

TRIMET BUS FLEET MANAGEMENT PLAN

Draft Report

May 2013



Title VI

The Columbia River Crossing project team ensures full compliance with Title VI of the Civil Rights Act of 1964 by prohibiting discrimination against any person on the basis of race, color, national origin or sex in the provision of benefits and services resulting from its federally assisted programs and activities. For questions regarding WSDOT's Title VI Program, you may contact the Department's Title VI Coordinator at (360) 705-7098. For questions regarding ODOT's Title VI Program, you may contact the Department's Civil Rights Office at (503) 986-4350.

Americans with Disabilities Act (ADA) Information

If you would like copies of this document in an alternative format, please call the Columbia River Crossing (CRC) project office at (360) 737-2726 or (503) 256-2726. Persons who are deaf or hard of hearing may contact the CRC project through the Telecommunications Relay Service by dialing 7-1-1.

¿Habla usted español? La información en esta publicación se puede traducir para usted. Para solicitar los servicios de traducción favor de llamar al (503) 731-4128.

TABLE OF CONTENTS

1.	INTRODUCTION.....	1-1
2.	FLEET AND MAINTENANCE OVERVIEW	2-1
2.1	Fleet Overview	2-1
2.2	Service Overview	2-1
2.3	Existing Bus Fleet.....	2-2
2.4	Contingency Fleet	2-4
2.5	Operating Spare Ratio.....	2-6
2.6	Current Maintenance Staffing	2-6
2.7	Labor Performance Indicators.....	2-6
2.8	Maintenance Performance Indicators	2-7
2.9	Scheduled Maintenance	2-10
2.9.1	General Preventive Maintenance	2-10
2.9.2	Transmission Preventive Maintenance	2-11
2.9.3	Engine Preventive Maintenance.....	2-11
2.9.4	Air Conditioning Preventive Maintenance	2-11
2.9.5	Wheelchair Lift Preventive Maintenance.....	2-12
2.9.6	Other Preventive Maintenance	2-12
2.10	Scheduled Predictive Maintenance	2-13
2.11	Unscheduled Maintenance	2-13
2.12	Cleaning Program	2-14
2.13	Bus Maintenance Facilities	2-15
2.14	Maintenance Facility – Paratransit	2-15
2.15	TriMet Force Account Plan for Preventive Maintenance.....	2-16
3.	FLEET AND FLEET MANAGEMENT.....	3-1
3.1	Quality of Service – Fixed Route and Paratransit.....	3-1
3.2	Reliability	3-3
3.2.1	On-Time Performance	3-3
3.2.2	On-Street Improvements.....	3-5
3.2.3	Technological Applications.....	3-5
3.3	Service Delays – Fixed Route and Paratransit.....	3-6
3.3.1	Maintaining Service Reliability: In-Service Failures	3-6
3.3.2	Miles Between Road Calls	3-6
4.	SCHEDULE AND RIDERSHIP	4-1
4.1	Schedule Design – Fixed Route.....	4-1
4.2	Route Performance Monitoring – Fixed Route	4-1
4.3	Ridership – Fixed Route	4-4
4.4	Passenger Load Standards – Fixed Route	4-5
4.5	Factors Influencing Peak Period Ridership – Fixed Route.....	4-6

4.6	ADA Paratransit	4-8
5.	FUTURE SYSTEM	5-1
5.1	Expanding Fixed Route (Bus) Service	5-1
5.2	Bus Service Changes Related to South Corridor Phase 2	5-3
5.3	Bus Service Changes Related to Columbia River Crossing Project	5-3
5.4	Maintenance Facilities Expansion	5-3
5.5	Planned Bus Procurements	5-4
5.6	Financial Forecasting	5-5

List of Figures

FIGURE 2-1. TRIMET ATTENDANCE PERFORMANCE (AS OF MARCH 2013).....	2-8
FIGURE 2-2. TRIMET OVERTIME PERFORMANCE (THROUGH FY 12).....	2-8
FIGURE 2-3. TRIMET LABOR PERFORMANCE (AS OF MARCH 2013).....	2-9
FIGURE 2-4. TRIMET COST PER MILE PERFORMANCE (AS OF MARCH 2013).....	2-9
FIGURE 2-5. TRIMET SCHEDULED VS. UNSCHEDULED WORK PERFORMANCE (AS OF MARCH 2013)	2-10
FIGURE 3-1. BUS (WEEKDAY) ON-TIME PERFORMANCE BY MONTH (1998-2013).....	3-4
FIGURE 3-2. LIFT ON-TIME PERFORMANCE BY YEAR (FY03 - FY13)	3-5
FIGURE 4-1. FIXED ROUTE BUS RIDERSHIP 1999-2013.....	4-5
FIGURE 4-2. LIFT AVERAGE WEEKDAY RIDES FY10-FY13.....	4-9
FIGURE 4-3. LIFT ANNUAL RIDERSHIP FY07-FY22.....	4-10

List of Tables

TABLE 2-1. TRIMET ACTIVE FIXED ROUTE FLEET (AS OF APRIL 12TH, 2013)	2-3
TABLE 2-2. TRIMET PARATRANSIT FLEET (AS OF APRIL 12TH, 2013).....	2-3
TABLE 2-3. CONTINGENCY FLEET (AS OF APRIL 12TH, 2013).....	2-4
TABLE 2-4. TRIMET MAINTENANCE EMPLOYEE SHIFT DISTRIBUTION	2-6
TABLE 2-5. GENERAL PM INTERVALS.....	2-11
TABLE 2-6. OPENING YEAR FIXED ROUTE OPERATING BASES	2-15
TABLE 2-7. OPENING YEAR LIFT OPERATING BASES	2-16
TABLE 4-1. BUS SERVICE FREQUENCY	4-1
TABLE 4-2. LOW PERFORMING LINES (<15 BR/VH), FALL 2012.....	4-3

TABLE 4-4. ACHIEVABLE PASSENGER CAPACITIES PER FIXED ROUTE VEHICLE4-5

TABLE 4-5. FIXED ROUTE BUSES IN SERVICE4-6

TABLE 4-6. TRIMET FIXED ROUTE FLEET FY2009-20134-7

TABLE 4-7. FOUR-YEAR HISTORY AND A PROJECTION OF LIFT VEHICLE NEEDS THROUGH 2018.....4-11

TABLE 5-1. FREQUENT SERVICE EXPANSION PRIORITY5-2

TABLE 5-2. FIXED ROUTE GARAGE CAPACITY5-3

TABLE 5-3. LIFT GARAGE CAPACITY5-4

This page left blank intentionally.

ACRONYMS

ADA	Americans with Disabilities Act
APC	Automatic Passenger Counters
ATP	Accessible Transportation Programs
ASA	Automated Stop Announcements
BDS	Bus Dispatch System
CAT	Committee on Accessible Transportation
CSI	Customer Service Information
FTA	Federal Transit Administration
MAX	Metropolitan Area Express
MMIS	Maintenance Management Information System
MTP	Medical Transportation Program
PIP	Productivity Improvement Process
PM	Preventive Maintenance
SMART	South Metro Area Rapid Transit
SOPs	Standard Operating Procedures
TC	Transit Center
TIP	Transit Investment Plan
WES	Westside Express Service

This page left blank intentionally.

1. Introduction

TriMet was created in 1969 as a special district of the State of Oregon and is governed by a seven-member board of directors appointed by the Governor. TriMet's 575-square-mile district serves 1.3 million people in the urban portions of Clackamas, Multnomah, and Washington counties.

TriMet plays an important role in the Portland Metropolitan area's pursuit of regional growth management goals (known as the *Region 2040 Growth Concept*). Including; improving bus service to regional centers, expanding the Metropolitan Area Express (MAX) light rail system, and continually improving the quality of the TriMet system which provides regional residents with a comfortable and convenient transportation choice.

Metro is the regional government that develops long-term plans for land use and transportation. TriMet is a partner with Metro and local governments in land use and transportation planning. TriMet's commitment to improve service in concert with growth management is a basis for The *Metro 2040 Growth Concept*.

