize the station characteristics during PE.

The design-build approach is being planned to advance the project schedule in order to minimize escalation costs and start construction of the initial portion of the project while the remainder of the project will proceed through the design-bid-build process. Work on these early contracts is planned to be initiated after Record of Decision (ROD), but ahead of the Full Funding Grant Agreement (FFGA), utilizing local excise tax funding. The PDP to be developed by the City will detail the proposed project delivery methods and interfaces for review by FTA and the PMOC. The City will further evaluate the project delivery approach and methods as they progress in PE to reflect alignment, station locations and segment delivery methods once finalized.

2.2.2 PROJECT BUDGET

On June 9, 2009, the City issued a revised FFGA Project Cost Estimate in the Standard Cost Category (SCC) format. The FFGA Project Cost Estimate, expressed in 2009 dollars, excluding finance charges, is shown as $4,266 million. In Year of Expenditure (YOE) dollars, the estimated cost provided was $4,941 million, excluding finance charges. The anticipated finance charges for the Airport alignment is $231 million in YOE dollars, bringing the total estimated cost of the project, including finance charges, to $5,172 million. Consistent with the FTA Guidance, these costs do not include estimated costs for Professional Services incurred prior to entry into PE, which is currently planned by the City for July 1, 2009.

As a result of the change in MOS to the Airport alignment, the City increased the New Starts Federal share from $1.2 billion (YOE) to $1.5 billion (YOE), as stated in the May 1, 2009, Financial Plan for Entry into Preliminary Engineering Submittal. The City provided a project cost effectiveness for the Airport alignment of $17.78 which is currently under evaluation by FTA.

Overall, it is the PMOC's opinion that the expected FFGA Project Cost Estimate provided on June 9, 2009 is mechanically sound and acceptable as a Project Cost Estimate for this phase of the project.

2.2.3 PROJECT SCHEDULE

The Master Project Schedule (MPS) is still under development and will continue to be so through the PE phase of the project. MPS MA5E, issued by the City on June 2, 2009, depicts aggressive revenue service dates for the Waipahu/Leeward section of Segment I and East

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Kapolei to Pearl Highlands Segment, but shows achievable revenue service dates for the Kamehameha, Airport, and Ala Moana Segments. The City is working to fast-track the schedule through a civil/guideway design-build delivery for Segment I in order to achieve its project delivery goals.

The City submitted their request to enter PE to the FTA on May 4, 2009, and based on the revised MPS submitted by the City on June 2, 2009, has scheduled approval from the FTA by July 1, 2009. Other current critical milestones include issuance of the Final Environmental Impact Statement (FEIS) on August 30, 2009; receipt of the ROD on October 1, 2009; project groundbreaking (Segment I guideway utilities) on April 25, 2010; and Revenue Service for the Waipahu/Leeward section of Segment I by December 24, 2012. Completion of Project is currently scheduled in March 2019.

Overall, the MPS provided on June 2, 2009 is mechanically sound and acceptable as a Preliminary MPS. It is the PMOC's professional opinion that the MPS is sufficiently defined for a project in its current phase, and that the MPS will need to be further refined during PE.

2.3. DURING PRELIMINARY ENGINEERING

Based on its review of the City's current technical capacity and capability and the project status, the PMOC recommends the following areas be fully addressed by the City in the early stages of PE:

- Hiring of additional City staff in order to develop the internal capability needed to effectively manage all consultants throughout the PE phase; further development of the role and responsibilities of the City's Quality Manager from PE through Revenue Operations; and the permanent staffing of a Manager of Safety and Security and Manager of Real Estate.
- Update of the PMP to include a PDP as a sub-plan to the PMP, a staffing plan and an updated organization chart. The PMP also needs to be updated to be consistent with the current status of the project.
- Further development of the PMP during PE in the areas of cost, schedule, and claims management; document control procedures; processes for Procurement and Contracts; and the Construction Management and Testing and Start-Up sections.
- Continue to develop a technically sound and properly integrated MPS.
- Evaluation and development of the project delivery approach and methods for the procurement of utility, facility and system design, and construction/installation contracts including the interface requirements between procurement contracts.
- Implementation and update of the RAMP, Bus Fleet Management Plan (BFMP), Safety and Security Management Plan (SSMP), and Quality Management Plan (QMP) as the project progresses, and the development of a Rail Fleet Management Plan (RFMP) and Contingency Management Plan.
- Third-party negotiations and agreements.

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3. PROJECT HISTORY

The HHCTC Project is a 34-mile, elevated fixed guideway system along O`ahu's south shore between Kapolei and the University of Hawai`i (UH) at Mānoa, including a spur to Waikīkī.

In July 2005, the state legislation authorized a 0.5-percent General Excise and Use Tax (GET) Surcharge as a source of revenue to build the transit corridor project. The GET surcharge went into effect on January 1, 2007 and has an end date of December 31, 2022. An Alternatives Analysis (AA) was initiated in August 2005 and the AA Report was presented to the Honolulu City Council in October 2006. Public meetings concerning the AA were held in November and December 2006, and on December 22, 2006, the City Council selected the fixed guideway alternative as the Locally Preferred Alternative (LPA). In selecting fixed guideway as the LPA, the City Council left some areas of the alignment open, which will be decided upon as the project progresses. These include West Kapolei, Salt Lake Boulevard, Airport alignment, and the Waikīkī/UH at Mānoa branches.

On July 1, 2007, the City created the Rapid Transit Division (RTD) within the Department of Transportation Services (DTS) through enactment of the City's Fiscal Year 2008 Executive Operating Budget and Program. The RTD's responsibilities include project development, management and implementation. New staff members continue to be added to the City's organization within RTD and through InfraConsult, LLC, the City's PMSC. The City's long-term strategy is to replace the PMSC staff positions by hiring locally, and having the PMSC train new City staff using the consultant's expertise in an effort to ensure that the new hires are capable of managing the City's consultants effectively.

On August 24, 2007, the City executed a General Engineering Consultant (GEC) contract for $85 million with PB Americas, Inc. (PB) to perform National Environmental Policy Act (NEPA) documentation and PE activities. The City combined the activities needed to support NEPA and to conduct PE into the GEC contract with separate Notices to Proceed (NTP).

On April 17, 2008, the Mayor directed DTS to move forward with steel-wheel on steel-rail technology. On August 1, 2008, the City issued the Administrative Draft Environmental Impact Statement (DEIS) to FTA for review and comment. The DEIS was completed and issued on October 30, 2008. The DEIS includes three fixed guideway build alternatives:

- Salt Lake only
- Airport only
- Airport and Salt Lake

In 2006, the City Council identified a 19-mile alignment from East Kapolei, through Salt Lake Boulevard and downtown, and with an eastern terminus at the Ala Moana (Shopping) Center as the selected MOS, which would be built first with the current funding/revenue available. The Project did not include the alignment from West Kapolei to East Kapolei, the Airport, Ala Moana Center to Waikīkī or to the UH at Mānoa. However, on January 28, 2009 the City Council voted to revise the MOS alignment to the Airport alignment in lieu of the Salt Lake alignment.

The Airport alignment is approximately a 20-mile portion of the 34-mile LPA, extending from East Kapolei to Ala Moana Center via the Airport. The Airport alignment includes 21 stations. The alignment is elevated, except for an at-grade portion of 2,400 linear feet at the Leeward Community College station. The Airport alignment will average a total of 97,500 boardings at Revenue Operations in the year 2019, 116,000 boardings in the year 2030, and will provide two significant areas with potential for Transit Oriented Development, near the Airport and in the surrounding industrial areas.

The City requested entry into PE for the Airport only option on May 4, 2009 and has scheduled approval from the FTA by July 1, 2009.

It is anticipated that the initial fleet size will be 76 vehicles. There is currently no FFGA for this project. The Waipahu/Leeward Section, which is a 1-1/2-mile portion of the MOS between the Waipahu Transit Center and Leeward Community College Stations, will be the first section scheduled to be in limited operation at the end of 2012. Construction of the Waipahu/Leeward Section is scheduled to begin in April 2010.

