

PMOC REPORT

OP 37 – Bus Fleet Management Plan Review

Honolulu High-Capacity Transit Corridor Project
City and County of Honolulu
Honolulu, HI

October 2011 (FINAL)

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1.0 EXECUTIVE SUMMARY

The City and County of Honolulu (“grantee”) is preparing to enter Final Design for implementation of a major capital initiative for constructing and activating new Honolulu High-Capacity Transit Corridor Project (HHCTCP) for rail service in Honolulu. The PMOC performed a follow-up review of grantee’s Bus Fleet Management Plan (BFMP), Revision 2, dated December, 2010. This evaluation was performed as part of the ongoing effort of the Jacobs PMOC team’s oversight responsibility for the HHCTCP as it is entering into Final Design for the Federal Transit Administration (FTA) grant process.

The PMOC followed the FTA Oversight Procedure (OP) 37 to perform review of grantee’s BFMP. Our review process consisted of identifying references for assessment of the plan contents and performing as needed analysis to validate calculations and claims made by grantee in the BFMP. Review of this document has been concentrated on the impacts and resultant grantee plans for bus service as a result of the Honolulu High-Capacity Transit Corridor Rail Project.

Per OP 37 reporting requirements in Section 7.0, our review findings, comments, conclusion and recommendations are presented in the report and two attachments titled –

- Appendix B: OP 37, Appendix B FMP Checklist – Grantee Compliance
- Appendix C: OP 37, Appendix C FMP Table of Contents – Grantee Compliance

Upon review, the PMOC’s conclusion is that grantee satisfactorily responded to PMOC’s comments on the previous version of the BFMP and that this BFMP generally meets the requirements of FTA Oversight Procedure (OP) No. 37, Sections 1.0 Purpose and 3.0 Objectives:

- Grantee has met the intent of the requirement for a BFMP, as well as demonstrating City’s ability to properly plan for and carry out the overall management of its Bus fleet.
- The BFMP addresses operating policies (level of service requirements); peak vehicle requirements (PVR); inspection and maintenance program; system and service expansions; vehicle procurements and related schedules; and operating spare ratio (OSR) justification.

The BFMP has presented empirical data for operations of the current system through 2009, and has provided projections through 2020. It satisfactorily addresses vehicles and service types in operation and anticipated to be in operation, as well as factors that are relevant to grantee’s determinations of current and future equipment needs. The plan addresses the composition of the fleet, operating conditions, and facilities.

Grantee’s current fixed route fleet is comprised of 91 articulated 60-foot vehicles (including 20 hybrids); 403 40-foot vehicles (including 39 hybrids); 12 35-foot vehicles and 24 30-foot vehicles for a total fleet size of 530 diesel buses with Peak Vehicle Requirement (PVR) of 439 buses, which yields an Operating Spare Ratio (OSR) of 20.73%. Grantee’s plans for future bus replacements follow FTA’s guidance of 20% OSR requirement. The PMOC generally concurs with grantee’s rationale for the PVR and OSR.

In conclusion, the PMOC would recommend that this BFMP update be accepted as a deliverable for entering Final Design.

2.0 INTRODUCTION

The purpose of this report is to provide the Jacobs Engineering Group's (Jacobs) PMOC team's review comments of City and County of Honolulu ("grantee") Bus Fleet Management Plan (BFMP), dated December, 2010. This evaluation was performed as part of the ongoing effort of the Jacobs PMOC team's oversight responsibility for the Federal Transit Administration (FTA).

The grantee is preparing to enter Final Design (FD) for the implementation of a major capital initiative for constructing and activating new Honolulu High-Capacity Transit Corridor Project (HHCTCP) for rail service in Honolulu. This review has concentrated on the bus impacts and alterations planned by grantee as part of this New Starts project.

2.1 PMOC Review Process

The PMOC followed the OP 37 to perform review of grantee's BFMP. Our review process consisted of identifying references for assessment of the plan contents and performing as needed analysis to validate calculations and claims made by grantee in the BFMP. Review of this document has been concentrated on the impacts and resultant grantee plans for bus service as a result of the Honolulu High-Capacity Transit Corridor Rail Project.