The *Metro 2040 Growth Concept*, which was adopted in 1995, preserves access to nature and builds better communities by maintaining a compact urban form with increased travel options. It directs most new development to population centers and along corridors that can be well served by transit, walking, and bicycling. Focusing jobs, housing, and services in these areas takes best advantage of transit system investments by reducing the need to drive. MAX is TriMet's light rail system serving the Portland metropolitan area. Opening in 1986, today MAX service includes four lines (Blue, Red, Green and Yellow), the Green line opened on September 12, 2009. Currently, four MAX lines run on 52 miles of track and serve 84 stations. MAX has become a national model for community support, land-use/ transportation planning, public art, and environmentally friendly construction practices.

TriMet operates 79 bus routes throughout the Portland, Oregon, metro area. Many bus lines connect with MAX Light Rail and provide Frequent Service (every 15 minutes or better during morning and afternoon rush hour).

Frequent service connects Regional Centers in the 2040 Plan with each other and with the Central City and serves Main Streets. In 1998, four lines had 15-minute or better service available each day of the week. Today, the Frequent Service network comprises 12 bus routes and is 164 miles long. As a result of these investments in new service, over 40 percent of the population of the TriMet District lives within one-half mile of Frequent Service.

TriMet is working to build and operate the Total Transit System. This includes elements that make transit a safe and attractive choice for riders who like frequent, reliable service with comfortable vehicles, easy access to shops and stations, and clear and accessible service information. TriMet's Transit Investment Plan (trimet.org/tip) provides a blueprint of where the agency will make investments in service and amenities through partnerships with local governments. As part of the Total Transit System, TriMet has enhanced service and added convenience through:

- TransitTracker™ real-time arrival information available for all 6,800 bus stops and all MAX and WES stations by phone at 503-238- RIDE (7433), trimet.org, for mobile devices by text and through trimet.org and via dozens of third-party apps.
- TransitTracker reader board signs posted at major transfer points and many MAX and all WES stations.
- Stop ID information posted at all MAX and WES stations and bus stops.
- Utilizing technology to briefly hold a green light so a bus behind schedule can continue through a busy intersection.

TriMet's LIFT Program provides complementary, door-to-door transportation services to Portland area residents who are functionally unable to use TriMet's regular fixed route services because of a disability. LIFT provides service to locations within 3/4 of a mile of either side of TriMet's 81 fixed routes.

Based on a recommendation by the Special Needs Transportation Policy Advisory Committee to the TriMet Board, TriMet has provided LIFT service in the Metro area since 1980. TriMet became fully compliant with the Americans with Disabilities Act (ADA) in 1996, and since has provided service that meets and exceeds requirements of the ADA.

TriMet's Accessible Transportation Programs (ATP) Department is part of the Operations Division, which also includes bus and rail service. ATP is made up of two programs—TriMet LIFT and the Medical Transportation Program (MTP). The LIFT Program is expressed in all caps to distinguish the program name from the vehicle lifts. LIFT is not an acronym.

TriMet operates LIFT service through contracts with private sector companies, which provide staff for all operating functions including transportation, maintenance, dispatch, and customer services. In addition, TriMet contracts with a taxi company to provide backup transportation that efficiently accommodates fluctuations in demand. TriMet provides vehicles, operating facilities, and equipment for all program elements aside from taxi service. TriMet is responsible for program, contract, and operations management for the LIFT Program, and for determining eligibility of LIFT clients.

During Fiscal Year 2011, TriMet provided 1.06 million LIFT rides.

2. Fleet and Maintenance Overview

2.1 Fleet Overview

Fixed Route

TriMet's entire bus fleet is broken down into the following categories: high-floor 30-foot diesel buses, high-floor 40-foot diesel buses, low-floor 40-foot diesel buses, low-floor 40-foot hybrid diesel-electric buses. TriMet maintains an active fixed-route fleet and a contingency fleet for emergency. Please see table 2-1 for the exact fixed-route fleet breakdown and section 2.4 for contingency fleet information.

Paratransit – LIFT Program

The LIFT fleet consists of cutaway, small buses and gasoline-powered minivans. All of the small buses are lift-equipped and have either three or four securement areas for people using a wheelchair or scooter. Seating for ambulatory customers is a combination of seats fixed to the bus floor and seating that is attached to and can be folded up against the interior wall of the bus, to open floor space for wheelchair securement. Ambulatory seating varies by sub-fleet with a seated maximum of 13 and a minimum of six. The number of seats available for ambulatory customers depends on the number of wheelchair spaces occupied. The minivan fleet of 15 ramp-equipped vans seats a maximum of three ambulatory customers or one customer using a mobility device and is useful when the pick-up location or the drop-off location presents access challenges for the small buses. See Appendix A of this report for the LIFT vehicle fleet details.

2.2 Service Overview

For the calendar year 2012, the fixed route fleet averages 38,000 miles per year per bus. The paratransit fleet averages 29,000 miles per year per vehicle. Vehicles are in operation 24 hours a day with the majority of service between 4:00 a.m. and 1:00 a.m.

Time spent outside of revenue operation is used for performing all necessary service, cleaning, and maintenance to the vehicles. TriMet's Field Operation Dispatch office is open 24 hours a day, seven days a week and is responsible for assigning replacement vehicles when needed in accordance with the available vehicle list from Maintenance. Before service operation, all vehicles are given a pre-trip inspection as follows:

1. Start-up and low air warning system test.
2. Exterior walk around.
3. Interior inspection.
4. Operator's compartment set-up and checks.

Defects found upon completion of the pre-trip inspection are recorded on the Trip Sheet assigned to the vehicle and resolved by maintenance when the vehicle is no longer in revenue operation.

The LIFT Program operations model consists of a central dispatch contract, a central maintenance contract and three transportation contracts. LIFT Central Dispatch receives ride requests; schedules and dispatches rides; and responds to customer contacts. LIFT Central Maintenance performs all vehicle maintenance, excluding minor maintenance activities specifically outlined as responsibility of LIFT Transportation contractors. LIFT Transportation manages employees who transport customers in TriMet-owned vehicles according to schedules produced by LIFT Central Dispatch. TriMet has general program and operations direction and oversight responsibility.

2.3 Existing Bus Fleet

All vehicles in operation are wheelchair accessible and adhere to ADA compliance standards.

Table 2-1, TriMet Fixed Route Fleet, provides detailed information on the vehicles used for fixed-route revenue operations.

* The capacity is noted as Seated / Seated+Standing

Table 2-2, TriMet Paratransit Fleet, provides detailed information on the vehicles used for paratransit operations.

Table 2-3, TriMet Contingency Fleet plan and vehicle listing, provides detailed information about the fixed route contingency fleet.

Table 2-1. TriMet Active Fixed Route Fleet (as of April 12th, 2013)

Manufacturer	Length	Capacity*	Engine	Transmission	Model	Year	Size
Gillig	40	43/64	Cummins L-10	Voith D863	Phantom	1990	23
Gillig	30	28/35	Cummins L-10	Voith D863	Phantom	1990	10
Gillig	30	28/35	Cummins L-10	Voith D863	Phantom	1991	6
Flexible	40	43/64	Cummins L10-CE	Voith D863	40102-6C	1992	48
Flexible	30	28/35	Cummins L10-CE	Voith D863	30102-6C	1992	6
Flexible	40	43/64	Cummins M11 Celect	Voith D863	40102-6C	1994	25
New Flyer	40	39/56	DD Series 50	Allison VR-731	D40LF	1997	22
Gillig	40	43/60	Cummins M11-280E	Allison B400R	Phantom	1997	60
Gillig	40	43/60	Cummins M11-280E	Voith D863.3	Phantom	1997	5
New Flyer	40	39/56	Cummins ISL CM850	Voith D863.3	D40LF	1998	58
New Flyer	40	39/56	Cummins ISL CM850	Voith D863.3	D40LF	1998	60
New Flyer	40	39/56	Cummins ISL CM850	Voith D863.3	D40LF	2001	59
New Flyer	40	39/56	Cummins ISL CM850	Voith D864.3E	D40LF	2002	55
New Flyer	40	39/56	Cummins ISL CM850	Voith D864.3E	D40LF	2002	25
New Flyer	40	39/56	Cummins ISL CM850	Voith D864.3E	D40LF	2005	39
New Flyer	40	39/56	Cummins ISL CM2150	Voith D864.5	D40LF	2009	40
Gillig	40	39/56	Cummins ISL CM2250	Voith D864.5	Low Floor	2012	51
Gillig	40	39/56	Cummins ISB CM2250	BAE Serial Hybrid	Low Floor Hybrid	2012	4
Total Active Fleet							596
Average Fleet Age (in years)							13.1