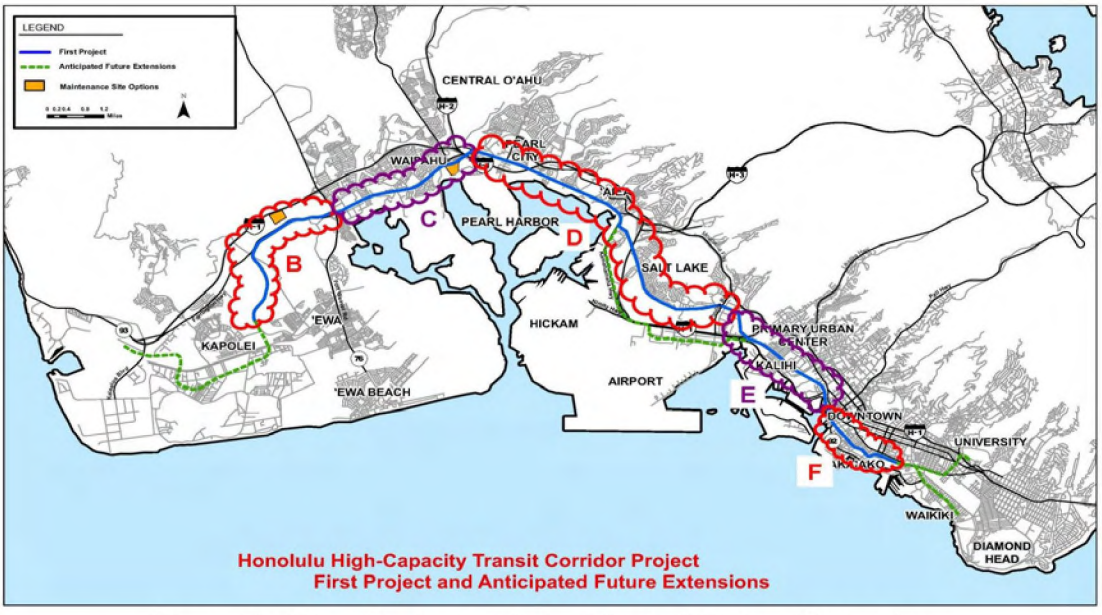

Figure 1. First Project and Anticipated Future Extensions

4. REVIEW AND FINDINGS

The HHCTC Project is scheduled to enter into PE in mid-2009. Before entering into PE, FTA requires projects to complete the necessary activities in the areas of project development, financial management and technical capacity and capability. This report only addresses the latter requirement. With regard to project development, the City completed the final AA Report on the LPA and FTA has reviewed and accepted the AA Report. The DEIS, completed and issued on October 30, 2008, included three fixed guideway build alternatives; Salt Lake only, Airport only and Airport and Salt Lake. As for financial management, the City completed and resubmitted the second revision of the Financial Plan to FTA on May 1, 2009 for review and acceptance. The Financial Plan is under review by FTA and its Financial Management Oversight Contractor (FMOC).

This section of the report presents: 1) the status of the required documents and the PMOC's overall assessment regarding the City's readiness to enter into the PE phase of the HHCTC Project from a technical capacity and capability perspective and 2) the PMOC's review of the reliability of the project scope, cost, and schedule of the MOS prior to entry into PE.

4.1. GRANTEE TECHNICAL CAPACITY AND CAPABILITY REVIEW

To develop this report, the PMOC used the *PMO Program Operating Guidance* and the *New Starts Project Planning and Development Checklist of Project Sponsor Submittals to FTA to Enter Preliminary Engineering* issued by FTA in June 2008, identifying the activities that the City is required to successfully complete in order to demonstrate technical capacity and capability prior to entering into PE. The requirements and scheduled delivery dates of these requirements were formally developed with the City in June 2007 and in August 2008, and identify the following required documents (FTA deliverables) or actions:

- Project Management Plan (PMP), inclusive of a Project Development Plan (PDP) and a staffing plan
- Real Estate and Acquisition Management Plan (RAMP)
- Quality Management Plan (QMP)
- Bus Fleet Management Plan (BFMP)
- Safety and Security Management Plan (SSMP)
- Third-Party Agreements Management Plan (included in the PMP)
- Rail Fleet Management Plan (RFMP)
- Contracting Plan for Preliminary Engineering Phase (included in the PMP)
- Contingency Management Plan (identifying significant areas of uncertainty in scope, cost and schedule)
- Integrated Master Project Schedule (MPS)

The PMOC reviewed the various FTA deliverables as they were developed and provided by the City. The PMOC then discussed any comments, concerns, or outstanding issues with the individual documents with the City and suggested ways to address the issues identified. These

discussions with the City resulted in the document(s) being revised in an effort to address all of the requirements necessary to advance into PE effectively.

The PMOC reviewed the organizational capability and capacity of the City to oversee and manage the PE phase of the HHCTC Project in line with federal, state, and local regulations and industry best practices. The technical capacity and capability evaluation is based on the overall assessment of the documents listed above except for the Financial Plan, which is being evaluated by FTA.

The following subsections provide the status of the checklist documents. The checklist deliverables reviewed by the PMOC provided a clearer understanding of the organizational structure of the City with regard to the HHCTC Project. The deliverable review was also performed to determine if the City has the appropriate management policies and procedures in place to adequately oversee and manage the project, and to verify that the City has all required documentation necessary to enter into PE in mid-2009, as currently anticipated.

4.1.1. STAFFING REVIEW

At the start of the FTA/PMOC oversight in April 2007, the DTS presented 26 staff positions for the HHCTC Project, 21 of which were filled by staff from InfraConsult, LLC, the PMSC. However, over the past two years the City has made tremendous progress in providing the staff needed to demonstrate the technical capacity and capability necessary to design, construct, and operate the HHCTC Project.

On June 5, 2007, the City issued a Request for Qualifications (RFQ) for a GEC for PE services, including the NEPA work. The City combined the activities needed to support NEPA and conduct PE into the GEC contract with separate NTPs. NTP #1, issued on August 24, 2007, is for work required to prepare a DEIS and the documents required by the FTA to support the City's application to advance to PE. NTP #2 would cover the PE effort needed once FTA has approved entry into PE. NTP #3 would be issued for the remainder of the contract work not included in NTP #1 or NTP #2. In August 2007, the City executed a contract with PB Americas, Inc. (PB) and issued NTP #1 on August 24, 2007. All PB key managers are currently on site. The addition of PB to the project provides the City with the ability to obtain any necessary technical expertise to complete both the PE and the Environmental Impact Statement (EIS) process effectively.

On July 1, 2007, the City formed the RTD that falls under DTS. The RTD is responsible for the management and oversight of the project from PE through construction, including all actions and project deliverables required by the FTA New Starts Program, and will interface with other City departments as needed. The RTD is headed by Mr. Toru Hamayasu, who will direct the project staff. The project staff will consist of full-time City employees supplemented with staff from the PMSC, who will fill key project roles pending the hiring of full-time City staff. The PMSC will continue to staff all required City positions in the interim.

The current City staff has the capability to manage the work presently being performed by the PMSC and the GEC. As work progresses into PE, the City will need to add the necessary staff to

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be directly accountable for the development of the project design, budget, and schedule. Development of the project design will include quality review and audit of the GEC as well as any engineering design consultants assigned to the project; the monitoring of safety and security design requirements and implementation; and continued oversight of the real estate acquisition process.

Currently, the project's organizational structure includes City staff along with PMSC and GEC staff, as shown in the City-GEC organizational chart (Figure 2). The current organizational structure provides the experience and expertise to manage the project at this phase of the work and the assigned City staff are sufficiently qualified to manage and monitor all current project activities including the third-party consultants/contractors to be procured during PE Phase of the Project.

The City's long-term strategy is to hire locally and have the PMSC train new City staff using the consultant's expertise in an effort to ensure that the new hires are capable of managing the City's consultants effectively. As the abilities of City staff increase, the need for PMSC staff will diminish until the PMSC staff is no longer necessary. Currently, the City does not have a set timetable for replacing the PMSC with City staff. The current PMSC contract expires in October 2009 and the City intends to issue a Request for Proposal (RFP) for a second Project Managements Services Contract in order to augment the City staff beyond the end of the current PMSC contract through FD. In the interim, the City plans to extend the existing PMSC contract until the second PMSC contract is executed. The City continues to advertise city positions currently filled by the PMSC.

Additionally, the current GEC contract is schedule to expire in February 2010. The City is planning to issue an RFP for the services of a General Construction Manager (GCM) to support the City in managing the final design and construction of the Project. The City plans to issue an RFP for a GCM later this year, for a period of performance beginning in January 2010 through the completion of revenue operations for the project in March 2019.

The PMOC has some concern that the City may encounter difficulty acquiring the experienced staff needed for the long-term assignment given Hawai`i's cost of living and distance from the mainland. The PMOC is also concerned that at present, the City does not have a staffing plan that addresses the transition of the positions currently held by the PMSC. In the early part of PE, the City needs to include a staffing plan in the PMP to address the transition of staff during the PE and FD phases of the Project for positions currently occupied by PMSC staff to City staff, and the dates by which the City intends to staff each of the positions.

At a minimum, the PMOC recommends that the City strive to fill the key management positions currently occupied by the PMSC as early as possible once they are in PE. The key positions the city should focus on filling are Chief Project Officer, Manager of Quality Assurance, Manager of Safety and Security, Chief Project Controls, and Contracts Administrator. The position of Manager of Real Estate Acquisition must be filled prior to the issuance of ROD, which is currently scheduled for October 2009.

