FEDERAL TRANSIT ADMINISTRATION

PROJECT MANAGEMENT OVERSIGHT PROGRAM

Contract No. DTFT60-04-D-00013
Project No. DC-27-5041
Task Order No. 10

CLIN 0005: Spot Report
Spot Report #3R – Project Management Plan Review
PG-20C: PE Phase Project Management Plan Scoping

Grantee: City and County of Honolulu

Honolulu High-Capacity Transit Corridor Project

Spot Report #3R – Project Management Plan Review

June 2009

FINAL DRAFT

By: **Booz Allen Hamilton**
8283 Greensboro Dr.
McLean, VA 22102

TABLE OF CONTENTS

LIST OF ACRONYMS iii
1. Executive Summary 1
2. Project Background / History 3
3. Methodology 5
   A. Assessment 5
   B. Operating Guidance #20 Requirements 5
4. Project Management Plan Background 6
   A. Record of Submissions 6
   B. PMP General Framework 6
   C. PMP Detailed Framework 8
   D. PMP Supplemental Framework 16
5. Project Management Plan Scoping 17
   A. General Scoping Outline 17
   B. Project Development Strategy 17
   C. PMP Detailed Scoping 17
   D. PMP Supplemental Scoping 20
6. Future PMP Scoping Effort and Oversight Plan 21
7. Conclusions and Recommendations 22

LIST OF ACRONYMS

AA	Alternatives Analysis
BFMP	Bus Fleet Management Plan
CDT	Contract Document Transmittal
DB	Design-Build
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
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
IC	InfraConsult, LLC
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
RFQ	Request for Qualifications
RFP	Request for Proposal
ROD	Record of Decision
RTD	DTS Rapid Transit Division
SCC	Standard Cost Category
SSMP	Safety and Security Management Plan
TOD	Transit Oriented Development
UH	University of Hawai`i
YOE	Year of Expenditure

1. EXECUTIVE SUMMARY

The Federal Transit Administration (FTA) New Starts Program requires that its grantees undertaking a major capital project submit a Project Management Plan (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.

On June 12, 2007, the City submitted a preliminary working draft of the Honolulu High-Capacity Transit Corridor (HHCTC) PMP for Project Management Oversight Contractor (PMOC) review. After several reviews and comments by the PMOC and subsequent drafts of the PMP by the City, Rev. 0 dated May 21, 2008 was issued, 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, updating the PMP to reflect project progress through October 2008. On January 28, 2009 the City revised the Minimum Operating Segment (MOS) alignment for the Project, prompting the City to issue Rev. 2 of the PMP on March 1, 2009, to update the project description due to the change in alignment.

The major changes from the May 21, 2008 to the current March 1, 2009 PMP include the following:

- Revised MOS from the Salt Lake to the Airport alignment;
- Revised and more defined project delivery methods and interfaces;
- Updated organizational chart reflecting current City, PMSC and GEC key staff;
- Better defined project procedures for implementation of the PE Phase of the Project; and
- Updated Project Cost Estimate and Master Project Schedule based on the revised MOS.

The PMOC review was performed to determine whether the City's PMP for the HHCTC Project was developed and documented to effectively perform the technical and administrative management of the Project in compliance with *FTA Guidelines Section 49 USC 5327 and 49 CFR 633 Project Management Oversight, Subpart C – Project Management Plans, FTA Grant Management Guidelines; FTA Circular 5010.1D, FTA Project and Construction Management Guidelines 2003 Update;* and the *Project Management Oversight (PMO) Program Operating Guidance #20 (PG-20), Project Management Plan (PMP) Review Products and Procedures.*

The PMOC review also focused on the City's conformance with the 13 specific required elements of a PMP stipulated in the Code of Federal Regulations; Title 49 – Transportation, Part 633 – Project Management Oversight, Subpart C – Project Management Plans, as well as for overall consistency and usability of the document as a reference for the City's Project staff and its consultants.

This report is based on the PMOC review of the March 1, 2009 submission of the PMP. The City continues to advanced several areas of the project as they prepare to move into Preliminary Engineering (PE). As a result of the most recent updates to the project delivery method,

AR00135244

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 Project Development Plan (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 Alternatives Analysis (AA) Phase through the completion of the PE Phase
- Prepare a Staffing Plan and revise the organization chart due to changes in Project Management Support Consultant (PMSC) positions and City staff, and to address the transition of PMSC staff to City staff during the PE Phase
- Revise the PMP to reflect the Proposed Transit Authority (if approved) to include scope of authority, roles and responsibilities of key staff positions, an organizational chart, and resumes of key staff.
- 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 to include document response durations, tracking, turnover, retention, storage, and retrieval.
- Expand the Process for Procurement and Contracts and change order procedures during PE to incorporate the roles of the GEC, General Construction Manager, 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.