* The capacity is noted as Seated / Seated+Standing

Table 2-2. TriMet Paratransit Fleet (as of April 12th, 2013)

Manufacturer	Length	Capacity+	Engine	Transmission	Model	Year	Size
Ford**	24'	13/3	7.3L DIT	4R100	El Dorado	2003	8
Ford	24'	8/4	6.0L DIT	5R110	El Dorado	2006	19
Ford	24'	8/4	6.0L DIT	5R110	El Dorado	2007	49
Ford	24'	8/3	6.0L DIT	5R110	El Dorado	2008	1
Ford	24'	12/3	6.0LDIT	5R110	El Dorado	2008	50
Dodge	17'	3/1	3.3L V6	41TE	Caravan	2010	15
Chevrolet	24'	12/3	6.6L Diesel	6spd Automatic	El Dorado	2011	15
Ford	22'	12/2	5.4L V8	Azure Dynamics	Supreme Corp	2011	1
Chevrolet	22'	10/4	6.6L Diesel	6spd Automatic	El Dorado	2011	26
Chevrolet	22'	10/4	6.6L Diesel	6spd Automatic	El Dorado	2012	84
Total Fleet							268
Average Fleet Age (in years)							5

**Limited use vehicles

+Note: The capacity is noted as Maximum Seated / Maximum mobility devices

Contingency Fleet Service Requirements

TriMet's contingency fleet consists of vehicles that have already reached the end of their useful life and are no longer needed for normal scheduled service. In typical times, TriMet maintains a contingency fleet of 12 to 15 vehicles. TriMet retains the contingency bus fleet for the following contingent service requirements:

- Restoration of previously reduced service;
- Major temporary, dedicated service events such as a "Bus bridge" for MAX light rail, due to construction or other interruptions to regular MAX service;
- Major service emergency conditions such as declared natural disaster such as major region-wide flood or winter storm, resulting in a temporary surge for TriMet ridership demand, or possibly damage to regular active fleet buses requiring temporary substitution of contingency buses for regular buses until the regular buses can be returned to service; and
- Sudden surge in TriMet ridership demand due to national or regional fuel emergencies.

TriMet shall send a letter of notification to the FTA should there be a need to fully re-activate a contingency bus for active service.

Contingency Fleet Maintenance

Contingency Buses are removed from normal scheduled maintenance and put into a contingency bus inspection (CBI) program which is performed every 90 days. CBI inspections consist of: brake adjustments, air, electrical, throttle, interlock system operation check and fluid level check for all contingency buses.

2.5 Operating Spare Ratio

Fixed Route

Bus Maintenance’s current standard is to maintain at or below a 20% spare ratio to assure vehicle availability, and is based upon PM peak pullouts and calculated for 30' and 40' buses only.

Paratransit

The goal for LIFT service delivery is to maintain above a 16% spare ratio, which is based upon average peak pullouts. As of June 30, 2012, the maximum peak pullout was 216 vehicles. Refer to Appendix A of this report for detailed LIFT fleet service requirements.

2.6 Current Maintenance Staffing

TriMet maintenance employees operate on a 24-hour, seven days a week work schedule. All shifts are staffed to accommodate scheduled preventive maintenance (PM) and fleet modifications as well as unscheduled repairs when vehicles are out of operation. Shifts are scheduled so that there is an overlap between shifts for communication relay. Table 2-4, TriMet Maintenance Employee Shift Distribution, illustrates employee distribution by shift.

Table 2-4. TriMet Maintenance Employee Shift Distribution

Position	Day	Swing	Night	*Other
Journey Mechanic	49	23	35	
Body Shop	8			
Unit Rebuild	14			
Maintenance Mechanic	3	2	1	
Helper	5	2	4	53
Apprentice Mechanic	19			
Spotter/Sign-out Clerk	3	3	2	
Cleaner	4			
Tire				6

* Other denotes a shift(s) that does not fall into TriMet's standard Day, Swing, or Night shift.

LIFT vehicles are maintained at a TriMet facility, by employees of the contractor, Penske Truck Leasing, Inc. LIFT Maintenance operates 18.5 hours a day, Monday through Friday, and 10.5 hours a day on the weekends, with a designated on-call lead mechanic available 24 hours a day, seven days a week.

2.7 Labor Performance Indicators

Fixed Route

Labor performance is key to the successful operation of the Maintenance department. Periodic reviews are in place for supervisors and managers to measure attendance, miles per effective

journeyman mechanic, and overtime usage. Performance goals for these items for Fiscal Year 12-13 are as follows:

- Attendance – maintain 92.5% or greater attendance rate.
- Miles per Effective Journey Mechanic – maintain 17,500 miles or less per effective mechanic.
- Overtime – maintain costs at or below budgeted levels.

2.8 Maintenance Performance Indicators

Fixed Route

Each year the Maintenance department identifies goals that are critical to successful performance of the fixed-route fleet. Vehicles must be reliable, clean, safe, and accessible for both internal and external customers and annual goals are directed at meeting those standards in a cost-effective manner. A monthly benchmark report tracks the ability of the Maintenance department to meet its goals.

There are six goals for fiscal year 2013-2014:

1. Attendance must be 94 percent or greater for all maintenance employees.
2. Percentage of scheduled repairs must be 70 percent or greater.
3. Bus inventory turns at 2.5 per month.
4. Overall miles between mechanical failures goal is at 3,300 miles or greater.
5. Safety rating must be 15 accidents per 200,000 work hours or less.
6. PM Compliance is at 85 percent or greater.

Previous goals have focused on overtime costs, spare ratio, preventive maintenance, on-time compliance, maintained pullouts, frequency of interior cleaning and steam cleaning, and repair to payroll hour ratios in addition to attendance, inventory value, cost per vehicle mile and road call mileage. When goals are consistently met, they become a regular part of operations and other goals are introduced.

FIGURE 2-1. TRIMET ATTENDANCE PERFORMANCE (AS OF MARCH 2013)

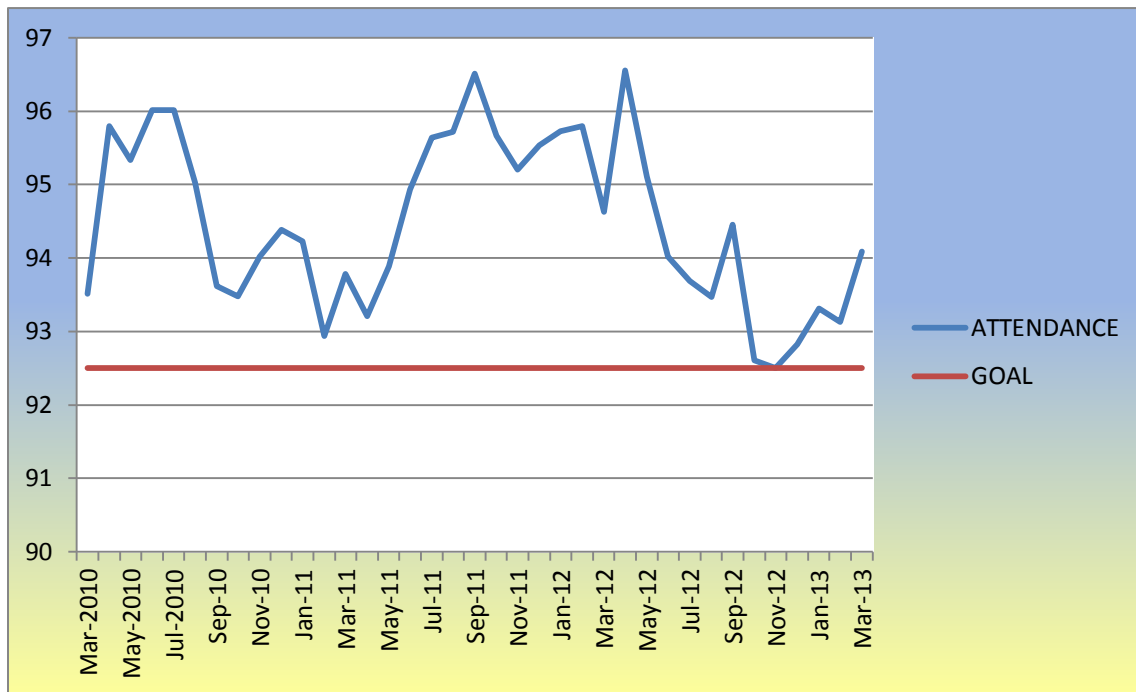


FIGURE 2-2. TRIMET OVERTIME PERFORMANCE (THROUGH FY 12)