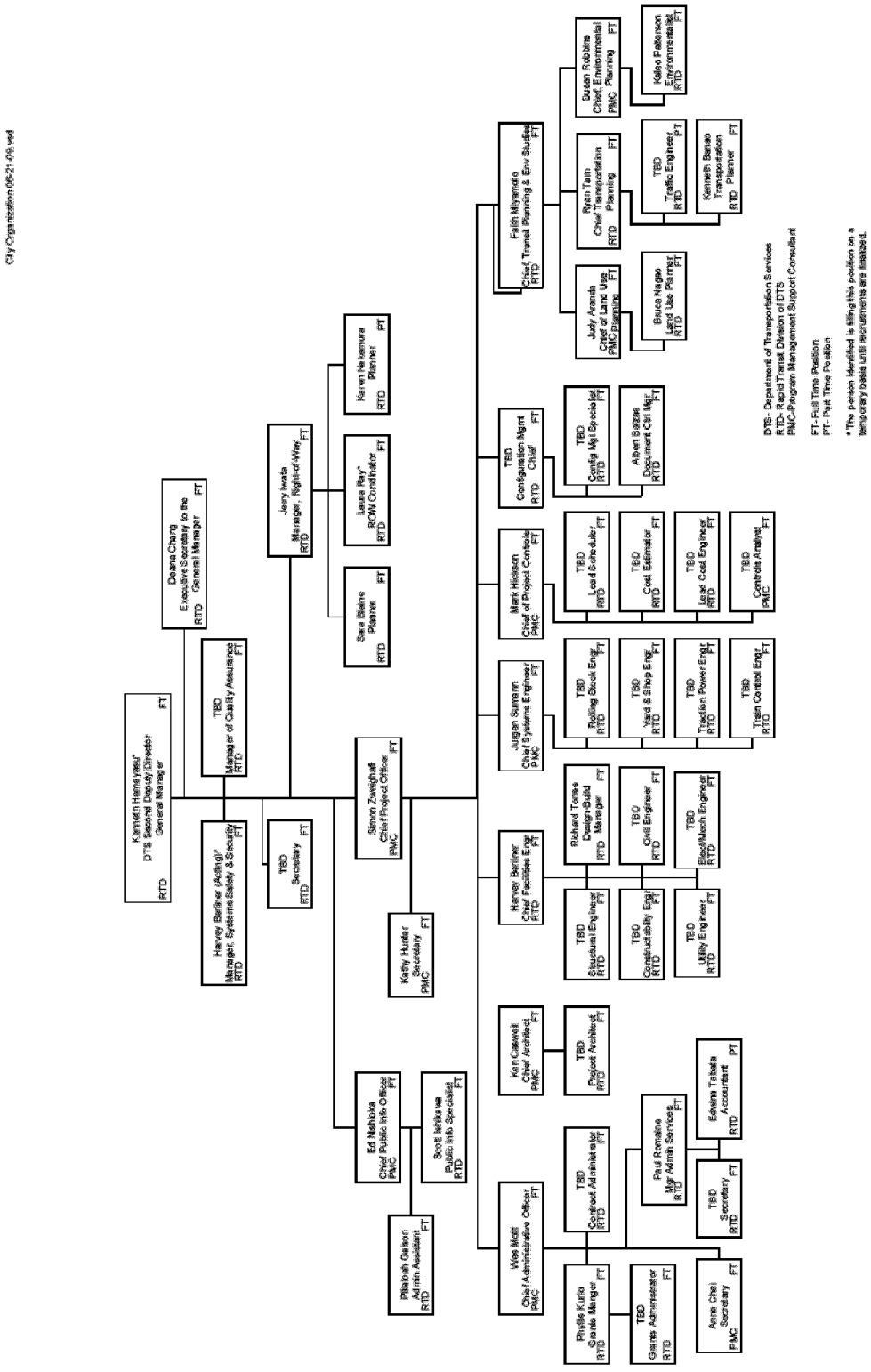

Figure 2. City-GEC Organizational Chart

The PMOC recommends continued monitoring of the City's project management process to ensure that the City is effectively managing the HHCTC Project and continues to be responsible for all decisions affecting project design, cost, and schedule until all key management positions identified are transitioned to full-time City staff. The transition from PMSC staff to full-time City staff should be monitored throughout the PE phase of the project.

Once in the PE phase, the City will need to address the following PMOC concerns:

- The RTD Quality Manager has the ultimate responsibility for the Quality Assurance (QA) and Quality Control (QC) for the project from PE through Revenue Operations, but does not currently have a significant role defined in the various project phases. The City needs to further expand the roles and responsibilities of the RTD Quality Manager to include participation in QA/QC audits, reviews, inspections, and testing to ensure compliance throughout the project.
- The Manager of Safety and Security is temporarily being filled by the Chief Facilities Engineer. The City needs to provide a permanent replacement responsible for the oversight of Safety and Security implementation and certification.
- The Manager of Real Estate is being temporarily filled by the Chief Land Division. The City needs to provide a permanent replacement responsible for the real estate acquisition and relocation activities prior to the issuance of ROD by the FTA.
- The transition of key positions held by PMSC staff to full-time City staff during the PE phase needs to be fully addressed, specifically the positions of Chief Project Officer, Manager of Quality Assurance, Chief Project Controls, and Contracts Administrator.

It is the PMOC's professional opinion that the City address the above staffing concerns during PE. More importantly, the City needs to develop a staffing plan as part of the PMP to address the concerns with the transition of positions currently held by PMSC staff to full-time City staff and the dates by which the City intends to staff each of the positions.

4.1.2. PROJECT MANAGEMENT PLAN (PMP)

The FTA New Starts Program requires that its grantees undertaking a major capital project submit a PMP for FTA's review and approval prior to advancing to subsequent project phases. The PMP is a key document in determining grantees' technical capacity and capability to efficiently and effectively implement a major capital project.

The City submitted a preliminary working draft of the PMP on June 12, 2007. The PMP needed further development to meet the FTA guidelines *Section 49 USC 5327 and 49 CFR 633 Project Management Oversight, FTA Grant Management Guidelines, FTA Circular 5010.1D* and *FTA's Project and Construction Management Guidelines 2003 Update.*

The City resubmitted the PMP on September 14, 2007, and based on this submission, the PMOC and the City conducted a review/workshop on October 16, 2007, to further develop the plan prior to formal submittal. The City resubmitted the PMP on December 20, 2007, which the PMOC reviewed and provided its comments to the City in January 2008.

The final draft of the PMP was provided by the City on March 17, 2008. The PMOC provided

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comments to this version of the PMP on April 25, 2008 and the City submitted a final baseline version of the PMP (revision 0) on May 21, 2008, which covered all of the 13 elements required to be included in a PMP for entry into PE, and reflecting the City's updates to the PMP in response to all previous PMOC comments.

On October 31, 2008, the City issued a Rev. 1 to the PMP, which updated the PMP to reflect project progress through October 2008. On January 28, 2009, the City revised the MOS alignment for the Project, prompting the City to issue Rev. 2 of the PMP on March 1, 2009, to update the project description and delivery methods due to the change in alignment. Refer to Spot Report #3R, dated June 2009, for a full review and analysis of each of the 13 elements covered in the PMP.

The following table provides the document and submission dates for each of the PMP revisions received from the City and reviewed by the PMOC:

	Document Date	**Receipt Date**
First Working Draft	June 12, 2007	June 12, 2007
Second Working Draft	September 14, 2007	September 14, 2007
Third Working Draft	December 20, 2007	December 20, 2007
Final Working Draft	March 17, 2008	March 17, 2008
Final Signed Baseline, Rev. 0	May 21, 2008	May 21, 2008
Revision 1	October 31, 2008	October 31, 2008
Revision 2	March 1, 2009	March 6, 2009

The City continues to advance several areas of the project as they prepare to move into PE. As a result of the most recent updates to the project delivery method, revisions to the organizational chart as a result of staff changes, and concerns with City staff transition, further development of the PMP in the following areas will be required during the PE phase of the project:

- Update the PMP to be consistent with the current status of the project.
- Develop a PDP providing the essential processes to be used, anticipated costs and schedule, and various metrics to satisfactorily measure performance in attaining the planned delivery of products and completion during the period between the completion of the AA Phase through the completion of the PE Phase
- Prepare a Staffing Plan and revise the organization chart due to changes in PMSC positions and City staff, and to address the transition of PMSC staff to City staff during the PE and FD Phases of the Project
- Update the Project Delivery approach during PE to reflect alignment, station locations, and segment delivery methods once finalized.
- Expand cost, schedule, and claims management sections during PE as the requirements and the processes are further defined.
- Expand the Configuration Management Plan and Document Control Procedures during the PE to incorporate the roles of the Consultants (engineering, design, and construction) and Contractors at the various stages of the project, and to include document response durations, tracking, turnover, retention, storage, and retrieval.
- Expand the process for Procurement and Contracts and change order procedures during

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PE to incorporate the roles of the GEC, GCM, and Contractors at the various stages of the project.

- Expand the Construction Management and Testing and Start-Up sections during PE as the requirements and the processes are further defined.

It is the PMOC's professional opinion and recommendation that the City update the PMP in the early part of PE phase to include and address the areas noted above. In particular, the PMP needs to include a Project Development Plan (PDP) as a sub-plan to the PMP, a staffing plan, and an updated organizational chart. The PMOC notes that the PMP is a living document and the City is updating the PMP as the project progresses to further refine and address the areas listed above.

4.1.3. REAL ESTATE AND ACQUISITION MANAGEMENT PLAN (RAMP)

The FTA New Starts Program requires that its grantees undertaking a major capital project submit a RAMP for FTA's review and approval prior to advancing into the PE, FD, and FFGA phases of the project.

The purpose of the RAMP is to demonstrate that the City has done adequate planning to implement the right-of-way appraisals, land acquisition, relocation, and property management activities for all phases of the project. These policies and procedures must also incorporate compliance requirements of state statutes and guidelines.

The City submitted an initial draft RAMP on January 3, 2008. The PMOC reviewed the draft against FTA policies and procedures that conform to the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970* as amended and implementing the regulations at *49 CFR Part 24 (collectively "the Uniform Act")* and *FTA Circular 5010.1D*. The PMOC provided and discussed its comments with the City during a workshop held on January 16, 2008.