As this project is preparing to move into the preliminary design phase, the PMOC review of the PMP was focused on the requirements for the PE phase. This review is based on the PMP dated March 1, 2009 and 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.

The PMOC is of the professional opinion that the March 1, 2009 PMP submitted by the City meets FTA guidelines and properly demonstrates the City's technical capacity and capability to effectively manage the PE phase of project development.

This Spot Report is an update to Spot Report #3 issued on November 12, 2008, as a result of the change in the Minimum Operating Segment (MOS) Alignment from Salt Lake to the Airport Alignment. The City issued a revised PMP updating the project description and the project delivery including the project progress since the issuance of the May 21, 2008 PMP.

2. PROJECT BACKGROUND / HISTORY

The HHCTC Project is a 29-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 were held on the AA 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 versus Airport alignment, and the Waikīkī/UH at Mānoa branches. The total LPA alignment is approximately 29 miles long from end to end.

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 will include project development, management and implementation. New staff members continue to be added to the City's organization within RTD and through InfraConsult, LLC (IC), the City's Project Management Support Consultant (PMSC). The City has started advertising the positions currently performed by IC.

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 (NTPs).

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 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

The City requested entry into PE on May 4, 2009 and anticipates approval from the FTA by July 7, 2009.

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, or from 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 29-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 1,815 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 (TOD), near the Airport and in surrounding industrial areas.

It is anticipated that the initial fleet size will be 67 vehicles. There is currently no Full Funding Grant Agreement (FFGA) for this project. The Waipahu/Leeward Section, which is a 1-½-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.

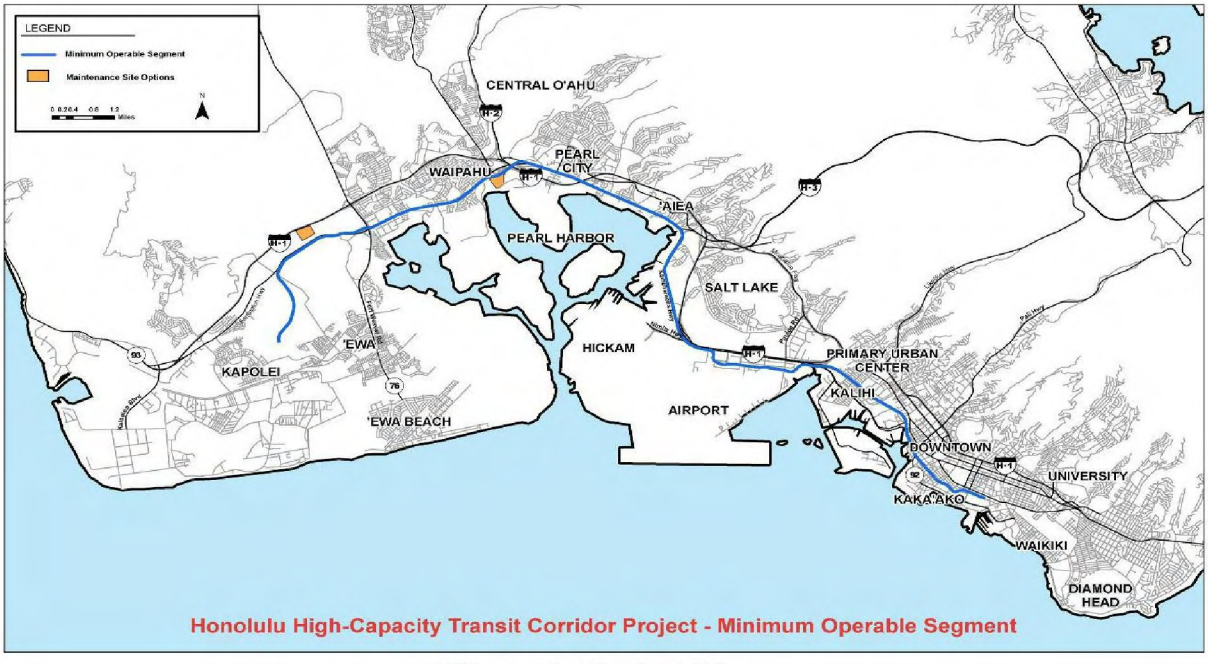

Figure 1. Project Map

3. METHODOLOGY

A. Assessment

The City requested to enter into PE for the Project on May 4, 2009 in accordance with the FTA New Starts requirements. The FTA New Starts Program requires that each project requesting FTA funding develop and 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 PMOC evaluated the City's PMP for the HHCTC Project in order to determine whether the plan was an acceptable document to form the basis of an effective management strategy to execute the PE phase of a major capital transit project. The City's PMP was evaluated against FTA requirements and guidelines including:

- 49 CFR 633 Project Management Oversight, Subpart C – Project Management Plans
- FTA Grant Management Guidelines, FTA Circular 5010.1D
- FTA Project and Construction Management Guidelines 2003 Update
- Project Management Oversight (PMO) Program Operating Guidance #20 (PG-20), Project Management Plan (PMP) Review Products and Procedures.

As this project is preparing to move into the preliminary design phase, the review of the PMP was focused on the requirements for the PE phase.

B. Operating Guidance #20 Requirements

This report addresses the requirements as described in PG-20, Section C: Scope of the Requirements, and PG-20, Subtask 20C – Preliminary Engineering Phase Project Management Plan Scoping Document.

AR00135248

4. PROJECT MANAGEMENT PLAN BACKGROUND

A. Record of Submissions

On June 12, 2007, the City submitted a preliminary working draft of the Project Management Plan (PMP) for Project Management Oversight Contractor (PMOC) review. The PMOC and the City discussed comments on the draft PMP on June 13, 2007, and the City resubmitted a revised PMP on September 14, 2007. 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 again resubmitted the PMP on December 20, 2007, which the PMOC reviewed and provided its comments to the City in January 2008. A final draft of the PMP was provided by the City on March 17, 2008. The PMOC provided comments to this version of the PMP on April 25, 2008 and the City submitted Rev. 0 of the PMP on May 21, 2008, 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 due to the change in alignment.

The following table provides a summary of the document and submission dates for each of the PMP working drafts 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 current PMP used for the purpose of this review is the City's HHCTC Project Management Plan Rev. 2, dated March 1, 2009.

B. PMP General Framework

The purpose of this section is to present the PMOC's assessment and evaluation on the extent to which the HHCTC PMP (as developed or implemented) conforms to PG-20. The PMOC requirements, as set down in PG-20, are as follows:

> *"For each of the PG-20 products, the Contractor shall assess and evaluate the degree to which the PMP components are themselves aligned with the Grantee's overall management strategy and their effectiveness in terms of minimizing costs (and cost overruns) and schedule*

(and schedule slippages). That it reflects all material project activities throughout the implementation of the project demonstrating a sound approach for managing the project in their unique project environment."

The following is a summary of the observations and findings by the PMOC for each of the requirements as noted in the PG-20 Scope of Requirements: "*Each PG-20 product review and its recommendations shall be developed using the following as general requirements for all PMPs in that the Grantee is required to develop and implement a Project Management Plan that demonstrates its technical capacity and ability perform the following:*"

- ***Build, operate, and maintain the entire public transportation system without requiring a reduction in existing public transportation services or level of service to operate the proposed project.***

  The PMP states that the City's goal for the project is to provide public transportation services to a rapidly developing area, to ease congestion in the east-west transportation corridor between Kapolei and UH at Mānoa and to improve access to future development. The PMP addresses this requirement by explaining the need to integrate the existing transit system with the proposed transit system in order to reduce both current and future congestion based on growth projection in the 2030 O`ahu Regional Transportation Plan. It is the PMOC opinion that the integration of current and planned service will assure the effective delivery of transit services throughout the community, without a reduction in the existing transit services or level of proposed rail service.

- ***Effectively and efficiently, implement the project through continuous administrative and management direction of project operations***

  The PMP provides the initial framework for developing all the administrative and management roles, responsibilities, procedures and processes to effectively and efficiently implement the project. Although the PMP needs further development and refinement during the PE phase, the level of detail provided is adequate for the Pre-PE Phase of the project.

- ***Provide, directly or by contract, adequate technical inspection, and supervision by qualified professionals of all work in progress***

  As detailed in Section 4.C.1 of this report, the project's current organizational structure includes City staff supplemented with PMSC staff. PMSC staff will fill key project roles pending the hiring of full-time City staff. The current organization is acceptable for this phase of the project, but will have to be monitored as the project progresses through the PE Phase.

- ***Assure conformity to grant agreements, applicable statutes, codes, ordinances, and safety standards as well as recognizing FTA and the PMO Contractor's role in the oversight and independent review of the project***

  The PMP details procedures for ensuring that all applicable federal, state, and local regulations, agreements, statutes, codes, ordinances, and safety standards are adhered to throughout the administration of the project. The PMP also includes several sources to ensure that the most applicable requirements are met.