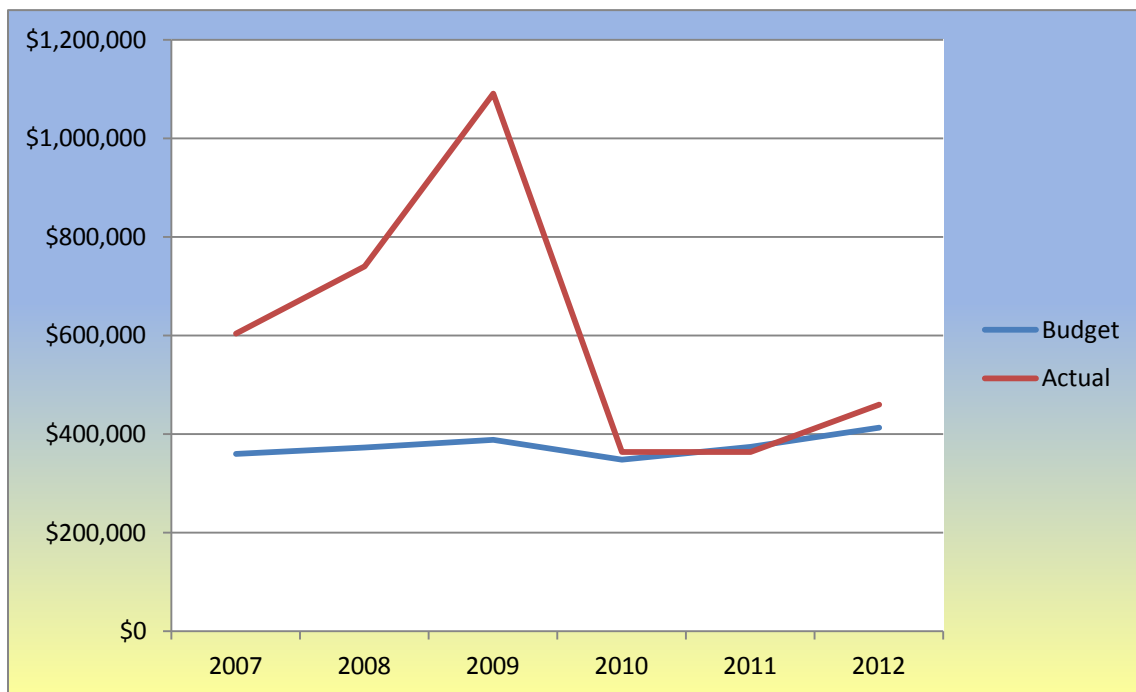


FIGURE 2-3. TRIMET LABOR PERFORMANCE (AS OF MARCH 2013)

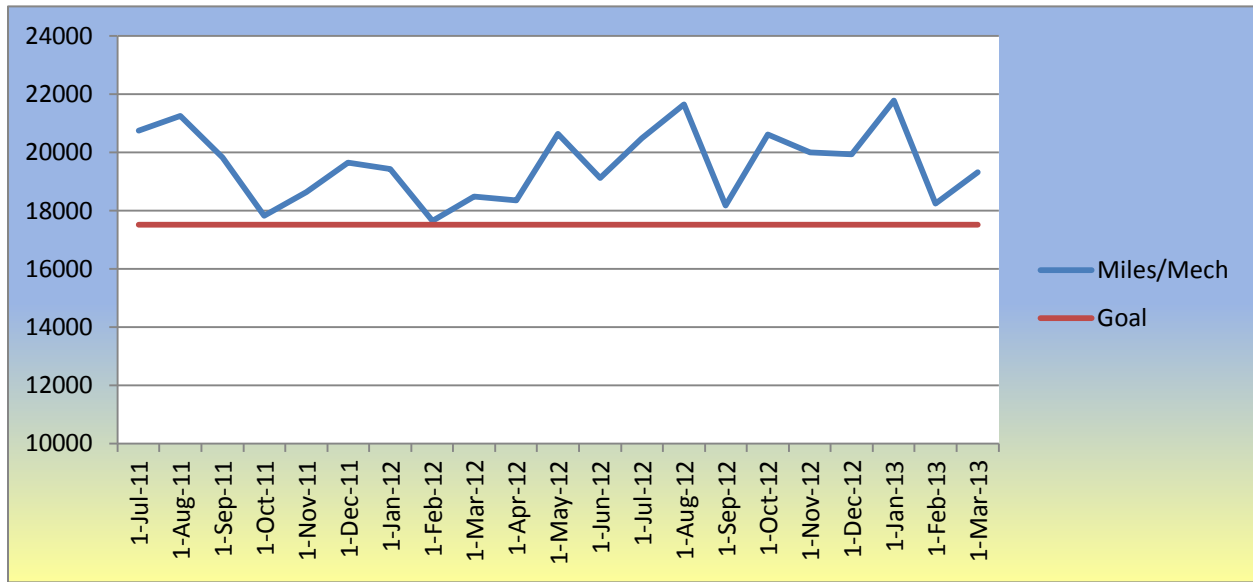
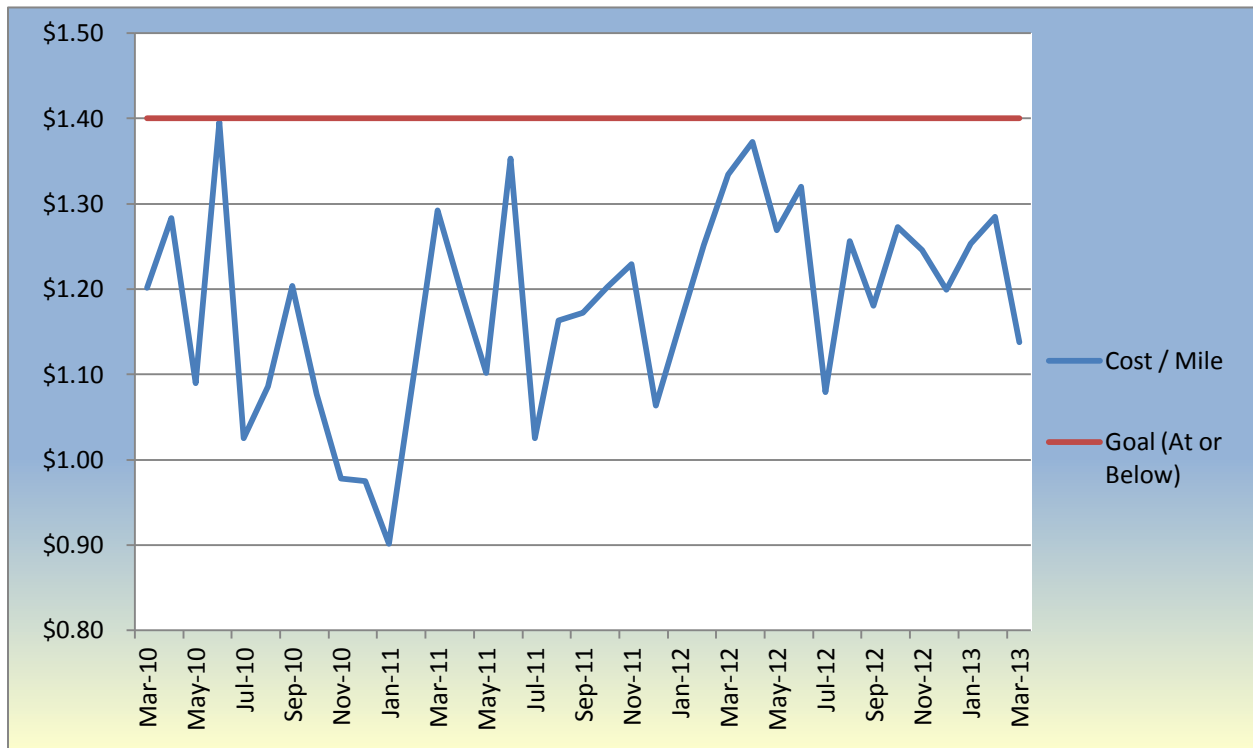
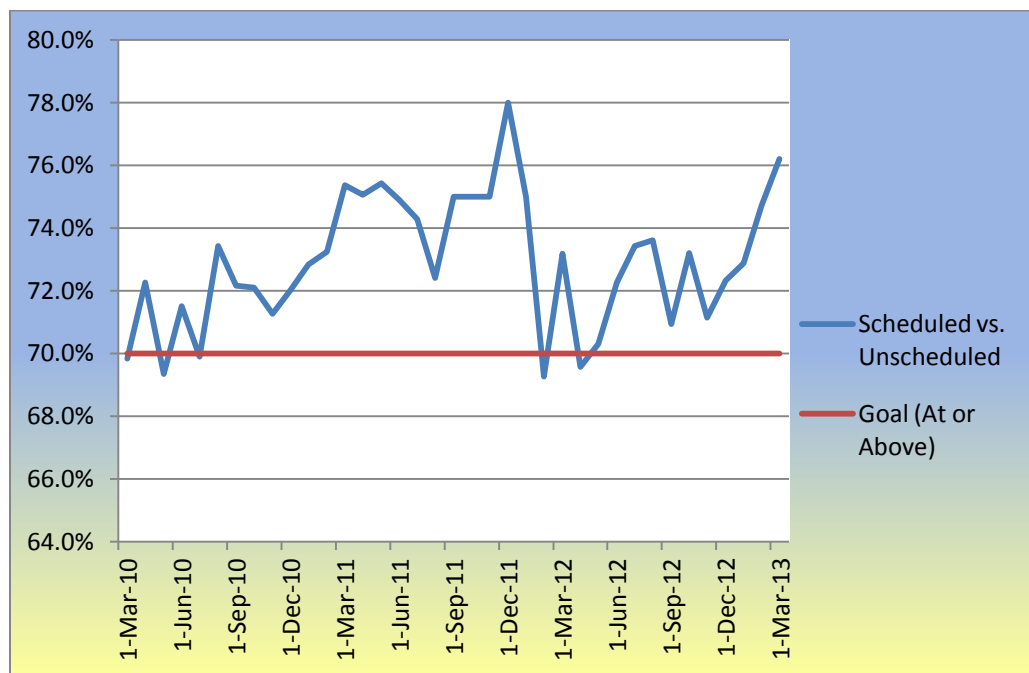