Per OP 37 reporting requirements, our review findings, comments, conclusion and recommendations are presented in the report and two attachments:

- Appendix B: OP 37, Appendix B FMP Checklist – Grantee Compliance
- Appendix C: OP 37, Appendix C FMP Table of Contents – Grantee Compliance

2.2 FTA References

In addition to OP 37, which specifically provides guidance on appropriate review of Fleet Management Plans, FTA regulation and guidelines for the data to be included in the Bus Fleet Management Plan (BFMP) are shown in the following documents:

- (1) FTA Circular C5200.1: Full Funding Grant Agreement Guidance
- (2) FTA Circular C9030.1: Urbanized Area Formula Program: Grant Application Instructions
- (3) FTA Memorandum by Hiram Walker; Guidance: Bus Fleet Management Plans

FTA's objective in issuing such guidance is to encourage the Grantee to properly plan for and carry out the overall management of its vehicle fleet. It states that the BFMP should address the key factors necessary to make effective decisions on equipment needs and future vehicle demand including to maintain a spare ratio of Buses based on industry "best practices" to avoid inefficient Bus investments. Furthermore, FTA's objective in issuing such guidance was to ensure that bus service would not be degraded during design and construction of a Grantee's rail project. It stated that the BFMP should address how the Grantee will:

- Maintain a bus fleet and facilities for the level of service and area currently served;
- Establish quality of service measures and adequate monitoring of the bus service; and
- Provide capital and operating funds that will be required for bus service in the area.

To effectively assess and monitor a Grantee's bus fleet management and performance, FTA requires the grantee to give a clear explanation of its bus system status in the past, at present, and as projected in the near future in major areas such as -- ridership, service standards, peak level of service requirements and operating spares, operations & maintenance performance vis-à-vis standards, operations & maintenance staffing, future service / facilities expansions, and funding sources for fleet procurements / rehabilitation projects. These need to be demonstrated with appropriate historical data (as reported to the National Transit Database) for the periods of 3-5 years prior to rail construction, and projections for the duration of the rail construction and a minimum of 1-3 years after rail service begins.

3.0 OVERVIEW OF BFMP DOCUMENT

This BFMP update is composed of the following major sections:

- 1.0 Introduction – provides a brief summary of grantee’s new fixed guideway rail systems and bus system, and how the BFMP document is organized.
- 2.0 Transit System – provides an overview of fixed route bus service, annual revenue vehicle miles & hours, fare structure and planned service changes.
- 3.0 Passenger Demand – describes recent history of fixed route ridership and ridership changes.
- 4.0 Bus Fleet – describes current fixed route fleet, peak vehicle demand, and bus fleet replacement and expansion.
- 5.0 Performance Standards and Policies for Bus Operations – discusses standards for on-time performance, vehicle assignment and headway, passenger amenities, and transit/access coverage.
- 6.0 Bus Fleet Maintenance Plan – provides an overview of scheduled maintenance cycles and demand, maintenance facilities and labor, unscheduled maintenance, and factors affecting maintenance demand.
- Appendix A – describes performance standards and policies.
- Appendix B – provides Maintenance Plan for recurring inspections.
- List of Tables – provides reference locations for ten bus information related tables.
- List of Figures – provides reference locations for ten figures including performance data and statistics.

4.0 PMOC FINDINGS, OBSERVATIONS AND COMMENTS

This is the second review by this PMOC of the grantee's BFMP. This review has focused on the following objectives, to assess / determine whether:

- (1) The BFMP is generally complete in the description of the fleet management planning, and that it complies with the FTA guidelines.
- (2) Grantee has generally complied with FTA OP 37 Appendix B and C requirements.
- (3) The BFMP is satisfactory to be accepted as a required deliverable for the proposed Honolulu High-Capacity Transit Corridor Rail Project.

This BFMP document is organized in a format that addresses FTA's guidelines and topics. The cover page has the necessary approval signature/date blocks and the verbiage for controlled and uncontrolled versions of the document. Table of Contents (TOC) has good breakdown with section and sub-section numbers, List of Tables, List of Figures, and Appendix.