- ***Establish and maintain adequate internal control over all their project and administrative functions that affect implementation of a grant in terms of effectiveness and efficiency of operations, schedule, reliability of financial reporting (i.e., all transactions are recorded and that all recorded transactions are real, properly valued, recorded on a timely basis, properly classified, and correctly summarized and posted)***

  As detailed in Section 4.C.1, the current City staff supplemented with PMSC staff provides the experience and expertise to manage the project at this phase of the work, and the assigned City staff is sufficiently qualified to manage and monitor all current project activities including the third-party consultants/contractors to be procured during the PE Phase of the project. The City needs to provide a staffing plan in the PMP detailing the transition of PMSC to City staff through PE. The City has developed a Quality Management Plan (QMP), Configuration Management Plan, and Document Control Procedures Plan that document how Project transactions are collected, recorded, distributed, and stored, including the durations required for action and/or response.

C. PMP Detailed Framework

The PMOC review focused on the City's conformance with the 13 elements of FTA's Project and Construction Management Guidelines, 2003 Update, as well as for overall consistency and usability of the document as a reference for the City's Project staff and its consultants. The 13 specific required elements of a PMP are stipulated in the Code of Federal Regulations (CFR); Title 49 – Transportation, Part 633 – Project Management Oversight, Subpart C – Project Management Plans. Additionally, basic elements that should be included in a comprehensive PMP are further discussed in the FTA Project and Construction Management Guidelines (2003 update). The review also focused on conformance to the Project Management Oversight Program Operating Guidance (PG) #20; Project Management Plan Review Products and Procedures. The following is a summary of the observations and findings for each of the 13 elements as a result of the PMOC's review.

1. *Adequate recipient staff organization, complete with well-defined reporting relationships, statement of functional relationships, job descriptions, and job qualifications.*

The City has done an exceptional job in providing a detailed organizational structure explaining the reporting relationships between City Departments, City staff and consultants in the PMP. The PMP provides detailed job descriptions for each key member of the City management staff, including PMSC staff. The PMOC reviewed the organizational capability

AR00135251

and capacity of the City to oversee and manage the PE Phase of the Project in line with federal, state, and local regulations and industry best practices.

Currently, the project's organizational structure includes City staff along with PMSC and GEC staff. The current organizational structure provides the experience and expertise to manage the project at this phase of the work, and the assigned City staff is 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 updated organizational chart was included in the March 1, 2009 PMP and included all current City, PMSC and GEC staff assigned to 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 hire is 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. The City does not have a set timetable for replacing the PMSC with City staff.

The City has also determined that it will require the services of a PMSC to supplement its staff beyond the end of the current IC contract, which expires in October 2009. A Request for Proposal (RFP) will be issued later this year for these services; however, an extension to the current PMSC contract is anticipated to transition from the existing PMSC contract. An implementation phase organization structure is under development to identify roles to be filled by City employees and roles to be filled by the PMSC. Additionally, the City will soon begin preparing an RFP for the General Construction Manager (GMC) who will be the prime consultant support to the City for managing the final design and construction program.

At the beginning of PE Phase, the City needs to include a staffing plan in the PMP to address the staff transition during the PE Phase of positions currently occupied by PMSC staff to City staff and the target dates by which the City intends to staff each of the positions.

The PMOC has some concerns that the City may encounter difficulty acquiring the experienced staff for the long-term assignment (given Hawai`i's cost of living and distance from the mainland) needed to transition the positions currently staffed with PMSC staff to full-time City staff. 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.

2. ***A budget covering the project management organization, appropriate consultants, property acquisition, utility relocation, systems demonstration staff, audits, and such miscellaneous payments as the recipient may be prepared to justify.***

The project budget included in the PMP was based on the project cost estimate included in the DEIS, issued by the City on October 30, 2008. Based on the DEIS, the cost estimate for the Airport alignment as expressed in 2008 dollars, excluding finance charges, was $4,125 million. In year of expenditure (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

AR00135252

$5,433 million. The City increased the New Starts Federal share from $1.2 billion (YOE) to $1.4 billion (YOE), as stated in the DEIS, Chapter 6, Section 6.2.2, FTA Section 5309 New Starts Program. The project cost effectiveness for the Airport alignment is $17.78.

On May 7, 2009, the City issued an updated Financial Plan and 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 $4,268 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 anticipated 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.

As noted in Spot Report #1 - Honolulu Cost Validation, and Spot Report #2 - PE Entry Readiness Report, it is the PMOC's opinion that the DEIS 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. 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.