FIGURE 2-4. TRIMET COST PER MILE PERFORMANCE (AS OF MARCH 2013).....



*Total cost of Materials and Services / Bus Fleet Mileage

FIGURE 2-5. TRIMET SCHEDULED VS. UNSCHEDULED WORK PERFORMANCE (AS OF MARCH 2013)



2.9 Scheduled Maintenance

Fixed Route

All fixed route and LIFT vehicles are scheduled for regular preventive maintenance. Preventive maintenance schedules vary in accordance to the system on which the maintenance is performed. Inspection procedures vary slightly depending on the model and make of the vehicle and its components. The Appendices section of this document contains the detailed fleet management sheets for the following inspections.

2.9.1 General Preventive Maintenance

- B Inspection – Oil change, oil sample, interior/exterior inspection, chassis lubrication, and brake adjustment
- C Inspection – B inspection plus differential fluid level reading, and procedural check on lift and transmission systems for some buses
- D Inspection – C inspection plus procedural check of air and system, opacity reading, differential fluid change, and visual inspection of exhaust and steering systems

The schedule for general preventive maintenance varies by fleet and/or engine manufacturer. Fleets that are no longer under warranty undergo oil analysis to determine the optimum extended oil change interval. The interval for each type is listed in Table 2-5, General PM Intervals.

Please refer to Appendix C of this report for detailed information on bus maintenance expenditures.

Table 2-5. General PM Intervals

Model Year	Bus Series	B	C	D
2012	3052-3055	6,000	12,000	24,000
2012	3001-3051	6,000	12,000	24,000
2009	2901-2940	6,000	12,000	24,000
2005	2801-2839	7,000	14,000	28,000
2002	2701-2725	6,000	12,000	24,000
2002	2601-2655	7,000	14,000	28,000
2001	2501-2560	7,000	14,000	28,000
1998	2259-2318	7,000	14,000	28,000
1998	2201-2258	7,000	14,000	28,000
1997	2101-2165	7,000	14,000	28,000
1997	2101-2165	7,000	14,000	28,000
1997	2001-2022	6,000	12,000	24,000
1994	1817-1843	10,000	20,000	40,000
1992	1901-1910	12,000	24,000	48,000
1992	1701-1808	10,000	20,000	40,000
1991	1631-1643	12,000	24,000	48,000
1990	1601-1630	12,000	24,000	48,000
1990	1401-1463	12,000	24,000	48,000

All Values are in Miles.

2.9.2 Transmission Preventive Maintenance

- L Inspection (every 18,000 miles) – Visual inspection, fluid drain and filter change, record fault codes, ATF sample and road test for proper shifts and retarder functions.
- LR Inspection (every 72,000 miles) – L inspection plus pan drop for metal and clutch check and operating pressure check.

2.9.3 Engine Preventive Maintenance

- E Inspection (every 50,000 miles) – Manual and electronic idle and valve checks and tune-up inspection.

2.9.4 Air Conditioning Preventive Maintenance

- ACB Inspection (every 24,000 miles) – ACA inspection plus clutch bearing lubrication, pressure and temperature check, and filter replacement.

- ACC Inspection (every 48,000 miles) – ACB inspection plus compressor area steam cleaning, voltage/amperage readings from motors and compressor operating efficiency tests.

2.9.5 Wheelchair Lift Preventive Maintenance

- WLR Inspection (every 12,000 miles) – clean platform, check ride and step height, inspect system for leaks, and lubricate all moving parts.
- WLX Inspection (every 48,000 miles) – WLR inspection plus fluid and filter change.

2.9.6 Other Preventive Maintenance

- FB (Farebox) Inspection (annual inspection) – Coin mechanism, bill transport, coin escrow, bill stuffer, logic board, and lock inspection, lube, adjust, and bulb replacement as needed.
- CAM (Camera System) Inspection (every 12,000 miles) – Procedural check of all cameras, data packs and data recorders.
- CBI (Contingency Bus Inspection) (every 90 days) – Brake adjustments, air, electrical, throttle, and interlock system operation check, and fluid level check for all contingency buses.
- TMF (Traction Motor Fluid Change) Inspection (every 100,000 miles) – Change of lubricants for the traction motor on serial hybrid vehicles
- HB6 (6,000 mile BAE Hybrid Inspection) Inspection (every 6,000 miles) – Inspection of hybrid specific components such as the traction motor, energy storage system, and electrical architecture.