During the months of February and March 2008, the PMOC had several informal discussions with the City and provided informal comments to assist the City with the development of the RAMP. On March 12, 2008 the City resubmitted the RAMP (dated February 29, 2008) for PMOC review and comment. Based on comments received from H.C. Peck, as a subcontractor to the PMOC, the City revised the RAMP and issued the final draft submission on April 17, 2008, which was significantly revised to address previous comments and concerns of the PMOC. On May 22, 2008, the final baseline version (revision 1) of the RAMP was transmitted to the PMOC. On May 14, 2009, revision 2 of the RAMP was submitted for PMOC review. This submittal revised the project description to reflect the MOS change to the Airport alignment and updated the RAMP to reflect the current status of the project.

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The following table provides the document and submission dates for each of the RAMP revisions received from the City and reviewed by the PMOC:

	Document Date	Receipt Date
First Working Draft	January 3, 2008	January 3, 2008
Second Working Draft, Rev. 0	February 29, 2008	March 12, 2008
Final Working Draft	April 1, 2008	April 17, 2008
Final Signed Baseline, Rev. 1	May 22, 2008	May 22, 2008
Revision 2	April 14, 2009	May 14, 2009

The April 14, 2009 RAMP final submittal is acceptable for entry into PE. Overall, the RAMP:

- Provides an overview of the acquisition process
- Defines roles for the City, project personnel, consultants, and subconsultants involved in all phases of the right-of-way acquisition and relocation activities
- Outlines acquisition strategies and decision-making processes
- Identifies coordination requirements and processes
- Defines tasks and assigns responsibilities for those tasks
- Describes the project controls that will be utilized to monitor the acquisition schedule, costs, and quality control.
- Identifies 193 total parcels, 33 of which are full takes involving displacements (18 Residential, 65 Commercial, and 1 Church).

Resolution of the following areas of concerns needs to occur prior to the next RAMP submittal and prior to the ROD:

- Previous versions of the RAMP did not adequately address the reporting and working relations between the key positions Chief Land Division, Manager of Real Estate and Relocation Specialist. While the RAMP final version for Pre-PE provides adequate descriptions of the reporting and working relationships between these positions, these key positions report to different Directors. The City has developed an issue resolution process to elevate disputes between these two key positions to the Managing Director or the Mayor, if necessary. The PMOC recommends that this organizational structure continue to be monitored to evaluate its effectiveness as identified.

- One of the key positions identified is Manager of Real Estate. The City has provided a revised organization chart indicating the City has assigned a City/County staff person, to serve as Manager of Real Estate until a permanent replacement can be found. The individual identified has sufficient right-of-way experience including Uniform Act compliance experience to successfully implement the right-of-way and relocation portion of the project. The City has indicated they are actively recruiting for the position of Manager of Real Estate. The PMOC recommends that any applicant's qualifications be reviewed by the PMOC to ensure the applicant demonstrates sufficient previous experience with federally-funded projects to successfully implement the project in compliance with Uniform Act regulations and applicable FTA requirements.

- The organization chart also identified a Right-of-Way Coordinator; however, while this individual has had experience overseeing the implementation of Capital Projects in

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compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act, this individual has had no direct responsibility for real property acquisitions or relocation. The role of Right-of-Way Coordinator is critical to ensure that the right-of-way and relocation activities are successfully implemented. A revised organization chart and new resumes should be made a part of the RAMP prior to the next submission. The PMOC recommends continued monitoring to ensure that the current staffing is adequate to meet the MPS.

- The ROW Acquisition Tracking Report adequately addresses all tasks required for land acquisition and relocation. The Acquisition Tracking Reports submitted by the City did not contain current and complete information. There are also inconsistencies between the Acquisition Tracking Report and the Parcel Acquisition Schedule. There are many tasks identified on the Parcel Acquisition Schedule that should have begun and/or have been completed by this date that are not showing as started and/or competed on the Tracking Report. The tracking tools and procedures described in the RAMP are adequate to implement the project; however, if they are not monitored and updated with current information they have no value. The PMOC recommends that the City provide additional detail on how the City anticipates this process to work including the projected timeframe for making final decisions.
- The Parcel Acquisition Schedule needs to include the possibility of engaging in condemnation activities and the expected time required to gain possession of the property through this method. This is necessary even if the City is not anticipating the need to file condemnations at this time. In the event that there is a failure to agree, or an unresolved title issue, it is necessary to understand what the impact will be on the project schedule. The schedule must reflect the amount of time required to file condemnation and receive possession through the courts, and the schedule must be revised to reflect this prior to ROD. Currently, the Parcel Acquisition Schedule indicates that approximately 369 days are required for parcels with no relocation and 509 days are required for parcels with relocation. The City has indicated that they do not expect condemnations in the first phase because a majority of the property is owned by governmental entities. The PMOC recommends that the City provide additional detail on what type of agreements are being executed between the City and other governmental agencies. This should include the status of each specific parcel as to current negotiations and agreements.
- There should be an Acquisition Tracking Report and Parcel Acquisition Schedule for subsequent segments. The Parcel Acquisition Schedule and Parcel Tracking Reports provided to the PMOC for review need to be continuously updated and monitored by the PMOC to insure that the MPS can be met.
- Relocation Policies and Procedures. The PMOC received Chapter 4 of the Hawai`i DOT Highways Division Right of Way Manual on Relocation Assistance from the City on June 18, 2009. A brief review by the PMOC shows some areas in which the manual is not in compliance with the new rule 49 CFR Part 24, and other areas where it is not in compliance with specific requirements of FTA Circular 5010.1D. In April 2008, the City advised that they would review the HDOT policies and procedures and make any modification(s) that would be necessary to meet the FTA and City requirements. These crucial revisions have not yet been accomplished by the City. The manual also

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references attachments A-S, which are made up of forms that must be utilized during the relocation process, and these were not included in the City's submission. These attachments, drafts of the required notices at 49 CFR Section 24.203 (a), (b), and (c), and a draft of the City's Relocation Assistance Brochure, which will explain the City's Relocation Assistance Program to potential displacees (as a mandatory element of the General Information Notice), must also be incorporated into the RAMP. All of this information is vital in accessing the City's ability to successfully implement the Relocation Assistance Program as required. Based on a planned ROD date of October 1, 2009, these items need to be provided to the PMOC by August 1, 2009 for review. If the City requires guidance or other assistance in this area from the PMOC, it can be provided.

- The City's Department of Budget and Fiscal Services will prepare a Relocation Plan prior to the ROD being issued for the project. This relocation plan will become a supplement to the RAMP. Per 49 CFR Section 24.205, such relocation planning must be completed prior to any action by the Agency (such as land acquisition activities) that would result in displacement. The PMOC recommends that the RAMP and Relocation Plan be reviewed for sufficiency by the PMOC as soon as they are available.

The PMOC considers the RAMP to be a "living document" and it is expected that the City would update the RAMP periodically as the project design proceeds and there is further refinement of the right-of-way plans to maintain compliance with the Uniform Act and other regulatory requirements as well as project development. While the RAMP is sufficient for entry into PE, the PMOC cannot overemphasize the importance of continued monitoring to ensure that the City is providing continuing evidence of further development of the schedule, acquisition and relocation tracking reports, updated cost estimating, and ongoing information regarding staffing issues and relocation requirements.

Based on the PMOC's review of the May 14, 2009 RAMP, it is the PMOC's professional opinion that the RAMP meets FTA requirements to implement the PE phase of project development.

4.1.4. QUALITY MANAGEMENT PLAN (QMP)

The FTA New Starts Program requires that its grantees undertaking a major capital project submit a QMP for FTA's review and approval prior to advancing to subsequent project phases. The City submitted an initial working draft QMP on January 3, 2008. The PMOC reviewed this draft against FTA *Quality Assurance and Quality Control Guidelines, FTA-IT-90-5001-02.1, dated February 2002*, which provide quality program guidance to grantees undertaking design, construction, or equipment acquisition in the management of federally funded projects. The PMOC and the City discussed comments on the draft QMP during a workshop held on January 16, 2008.

The City submitted a revised QMP addressing the PMOC initial comments on March 26, 2008 (dated March 25, 2008). Although the PMOC provided the City comments to this version of the QMP on April 15, 2008, the QMP submitted covered all of the requirements required in the *FTA Quality Assurance and Quality Control Guidelines, FTA-IT-90-5001-02.1* and was therefore

acceptable for entry into PE in its current version. On May 15, 2009, revision 1 of the QMP was submitted for PMOC review, revising the project description to reflect the MOS change to the Airport alignment.

The following table provides the document and submission dates for each of the QMP revisions received from the City and reviewed by the PMOC:

	Document Date	Receipt Date
First Draft		January 3, 2008
Final Working Draft	March 25, 2008	March 26, 2008
Final Signed Baseline, Rev. 0	May 12, 2008	June 16, 2008
Revision 1	May 8, 2009	May 15, 2009

The QMP needs to be updated early in PE to further address the QA/QC procedures to be implemented by the FD Consultants, the GCM, as well as Design-Build (DB) and Design-Bid-Build (DBB) Contractors. The QMP is a living document that will be updated as the project proceeds through the different phases and stages of the Project.