The content provides the necessary information related to grantee's Bus system, operations, load factors, and trip times; Bus fleet and maintenance facilities; and maintenance requirements for Buses. Historical data is provided for the past 4-5 years and per FTA guidance, projections extend to 10-year time frame (to year 2020).

Section 2 Transit System

Describes the fixed route bus system known as "*TheBus*" and paratransit system known as "*TheHandi-Van*". The information for *TheHandi-Van* is cursory, but is acceptable since it is demand-responsive and would not be affected by the construction of the HHCTCP. *TheBus* system has 96 fixed routes including express service. The ridership has generally remained flat since 2005 with a total growth of about 3% from 2005 through 2008 (or about 0.73% annually); and "By City Council policy (Resolution No. 00-29, CD-1), the farebox recovery ratio is maintained between 27 percent and 33 percent of *TheBus* operations".

As the proposed rail line is implemented, Grantee plans to restructure various fixed route bus lines with well-defined criteria for changes. Per FTA's guidance, the BFMP has clearly outlined how the bus system will not be degraded as a result of the construction of the rail line. It is noteworthy that grantee's projection is for a steady increase in the Peak Vehicle Requirements (PVR) upon implementation of the HHCTCP rail line, as shown in Figure 2-5.

Section 3 Passenger Demand

Describes the ridership growth projections "prepared using procedures documented in the Honolulu High-Capacity Transit Corridor Project Travel Forecasting Methodology Report – June 30, 2006. The forecasts prepared are documented in the Honolulu High-Capacity Transit Corridor Project Alternatives Analysis Travel Demand Forecasting Results Report – October 2008. As shown in Figure 3-3, bus ridership from FY 2008 through FY 2020 is expected to grow about 2.9 percent per year." This serves as the basis for projecting the PVR increase shown in Figure 2-5 and is acceptable for the purpose of the BFMP review.

Section 4 Bus Fleet

Describes the current fixed route fleet consisting of a total of 530 diesel buses. Table 4-1 provides an inventory of the active bus fleet, which consists of 91 articulated 60-foot vehicles (including 20 hybrids); 403 40-foot vehicles (including 39 hybrids); 12 35-foot vehicles and 24 30-foot vehicles. All buses are equipped with bicycle racks and are accessible through either lifts or ramps.

The PVR for fixed route service is 439 vehicles operating in maximum service, which are deployed from two operating bases in Kalihi and Pearl City. Table 4-1 shows seating and standing capacity for each type of bus and Figure 4-1 shows peak load points for all routes vis-à-vis peak capacity. This revision includes a new Appendix A – Title VI Performance Standards and Policies that describes Load Factor policy as adopted by grantee’s management/Board of Directors. Also, 18 of 91 routes are shown to be operating over peak capacity and several other routes operate under peak capacity. This revision includes grantee’s plan to enhance bus operations by correcting the over-capacity/under-capacity situation to balance the demand using existing fleet.

Table 4-4 provides a year-by-year plan for the fleet replacement and expansion. Also, as required in the FTA guidance, grantee provided a fully populated BFMP Table 4-3, upon grantee’s financial plan update, which shows annual budgetary information for the projected cost of Bus Acquisition and Replacement from 2011 - 2020. The PMOC finds this information acceptable for the purpose of the BFMP review.

Section 5 Performance Standards and Policies for Bus Operations

Describes various measures used to assess bus performance. These include – on-time performance, vehicle assignment, vehicle headway, transit amenities, and transit access/coverage. This revision includes a discussion on major mechanical failures and is acceptable for the purpose of the BFMP review.

Section 6 Bus Fleet Maintenance Plan

Describes maintenance goals & objectives, various types of maintenance, and maintenance facilities & labor. Grantee has stated maintenance goals (on Page 6-1) to improve and excel in their maintenance program. This is consistent with other bus agencies in the country. These goals can vary from agency to agency to meet the needs of the agency, except for a few common ones that every agency must report. Grantee has provided quantitative criteria for critical areas such as minimum availability (85%), Miles-Between-Road-Calls (10,000) and minimum overtime (5%), which are satisfactory for the purpose of the BFMP review. Also, this revision now includes a discussion on rebuild / rehab projects and component / subsystem campaigns.

