Oversight Procedure 37 — Fleet Management Plan Review

1.0 PURPOSE

The purpose of this Oversight Procedure (OP) is to describe the review, analysis, recommendation procedures, and reporting requirements that the Federal Transit Administration (FTA) expects from the Project Management Oversight Contractor (PMOC) regarding the project sponsor's Rail Fleet Management Plan (RFMP) and Bus Fleet Management Plan (BFMP).

To support a request for advancement or funding for a major capital project, FTA requires the project sponsor submit a fleet management plan covering all existing transit modes in service. This plan should demonstrate that the project sponsor properly plans for and carries out competent overall management of their entire vehicle fleet. As an alternate, the project sponsor may submit separate RFMPs for each mode that does not share track with any other mode.

While the fleet management plans are not approved or disapproved per se, the PMOC's review informs FTA as to whether the proposed major capital project will degrade existing transit service because of its design or construction and whether the project sponsor will have adequate resources to provide service to meet the transit demand during and after the construction of the major capital project. This review provides a major input to FTA in its determination of the adequacy of the project sponsor's operational resources and financial capacity.

While this OP focuses on Capital Investment Grant (CIG) projects, which have specific requirements by law, it also applies to all capital projects. FTA will issue Implementation Plans (IPs) to clarify the specific reviews and expected deliverables based on the project types.

2.0 BACKGROUND

In two 1999 Internal Memos to the Regional Administrators (see Section 4.0 below), FTA explained that the purpose of bus and rail fleet management plans is to encourage a transit operator or project sponsor to properly plan for and carry out the overall management of their fleets. The memos also provided an outline format to assist in FTA's review of fleet management plans and set forth the minimum content requirements of each plan. The letters stress that the items in the outline section of each are minimum requirements and to include other material, as appropriate.

3.0 OBJECTIVES

The objectives of the PMOC review of the project sponsor fleet management plans are to ensure that each plan meets the minimum criteria provided in FTA's 1999 RFMP and BFMP guidance and ensure that the content will enable the transit operator to properly plan for and carry out the overall management of their vehicle fleet(s).

To enable proper evaluation, the RFMP submitted in support of a major capital project should, at a minimum, reflect a 10- to 15-year time frame and must include the project's design year. The

RFMP time frame should begin with at least one full year of historical and empirical data compiled through past and current operations of the rail fleet.

The minimum time frame requirements for a BFMP are three to five years prior to the start of project construction until one to three years after the start of operations on the completed project, including at least one full year of historical and empirical data compiled through past and current operations of the bus fleet.

An effective plan will address vehicle and service types (bus, rail, etc.) in operation and anticipated to be in operation, including paratransit, as well as factors that are relevant to the project sponsor's determinations of current and future equipment needs. Future demand should be estimated based on:

- Vehicle life expectancy;
- Requirements for peak and spare vehicles;
- Strategies for acquisition of new vehicles; and
- Strategies for maintenance and operations.

The plan should also address, in detail, the composition of the fleet, operating conditions, facilities, etc.

The PMOC's role in this process is to evaluate, based on the experience and knowledge of the qualified evaluator(s), the extent to which the project sponsor has met the intent of the requirement for a fleet management plan, as well as the project sponsor's ability to properly plan for and carry out the overall management of their vehicle fleet. The PMOC should first examine whether all the required factors have been included in the plan, and then provide opinions on whether the plan is:

- Feasible, based on the resources immediately available to the project sponsor;
- Sustainable, based on the long-term infrastructure and resources anticipated to be available to the project sponsor; and
- Comprehensive, based on its consideration of the required factors to properly maintain and operate the new or refurbished vehicles contemplated.

4.0 REFERENCES

The PMOC shall become familiar with the following references to Federal legislation, regulation, and guidance before reviewing the project sponsor's work. These are the principal references, but this list is not exhaustive:

4.1 FTA Circulars

- C 5200.1A, Full-Funding Grant Agreements Guidance
- C 9030.1E, Urbanized Area Formula Program: Program Guidance and Application Instructions

4.2 Guidance

- FTA Project and Construction Management Guidelines (2016)

- Rail Fleet Management Plans, FTA Memorandum to Regional Administrators, September 2, 1999 (attached as Appendix D)
- Bus Fleet Management Plans for New Starts, FTA Memorandum to Regional Administrators, April 8, 1999 (attached as Appendix E)

5.0 PROJECTS SPONSOR'S SUBMITTALS

Appendix C contains a sample table of contents and timeline for completion of a Fleet Management Plan. Separate fleet management plans may be developed for bus and rail including separate plans for rail systems that do not share a common rail line. The PMOC shall utilize this table of contents as a guide in its review of a project sponsor's fleet management plan.

The project sponsor is required to formally submit its fleet management plan to FTA at the following milestones during the project life:

- Before Entry into Engineering;
- For a risk assessment if conducted during the engineering phase; and
- Before FFGA (if required, as an update).

It is anticipated that an existing fleet management plan may need updates from time to time between milestones. It should be noted that during transitional periods of new replacement car deliveries, retirement, or rebuild/rehab, the spare ratio of the total cars available will be higher than usual. Any increase over previous spare ratios should be clearly described and should be temporary in nature for the transit agency. Items that will necessitate an immediate update to the plan might include the following:

- New vehicle purchase;
- Retiring of existing vehicles;
- Rebuild/rehab program to extend life expectancy of existing vehicles;
- Extensions or expansions in service; and
- Strategic changes that affect the operations, peak vehicle requirements, or load factors of the system.