Paratransit

The paratransit fleet has a two-level preventive maintenance inspection program: “A” level service every 5,000 miles for minivans or every 6,000 miles for LIFT buses and “B” level service every 30,000 miles for all LIFT revenue vehicles. As with fixed route inspections, the “B” service is more progressive than the “A” service. These consist of eight service sections:

1. Test drive (inspection includes: starter, warning devices, dashboard gauges, interior lights and switches, steering wheel play, fast idle switch, heater, air-conditioner, horn, fire extinguisher, seatbelts, wipers, parking and foot brakes and interlock, record engine rpm and oil pressure)
2. Under chassis and lube (inspection includes: steering assembly and U joints, kingpins and tie rods, front axle assembly, sway bars and linkage, springs and shocks, brakes, drums, wheel seals, driveshaft, differential, drain transmission fluid/replace filter/refill, fuel tanks and lines, frame and cross members, lube complete unit)

3. Service (inspection includes: exterior lights, windshield cleaner fluid, condition of wiper blades and arms, mirrors, body condition, bumpers/mud flaps/brackets, headlamps, take oil, coolant and transmission fluid samples for analysis, coolant, drain fuel/water separator and crankcase, replace fuel and oil filters)
4. Upper chassis, engine and electrical (inspection includes: exhaust system, power-steering fluid, fan shroud, water pump, belts, AC compressor, alternator, air-intake filter, batteries)
5. Engine inspection (w/engine running, inspection includes: recording oil pressure, filters, lines and gaskets, exhaust, fault codes)
6. Wheelchair lift (ramp on minivans)(inspection includes: operation, lube, check for loose hardware and fluid leaks, warning buzzer)
7. Tires and Wheels (inspection includes: record tread depth and tire pressure, visual inspection for wear or damage, wheel nuts and axle flange nuts)
8. Final inspection (includes: check engine oil level, check for additional PM to be performed, update PM sticker)

2.10 Scheduled Predictive Maintenance

Fixed Route

Predictive maintenance is performed on components that have exhibited a determined lifetime. Components are identified for predictive maintenance in accordance with their frequency of unscheduled repairs. Component replacement history by fleet type is statistically reviewed to determine the optimum replacement schedule. TriMet currently has fourteen components on a predictive maintenance schedule: air dryers, brake application valves, brake relay valves (front and back), air compressors, alternator bearings, fuel pumps, water pumps, turbochargers, operator seats, diesel particulate filters, suspension airbags, windshield wipers, fuel injectors, electric starters and engine thermostats.

TriMet is always evaluating and identifying bus components that could be placed on a predictive replacement interval.

Paratransit

There is no scheduled predictive maintenance program currently in place for the LIFT fleet.

2.11 Unscheduled Maintenance

Fixed Route

Unscheduled maintenance is classified into four categories: Road calls, pullout repairs, operator reported defects, and yard repairs.

- Road call repairs: A disruption of service where another vehicle must be put into service to replace the disabled vehicle for mechanical, or safety concerns.

- Pullout repairs: Problems with a vehicle, typically minor mechanical or safety issues, that are found by the operator that must be fixed before the vehicle is put into service.
- Operator reported defects: Problems with a vehicle that do not warrant a disruption of service and are mainly comfort, cosmetic, or minor mechanical issues.
- Field Repairs by Downtown Mechanics and Yard Repairs: Repairs done to the vehicle within the yard confines, typically for cosmetic or minor mechanical issues at fixed locations or transit centers.

All unscheduled maintenance is entered into the Maintenance Management Information System (MMIS) and corrective actions to remedy the problem are recorded. Those that are safety related or likely to result in a road call are repaired before being returned to service. Defects not falling into the above categories but not able to be repaired immediately are deferred and scheduled for further repairs at a later date. One indicator of Maintenance performance is the percentage of scheduled to unscheduled repairs. The performance goal for FY12-13 is to keep unscheduled maintenance at or below 30% of total repairs.

Paratransit

Unscheduled maintenance is identified on the fleet of LIFT vehicles: at the time of the operator's pre-trip inspection before pull-out, during service when a road call or vehicle tow is required, and in response to a written operator defect report submitted to Maintenance. Safety and maintenance related issues that do not allow for safe operation of a vehicle will be repaired before the vehicle is used to deliver service.

2.12 Cleaning Program

Fixed Route

During the nightly service process, where buses are refueled and have their fluids checked, each interior is cleaned with a cyclone blower to remove dust, trash, etc., before being run through a wash rack for exterior cleaning. In addition, floors are mopped as needed but no less than once per week. Aluminum wheels are cleaned regularly but no less than once per week.

Our performance in this area is based upon customer complaints through our Service Improvement Process (SIP). The goal is to have no more than two customer complaints at each garage for each month.

Paratransit

Cleaning of buses is part of the transportation providers' contract. Operators daily sweep out buses, remove trash from vehicles and spot clean windows, surfaces and floors as needed. The transportation providers contract with a vendor who performs thorough interior cleaning and exterior cleaning.

2.13 Bus Maintenance Facilities

Fixed Route

Bus Maintenance is headquartered at 4413 SE 17th Avenue, Portland, Oregon. Fleets consist of 30- and 40-foot buses. Each bus is assigned to a garage — Center Street garage, Powell garage on the Eastside, or Merlo garage on the Westside. Buses start and end each service day and receive all necessary maintenance at their assigned garages.

Bodywork is performed at the Merlo garage in the body shop, which is equipped and staffed to repair accident damage, body defects and paint. The Unit Rebuild group is located at Center Street and performs rebuild of various components such as transmissions, air/electric components, electronic components, steering gear boxes, hydraulic pumps, lift pistons, etc. In addition, buses are brought to this location to perform engine overhauls.

The bus fleet is domiciled and maintained at three operating divisions — Powell, Center, and Merlo garages. Table 2-6 shows when each facility was built.

Table 2-6. Opening Year Fixed Route Operating Bases

	Year Built
Powell	1976
Center	1980
Merlo	1984

TriMet Facilities Management maintains the bus garages. There is no deferred capital maintenance. Facilities Maintenance prioritizes capital maintenance as follows:

1. Structures (roof and envelope)
2. Major sub-systems (HVAC, hoists, plumbing)
3. Surface treatments and finishes (paint, concrete)

2.14 Maintenance Facility – Paratransit

LIFT Maintenance is located at 2800 NW Nela Street, Portland, OR. All vehicle maintenance, excluding identified light maintenance items: (replacing headlights, taillights, wiper arms and blades, adding washer fluid and topping off engine oil/transmission fluid,) is done at the Nela facility. Buses are transferred from their operating base to Nela for necessary preventive maintenance and repairs. Body damage repairs are done by outside contractors. LIFT maintenance has 11 bus bays, five equipped with lifts in the 24,000 square foot facility.

The LIFT fleet is domiciled at three facilities—Region 1 – 2800 NW Nela St., Portland; Region 2- 2055 SW Merlo Court, Beaverton, (LIFT at Merlo); and Region 3 - 3705 SE 99th Avenue, Portland, (LIFT at Powell). All LIFT facilities, including office buildings, parking lots and shop areas, are TriMet-owned. All scheduled maintenance and most repair work on LIFT vehicles is

performed at LIFT central maintenance, located at the NW Nela facility in Portland, OR, the exception being body repairs done by outside contractors. Table 2-7 shows when each facility was occupied by TriMet:

Table 2-7. Opening Year LIFT Operating Bases

	Year
Nela	1997
LIFT at Merlo	2011
LIFT at Powell	2003

2.15 TriMet Force Account Plan for Preventive Maintenance

FTA defines force account work as work other than grant or project administration that is included in an approved grant and performed by a grantee's own labor forces. Force account work may consist of design, construction, refurbishment and inspection, and construction management activities. Incremental labor cost from flagging protection, service diversion or other activities directly related to a capital grant may also be defined as force account work. Force account work does not include grant or project administration activities that are otherwise direct project costs. Force account can include major capital project work on rolling stock. An example of this is preventive maintenance activities.

TriMet's rail, fixed route, paratransit and facilities maintenance program includes work performed by TriMet's labor force and by contractors. By far the great majority of preventive maintenance is performed by TriMet's own labor forces as negotiated by the Working and Wage Agreement between Amalgamated Transit Union Division 757 and TriMet. Under the labor agreement work that is contracted out must meet criteria specified in the labor agreement. Contracted maintenance must also be pre-approved by the ATU. TriMet's LIFT paratransit maintenance is contracted out entirely, but that is also by agreement with the ATU.

The justification for using force account work for preventive maintenance is the TriMet ATU labor agreement.