There is a brief description of two maintenance facilities. This revision includes their maintenance capability including equipment for major subsystems or their expansion capacity for future vehicle purchases Also, Appendix B has detailed Inspection Forms.

The PMOC offers for grantee’s consideration a suggestion that inclusion of a few other quantitative criteria / goals to grantee’s less critical and/or unique maintenance goals along with charts/figures of historical performance of how these goals are achieved will further enhance the

BFMP document. These could include – maintenance employee attendance, percentage completion of scheduled repairs, accident safety rating, etc.

5.0 CONCLUSION

The PMOC recommends that this BFMP update be accepted as a deliverable for entering Final Design.

APPENDICES

Appendix A: Acronym List

BFMP	▪ Bus Fleet Maintenance Plan
CITY	▪ The City and County of Honolulu
DOT	▪ United States Department of Transportation
FMP	▪ Fleet Management Plan
FTA	▪ Federal Transit Administration
HHCTCP	▪ Honolulu High-Capacity Transit Corridor Project
JACOBS	▪ Jacobs Engineering Group (the PMOC)
OP	▪ Oversight Procedure
OSR	▪ Operating Spare Ratio
PMOC	▪ Project Management Oversight Contractor
PVR	▪ Peak Vehicle Requirements
TOC	▪ Table of Contents
US / U.S.	▪ United States of America

Appendix B: OP 37, Appendix B FMP Checklist – Grantee Compliance

	Requirement	PMOC Review Comments
		Review comments will indicate the following: Acceptable, Unacceptable, Acceptable with comment. Identify portions of the document that meet the criteria
1	Grantee Document	
1A	<i>The FMP is conformed in accordance with the Grantee's Document Control System.</i>	Not Applicable
1B	<i>Each page identifies the Revision No. and the date of the document.</i>	Acceptable
1C	<i>The date of the Grantee's submittal is clearly identified.</i>	Acceptable.
1D	<i>The contents of the FMP properly reflect the Table of Contents.</i>	Acceptable
2	PMOC review of Grantee's fleet description	
	<i>Verify description of the makeup of the present fleet, including:</i>	
2A	<i>The number and type of vehicles in service</i>	Acceptable – Described in Section 4.1.
2B	<i>Peak vehicle requirements (service period and make-up, e.g., standby vehicles)</i>	Acceptable – Described in Tables 4.1 & 4.3; basis for passenger demand is explained in Section 3.0.
2C	<i>Address the spare ratio of vehicles, and the rationale underlying that spare ratio</i>	Acceptable – Described in Table 4.3; rationale for projections uses FTA recommended 20% spare ratio.
2D	<i>Achieve optimal life expectancies</i>	Acceptable – Described in Section 2.3.
2E	<i>Details of existing and planned vehicle procurements</i>	Acceptable – Described in Table 4.3
2F	<i>Current and future equipment needs</i>	Acceptable – Described in Table 4.3
2G	<i>Grantee in its selection and specification of vehicle equipment and systems has matched appropriate technology with the planned transit applications for best performance at the lowest cost.</i>	Not Applicable. The PMOC offers for FTA's consideration that a review may be conducted if there is any reason to believe that the system is degraded.
3	PMOC review of Grantee's Operations and Maintenance strategy	
	<i>Verify that the Operations and Maintenance Strategy addresses:</i>	
3A	<i>Operating policies and conditions (level of service requirements, vehicle failure definitions and actions)</i>	Acceptable – Described in Section 2.0.
3B	<i>In detail the composition of facilities</i>	Acceptable – Described in Section 6.2.
3C	<i>Any rebuilds that extend the life expectancy of the equipment, any overhaul/rebuild programs; schedule to complete, effects on vehicle availability and useful life, etc., to the fleet</i>	Acceptable
3D	<i>The Grantee has adequately defined the preventive maintenance and schedule established for the existing and procured/overhauled vehicle fleet</i>	Acceptable – Described in Section 6.0 and Appendix A consisting of non-recurring inspections.
3E	<i>Enable a transit operator to properly plan for and carry out the overall management of its entire fleet of vehicle</i>	Acceptable – Described in Section 6.0.