A revised fleet management plan should include a brief description and clear reconciliation to the previously submitted plan.

6.0 SCOPE OF WORK

At the milestone points, or as conditions warrant, FTA may require the PMOC to review the project sponsor's fleet management plan. The PMOC shall report findings and make recommendations as to the accuracy, adequacy, and reasonableness of the project sponsor's fleet management plan and supporting data, plans, and documentation.

The plans must address:

- Operating policies (level of service requirements, vehicle failure definitions and actions);
- Peak vehicle requirements (peak service period and scheduled standby trains);
- Maintenance program (scheduled, unscheduled, and overhaul);

- System and service expansions;
- Vehicle procurements and related schedules; and
- Spare ratio justification.

The PMOC may be asked to:

- Share their knowledge of fleet management plans and practices with the project sponsor, serve as a resource, and lend their experience and knowledge of other plans;
- Provide plans that have been found complete and reasonable as models of "best practices" among project sponsors;
- Provide further outlines of the elements in a fleet management plan to adjust the plan to the project sponsor's operation; and
- Review the fleet management plan to ensure it is comprehensive and complete in its analysis of the vehicle operations.

In support of this review, the PMOC shall, when directed, conduct on-site inspections of equipment, facilities, data, documentation, or records to evaluate the project sponsor's effectiveness in implementing the fleet management plan in conformance with the grant agreement, sound operating or engineering practices, or other statutory and administrative requirements. Inspection visits should be made, for example, to follow up on information received from the project sponsor about an event with significant impact on the project, or to determine whether the project sponsor has adequately implemented the fleet management plan.

The PMOC shall review project sponsor documentation, characterize the project sponsor's fleet management plan, and validate the plan and operating assumptions in conformance with these procedures. When directed, the PMOC shall perform a technical review or conduct physical inspections. The PMOC shall evaluate and assess the accuracy, adequacy, and reasonableness of the project sponsor's fleet management plan and its supporting plans and documentation using the following criteria:

1. The project sponsor'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 either the design and manufacture of the equipment or the design and construction of the project. The project sponsor 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.
2. Fleet operations (present and future) as described in the plan are substantially consistent with those adopted in the Record of Decision (if applicable), sufficiently complete in detail and analysis (fleet plan or supporting documentation) to readily demonstrate project sponsor's ability to maintain or improve the current level, and quality of operating costs, and reliability and quality of service for the years leading up to and following construction of the project. The plan also provides details of existing and planned vehicle procurements as well as any overhaul/rebuild programs that extend the life expectancy of the equipment.

3. The project sponsor has selected a sufficient time frame for fleet planning,[1] and compiled sufficient historical and empirical data from past and current fleet operations.
4. The project sponsor can properly plan for and execute the overall management of their entire fleet of vehicles and related support functions and equipment, addressing reasonably foreseeable and relevant factors regarding future equipment needs:
   a) Additional maintenance facility requirements;
   b) Accommodations for future growth;
   c) Contingency for short term changes in ridership; and
   d) Vehicle life cycle maintenance.
5. The project sponsor's management is competent and capable of providing leadership and direction on fleet planning and operating matters including all aspects of fleet management plan requirements.
6. The plan includes:
   a) Definitions of terms;
   b) Requirements for peak and spare vehicles, including schedule spares, maintenance spares, and parts spares;
   c) Requirements for support functions such as heavy and running maintenance, capital, and operating parts inventory and information technology;
   d) Strategies for acquisition of new vehicles or overhauling existing equipment and tradeoffs between them;
   e) Strategies for maintenance and operations, including reducing spare vehicles;
   f) Strategies for reducing operating costs and increasing service reliability;
   g) Description of existing system and expansion plans, both project and non-project related;
   h) Schedule for the existing and procured/overhauled vehicle fleet; and
   i) The project sponsor's reliability program, past performance, and plans to improve reliability.
7. FTA provides a recommended spare ratio of 20 percent for bus fleets. For rail fleets, FTA has not established a specific spare ratio number as rail transit operations tend to be highly individualized and, as such, the spare ratio is expected to vary from operator to operator. The following, which mirrors the guidance provided to project sponsors, should be used by the PMOC in their review of the project sponsor's justification for and the reasonableness of the proposed spare vehicle ratio:

[1] The planning horizon for bus fleet plans should be at least 10 years but not less than described in Appendix E for BFMP in support of rail projects. The planning horizon for rail fleet plans should be through either the design year for new systems or through the first vehicle overhaul cycle, whichever comes later. For existing rail operators, however, the fleet plan should not be less than 15 years but typically 20 years to 30 years (See end note in Appendix D).

a) Spare ratio justification should consider: average number of cars out of service for scheduled maintenance, unscheduled maintenance,[2] and overhaul programs; allowance for ridership variation (historical data); ridership changes that affect car needs caused by expansion of system or services; contingency for destroyed cars; and car procurements for replacements and system expansions; vehicle procurement lead times.
b) Cars delivered for future expansion and cars that have been replaced but are in the process of being disposed of should be identified and separated from other spares because they unfairly distort the spare ratio.
c) The Peak Vehicle Requirement should include “spare,” “gap,” or "standby" trains, but only where those trains are scheduled, ready for service, and have a designated crew.
d) Factors that may influence spare ratio are:
    i) Equipment make-up (e.g., locomotive-hauled trains, married pair units or single cars, equipment design, reliability and age);
    ii) Environmental conditions (weather, above ground or underground operation, loading and track layout);
    iii) Operational policies (standby trains, load factors, headways);
    iv) Maintenance policies (conditions for removing cars from service), maintenance scheduled during nights and weekends, and labor agreement conditions; and
    v) Maintenance facilities and staff capabilities.
e) A template for the calculation can be found in the Circular 9030.1D, Appendix D.