Based on the PMOC's review of the May 15, 2009, QMP, it is the PMOC's professional opinion that the QMP meets FTA requirements to implement the PE phase of project development.

4.1.5. BUS FLEET MANAGEMENT PLAN (BFMP)

FTA requires that its grantees undertaking a major capital project submit a BFMP for FTA's review and approval prior to advancing to subsequent project phases. The objective of the BFMP is to ensure that bus service is not degraded during design and construction of the grantee's rail project. The BFMP should provide a clear explanation of the current situation and operation with regards to composition of the existing bus fleet, maintenance facilities, and operating conditions.

The City submitted an initial draft BFMP on June 12, 2007. The PMOC reviewed this draft and advised the City that the plan needed further development to meet the *FTA's guidance on Bus Fleet Management Plans for New Starts projects dated April 8, 1999* and *FTA's Guidance for Transit Financial Plans, dated June 2000*, that requires that the number of buses in service, vehicle retirements, acquisitions and overhauls, and the associated annual costs are documented in the BFMP. The PMOC and the City discussed comments on the draft BFMP on June 13, 2007, and the City resubmitted a revised BFMP on January 03, 2008 (dated December 2007); however, the plan did not address a number of the PMOC's comments. After further discussions with the City on January 15, 2008 and formal review comments transmitted on January 23, 2008, the City resubmitted the BFMP on April 4, 2008, which incorporated the PMOC's review comments and addressed the FTA requirements for development of a BFMP.

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The following table provides the document and submission dates for each of the BFMP revisions received from the City and reviewed by the PMOC:

	Document Date	Receipt Date
First Working Draft	June 12, 2007	June 12, 2007
Second Working Draft	December 2007	January 3, 2008
Final Working Draft	April 2008	April 4, 2008
Final Signed Baseline, Rev. 0	April 2008	June 16, 2008

Based upon PMOC review of the revised BFMP submitted on April 4, 2008, the plan now provides sufficient data, discussion, and documentation in the following areas:

- Peak levels of service by year with the number of vehicles required while satisfactorily meeting FTA requirements for spare ratios
- Fleet average age, composition, vehicle requirements, and purchase plan
- Current and projected bus ridership using load factor policy
- A description of maintenance facilities, practices, and procedures to maintain and adequately address the existing and expansion of the fleet
- Service quality and reliability measures including but not limited to vehicle reliability
- Load factors and on-time performance
- A projected annual project that coincides with the financial capacity review.
- Spare ratio averages approximately 20 percent from current year through 2020.

Based on the PMOC's review of the April 2008 BFMP, it is the PMOC's professional opinion that the BFMP meets FTA requirements to implement the PE phase of project development.

4.1.6. RAIL FLEET MANAGEMENT PLAN (RFMP)

The City has not fully developed a RFMP at this time. They have developed a set of assumptions that will form the basis of a RFMP once final decisions on vehicle type and operating parameters are developed. Based on the current assumptions, the total active rail car fleet will consist of 76 "Metro Light" railcars as proposed. The "Metro Light" railcar being proposed is an automated light metro car, similar to railcars currently in operation in Vancouver, Copenhagen, and Oslo, but not in the United States. The railcar would have three doors per side and be approximately 60-feet long. Trains could run in two-, three-, or four-railcar trains. Using the "Metro Light" vehicle is based on the following assumptions:

- 6,277 peak riders during the peak hour-peak direction
- Car capacity of 162 passengers (50 seated +112 standees) based on 3.4 sq ft/person and assuming a load factor of 125%
- 3-minute headways, with 3-car consists.
- 40-minute runtime end-to-end, 87-minute round trip

Based on the above, the proposed fleet of 76 railcars can be broken down as follows:

- 31 trains in revenue service (62 railcars based on 2-car trains)
- 2 trains at ready (4 railcars)
- 15% spare ratio (10 rail cars)

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- 21 trains in revenue service (57 rail cars based on 3-car trains)
- 2 trains at ready (4 railcars)
- 20% spare ratio (15 railcars)

The use of a 15% spare ratio at this time appears to be adequate based on the assumptions; however, the FTA recommended 20% spare ratio is preferred. Based on the opening of the new service coupled with new technology, the higher spare ratio provides an adequate safety net should fleetwide problems or issues arise. The higher ratio will permit the City to still meet the forecasted ridership demand. Car capacity, load factor, train configuration, and ridership projections/simulations will assist in determining design of the railcar itself to meet peak vehicle demand. However, until the technology of the vehicle is finalized, the City cannot determine what maintenance cycles will be required to include in the formula for calculating the spare ratio.

On April 9, 2009, the City issued the Vehicle/Core Systems Design-Build-Operate-Maintain (DBOM) Contract –RFP Part 1 (Request-for-Qualifications). The City's intent is to procure a single DBOM Contract for all vehicles and systems elements, which includes the procurement and installation of vehicles, traction power, train control, and communications, as well as operations and maintenance for ten years following full revenue operation in 2019. The vehicles and systems elements are planned to be manufactured, delivered, and installed as single contracts with multiple NTPs to meet the specific needs of each phase. The vehicle delivery schedule allows for a small vehicle delivery in late 2011 for initial testing, commissioning, and training with the remaining vehicles scheduled for delivery in early 2015. Further refinements including a complete operating plan will be developed during PE.

The City will be required to submit a fully developed RFMP for review in support of entry into FD to ensure that the City will have adequate service to meet the transit demand for the years following construction of the New Starts project.

Based on the PMOC's review of the June 2009 Fixed Guideway Fleet Sizing Report, it is the PMOC's professional opinion that the assumptions provided form the basis of a RFMP and meet the FTA requirements to implement the PE phase of project development.

4.1.7. SAFETY AND SECURITY MANAGEMENT PLAN (SSMP)

FTA's New Starts Program requires that each project receiving FTA funding develop an SSMP for submittal to FTA. FTA issued guidelines for SSMPs contained in Circular 5800.1, on June 21, 2007 and effective as of August 1, 2007, to guide grantees in developing these documents.

The PMOC held a workshop with the City on October 17, 2007 to review the updated FTA requirements for the development of the SSMP. The City submitted a draft SSMP on January 3, 2008 (dated December 28, 2007), and the PMOC discussed its review and comments with the City on January 16, 2008, with formal review comments transmitted on January 23, 2008.

The City completed and submitted a final draft of the SSMP on March 11, 2008. The PMOC used the FTA guidelines checklist to evaluate the SSMP for readiness to enter into PE and provided comments to the City on April 15, 2008. Based on this review, the PMOC

recommended that the SSMP policy statement include a statement on completing a safety and security certification program and that the SSMP be signed and approved by the City prior to issuance of the baseline document for entry into PE. The final signed baseline, dated May 12, 2008, of the SSMP was received on June 16, 2008 and included the PMOC comments as well as comments from the Honolulu Police Department.

The following table provides the document and submission dates for each of the SSMP revisions received from the City and reviewed by the PMOC:

	Document Date	Receipt Date
First Working Draft	December 28, 2007	January 3, 2008
Final Working Draft	March 10, 2008	March 11, 2008
Final Signed Baseline, Rev. 0	May 12, 2008	June 16, 2008

The SSMP incorporates the role of the State Safety Oversight Agency (SSOA) as required by the FTA Guidelines for SSMPs contained in Circular 5800.1. FTA requires states to designate an agency to oversee the safety of any fixed guideway transit (non-commuter rail) system within the state. The process for establishing an SSOA has been identified by the City and on May 13, 2009 the City met with the State of Hawai`i Department of Transportation (HDOT) Director concerning the start-up of the SSOA based on the FTA's State Safety Oversight Rule transmitted to the Governor of the State of Hawai`i in February 2009. An Executive Order is needed to establish the SSOA office and possible legislation action may be necessary for staffing the office due to current budget constraints. The PMOC has expressed concern that the time required to establish an SSOA in the State of Hawai`i is still undefined at this time; however, HDOT is moving forward with the establishment of an SSOA to oversee the project.

A Safety and Security Oversight and Review Committee (SSORC) has been established by the City for the project with the primary purpose of coordinating the activities of the SSMP and providing oversight of the Safety and Security Certification Program. The first meeting of the SSORC was held in January 2008 and meetings continue bi-monthly. The Safety and Security Certification Plan will be developed and submitted for review in early PE.

Based on the PMOC's review of the May 12, 2008 SSMP, it is the PMOC's professional opinion that the SSMP meets FTA requirements to implement the PE phase of project development.

4.1.8. THIRD-PARTY AGREEMENTS MANAGEMENT PLAN

The Third-Party Agreement Management Plan is in the initial stages and is currently included in the PMP. As third-party agreements are established and negotiated during PE, a separate Third-Party Agreements Management Plan will be developed during PE for review. The City is continuing to coordinate with third-party agencies to determine the scope of work associated with each agency.

- Utilities. The existing utilities mapping for the Salt Lake alignment was completed and verified through each of the associated utility agencies. The City is currently in the

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process of compiling the existing mapping for the revised Airport alignment, and this work should be complete by August 2009. The Segment I utilities relocation drawings based on the scope provided in the DB procurement have been completed and transmitted to each of the utility agencies for review and concurrence. A letter from the City will follow, which requests that each of the affected utility agencies develop cost and schedule estimates based on the relocation drawings provided. Once the cost and schedule estimates are received by the City, Construction Agreements for Segment I will be issued. It is planned that these Construction Agreements will be executed prior to the start of Segment I construction in April 2010.