Budgets pertaining to preventive maintenance are included in the Appendices section of this document.

3. Fleet and Fleet Management

3.1 Quality of Service – Fixed Route and Paratransit

High quality transportation is a key element to the TriMet system. Safe, frequent, reliable and comfortable service on modern vehicles is fundamental to improving service quality and attracting new riders. TriMet will maintain and improve the quality of its transit service as described below.

Safety and Security

Ensuring safe operation of transit service and safe design of transit facilities and equipment is embedded into all TriMet activities. Similarly, all TriMet employees serve as “eyes and ears” for security awareness.

- Procurements and construction of new buses, light rail vehicles, and facilities include safety requirements in design and performance specifications, which are verified in design reviews and testing. Safety hazards are formally identified, assessed, and resolved as part of developing specifications and designs. Acceptance testing against safety-related design and performance requirements is formally performed and documented. Certification that all safety design requirements have been met, as well as the following operational safety requirements, is required before completed facilities and equipment are placed into passenger service. Standard Operating Procedures (SOPs) govern all operations, to assure safety and quality.
- Safety training for employees is formal and documented, specific both to job classification and the specific equipment or facility involved.
- Emergency response drills are conducted periodically.
- Every accident is analyzed for preventability, with lessons learned implemented by improvements to procedures, training, or equipment, as appropriate.
- Safety audits are performed on an ongoing basis, and the Federal Transit Administration (FTA) performs safety program oversight.

Security programs include:

- All TriMet employees serve as “eyes and ears” for security awareness and reporting.
- Security procedures assure rapid and assured communication and response to a reported security situation. TriMet’s operations command center works closely with 9-1-1 dispatch centers to assure the fastest possible police or emergency response.

- TriMet buses have security cameras on-board, and public telephones installed near high-use bus stops enable customers to call 9-1-1.
- Transit Police Division officers, contracted Transit Security Officers, Rider Advocates (in North/Northeast neighborhoods), and Fare Inspectors patrol the TriMet system.
- TriMet receives information about homeland security threats potentially affecting the transit system through the Transit Police Division and other sources, and takes appropriate action. Since 2001, TriMet has adopted transit agency best practices and training related to domestic security, which all operating personnel have been trained on. TriMet continually monitors emerging trends in mass transit security and homeland security.

Riders can play an important role in maintaining system safety and security, by reporting potentially unsafe or threatening situations to TriMet staff. In 2004, TriMet introduced new security signage, brochures, channel cards, and Transit Tracker notices encouraging heightened passenger awareness.

All LIFT and fixed route vehicles are equipped with a CAD/AVL system which was completed in April 2013. CAD/AVL capabilities include voice and data communications, automated vehicle location, and covert alarms, allowing safety and security issues to receive immediate attention from dispatchers, and emergency personnel.

Frequency and Levels of Service

Service frequencies often reflect the demand for service; however TriMet understands the importance of frequency as it applies to quality of service. Frequent service contributes to ridership in several ways:

- It reduces actual and, even more substantially, perceived travel time by transit.
- It makes the need to transfer less onerous. Given contemporary multi-destination travel patterns, TriMet cannot connect all the origins and destinations with direct service. If the transfer wait time is short and the transfer environment is good, customers will be much more willing to transfer.
- It makes transit more attractive for short trips. Most trips by automobile are short, so it is important for transit to attract these trips in order to increase ridership and meet 2040 goals, particularly on transit ridership to Regional and Town Centers and along Main Streets.
- It makes transit convenient, an essential element in attracting more trips.

As stated, frequency and levels of service are reflective of demand. This is especially true during peak-periods, when efficient deployment of resources is essential. Peak-only and express bus service is provided between 7:00 a.m. and 8:30 a.m. and 4:00 p.m. and 6:00 p.m. on weekdays. Though frequent service routes operate all day, service frequencies on these routes increase during these periods to also meet the higher demand for service. TriMet service in general is

available between the 4:00 a.m. and 2:00 a.m. on weekdays and the span of service for weekends is generally from 4:30 a.m. to 1:30 a.m. with no peak periods.

Automated Stop Announcements

Computerized “Automated Stop Announcements” (ASA) are installed on all buses as of April 21st, 2013 and planned for all newly procured low-floor buses. Beyond assisting TriMet in assuring that the ADA requirements for announcing transit stops are fully complied with, the ASA improves service quality for all transit riders. ADA requires that stops be internally announced for transfer points, major intersections, destination points, requested stops, and externally announced for the route and destination for customers waiting at stops served by multiple lines.

TriMet’s ASA system includes internal and external audio announcements, with newer low-floor buses including an internal reader-board display of stops. TriMet’s ASA project staff has continually consulted with the “Committee on Accessible Transportation” (CAT), other organizations representing people with disabilities, and TriMet bus operators in development of the system. The system is configurable to adjust features such as what is announced, audio volume, etc., based on feedback from bus operators and riders.

TriMet began making ASA external route and destination announcements in December 2006, and internal stop announcements in December 2007, for a few selected routes. As of summer 2013, all bus routes shall be loaded into the ASA system for external announcements.

TriMet’s newest buses have low floors equipped with deployable ramps that have a shallow angle that make it easier for all riders to get on and off, especially elderly individuals and persons using mobility devices.

3.2 Reliability

TriMet’s market research shows that transit service must be reliable in order to be a viable transportation choice. This is achieved by writing accurate schedules; minimizing the time buses are delayed by traffic congestion; efficient boarding and fare payment systems; proper training and supervision of drivers; and restoring service promptly after a disruption.

3.2.1 On-Time Performance

Fixed Route

A bus is considered on time if it arrives no more than one minute before its scheduled arrival time or less than five minutes after its scheduled departure time. Information on bus arrival times is continually collected and summarized each quarter. The goal is for at least 84 percent of all bus trips and 87 percent of MAX trips to arrive at time points on time during an average weekday, Saturday, or Sunday.

FIGURE 3-1. BUS (WEEKDAY) ON-TIME PERFORMANCE BY MONTH (1998-2013)