8. The project sponsor’s information system reliably provides needed operating and financial data such as current estimates of maintenance facility and vehicle operating costs, reliability, and life expectancy for decision-making and performance review.
9. In its selection and specification of vehicle equipment and systems, the project sponsor has matched the appropriate technology with the planned transit applications for the best performance at the lowest cost.
10. Project sponsor estimates of costs, service levels, quality, or reliability are mechanically correct and complete, consistent with the project sponsor-defined methodologies, and free of any material inaccuracies or omissions.
11. Project sponsor forecasts and schedules are mechanically correct, complete, and consistent with the plan scope and project scope adopted in the Record of Decision.

[2] Since the average number of cars undergoing unscheduled maintenance (including collision damage or waiting for parts) varies on a daily basis, it is expected that there will be a number of vehicles available but not used; this number represents the difference between the average number of cars held for unscheduled maintenance and the maximum permissible number of cars that can be held for unscheduled maintenance and still support the Peak Vehicle Requirement.

REPORTS, PAPERS, PRESENTATIONS

The PMOC shall review the items as per the checklist in Appendix B. The PMOC shall provide the COR/ACOR with a written report, formatted in compliance with OP 01, of their findings, analyses, recommendations, professional opinions, and description of the review activities undertaken, as well as other supporting information.

After the COR/ACOR has transmitted formal acceptance of the report, the PMOC should share the report with the project sponsor. If there are differences of opinion between the PMOC and the project sponsor regarding the PMOC's findings, the COR/ACOR may direct the PMOC to reconcile their findings with the project sponsor and provide the COR/ACOR with a report addendum covering the modifications agreed upon by the project sponsor and PMOC.

When directed by the COR/ACOR, the PMOC shall perform data analysis and develop data models that meet FTA requirements using Microsoft Office products, such as Excel and Word, and use FTA templates when provided.

Upon approval by the COR/ACOR, the PMOC may add other software as required, but they should provide the COR/ACOR with documentation and report data when complete.

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APPENDIX A: ACCEPTABLE QUALITY LEVEL

	Desired Outcome	Performance Requirement	Check list	Acceptable Quality Level	Performance Measure	Monitoring Method
1	The PMOC shall review and analyze project sponsor's fleet management plan and the projects sponsor's ability to properly plan and carry out the overall management of its entire vehicle fleet.	**R1a.** The PMOC shall develop and document a process for review and analysis of the fleet management plan.	☐	**Q1a.** PMOC provides documentation of the process.	**M1a.** Review of the process documentation.	**MM1a.** Periodic review by FTA or its agent.
		R1b. The PMOC shall use its process and project management judgment to review and analyze project sponsor's fleet management plan and the projects sponsor's ability to properly plan and carry out the overall management of its entire vehicle fleet.	☐	**Q1b.** PMOC reviews and provides internal verification that the process has been followed as documented.	**M1b.** Documented review and analysis of project sponsor's fleet management plan and the project sponsor's ability to properly plan and carry out the overall management of their entire vehicle fleet.	**MM1b.** Periodic review by FTA or its agent.
2	The PMOC shall, as directed by FTA, review project sponsor's fleet management plan and form a professional opinion as to the feasibility, sustainability, and	**R2a.** The PMOC shall review the project sponsor's fleet management plan to determine the feasibility, sustainability, and comprehensiveness of the project sponsor's fleet management plan.	☐	**Q2a.** Professional opinion of the feasibility, sustainability, and comprehensiveness of project sponsor's fleet management plan.	**M2a.** PMOC's review and opinion as to the feasibility, sustainability, and comprehensiveness of project sponsor's fleet management plan demonstrates sound management and engineering practices and professional experience.	**MM2a.** Periodic review by FTA or its agent.