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 are not fully defined.
- Station communications and intelligent transportation systems need better definition.
- Fare collection system and equipment need better definition.

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.

3. ***A design management process encompassing PE and final design.***

The design management process is well defined in the PMP. If implemented as developed by the City, the design management process should adequately document the design process from conceptual engineering through the completion of PE, and into Final Design, including analysis of design alternatives and implementing recommendations resulting from peer reviews and value engineering analysis.

Also included in the PMP is the City's commitment to ensure accessibility compliance, as required, throughout the Project. The PMP states that the Project design will comply with the Americans with Disabilities Act of 1990 (ADA), as amended, and the U.S. Department of Transportation's (USDOT) regulations, "Transportation Services for Individuals with Disabilities (ADA)," 49 CFR Part 37. Additionally, in accordance with the PMP Section 6, Design Management, the City will conduct formal design reviews to ensure ADA requirements are incorporated throughout the Project design.

4. ***A construction schedule.***

The City has developed a Master Project Schedule (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 reflects the change of alignment from Salt Lake to the Airport alignment.

The MPS is still under development and will continue to be so through the PE Phase of the project. It is the PMOC's opinion that the MPS depicts an optimistic but achievable revenue service date of March 2019 for the entire Airport alignment. The schedule is evolving 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 relationship among land acquisition, utility relocation, vehicle procurement, civil/systems D/B, and station final design 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 at the end of 2012, including coordination with operations/maintenance activities.
- The schedule needs to further define the activities and durations and critical path at a deeper level, i.e., 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 DB contractor.
- Maintenance Facility – the Maintenance and Storage Facility (MSF) will not be fully functional and operational for service by November 2012 when the Waipahu/Leeward MOS-1 alignment is scheduled to open.
- Vehicle Production – the first production vehicles delivery is scheduled for October 2011, which is aggressive. Vehicle testing and storage assumptions require clarification given that the MSF will not be operational.
- Operations Control Center (OCC) – there are no scheduled activities for the OCC, and it is not clear where the facility will be located and when it will be designed, installed, and tested. Detailed planning in this area is necessary since the grantee is a new operator.
- Staffing – Operations and Maintenance staff training is at risk given that MSF completion is not consistent with MOS-1 service requirements.
- Schedule Contingency – the schedule should include duration contingencies (without impacting the Revenue Operations Dates) to address further activity details as the design and construction phases progress. The PMOC notes that FTA guidelines identify a 20% project duration contingency as typical.

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 Design-Build 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, anticipates approval from the FTA by July 7, 2009. Other current critical milestones include issuance of the FEIS on August 30, 2009; receipt of the Record of Decision (ROD) on October 1, 2009; Project groundbreaking (WO/FH Guideway utilities) on April 25, 2010; and Revenue Service for the Waipahu/Leeward Section by December 24, 2012. Completion of Project is currently scheduled in March 2019.

Table 1 presents a summary of the planned schedule of milestones activities provided by the City.

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	07/07/09	
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	

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, Final Design, Procurement and Construction phases.

Overall the schedule is aggressive and will need to be continuously monitored.

5. ***A document control procedure and record-keeping system.***

The City is currently using Document Control Procedures developed for the Project and documented in a separate Document Control Plan. The Document Control Plan details the City's document control procedures and the document filing system, to be used by the City and all its consultants for all phases of the project including document tracking, turnover,

AR00135256

retention, storage, and retrieval. The City submitted the Project Document Control Plan to the PMOC on May 15, 2009 for review and comment. It is the opinion of the PMOC that the Document Control Plan is adequate for this phase of the Project, however during the PE Phase, the City will have to further develop the Plan to include how correspondence is routed and filed, responsibilities and durations for correspondence responses, handling of sensitive correspondence, document retrieval, etc. – specifically once Consultants (engineering, design and construction) and Contractors are added to the Project. The Document Control Plan will also need to detail the process for Request For Information (RFI), Contract Document Transmittal (CDT) and As-Built Document review durations, monitoring, coordination and interface.

6. ***A change order procedure which includes a documented, systematic approach to the handling of construction change orders.***

   The change order procedures are addressed adequately in the PMP to start PE; however, the process and procedures need to be expanded during PE to incorporate the roles of the General Engineering Consultant (GEC), the General Construction Manager (GCM), and Contractors during Final Design and into the Construction phase of the project (e.g., required level of authority for signature, time limits for turnaround, etc.)

7. ***A description of organizational structures, managerial/technical skills, and staffing levels required throughout the construction phase.***

   The organizational structure through the design phases are adequately defined in the PMP for the PE and Final Design phases of the project. The structure for the Construction phase will need to be expanded as the requirements and the processes are further defined during the PE Phase. This will be included in the next updates of the PMP during the PE phase.