The Utilities Engineering Services Agreement, which allows the third-party agencies to charge for engineering services, was updated by the City based on comments received from the utility agencies and transmitted to each utility agency for signature.

- State of Hawai`i Department of Transportation (HDOT). The HDOT coordination continues to progress without issue. HDOT continues to provide review and comments to plans, specifications, and/or criteria as they are submitted for review. The initial agreement with HDOT has been transmitted by the City for review and comment. At present, a meeting is being scheduled between the City and HDOT to discuss HDOT's comments to the agreement.

At present, the PMOC does not foresee any major problems with utility coordination and relocation in Segment I, as the alignment does not impact any major lines. In addition, coordination meetings with third-party agencies presently in progress have been encouraging and no significant issues have developed.

As a result of the PMOC's review of the third-party agreement plan as part of the March 1, 2009 PMP, it is the PMOC's professional opinion that the third-party agreement plan meets FTA requirements to implement the PE phase of project development.

4.1.9. FINANCIAL PLAN

FTA requires a Financial Plan be submitted by grantees as part of the New Starts process. On May 1, 2009, the City submitted an updated Financial Plan as a result of the MOS change to the Airport alignment to FTA for review and acceptance. The Financial Plan is currently being reviewed by FTA and its FMOC.

4.1.10. CONTRACTING PLAN FOR PRELIMINARY ENGINEERING PHASE

The City intends to implement the Project in four segments, in accordance with the Contract Packaging Plan developed by the City and received for review on February 19, 2009. A summary of the Contract Packaging Plan for PE is currently included in the PMP as the project delivery approach for the Project. The four segments and method of delivery identified in the PMP are:

- **Segment I** – East Kapolei to Pearl Highlands – DB
- **Segment II** – Pearl Highlands to Aloha Stadium – DBB
- **Segment III** – Aloha Stadium to Middle Street Station – DBB

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- **Segment IV** – Middle Street Station to Ala Moana Center – DBB

The DB approach is being implemented to advance the project schedule in order to minimize escalation costs and start construction of the initial portion of the project while the remainder of the project will proceed through the design-bid-build process. Work on these early contracts is planned to be initiated after ROD but ahead of the FFGA, utilizing local excise tax funding. The City plans to issue Letters of No Prejudice (LONPs) to execute the DB contracts for design and construction prior to FFGA.

The PDP to be developed by the City will detail the proposed project delivery methods and interfaces between utility, facility, systems and vehicle contracts for review by FTA and the PMOC. The City will further evaluate the project delivery approach and methods as they progress in PE to reflect alignment, station facility and ancillary structure locations, and segment delivery methods once finalized.

4.1.11. CONTINGENCY MANAGEMENT PLAN

The City has not developed a Contingency Management Plan at this time as the specific risk requirements for the HHCTC Project have not yet been defined. FTA has required that a Pre-PE Risk Assessment be performed prior to approval for entry into PE. FTA has procured an independent PMOC to perform the Pre-PE Risk Assessment analysis.

In the PMP, the City identified four major sources of risk to the project: Design Risks, Construction Risks, Financing and Economic Risks, and External Political and Social Risks. The PMP also identifies the types of risks within each categories and potential mitigation efforts to be implemented throughout the project phases.

Upon completion of the Pre-PE Risk Assessment currently being performed, the Risk PMOC will provide a preliminary risk register from which the City will develop a Contingency Management Plan identifying the specific risks on the HHCTC Project, and the anticipated mitigation measures to be implemented from the PE Phase of the project through project completion. This Contingency Management Plan will be updated throughout the phases of the Project as risks are mitigated and new risks identified.

4.2. PROJECT STATUS

This section of the report documents the PMOC's review of the reliability of the project scope, cost, and schedule of the MOS prior to entry into PE. The HHCTC Project is in the Pre-PE stage. The City completed the final AA report on the LPA, which has been reviewed and accepted by FTA. The DEIS was completed, accepted by FTA, and issued on October 30, 2008. The project guideway and station locations are being finalized and structural alternatives for the guideway and stations are being evaluated in order to further define the scope of project. The Administrative FEIS is currently being developed by the City for review and comment.

The DB approach is being implemented to advance the project schedule. The City has developed a Compendium of Design Criteria for all design elements along with their standard

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specifications and standard and directive drawings. On February 4, 2009, the City released RFP Part 1 – West Oahu/Farrington Highway Design-Build Contract - Request for Qualifications, for the first guideway segment from East Kapolei to Pearl Highlands. The Part 1 RFP is the first of two RFP parts issued to identify qualified proposers to submit proposals for the West Oahu/Farrington Highway Design-Build Contract. The Part 1 RFP required potential proposers to provide organizational and technical capacity and capability for completing the Segment 1 design-build guideway at an approximate cost of $550 to $600 million.

A pre-proposal conference for Part 1 RFP was held on February 18, 2009 for all potential proposers, and responses to Part 1 RFP were received on March 13, 2009. The City determined a Priority List that included the top four highest/qualified ranked firms from the proposers deemed eligible for consideration, who then received the RFP Part 2, Request for Technical and Price Proposals. In accordance with the Hawai`i Administrative Rules on Procurement, the City did not release how many proposers provided submittals, and the Priority List was not published prior to the release of the Part 2, Request for Proposal, on April 3, 2009. The Hawai`i Administrative Rules on Procurement (HRS 103D-701) require the City to keep all competitive sealed proposals confidential. Sealed proposals can only be made available for public inspection upon posting of the award.

On April 9, 2009, the City released the Vehicle/Core Systems Design-Build-Operate-Maintain Contract RFP Part 1, Request for Qualifications, which includes the procurement and installation of vehicles, traction power, train control, and communications. Proposals were received by the City on June 5, 2009, and the RFP Part 2, Request for Technical and Price Proposals, will be issued to proposers pre-qualified by the Part 1 process and deemed eligible for consideration for the Priority List on July 31, 2009. Vehicles and systems elements are planned to be manufactured, delivered, and installed as single contracts with multiple NTPs to meet the specific needs of each phase. The Maintenance and Storage Facility was also issued as a DB Contract, the RFP Part 1, Request for Qualifications was released on May 29, 2009. Proposals are due on July 2, 2009.

The City continues to advance the project at this time and on May 4, 2009 requested entry into PE for the Airport only option.

4.2.1. PROJECT SCOPE

AA was initiated in August 2005 and the AA report was presented to the Honolulu City Council in October 2006. Public meetings were held on the AA in November and December 2006, and on December 22, 2006, the City Council selected the fixed guideway as the LPA, with the selection also including the alignment of the project. The four alternatives evaluated in the AA process were:

- No-Build
- Transportation System Management
- Managed Lanes
- Fixed Guideway

The LPA selected is a 34-mile elevated fixed guideway system along O`ahu's south shore

between Kapolei and the UH at Mānoa, including a spur to Waikīkī. In selecting Fixed Guideway as the LPA, the City Council left some areas and portions of the alignment open, which will be decided upon as the project progresses. These include West Kapolei, Salt Lake Boulevard, the Airport alignment, and the Waikīkī/UH at Mānoa branches.

Conditions for selecting the LPA alignment included:

- The west terminus of the alignment is at East Kapolei, where there are plans for significant future development (UH West O`ahu and State Department of Hawaiian Home Lands)
- Serve Waipahu, which is primarily a highly dense residential area with some commercial development along the main road
- Serve the Pearl Harbor area and Aloha Stadium
- Serve the Salt Lake Boulevard area, which is highly residential and currently very congested, with several areas of very dense development including commercial, business, and residential land uses
- Serve downtown Honolulu and Kalihi, both of which are high-density commercial and residential areas, including two community colleges.

The assumptions made for the operation of the Fixed Guideway in the AA report were:

- System will operate from 4 a.m. to 12 a.m., with 3- to 10-minute headways.
- Maximum speed will be about 60 mph, in a fully dedicated right-of-way with dedicated vehicles, mainly on aerial/elevated guideway with columns in existing roadway medians, although at-grade may be possible in some areas
- Guideway is less than 30-feet wide between stations, and approximately 50-feet plus vertical circulation at stations
- Stations will be spaced approximately at every mile and be approximately 270-feet long
- Cost to ride will be the same as "TheBus" with transfer available from one to the other.

The City included both the Salt Lake Boulevard and the Airport alignments in the DEIS for a total project alignment of 34 miles. The DEIS was completed and issued on October 30, 2008, and included three fixed guideway build alternatives:

- Salt Lake only
- Airport only
- Airport and Salt Lake

The Airport only alternative is currently being evaluated for entry into PE.

In conjunction with AA, an initial scope was developed for the project, which included preliminary alignment development reflecting all alternatives, typical sections for the guideway and structures (both elevated and at-grade), typical station design, and a preliminary cost estimate.

Over the last two years, the City's GEC has held several workshops in advance of PE in an effort to determine the most effective alternatives for execution of the project. These workshops allow the GEC to analyze and evaluate structural and geotechnical options for both the guideway

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foundations and the aerial structure and architectural alternatives for the stations, as well as station area interface and design to maximize circulation. The workshops also address project constructability and systems interface. The GEC has also undertaken and completed several environmental studies, performed initial soil boring testing, and studied alignment refinements including station and support facility locations.