	Desired Outcome	Performance Requirement	Check list	Acceptable Quality Level	Performance Measure	Monitoring Method
	comprehensiveness of project sponsor's ability to successfully manage and complete the project.	**R2b.** The PMOC shall review the operations and maintenance strategy contained in project sponsor's fleet management plan to determine the feasibility, sustainability, and comprehensiveness of the strategy.	☐	**Q2b.** Professional opinion of the feasibility, sustainability, and comprehensiveness of the project sponsor's operations and maintenance strategy.	**M2b.** PMOC's review and opinion as to the feasibility, sustainability, and comprehensiveness of project sponsor's operations and maintenance strategy demonstrates sound management and engineering practices and professional experience.	**MM2b.** Periodic review by FTA or its agent.
		R2c. The PMOC shall review the fleet management plan to determine the feasibility, sustainability, and comprehensiveness of the project sponsor's management capabilities.	☐	**Q2c.** Professional opinion as to the feasibility, sustainability, and comprehensiveness of the project sponsor's management capabilities.	**M2c.** PMOC's review and opinion as to the feasibility, sustainability, and comprehensiveness of project sponsor's management capabilities demonstrates sound management and engineering practices and professional experience.	**MM2c.** Periodic review by FTA or its agent.
		R2d. The PMOC shall review the fleet management plan to assess the impact of this project on feasibility, sustainability, and comprehensiveness of present and future transit	☐	**Q2d.** Professional opinion of the impact of this project on the feasibility, sustainability, and comprehensivene	**M2d.** PMOC's review and opinion as to the impact of this project on the feasibility, sustainability, and comprehensiveness of project sponsor's present and future transit operations demonstrates sound	**MM2d.** Periodic review by FTA or its agent.

	Desired Outcome	Performance Requirement	Check list	Acceptable Quality Level	Performance Measure	Monitoring Method
		operations of the project sponsor.		ss of project sponsor's present and future transit operations.	management and engineering practices and professional experience.	
3	The PMOC shall provide FTA with a written report of its findings, analysis, recommendations, and professional opinions.	**R3.** The PMOC shall present its findings, analysis, recommendations, and professional opinions to FTA in a written report and, when so directed by FTA, seek to reconcile its findings with project sponsor to the extent possible. A supplemental report shall be filed describing the results of reconciliation attempts.	☐	**Q3.** Reports and presentations are professional, clear, concise, and well written. The findings and conclusions have been reconciled with other PMOC reports and have been reconciled with the project sponsor to the extent possible.	**M3.** Review of the PMOC's presentation of findings, analysis, recommendations, and professional opinions by the FTA.	**MM3.** Periodic review by FTA or its agent.

APPENDIX B: FLEET MANAGEMENT PLAN CHECKLIST

Review comments will indicate the following: Acceptable, Unacceptable, Acceptable with comment. Identify portions of the document that meet the criteria.

	Requirement	PMOC Review Comments
1	**Project Sponsor Document** *Verify that:*	
1A	The FMP is conformed in accordance with the project sponsor's Document Control System	
1B	Each page identifies the revision number and the date of the document	
1C	The date of the project sponsor's submittal is clearly identified	
1D	The contents of the FMP properly reflect the table of contents	
2	**PMOC Review of Project Sponsor's Fleet Description** *Verify description of the makeup of the present fleet, including:*	
2A	The number and type of rail vehicles and buses in service	
2B	Peak vehicle requirements (service period and make-up, e.g., standby trains)	
2C	Address the spare ratio of rail cars, and the rationale underlying that spare ratio	
2D	Achieve optimal life expectancies	
2E	Details of existing and planned rail vehicle procurements	
2F	Current and future equipment needs	
2G	Project sponsor 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	

3	**PMOC Review of Project Sponsor's Operations and Maintenance Strategy** *Verify that the operations and maintenance strategy addresses:*	
3A	Operating policies and conditions (level of service requirements, train failure definitions and actions)	
3B	In detail the composition of facilities	
3C	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	
3D	The project sponsor has adequately defined the preventive maintenance and schedule established for the existing and procured/overhauled rail car fleet	
3E	Enable a transit operator to properly plan for and carry out the overall management of its entire fleet of locomotives and rail cars	
3F	Fleet operations (present and future) as described in the plan are substantially consistent with that adopted in the Record of Decision (if applicable)	
4	**PMOC Review of Project Sponsor's Management Capabilities** *Verify that the project sponsor's management is competent and capable of providing leadership and direction on matters of:*	
4A	The requirements for peak and spare vehicles including schedule spares, maintenance spares, and parts spares	
4B	The requirements for support functions such as heavy maintenance, capital and operating parts inventory, and information technology	

4C	Strategies for acquisition of new vehicles or overhauling existing equipment and tradeoffs between them	
4D	Strategies for maintenance and operations including reducing spare vehicles	
4E	Strategies for reducing operating costs and increasing service reliability	
4F	The plan discusses the project sponsor's reliability program, past performance and plans to improve reliability including profile monitoring and support of maintenance as well as failure rates and rail cars out-of-service as well as providing train failure definitions and actions	
4G	Project sponsor 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.	
4H	Sufficiently complete in detail and analysis (Fleet plan or supporting documentation) to readily demonstrate (1) project sponsor'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)	
4I	The project sponsor'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	
4J	The plan defines system and service expansions	

5	**Project Impact Assessment** *Verify that critical system elements receive comprehensive assessment:*	
5A	The project sponsor's existing transit service, in terms of level of service, operating costs, reliability, quality, and support functions, will not be degraded because of either the design and manufacture of the equipment or the design and construction of the project	
5B	The project sponsor 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	
5C	The project sponsor 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 considering demand for service	
5D	Project sponsor estimates of costs, service levels, quality, or reliability are mechanically correct and complete, consistent with the project sponsor-defined methodologies and free of any material inaccuracies or incomplete data	
5E	Project sponsor 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	