8. ***Quality control (QC) and quality assurance (QA) programs which define functions, procedures, and responsibilities for construction and for system installation and integration of system component.***

   The QMP was submitted as a separate plan that adequately defined the City's QA/QC program including procedures and responsibilities for PE. As noted in Spot Report #2 - PE Entry Readiness Report, the QMP, Rev 0, dated May 12, 2008, covered all of the requirements required in the *FTA Quality Assurance and Quality Control Guidelines, FTA-IT-90-5001-02.1* for entry into PE and was therefore acceptable for entry into PE in its current version.

   As a result of the MOS change from the Salt Lake to the Airport alignment, the QMP, Rev. 1, dated May 8, 2009, was submitted by the City on May 15, 2009. The Project Background, Description and Organization sections of the QMP were updated based on the Airport alignment and the currently planned organizational structure for the Project. Also, the QA/QC role of the GCM was expanded and better defined. The QMP, Rev 1, dated May 8, 2009, covered all of the requirements required in the *FTA Quality Assurance and Quality Control Guidelines, FTA-IT-90-5001-02.1* for entry in PE and is therefore acceptable for entry into PE in its current version.

AR00135257

The QMP is a living document that will be updated as the project proceeds through the different phases and stages of the project. As the City moves into PE, the City will continue to refine the quality procedures and responsibilities for construction, system installation and system integration.

9. ***Materials testing policies and procedures.***

   Material testing policies and procedures are included in the QMP, Rev 1, dated May 8, 2009, submitted separately from the PMP. The City is continuing to review and develop the material testing policies and procedures to be more project specific. As the City moves into PE, the City will continue to refine the requirements for material testing during the construction phase of the project, including which entities will be required to perform material testing activities, including scheduling, review of test results.

10. ***Internal plan implementation and reporting requirements.***

    The PMP provides sufficient detail for all internal procedures and reporting requirements for implementation of the project through PE. Procedures required for the Final Design and Construction phase of the project will need further updating and refinement as the City finalizes project delivery approaches and methods.

11. ***Criteria and procedures to be used for testing the operational system or its major components.***

    Draft criteria and procedures have been provided in the PMP for testing the operational system and its major components. Draft criteria and procedures are sufficiently developed to enter the PE Phase of the project; however, this section will need to be further refined during the PE Phase of the project.

12. ***Periodic updates of the plan, especially related to project budget and project schedule, financing, ridership estimates, and the status of local efforts to enhance ridership where ridership estimates partly depend on the success of those efforts.***

    The PMP includes all project information required for this phase of the project. As stated in the PMP, the City has committed to reviewing the PMP annually for potential revisions. At a minimum, the PMP will be revised to reflect the current management approach at the key milestones including organizational changes the status of ridership estimates; and project budget, schedule, and financing. In between PMP submissions, the City is utilizing the ProjectSolv[2] software to continuously upload Project updates for PMOC and FTA review and comment.

AR00135258

13. ***The recipient's commitment to make monthly submissions of project budget and project schedule to the Secretary.***

The PMP provides procedures for updating the Master Project Schedule and the Cost Control Report monthly in order to transmit the required project budget and schedule information to FTA by the 10th of each month. If implemented as described by the City, updated project budget and schedule information will be available for FTA review on a monthly basis once the baseline project budget and schedule developed and accepted. The City is utilizing the ProjectSolv[2] software to continuously upload project updates for PMOC and FTA review and comment.

D. PMP Supplemental Framework

The PMP includes the preliminary stages of development of the Third-Party Agreement Management Plan and Project Delivery Plan. These plans will be separately developed for review as the project is further refined during PE. As described in Section 5 of this report, the City will need to update the PMP in the early part of PE to include updates to the project delivery method, a new organization chart to reflect changes in staff, and further development of management plans (PDP, Contingency Management Plan, Document Control Plan, etc.).

5. PROJECT MANAGEMENT PLAN SCOPING

A. General Scoping Outline

The PMOC reviewed the City's PMP, dated March 1, 2009, and notes that the document is sufficient for this phase of the project. However, further development of the PMP will be required during the PE Phase of the project and shall include specific management plans such as a Project Development Plan (PDP), Contingency Management Plan, Document Control Plan, and Staffing Plan, which are separately analyzed and reported in Section 5.C of this report.