	Requirement	PMOC Review Comments
3F	<i>Fleet operations (present and future) as described in the plan are substantially consistent with that adopted in the Record of Decision (if applicable)</i>	Not Applicable
4 PMOC review of Grantee's Management Capabilities		
	<i>Verify that the Grantee's management is competent and capable of providing leadership and direction on matters of:</i>	Acceptable – Based on PMOC's observation, grantee is an experienced and mature Bus Operator and has competent and capable management t provide leadership and direction.
4A	<i>The requirements for peak and spare vehicles including schedule spares, maintenance spares, parts spares</i>	Acceptable – see comment in 4.0 above.
4B	<i>The requirements for support functions such as heavy maintenance, capital and operating parts inventory and information technology</i>	Acceptable – see comment in 4.0 above.
4C	<i>Strategies for acquisition of new vehicles or overhauling existing equipment and tradeoffs between them</i>	Acceptable – see comment in 4.0 above.
4D	<i>Strategies for maintenance and operations including reducing spare vehicles</i>	Acceptable – see comment in 4.0 above.
4E	<i>Strategies for reducing operating costs and increasing service reliability.</i>	Acceptable – Described in Section 3.2.
4F	<i>The plan discusses the Grantee's reliability program, past performance and plans to improve reliability including profile monitoring and support of maintenance as well as failure rates and vehicles-out-of-service as well as providing vehicle failure definitions and actions</i>	Acceptable – Performance standards and policies for bus operations are described in Section 5.0. Past performance is described in Section 2.0.
4G	<i>Grantee keeps a copy on file for review upon request updated from time to time as changes occur within the transit agency, acquisitions, replacement, rebuild/rehab, changes in headway or level of service, etc</i>	Acceptable – see comment in 4.0 above.
4H	<i>Sufficiently complete in detail and analysis (Fleet plan or supporting documentation) to readily demonstrate (1) Grantee's ability to maintain and consistently improve the current level, operating costs, reliability and quality of revenue service for the years leading up to and following construction of the project; (the plan also provides.)</i>	Acceptable – see comment in 4.0 above.
4I	<i>The Grantee's information system reliably provides needed operating and financial data such as current estimates of vehicle operating costs, reliability and life expectancy, for decision-making and performance review.</i>	Acceptable – see comment in 4.0 above.
4J	<i>The plan defines system and service expansions.</i>	Acceptable – see comment in 4.0 above.
5 Project Impact Assessment		
	<i>Verify that critical system elements receive comprehensive assessment:</i>	