6	**PMOC's Review of Project Sponsor's Operations and Maintenance Plan Format** *Verify that the plan is consistent with FTA's guidance specifically with respect to:*	
6A	Definition of terms	
6B	Description of existing system and expansion plans, both project and non-project related	
6C	The Demand for Revenue Vehicles and Operating Spare Ratio have been calculated in conformance with FTA guidance	
6D	The project sponsor has selected a sufficient time frame, (see Section 6.0 for guidance) and has compiled sufficient historical and empirical data from past and current fleet operations	

APPENDIX C: SAMPLE FLEET MANAGEMENT PLAN TABLE OF CONTENTS

Symbol Legend	● Element to be completed	○ Element to be modified or augmented with additional information as necessary

Sample Fleet Management Plan Table of Contents	**Prior to Entry into Engineering**	**During Engineering**	**Requesting FFGA or in Bid/Award and/or Construction**
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 versus Supply	●	○	○
Existing and planned fleet procurements	●	○	○
Define overhaul / rebuild programs	●	○	○
Rebuild Schedules	●	○	○

Sample Fleet Management Plan Table of Contents			Prior to Entry into Engineering	During Engineering	Requesting FFGA or in Bid/Award and/or Construction
		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		●	○	○

APPENDIX D: RAIL FLEET GUIDANCE MEMO

U.S. Department
of Transportation
Federal Transit
Administration

Memorandum

Subject: GUIDANCE: Rail Fleet Management Plans

Date: Sep 2, 1999

From: Hiram J. Walker
Associate Administrator For Program Managment

Reply to Attn. of:

To: Regional Administrators
Regions I through X

Through: Nuria I. Fernandez
Deputy Administrator

This memorandum provides guidance on the requirement for fleet management plans by all transit agencies that have a rail system–light, heavy, commuter or other, either in existence or in the new starts approval process. It addresses the objectives of the fleet management plan, outlines the content of the plan, and defines FTA's role in the review of and acceptance of the plan. Establishing an outline format will assist in the review of the fleet management plans. A general outline is attached that will assist transit agencies in preparing their plan. The items in the outline section should be viewed as minimums, and not as the only items incorporated in the fleet management plan.

The appropriate FTA Regional Office will review all fleet management plans for its completeness in addressing the key factors outlined. No formal approval or acceptance process for the respective fleet management plans is needed, but the Regional Office will provide comments to the submitting agency. After the plan has been reviewed and all comments incorporated into the plan by the submitting agency, a copy shall be kept on file by the transit property for review upon request.

It is anticipated that the fleet management plan will need to be updated from time to time as changes occur within the transit agency—acquisitions, replacement, rebuild/rehab, changes in headway or level of service, etc. When updates are made, the plan will be reviewed and comments provided back by the Regional Office to the transit agency. This memorandum also outlines what constitutes the need for updating the plans by the respective transit agencies.

RESPONSIBILITIES

The responsibilities of the FTA Regional offices with regards to the fleet management plan are to:

- Make the grantee aware of FTA guidance in the area of fleet management plans
- Be aware of those transit systems in the process of procuring or rebuilding rail cars

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- Monitor transit properties through the new starts process and evaluate completeness of fleet management plan
- Assist the transit properties in preparing a fleet management plan in advance of their request for grants for the purchase of rail cars
- Review and comment back to the transit property on completeness and reasonableness of the plan in addressing the key factors outlined
- Ensure that an acceptable fleet management plan is kept on file at the transit agency

Certain capital projects have a Project Management Oversight (PMO) contractor assigned to them by the FTA. On those projects, the PMO contractor may be asked to:

- Share its knowledge of fleet management practices with the transit agency
- Assist in identifying materials that are crucial to the successful development of a fleet management plan
- Provide plans that have been found complete and reasonable as models of "best practices" among transit agencies
- Provide further outlines of the elements in a fleet management plan that makes it comprehensive and acceptable to their operation
- Participate in the review of the fleet management plan to ensure the plan is comprehensive and complete in its analysis of the rail operations
- Serve as a resource by lending its experience and knowledge of other plans that are completed or viewed as exhibiting "best practices" in the industry

It should be noted that the Rail Fleet Management Plan and Bus Fleet Management Plan for New Starts (dated April 8, 1999) are required by FTA's Office of Planning. The Office of Planning is aware that the FTA does not formally approve these plans, nonetheless the plans are important submissions by a program sponsor for review.

If you require further guidance or clarification, please contact Spiro Colivas at (202) 366-6009.

Attachment: Rail Fleet Management Plan

RAIL FLEET MANAGEMENT PLAN

INTRODUCTION

This memorandum provides guidance on fleet management plans for all transit agencies that have a rail system–light, heavy, commuter or other, either in existence or in the new starts approval process. The procurement of rail cars is not an easy task for transit operators. Each rail fleet is complex and unique to the environment in which it will operate. From the development of a technical specification, bid process, technical reviews, contractor award, engineering, prototype testing and analysis can take years before actual production and subsequent revenue service of the rail cars begin. Because of these factors, the fleet management plan should be viewed as dynamic rather than a static document.

The appropriate FTA Regional Office will review all fleet management plans for completeness in addressing the key factors outlined. No formal approval or acceptance process for the respective fleet management plans is needed, but the Regional Office will provide comments to the submitting agency. After the plan has been reviewed and all comments incorporated into the plan by the submitting agency, a copy shall be kept on file by the transit property for review upon request.