B. Project Development Strategy

As noted in PG-20, the primary goal of the Project Development Strategy is to take the Project upon entry into PE and deliver it to Entry into Final Design with: (1) 100% mitigation of requirements risk; (2) substantially complete with respect to NEPA scoping, transit capacity, level of service, project definition requirements; (3) project delivery method and contract packaging strategy selected; (4) establishment of the schedule risk baseline; (5) risk management capacity developed and targets achieved; and (6) cost estimate and project schedule developed along planned lines and minimum contingencies targets achieved.

The 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 Administrative DEIS was issued on August 1, 2008 to FTA for review comment. The City completed and released the DEIS on October 30, 2008. The project guideway and station locations are being finalized; however, structural alternatives for the guideway and stations are still being evaluated in order to further define the scope of project.

Further analysis of the City's fleet size, station platform lengths, track configurations, signal, power and communications systems, and maintenance facilities to operate and accommodate ridership in the 25-year forecast will be performed during the PE phase of the project.

FTA has procured an independent PMOC to perform the Pre-PE Risk Assessment analysis, of the Project. At that time, the PMOC will integrate the data inputs and recommendations from the Risk Assessment products (PG-11, 32, 33, 34, 35 and 40) into its recommendations for the Project Strategy product in terms of risk management, contingency management, design management, requirements management, project delivery method, contract packaging strategy, etc.

C. PMP Detailed Scoping

This PMP scoping document identifies additional requirements for methods and resources; management strategies including project control; and the specific plans or products, responsibilities, authorities, and measures of performance.

The PMP currently provides preliminary information for several management plans that will be submitted as separate stand-alone documents as the project progress and the plans are further defined. The following are specific plans and PMOC recommendations for refinement and development of the PMP during the PE Phase of the project.

C.1. Project Development Plan (PDP)

A preliminary description of the Project Development Plan (PDP) is included in the PMP. A PDP needs to provide 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 and the completion of PE Phase.

A fully developed PDP needs to be incorporated into the PMP during the PE Phase of the project.

C.2. Staffing

The PMP needs to be updated to address, through a staffing plan, the transition of PMSC staff to City staff during the PE Phase. The staffing plan must include, at a minimum, all required positions and the dates by which the City intends to staff each of the positions.

Presently, the City Council is considering an amendment to the City Charter to create a Transit Authority. In order for the Transit Authority to be created and operational, the measure must be placed on a general election ballot. A draft charter amendment has been developed for City Council review. The Transit Authority would be a semi-autonomous City agency responsible for planning, design, construction, operation, maintenance, and expansion of the fixed-guideway mass transit system. As initially proposed, the Transit Authority would have the following authority and functions:

- Full and complete control of all real and personal property used or useful in connection with the fixed-guideway system
- Full and complete authority to plan, manage, control, administer, operate, maintain, repair and expand the fixed-guideway system, including extensions
- Authority to make and execute contracts and other instruments
- Authority to prepare and issue warrants
- Authority to promote, create and assist development projects near fixed-guideway system stations
- Authority to apply for, receive and accept grants of property, money and services and other assistance.

Future updates of the PMP will have to reflect the proposed Transit Authority (if approved) to include scope of authority, roles and responsibilities of key staff positions, an organizational chart, and resumes of key staff.

C.3. 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.

C.4. Third-Party Agreement 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 has begun coordination with third-party agencies to determine the scope of work associated with each agency. Coordination meetings with third-party agencies presently in progress have been encouraging and no significant issues have developed.

C.5. Document Control Plan

A separate Document Control Plan detailing the City's document control procedures and the document filing system, to be used by the City and all its consultants, is in the preliminary stage of development. The current plan submitted to the PMOC for review on May 15, 2009 is adequate for this phase of the Project. However during the PE Phase, the City will have to further develop the Plan for all phases of the project to incorporate the roles of the Consultants (engineering, design and construction) and Contractors at the various stages of the project to include document response durations, tracking, turnover, retention storage and retrieval.

C.6. Project Delivery

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 – Design-Build
- **Segment II** – Pearl Highlands to Aloha Stadium – Design-Bid-Build
- **Segment III** – Aloha Stadium to Lagoon Station – Design-Bid-Build
- **Segment IV** – Lagoon Station to Ala Moana Center – Design-Bid-Build

AR00135262

On February 4, 2009, the City released RFP Part 1, Request for Qualifications, for the first guideway segment from East Kapolei to Pearl Highlands. The RFP Part 1 – West Oahu/Farrington Highway Design-Build Contract - Request for Qualifications, 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 RFP Part 2 – West Oahu/Farrington Highway Design-Build Contract - Request for Technical and Price Proposals, was issued on April 3, 2009 to solicit technical and price proposals from the proposers pre-qualified by the Part 1 process and deemed eligible for consideration for the Priority List.