	Requirement	PMOC Review Comments
5A	<i>The Grantee's existing transit service in terms of level of service, operating costs, reliability, quality and support functions, will not be degraded as a consequence of the design and either the manufacture of the equipment, or construction of the project</i>	Acceptable – There is clear criteria provided in Section 2.4 for service changes and Figure 2-5 projects PVR growth through 2020. The PMOC finds the information provided in the BFMP related to grantee's bus system operation satisfactory to confirm that grantee is running a sound bus operation and grantee's existing bus service will not be degraded “in terms of level of service and reliability” as a consequence of the design and construction of Honolulu High-Capacity Transit Corridor Rail Project.
5B	<i>The Grantee will be able to provide adequate service to meet the transit demand for the years leading up to and following either the delivery of the equipment/facility or construction of the project</i>	Acceptable – The PMOC finds the information provided in the BFMP satisfactory to confirm that grantee is running a sound bus operation and based on City's successful service performance history, grantee “will be able to provide adequate service to meet the transit demand for the years leading up to and following” the design and construction of the Honolulu High-Capacity Transit Corridor Rail Project.
5C	<i>The Grantee can properly plan for and execute the overall management of its entire fleet of vehicles and related support functions and equipment, addressing all the reasonably foreseeable factors that are relevant to the determination of current and future equipment needs in light of demand for service</i>	Acceptable – The PMOC finds the information provided in the BFMP related to grantee's bus system operation satisfactory to confirm that grantee is running a sound bus operation and based on grantee's successful service performance history, grantee “can properly plan for and execute the overall management of its entire fleet of vehicles and related support functions and equipment” for the years leading up to and following the design and construction of the Honolulu High-Capacity Transit Corridor Rail Project.
5D	<i>Grantee estimates of costs, service levels, quality, or reliability are mechanically correct and complete, consistent with the Grantee-defined methodologies and free of any material inaccuracies or incomplete data.</i>	Not Applicable – The PMOC offers for FTA's consideration that a review may be conducted if there is any reason to believe that the system is degraded.
5E	<i>Grantee forecasts and schedule are also mechanically correct and complete, consistent with the plan scope and project scope adopted in the Record of Decision (if applicable) and the proposed Revenue Operations Date as well as free of any material inaccuracies or incomplete data.</i>	Not Applicable – The PMOC offers for FTA's consideration that a review may be conducted if there is any reason to believe that the system is degraded.
6	PMOC's review of Grantee's Operations and Maintenance Plan Format	
	<i>Verify that the plan is consistent with FTA's guidance specifically with respect to:</i>	
6A	<i>Definition of terms</i>	Acceptable
6B	<i>Description of existing system and expansion plans, both project and non-project related</i>	Acceptable – Described in Section 2.0.
6C	<i>The Demand for Revenue Vehicles and Operating Spare Ratio have been calculated in conformance with FTA guidance</i>	Acceptable – Described in Tables 4.1 & 4.3.

	Requirement	PMOC Review Comments
6D	<i>The Grantee has selected a sufficient time frame, (a minimum of 10 to 15 years) and compiled sufficient historical and empirical data from past and current fleet operations</i>	Acceptable – The time frame through 2020 is selected for detailed projections.

Appendix C: OP 37, Appendix C FMP Table of Contents – Grantee Compliance

Sample Fleet Management Plan Table of Contents	In AA and/or Requesting Entry to PE	In PE, Advanced PE, and/or Requesting entry to FD	In FD and/or Requesting FFGA	In Bid / Award and / or Construction	Grantee Compliance
Introduction	●	○	○	○	✓
Overview of Plan	●	○	○		✓
Plan Timeframe	●	○	○		✓
Definition of Terms	●	○	○	○	✓
Existing System	●	○	○	○	✓
Description of current system	●	○	○	○	✓
Inventory List	▲	○	○	○	✓
Expansion Plan	▲	●	○	○	✓
Demand for Revenue Vehicles	▲	●	○	○	✓
Peak Passenger Demand	▲	●	○	○	✓
Passenger Load Standards	▲	●	○	○	✓
Vehicle Run Times	▲	●	○	○	✓
Peak Vehicle Calculations	▲	●	○	○	✓
Gap or Ready reserve vehicles	▲	●	○	○	✓
Spare Vehicle Calculation	▲	●	○	○	✓
Total Sum of Vehicles required out of service	▲	●	○	○	✓
Supply of Revenue Vehicles	▲	●	○	○	✓
Reconciliation of Demand vs. Supply	▲	●	○	○	✓
Existing and planned fleet procurements	▲	●	○	○	✓
Define overhaul / rebuild programs	▲	●	○	○	✓
Rebuild Schedules	▲	●	○	○	✓
Vehicle Availability	▲	●	○	○	✓
Useful Life	▲	●	○	○	✓
Maintenance and Reliability	▲	●	○	○	✓
Preventative Maintenance Program	▲	●	○	○	✓
Fleet Failure Rates	▲	●	○	○	✓
Revenue Vehicle Demand/Supply Balance	▲	●	○	○	✓
Comparison of Vehicle Demand and Supply for duration of plan	▲	●	○	○	✓

NOTE: ▲ – Preliminary information required; ● – Element to be completed; ○ – Element to be modified or augmented with additional information as necessary.