BACKGROUND

The U.S. DOT Office of Inspector General (OIG) audited eight major rail transit operators from 1993 to 1995. A final national report (R4-FT-6-027) was issued on March 16, 1996. Since that time, the FTA has worked with the OIG and the Office of the Secretary to resolve issues in the final OIG audit report–"Summary Report on Audit of Useful Life of Rail Cars". The OIG recommendations involved the FTA's guidance regarding 12-year overhaul and 25-year replacement criteria, as well as establishment of a universal spare ratio for rail cars.

Throughout the discussions with the OIG, FTA has maintained that service and other operational factors were local decisions and should be left to the local decision-makers. FTA also maintained that existing policy provided a balance between effective oversight and grantee flexibility in making project specific decisions. In order to resolve some of the OIG's issues, FTA has:

- Issued guidelines in FTA Circular 9030. 1C – Urbanized Area Formula Grant dated October 1, 1998, requiring a fleet management plan (excerpt in Attachment 1) and,
- Agreed to issue complete technical assistance guidelines for rail operators for preparation of their respective fleet management plan to include the following minimum areas;

    - New railcar purchases
    - Maintenance and operations strategies
    - Railcar life expectancy
    - Peak railcar requirements and spares

The guidance provided herein will serve as technical assistance and help identify "best practices" for the rail operators to prepare a rail fleet management plan for their system. It should be understood that this guidance needs to be reviewed periodically and updated as necessary.

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OBJECTIVE

The purpose of a fleet management plan is to encourage a transit operator to properly plan for and carry out the overall management of its vehicle fleet. Because of scarce resources, the importance of having a plan cannot be overstated. The transit operator needs to address the key factors necessary to make effective decisions on equipment needs and future vehicle demand. One of those factors will be spare ratio of rail cars. A specific spare ratio based on standards established according to industry "best practices" is an effective means of avoiding inefficient railcar investments.

It is understood that the spare ratio will vary from operator to operator. FTA's Circular 9030.1C states that "because rail transit operations tend to be highly individualized, FTA has not established a specific number to serve as an acceptable spare ratio for rail transit operations". This fact does not exclude any property from the requirement of a fleet management plan, but allows grantees flexibility to determine service requirements in their area. Circular 9030.1C further states that "the grant applicant's rail vehicle spare ratio and the rationale underlying that spare ratio will be examined as part of the grant application review whenever FTA assistance is requested to purchase rail vehicles and during the triennial review".

FTA desires to ensure that adequate guidance is available to assist grantees in making educated judgments on how scarce resources are used in capital investment decision-making and to protect the federal investments in transit systems. Implementation of a fleet management plan through these "best practices" will enable transit systems to achieve optimal life expectancies and appropriate spare rail car ratios.

FTA does not specify a rail car spare ratio, but operators are required to justify spare ratio calculations in a fleet management plan. The plan will be examined during triennial reviews and reviewed in grant requests for vehicle acquisition. FTA Circular 9030.1C – Urbanized Area Formula Program: Grant Application Instructions dated October 1, 1998, Chapter V, Section 15. Fixed Guideway Rolling Stock, paragraph b(5) Spare Ratio Policy, contains a requirement that grantees prepare and maintain a fleet management plan. The Circular states:

> "An operator of a rail system must have in its file available upon request by FTA a fleet management plan that addresses operating policies (level of service requirements, train failure definitions and actions); peak vehicle requirements (service period and make-up, e.g., standby trains); maintenance and overhaul program (scheduled, unscheduled, and overhaul); system and service expansions; rail car procurements and related schedules; and spare ratio justifications."

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OUTLINE CONTENT

FTA has reviewed draft fleet management plans that were submitted to the respective FTA Regional Offices. For uniformity and establishment of "best practices" among the rail operators, an outline is shown below describing the minimum requirements in the fleet plans. These are viewed as the minimum required items with regards to composition of fleet, operating conditions, maintenance, facilities, peak vehicle demand and spare ratio. Any collected data from past and current operations used in making projections should be included in the appropriate sections as well. All historical and empirical data compiled through years of operating the existing fleet is important information on which to base portions of the fleet management plan. Each plan should consider a minimum time frame of 10 years from the date of the initial analysis. [i]

- Introduction: Broad overviews of the plan being submitted and exact time frame that it covers.
- Definition of Terms: Use of terms such as demand refers to ridership and the need for service, supply refers to amount of vehicles available, etc.
- Existing System: Description of the current system and rail fleet. A table detailing vehicle inventory for the transit agency (owned, leased, etc.) should be provided in this area or reference to an appendix at the end of the fleet management plan. This inventory list should list vehicle number or ID, age, status (active, inactive, disabled, salvage, etc.), and other clarifying comments.
- Expansion Plans: Future system development.
- Demand for Revenue Vehicles: Establishment of passenger demand and resulting peak vehicle requirement.

  - Step One – Determine peak passenger demand at the maximum load points by actual counts of present ridership and estimates of future demand. Include additions or rail extensions that will open in the 10-year time frame.
  - Step Two – Define and adopt passenger load standards and calculate load factor. Explain current passenger load standards and future load standards along with objectives or goals to achieve.
  - Step Three – Determine vehicle run times. This should be based on actual train performance for the existing system and for future expansions.
  - Step Four - Apply the adopted passenger load standards to the peak period ridership to calculate the number of cars required at the maximum loading points during peak period.
  - Step Five – Establish the peak vehicles required based on the selected headway (time interval between trains) and car consists (number of cards in a train) that meet the passenger load criteria.
  - Step Six – Explain if any gap or ready reserve trains will be utilized in the operating strategy. These rail cars will be added to the peak vehicles required for revenue service.