As stated above the DB approach is being implemented to advance the project schedule. The City released RFP Parts 1 and 2 for the West Oahu/Farrington Highway Design-Build Guideway Contract; the first guideway segment from East Kapolei to Pearl Highlands. The City has developed a Compendium of Design Criteria for all design elements along with their standard specifications and standard and directive drawings. The City will evaluate the structural and architectural element for the Segment I guideway to ensure consistency of structural, architectural, and aesthetic elements throughout the project.

The City is currently performing several tasks in an effort to further define the project scope and, as a result, the MPS. The City has prepared plan and profile drawings, and is identifying right-of-way for the guideway, stations, and ancillary facilities. The City has also begun utility coordination and relocation activities, environmental studies, and foundation and aerial structural analysis in order to determine the most effective alternatives for execution of the project. The City has also developed track line diagrams, simulated traction power requirements to determine the number and spacing of traction power substations and further defined the communications and fare collection requirements. Fleet size is anticipated to be 76 vehicles.

During PE, guideway, station, and ancillary facility locations will be finalized and the City will continue to evaluate architectural and structural alternatives and perform additional geotechnical/soils and environmental testing in an effort to further define the project scope. The City will also further refine the interfaces between the utility, facility, system and vehicle contracts. The City has begun to hold public meetings with the various affected communities to finalize the station characteristics and interface with the local communities.

4.2.2. PROJECT PRELIMINARY DESIGN

With regard to staffing support for Preliminary Design, the GEC has technical capability and capacity to evaluate the various options required to produce a complete set of preliminary design documents and to perform the preliminary design requirements for the HHCTC Project. As demonstrated in the PMP, the City, with the support of the PMSC, has developed the necessary procedures to monitor the GEC's performance, as well as ensure that the City requirements are included in the design through scheduled design reviews.

The DB approach is being implemented to advance the project schedule in order to minimize escalation costs and start construction of the initial portion of the project while the remainder of the project will proceed through the DBB process. Plans and profiles developed by the West Oahu/Farrington Highway Guideway Design-Build Contractor will be evaluated for consistency throughout the project. The City will issue procurements for Engineering Design Consultants who will be responsible for performing engineering and design for the DBB Segments, including all stations.

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4.2.3. PROJECT CAPITAL COST

The DEIS cost estimate for the Airport alignment as expressed in 2008 dollars, excluding finance charges, was $4,125 million. In YOE dollars, the estimated cost was $4,927 million, excluding finance charges. The anticipated finance charges for the Airport alignment was $506 million in YOE dollars, bringing the total estimated cost of the project, including finance charges, to $5,433 million. As a result of the change in MOS to the Airport alignment, the City increased the New Starts Federal share from $1.2 billion (YOE) to $1.5 billion (YOE), as stated in the May 1, 2009, Financial Plan for Entry into Preliminary Engineering Submittal. The City provided a project cost effectiveness for the Airport alignment of $17.78 which is currently under evaluation by FTA.

On May 7, 2009, the City issued an updated Financial Plan and a revised FFGA Project Cost Estimate in the SCC format. The FFGA Project Cost Estimate, expressed in 2009 dollars, excluding finance charges, is shown as $4,268 million. In YOE dollars, the estimated cost provided was $4,942 million, excluding finance charges. The anticipated finance charges for the Airport alignment is $231 million in YOE dollars, bringing the total estimated cost of the project, including finance charges, to $5,173 million. Consistent with the FTA Guidance, these costs do not include estimated costs for Professional Services incurred prior to entry into PE, which is currently scheduled by the City for July 1, 2009.

The PMOC performed a review of the May 7, 2009 FFGA Project Cost Estimate and determined that the methodology used to develop the current Airport Alignment FFGA estimate was similar to the approach taken to generate the Salt Lake Alignment DEIS estimate. The following observations were also noted:

- A sampling of the unit cost in the Airport Alignment FFGA estimate indicated that the unit costs were the same in all segments of the Airport Alignment. Thus, the unit costs did not take into account varying site conditions along the alignment. Similarly, the estimate did not account for unforeseen site, ground, or geotechnical conditions.
- Station costs were based on generic line items and parametrically derived quantities and costs. Thus, the scope needs to be better defined to allow a more accurate portrayal of the station-related costs. This also applies to the four new stations on the Airport Alignment.
- The previous 2006 and current 2008 hazardous materials and environmental mitigation costs were lump sums, with minimum definition of scope. In order to develop a more accurate estimate these hazmat/environmental costs, the PMOC recommended in 2007 that a detailed site assessment be performed early in the PE Phase to better quantify the type, limits, and extent of any soil or groundwater contamination.

The estimate was prepared in accordance with generally accepted estimating principles and practices; however, since the project is in the Pre-PE stage, major cost elements and risk items should be reviewed as the design and engineering mature and the construction schedule is refined. Such items include utility relocations, real estate acquisitions and ROW considerations, environmental remediation, and geotechnical impacts to foundation design and construction.

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The PMOC also determined that the previously identified risks in the Salt Lake Alignment estimate are still relevant to the current Airport Alignment FFGA estimate:

- The availability and retention of labor, as well as the availability of materials and equipment, may adversely impact cost and schedule.
- Geotechnical information is not sufficient. Geotechnical and boring data are needed for the foundation design of structures.
- Real estate acquisitions are not completely known.
- Precast yards and laydown/staging areas need to be identified.
- Traction power supply and distribution requirements, station communications, and intelligent transportation systems need better definition.
- Fare collection system and equipment need better definition.

It is the PMOC's opinion that the May 7, 2009 cost estimate appeared reasonable for a project at the Pre-PE stage of development. Furthermore, the estimate's level of detail is commensurate with a project at the Pre-PE Phase.

On June 9, 2009, the City issued a slightly revised FFGA Project Cost Estimate in the SCC format reflecting refinements in the cost data. The FFGA Project Cost Estimate, expressed in 2009 dollars, excluding finance charges, is shown as $4,266 million. In YOE dollars, the estimated cost provided was $4,941 million, excluding finance charges. The anticipated finance charges for the Airport alignment is $231 million in YOE dollars, bringing the total estimated cost of the project, including finance charges, to $5,172 million. The City also provided a detailed build-up of escalation rates to support the YOE dollars calculated in the FFGA Project Cost Estimate.

Overall, the Expected FFGA Project Cost estimate for the HHCTC Project was found to be reasonable at this stage of the project. The provisions for contingencies were found to be adequate and appropriate for a project in the Pre-PE phase. Also, the assumed inflation rates used to adjust project costs from 2009 dollars to YOE dollars were found to be trending low and may not be sufficiently conservative, based on recent cost inflation for construction projects nationally and local Honolulu consumer cost inflation.

4.2.4. PROJECT RISK

In May 2007, the PMOC performed a Cost Validation Analysis of the project costs developed on the basis of the conception design performed during AA. As a part of the Cost Validation Analysis, the PMOC reviewed potential cost risks and identified cost elements that either may be missing from the current estimates or that may benefit from further refinement, to reduce cost risk. The following are some of those items that may pose cost risks to the project, and hence deserve further attention during PE:

- Utility Relocation – The last comprehensive utility assessment for buried utilities was performed in 1991 and consisted largely of a review of city utility maps. The current project estimate consists of updated relocation costs applied to the 1991 assessment data. Hence, there is risk that the current cost may be too low, suggesting the need for an updated utility assessment.

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- Real Estate Acquisition and Relocation – At present, the City continues to refine the alignment right-of-way along with location of stations and support facilities. The City has begun to identify land parcels affected by the project including station touchdown locations, park-and-ride facilities and construction access and lay-down areas. Because much of the data used in the City's development of the project budget relies upon analysis completed in 1991, all real estate costs, including relocation costs, will be re-estimated once all affected parcels are identified.

- Environmental Mitigation Requirements – Again, once the City determines the final location of the alignment along with station locations and support facilities, further environmental studies will be necessary to determine the full extent, if any, of the environmental mitigation necessary to complete the project.

- Sub-surface Soil Conditions (Geotechnical) – Because of the differing nature of the subsurface soils along the alignment, further geotechnical studies will be necessary during PE to determine foundation locations and types.

The risks identified above were further evaluated during the Pre-PE Risk Assessment performed by an independent PMOC prior to approval for entry into PE. Upon completion of the Pre-PE Risk Assessment currently being performed, the Risk PMOC will provide a preliminary risk register from which the City will develop a Contingency Management Plan identifying the specific risks on the HHCTC Project, and the anticipated mitigation measures to be implemented from the PE Phase of the project through project completion. This Contingency Management Plan will be updated throughout the phases of the Project as risks are mitigated and new risks identified.

4.2.5. PROJECT SCHEDULE

The City has developed an MPS for the HHCTC Project. On September 21, 2008, the City provided a consolidated MPS for PMOC review, to which the PMOC provided detailed review comments to the City on October 1, 2008. An integrated MPS was provided by the City on October 13, 2008. On March 21, 2009, the City provided an updated integrated MPS (MA05) for PMOC review, which reflected the change of alignment from Salt Lake to the Airport alignment.