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 ROD but ahead of the FFGA, utilizing local excise tax funding. The Maintenance and Storage Facility is also planned as a Design-Build, the RFP Part 1, Request for Qualifications was released on May 29, 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. On April 9, 2009, the City released the Vehicle/Core Systems Design-Build Contract RFP Part 1, Request for Qualifications, which includes the procurement and installation of vehicles, traction power, train control, and communications.

The Project Delivery Plan 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.

C.7. Further Refinement of PMP Sections

The PMP needs to be updated to expand in the areas of Cost, Schedule, Claims Management, Configuration Management, Construction Management, and Testing and Start-Up, as roles, responsibilities, requirements, and processes are further refined,.

D. PMP Supplemental Scoping

PG-20C requires the PMOC to develop recommendations for advancing the definition/development of the project by completing: PG-32A and B; PG-32C; PG-32E (after Record of Decision); PG-33A (prior to the finalized EIS); PG-33B (after final EIS); PG-33E; PG-34A; PG-39; and PG-40E,F,G.

However, FTA has procured an independent PMOC to perform the Pre-PE Risk Assessment analysis. At that time, future PMP updates shall incorporate the requirements and recommendations with respects of the Risk Assessment.

AR00135263

6. FUTURE PMP SCOPING EFFORT AND OVERSIGHT PLAN

The City requested entry into PE for the Project on May 4, 2009.

At present the FTA is conducting a Pre-PE Risk Assessment of the Project in accordance with the FTA Program Guidance. At the conclusion of this risk analysis, a project specific PMOC Oversight Plan will be developed to address and monitor the areas of risk identified.

In addition to project specific monitoring, the PMOC will continue to perform the following oversight functions through the PE Phase of the project:

- Development of roadmaps for the capital project schedule including timing FTA deliverables and requirements, and review periods through Preliminary Engineering to a Full Funding Grant Agreement.
- Compliance review of FTA required deliverables and documentation prepared by the City.
    - Further development of PMP during the PE Phase
    - Implementation and update of the Real Estate and Acquisition Management Plan (RAMP), Bus Fleet Management Plan (BFMP), Safety and Security Management Plan (SSMP), Quality Management Plan (QMP), Configuration Management Plan, and Document Control Plan as the project progresses; and the development of a Rail Fleet Management Plan (RFMP), Contingency Management Plan, and Project Development Plan (PDP).
- Monitor the continued development of a technically sound and properly integrated Master Project Schedule
- Monitoring of the City's further definition of the project scope, final Airport alignment location, maintenance yard location, station locations and support facilities.
- Monitoring of the evaluation and development of the project delivery approach and methods for the procurement of utility, facility and system design and construction/installation contracts.
- Performance of Cost Validation Reviews and Cost Variance Analyses
- Monitoring of local newspapers to monitor the ongoing social, political and financial environment of a project
- Participation in safety certification meetings and monitor certification implementation process
- Participation in Honolulu Rail Transit Project Safety and Security Oversight and Review Committee meetings
- Participation in design progress meeting to monitor project status
- Development/review of procurement documentation, inspection and verification of receipt for the procurement of vehicles and/or materials

AR00135264

7. CONCLUSIONS AND RECOMMENDATIONS

The PMOC review focused on the City's conformance with the 13 elements of FTA's Project and Construction Management Guidelines, 2003 Update, as well as for overall consistency and usability of the document as a reference for the City's Project staff and its consultants.

As this project is preparing to move into the PE Phase, the PMOC review of the PMP was focused on the requirements for the PE Phase. This review is based on the PMP dated March 1, 2009. ***The PMOC is of the professional opinion that the March 1, 2009 PMP submitted by the City meets FTA guidelines and properly demonstrates the City's technical capacity and capability to effectively manage the PE Phase of project development.***

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 Project Development Plan (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 PE Phase
- Prepare a Staffing Plan and revise the organization chart due to changes in Project Management Support Consultant (PMSC) positions and City staff, and to address the transition of PMSC staff to City staff during the PE Phase. The staffing plan should be provided to the PMOC for review prior to the release of the RFP for a follow-on PMSC planned for later this year.
- Revise the PMP to reflect the Proposed Transit Authority (if approved) to include scope of authority, roles and responsibilities of key staff positions, an organizational chart, and resumes of key staff
- 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 to include document response durations, tracking, turnover, retention storage and retrieval.
- Expand the Process for Procurement and Contracts and change order procedures during PE to incorporate the roles of the GEC, General Construction Manager, 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.