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- Step Seven – Calculation of spare rail cars required. Determine the number of scheduled preventive maintenance, unscheduled maintenance, vehicles used for continued testing/engineering review, etc., as basis for total sum of vehicles required out-of-service at any given time.
- Step Eight – Determination of total fleet demand and spare ratio. Total fleet is the sum total of peak vehicles required, scheduled service, gap trains, and spares. The operating spare ratio is defined as:

$$\frac{\text{(Total Fleet – Peak Vehicles Required)}}{\text{Peak Vehicles Required}} = \text{Operating Spare Ratio}$$

- Supply of Revenue Vehicles: Reconciliation of demand versus supply should determine if additional rail cars will be needed and procured or other changes will be implemented instead. Details of existing and planned rail vehicle procurements as well as any rebuilds that extend the life expectancy of the equipment. Define any overhaul/rebuild programs; schedule to complete, effects to vehicle availability and useful life, etc., to the rail fleet.
- Maintenance and Reliability: Define the preventive maintenance and schedule established for the existing rail car fleet. Profile monitoring and support of maintenance as well as failure rates and rail cars out-of-service. Provide train failure definitions and actions.
- Revenue Vehicle Demand/Supply Balance: Explain and provide a comparison of the vehicle demand and the supply for the time duration of the plan, including any new rail car procurements.

This outline is not meant to be an all-encompassing list of items for the fleet management plan. Rail operators should review the suggested outline and determine what additional items or priority provide a better overview of its system.

UPDATES TO FLEET MANAGEMENT PLANS

The existing fleet management plans will need to be updated by the respective transit operator from time to time. It should be noted that during transitional periods of new replacement car deliveries, retirement, or the rebuild/rehab of existing rail cars, the spare ratio of the total cars available might be higher of necessity. Any increase over previous spare ratios should be clearly defined and temporary in nature for the transit agency. Items that will necessitate an immediate update to the plan might include the following:

- New rail car purchase
- Retiring of existing rail cars

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- Rebuild/rehab program to extend life expectancy of existing vehicles
- Extensions or expansions in service
- Strategic changes that affect the operations, peak vehicle requirements, or load factors of the system

It is anticipated that the fleet management plan will need to be updated from time to time as changes occur within the transit agency. When updates have been made, the plan will be reviewed and comments provided back by the Regional Office to the transit agency. Currently, FTA requires that every rail operator have an acceptable rail fleet management plan prior to award of any Federal Grant. The revised fleet management plan should include a brief description and clear reconciliation to the previously submitted plan.

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[i] Although this 1999 Dear Colleague Letter recommended a minimum time frame of 10 years, experience since that time, noting the procurement and service life of rail vehicles, calls for a longer planning horizon. The planning horizon for rail fleet plans should be through either the design year for new systems or through the first vehicle overhaul cycle, whichever comes later. For existing rail operators; however, the fleet plan should not be less than 15 years but typically 20 years to 30 years.

APPENDIX E: BUS FLEET GUIDANCE MEMO

U.S. Department
of Transportation
Federal Transit
Administration

Memorandum

Subject: GUIDANCE: Bus Fleet Management Plan for New Starts

Date: APR 8, 1999

From: Hiram J. Walker
Associate Administrator For Program Managment

Reply to Attn. of:

To: Regional Administrators
Regions I through X

Through: Nuria I. Fernandez
Deputy Administrator

The purpose of this memorandum is to provide guidance on bus fleet management plans for New Starts. As the sponsors of a New Start move into final design, a bus plan must be prepared in support of their project. This memorandum lists the objectives, process and provides an outline for the sponsors of the New Start to address in their bus plan. The items in the outline section should be viewed as minimums and not as the only items that should be incorporated in the bus plans.

OBJECTIVE

The objective of the bus fleet management plan is for the New Starts sponsor to ensure that bus service is not degraded during design and construction of their rail project. Each bus plan should address how the sponsor 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
- Provide capital and operating funds that will be required for bus service in the area

SCOPE

Each bus fleet management plan should give a clear explanation of their current situation with regards to composition of bus fleet, maintenance facilities and operating conditions. A New Start sponsor should prepare simple tables of time series data for their bus fleet for the periods of 3-5 years prior to rail construction, duration of the rail construction, and at least 1-3 years after rail service begins. Past years' data should be as reported to the National Transit Database, where possible and future data will be projected.

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The New Start sponsor should be clear and concise in their bus plan. At minimum, the plan should include the following areas:

- Peak level of service for each year – number of vehicles required
- Fleet average age, composition, rehab/rebuild projects, vehicle retirements and purchase plans
- Ridership – current and projected average daily trips and load factor policy
- Maintenance facilities – age of facilities, capacity for existing fleet, expansion capacity for future vehicle purchases
- Maintenance expenditures, service quality and reliability measures – existing programs or measures used to gather information on service quality and reliability, on-time performance, load factors, vehicle reliability, etc.
- Annual budgets to provide for all of the above (tie into financial capacity review)

If you require further guidance or clarification, please contact Mr. Spiro Colivas in TPM-20 at (202) 366-6009.