On June 2, 2009, the City issued an updated MPS (MA5E) with minor revisions to contract dates based on ongoing refinement of the MPS as a result of the DB RFPs currently issued for public response. The City submitted their request to enter PE to the FTA on May 4, 2009, and based on the revised MPS submitted by the City on June 2, 2009, has scheduled approval from the FTA by July 1, 2009. Other current critical milestones include issuance of the FEIS on August 30, 2009; receipt of the ROD on October 1, 2009; Project groundbreaking (Segment I guideway utilities) on April 25, 2010; and Revenue Service for the Waipahu/Leeward Section of Segment I by December 24, 2012. Completion of Project is currently scheduled in March 2019.

The MPS is still under development and will continue to be so through the PE phase of the

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project. The MPS depicts aggressive revenue service dates for the Waipahu/Leeward section of Segment I and East Kapolei to Pearl Highlands Segment, but shows achievable revenue service dates for the Kamehameha, Airport, and Ala Moana Segments. The City is working to fast-track the schedule through a civil/guideway DB delivery for Segment I in order to achieve its project delivery goals.

The schedule is evolving rapidly and needs further development as the project moves towards and through PE, in order to provide a sound basis to manage the project. Areas of schedule development are:

- The schedule needs to clearly identify relationships among land acquisition, utility relocation, vehicle procurement, civil/systems DB, station FD, and construction.
- The schedule needs more detailed activities for civil/guideways, systems, and station construction work.
- The schedule needs to more accurately define the design, procurement, construction, and testing activities required for the opening of the Waipahu/Leeward Section in December 2012, including coordination with operations/maintenance activities.
- The schedule needs to further define the activities and durations and critical path at a deeper level, one more commensurate with a project of this size.
- The schedule needs to include activities for long-lead items such as running rail, special trackwork, elevators/ escalators, rail maintenance equipment, etc.

In addition to the ongoing technical development of the MPS, it is suggested that the City work to reduce and mitigate some of the potential risk to the project. Areas that the City needs to review and address are:

- Vehicle and Systems – The combined Vehicle and Systems contract is unusually large, showing a duration of approximately nine years. The size of this package results in risk to all MOS openings if there is a delay from this single design/build contractor.
- Maintenance Facility – the Maintenance and Storage Facility will not be fully functional and operational for service by December 2012 for the Waipahu/Leeward section of the Segment I alignment.
- Vehicle Production – Delivery of the first production vehicles is scheduled for November 2011, which is aggressive. Vehicle testing and storage assumptions require clarification given that the Maintenance and Storage Facility will not be operational.
- Operations Control Center – There are no activities scheduled for the Operations Control Center; and it is not clear when the facility will be installed and tested. Detailed planning of the Operations Control Center is necessary, particularly since the grantee is a new operator.
- Staffing – Operations and Maintenance staff training is at risk given that Maintenance and Storage Facility completion is not consistent with Waipahu/Leeward Segment service requirements.

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Table 1 presents a summary of the planned schedule of milestones activities provided by the City. Table 2 provides the dates for the start of construction and revenue operations for each of the segments in the Project.

Table 1. Summary Schedule of Milestone Activities

Activity Description	Planned Schedule	Actual Schedule
Select Vehicle Technology	03/12/08	**04/17/08**
Finalize DEIS/Publish Notice of Availability	12/24/08	**10/30/08**
Issue RFP Part 1 – WO/FH Design-Build Contract	02/04/09	**02/04/09**
Issue RFP Part 2 – WO/FH Design-Build Contract	04/03/09	**04/03/09**
Issue RFP Part 1 – Systems Design-Build Contract	04/09/09	**04/09/09**
Issue RFP Part 1 – Maintenance Storage Facility Design-Build Contract	05/29/09	**05/29/09**
Start PE for Project	07/01/09	
Issue RFP Part 2 – Maintenance Storage Facility Design-Build Contract	07/24/09	
Issue RFP Part 2 – Systems Design-Build Contract	07/31/09	
Finalize FEIS/Publish Notice of Availability	08/30/09	
Record of Decision (ROD)	10/01/09	
Issue NTP for WO/FH Design-Build Contract	12/13/09	
Start Right-of-Way Relocation and Acquisition	02/24/10	
Issue NTP for Maintenance Storage Facility	03/05/10	
Start Final Design (FD) for Project	04/21/10	
Start WO/FH Construction / Start Utility Relocation	04/25/10	
Issue NTP for Systems (vehicles, traction power, train control and communications)	07/09/10	
City Executes FFGA	06/22/11	
Vehicles – First Delivery (2 Prototype Vehicles)	11/20/11	
Open Waipahu/Leeward Section	12/24/12	
Vehicles – Delivery (Remaining Vehicles)	03/24/15	
Open (Revenue Operation) for the Project	03/04/19	

Table 2. Milestone Dates for Project Segments

Segment	Utility Relocation/ Construction Date	Revenue Operations Date
Segment I: East Kapolei to Pearl Highlands	04/25/2010	07/21/2014
	04/25/2010	
Segment II: Pearl Highlands to Aloha Stadium	10/21/2011	01/21/2017
	11/15/2011	
Segment III: Aloha Stadium to Middle Street Station	10/21/2011	11/22/2017
	04/18/2012	
Segment IV: Middle Street Station to Ala Moana Center	10/21/2011	03/04/2019
	02/24/2013	

The City continues to progress the schedule in an effort to formulate the appropriate project delivery methods to achieve an initial operating segment by the end of year 2012. Ongoing updates of the MPS will occur as more detailed activities are added supporting each different project phase, starting from Pre-PE, PE, FD, Procurement, and Construction phases.

Overall, the MPS provided on June 2, 2009 is mechanically sound and acceptable as a Preliminary Master Project Schedule; however, it will need to be continuously monitored through PE.

Based on a thorough review of the MPS, it is the PMOC's professional opinion that the Master Project Schedule is sufficiently defined for a project in its current phase and that the schedule needs to be further refined during PE.

4.2.6. ONGOING ISSUES REQUIRING PMOC MONITORING

Going forward, the following issues need to be monitored, developed, and resolved during the PE phase:

- Hiring of additional City staff in order to develop the internal capability needed to effectively manage all consultants throughout the Project. At present, the PMOC recommends that the following be filled by City staff during the PE phase, but prior to entry into Final Design:
    - Chief Project Officer
    - Manager of Quality Assurance
    - Manager of Safety and Security
    - Chief Project Controls
    - Contracts Administrator
    - Manager of Real Estate Acquisition –the position of Manager of Real Estate Acquisition must be filled before the issuance of ROD.
- Update and further development of the PMP during the PE phase in the areas of cost, schedule, and claims management; document control procedures; processes for Procurement and Contracts; and the Construction Management and Testing and Start-Up sections.
- The project scope needs to be further detailed in order to develop a complete MPS. Development of the MPS should further define schedule activities and identify critical path activities and associated milestone dates.
- The Real Estate Acquisition and Relocation schedule has not been defined and could potentially impact the current critical path identified.
- Interface between Facility and Systems contracts, specifically if the Systems contracts are procured in different parameters than the Facility contracts. The City needs to finalize the project delivery approach and procurement methods for utility, facility, systems, and vehicle contracts, and apply realistic durations for each contract into the project schedule to determine any future schedule conflicts.
- Third-party negotiations and agreements.
- Implementation and update of the PMP, RAMP, BFMP, SSMP and QMP as the project progresses, and development of a RFMP and Contingency Management Plan.

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5. CONCLUSIONS AND RECOMMENDATIONS

The HHCTC Project is scheduled to enter into PE mid-2009. This report addresses the PMOC's review of the organizational capability and capacity of the City to oversee and manage the PE phase of the HHCTC Project in line with federal, state, and local regulations, and industry best practices, as well as the overall status of the HHCTC Project with regards to scope, cost, and schedule.

Based on meetings and workshops with the City management and staff, documentation reviews, and site visits and tours, ***it is the PMOC's professional opinion that the City has successfully addressed all the requirements necessary to demonstrate the technical capacity and capability to effectively manage the PE phase of capital project development.***

As the project moves forward, there are certain areas that the City needs to focus on and address in early stages of the PE phase to assure effective delivery of the project. These area include:

- Hiring of additional City staff in order to develop the internal capability needed to effectively manage all consultants throughout the PE phase; further development of the role and responsibilities of the City's Quality Manager from PE through Revenue Operations; and the permanent staffing of a Manager of Safety and Security and Manager of Real Estate.
- Update of the PMP to include a PDP as a sub-plan to the PMP, a staffing plan, and an updated organization chart. The PMP also needs to be updated to be consistent with the current status of the project.
- Further development of the PMP during PE in the areas of cost, schedule, and claims management; document control procedures; processes for Procurement and Contracts; and the Construction Management and Testing and Start-Up sections.
- Continued development of a technically sound and properly integrated MPS.
- Evaluation and development of the project delivery approach and methods for the procurement of utility, facility, and system design and construction/installation contracts including the interface requirements between procurement contracts.
- Implementation and update of the Real Estate and Acquisition Management Plan (RAMP), Bus Fleet Management Plan (BFMP), Safety and Security Management Plan (SSMP) and Quality Management Plan (QMP) as the project progresses, and the development of a Rail Fleet Management Plan (RFMP) and Contingent Management Plan.
- Third-party negotiations and agreements.

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