APPENDIX F: ACRONYMS

Acronym	Term
ACOR	Alternate Contracting Officer's Representative
ADA	The Americans with Disabilities Act
AGC	Associated General Contractors of America
ATC	Alternative Technical Concepts
AVS	Associate Value Specialist
BEA	Bureau of Economic Analysis
BLS	Bureau of Labor and Statistics
BRF	Beta Range Factor
BY	Base Year
CATEX or CE or CX or Exclusion	Categorical Exclusion
CCIP	Contractor Controlled Insurance Program
CE	Categorical Exclusion
CER	Cost Estimating Relationship
CFR	Code of Federal Regulations
CIG	Capital Investment Grant
CLIN	Contract Line Item Number
CM	Construction Manager

Acronym	Term
CM/GC	Construction Manager/General Contractor
CMAR	Construction Manager at Risk
COR	Contracting Officer's Representative
CPM	Critical Path Method
CPTED	Crime Prevention Through Environmental Design
CR	Constructability Review
CVS	Certified Value Specialists
DB	Design-Build
DBB	Design-Bid-Build
DBE	Disadvantaged Business Enterprise
DBF	Design-Build-Finance
DBFOM	Design-Build-Finance-Operate and Maintain
DBOM	Design-Build-Operate and Maintain
DEIS	Draft Environmental Impact Statement
DF	Designated Function
DHS	Department of Homeland Security
DTS	Department of Transportation Services
EA	Environmental Assessment
EIS	Environmental Impact Statement

Acronym	Term
EMP	Emergency Management Plan
ENR	Engineering News-Record
EPCM	Engineering/Procurement/Construction Management
ESWA	Early Systems Work Agreement
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FFGA	Full Funding Grant Agreement
FHWA	Federal Highway Administration
FLSSC	Fire/Life Safety and Security Committee
FONSI	Finding of No Significant Impact
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GAO	Government Accountability Office
GC	General Contractor
GC/CM	General Contractor/Construction Manager
GMP	Guaranteed Maximum Price
HAZMAT	Hazardous Materials
IP	Implementation Plan
LONP	Letter of No Prejudice

Acronym	Term
LPA	Locally Preferred Alternative
MBE	Minority Business Enterprise
MCC	Management Capacity and Capability
MDBF	Mean Distance Between Failures
MPO	Metropolitan Planning Organization
NEPA	National Environmental Policy Act
NTE	Not-to-Exceed
NTP	Notice to Proceed
O&M	Operation and Maintenance
OCIP	Owner Controlled Insurance Program
ODCs	Other Direct Costs
OHA	Operational Hazard Analysis
OIG	Office of Inspector General
OMP	Operations and Management Plan
OP	Oversight Procedure
P3	Public Private Partnership
PCMG	Project and Construction Management Guidelines
PD	Project Development
PDM	Project Delivery Method

Acronym	Term
PHA	Preliminary Hazard Analysis
PMO	Project Management Oversight
PMOC	Project Management Oversight Contractor
PMP	Project Management Plan
POP	Project Oversight Plan
PTASP	Public Transportation Agency Safety Plan
QA/QC	Quality Assurance/Quality Control
R&D	Research and Development
RAMP	Real Estate Acquisition Management Plan
RAP	Rail Activation Plan
RCMP	Risk and Contingency Management Plan
RET	Risk Evaluation Tool
RFI	Request for Information
RFP	Request for Proposal
RFQ	Request for Qualifications
ROD	Record of Decision
ROW	Right-of-Way
RSD	Revenue Service Date
S/DBE	Small/Disadvantaged Business Enterprises

Acronym	Term
SABCE	Stripped and Adjusted Base Cost Estimate
SABS	Stripped and Adjusted Base Schedule
SAVE	Society of American Value Engineers
SCC	Standard Cost Category
SCIL	Safety Certifiable Items List
SGR	State of Good Repair
SIT	System Integration Testing
SITP	Systems Integration Test Plan
SOP	Standard Operating Procedure
SOW	Scope of Work
SSCVR	Safety Certification Verification Report
SSGA	Small Starts Grant Agreement
SSI	Sensitive Security Information
SSMP	Safety and Security Management Plan
STIP	Statewide Transportation Improvement Program
SYGA	Single Year Grant Agreement
TAR	Travel Authorization Request
TBM	Tunnel Boring Machine
TCC	FTA Office of the Chief Counsel

Acronym	Term
TCRP	Transit Cooperative Research Program
TIFIA	Transportation Infrastructure Finance and Innovation Act
TIGER	Transportation Investment Generating Economic Recovery
TIP	Transportation Improvement Program
TOD	Transit-Oriented Development
TPE	FTA Office of Planning and Environment
TPM	FTA Office of Program Management
TRB	Transportation Research Board
TSA	Transportation Security Administration
TVA	Threat and Vulnerability Assessment
URA	Uniform Relocation Assistance and Real Property Acquisition Act
U.S.C.	United States Code
VE	Value Engineering
VECP	Value Engineering Change Proposals
WBE	Women Business Enterprise
WBS	Work Breakdown Structure
YOE	Year of Expenditure