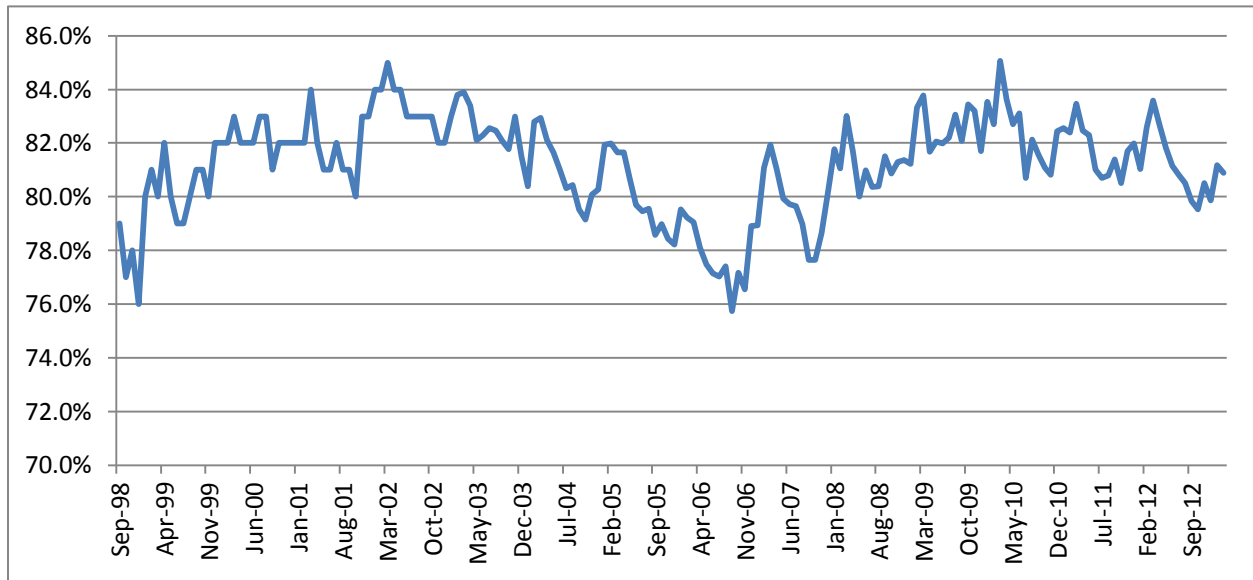


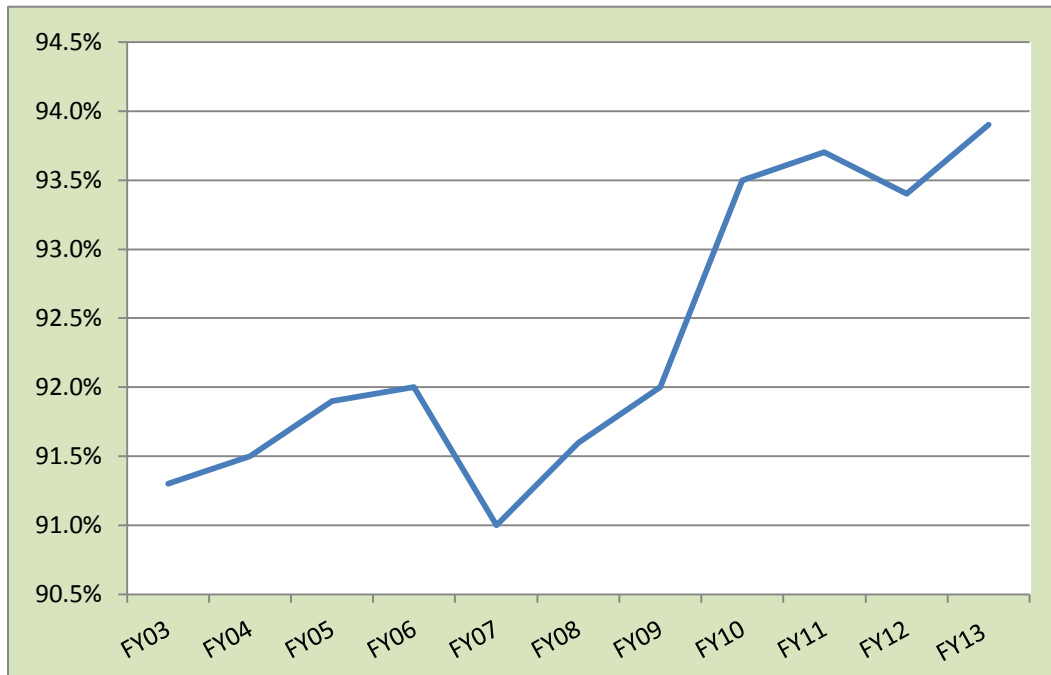
Figure 3-1 can be explained partially by the implementation of new operational technology such as the CAD/AVL System that is expected to be fully implemented by April 2013, in conjunction with a comprehensive effort by operations management to address runtime and schedule adherence issues brought forward by bus operators (Winter 2007 - present).

TriMet modifies bus schedules and routes to maximize service productivity. Ridership is also a measure of how efficient and productive bus service is.

Paratransit

A LIFT ride is considered on time if the vehicle arrives within a 30-minute window that is given to the customer at the time the ride is reserved. TriMet's minimum standard is for 90 percent of all pickups to be within the 30-minute window and the FY13 goal is 93.5 percent.

FIGURE 3-2. LIFT ON-TIME PERFORMANCE BY YEAR (FY03 - FY13)



In addition to on-time performance for pickups, LIFT also tracks timeliness of customer arrivals for appointments. These performance indicators, and complaint data for LIFT service, is reported quarterly to TriMet’s advisory committee, CAT.

3.2.2 On-Street Improvements

Traffic preferential improvements along roadways that help improve the reliability of bus service include:

- Signal priority
- Jump lanes at intersections
- Bus stops with curb extensions
- Management and route design measures to reduce run times and improve reliability

3.2.3 Technological Applications

TriMet uses advancements in transit technology to track and improve the reliability of service. In addition to the use of automatic passenger counters (APC) at bus doors to collect ridership information, TriMet’s new CAD/AVL System is expected to be fully installed on all rolling revenue assets by June 2013. This allows TriMet to track buses via GPS and, when combined with APC data, provides a powerful tool for analyzing service.

3.3 Service Delays – Fixed Route and Paratransit

3.3.1 Maintaining Service Reliability: In-Service Failures

Fixed Route

Close attention is paid to service delays due to mechanical failures. Using our PIP (Productivity Improvement Process), mechanics continually identify specific components that resulted in an inordinate number of road calls. Each component is then analyzed to determine the best way to reduce unscheduled failures and if a predictive maintenance procedure can be applied. Each of these problem components would then be changed at a predetermined mileage designed to reduce unscheduled replacements by 95percent.

In addition, mobile service trucks are available at three service locations in the east, west, and downtown regions of our service district. Each truck is on duty, staffed, and outfitted with commonly used parts during the AM and PM peaks. This has reduced the need for operators to road call a bus to make what would ordinarily be a very minor repair, i.e., headlight, wiper blade, mirror, etc.

Paratransit

TriMet and its contractor for LIFT vehicle maintenance, Penske Truck Leasing, monitor road call mileage very closely. All of the above is predicated on rigorous attention to scheduled and comprehensive PM procedures. TriMet LIFT has a goal of 95 percent on-time performance of its PMs and has met that goal for a number of years, usually achieving 100 percent.

3.3.2 Miles Between Road Calls

Fixed Route

Fleet reliability is measured in miles between road calls. In addition to preventive maintenance, the Maintenance department is now pursuing predictive maintenance where high profile components are replaced on a schedule determined by historical failures.

Road calls are applicable to 30- and 40-foot buses and are divided into three categories:

- Major road calls are defined as road calls due to a mechanical failure that affects movement or safety such as an engine, transmission or door.
- Minor road calls are defined as road calls due to a mechanical failure of a part that does not affect movement or safety such as air conditioning or wheelchair lifts or ramps.
- Other road calls are defined as road calls caused by non-mechanical issues such as accidents or bio-hazards.
- Total road calls are defined as the combination of major and minor road calls.

Chargeable road calls are the basis for performance goals of the department. The new process for capturing and identifying road calls was implemented in December 2010. Research showed that

our old standard of road call counting did not account appropriately the number of road calls in regards to NTD reporting standards. All past road call mileage is invalid when compared to NTD standards.

Paratransit

LIFT Maintenance has adopted the new road call reporting process to mirror the process in place for fixed-route bus maintenance. This mileage is being monitored closely and as soon as enough data is gathered, a solid goal will be established. This should be completed by June 20

This page left blank intentionally.

4. Schedule and Ridership

4.1 Schedule Design – Fixed Route

TriMet service is designed to meet ridership demands while maintaining a high level of service efficiency. An important component to maintaining this efficiency is in designing service schedules to meet the varying demand levels for service throughout the day. The basic variable that gives service planners this flexibility is altering service headways throughout the day. However other variables such as span of service, inter-lining bus trips, and offering peak-only service can improve the efficiency of service on the street.

Span of Service

Regular TriMet service is available between the 4:00 a.m. and 2:00 a.m. on weekdays. Peak periods on these days are experienced between 7:00 a.m. and 8:30 a.m. and 4:00 p.m. and 6:00 p.m. The span of service for weekends is generally from 4:30 a.m. to 1:30 a.m. with no peak periods.

Frequency

As mentioned in Section 3 the frequency of service, or service headway, is a large component of service quality. Service frequency is also a significant component in the schedule design of TriMet’s bus system. Bus service is generally categorized as regular service, frequent service, and peak-only service. All routes operate during peak periods (6:00 – 9:00 a.m., 3:00-6:00 p.m.), when the demand for service is high. Frequent Service routes operate all day and offer 15-17 minute (or better) service headways during morning and afternoon rush hour. General TriMet service is available from 4:00 a.m. to 2:00 a.m.

Table 4-1. Bus Service Frequency

Category	Span of Service	Routes (% of all routes)
Frequent service	Service at least every 15-17 min during morning and afternoon rush hour	12 (15%)
Regular service	All day service (4:00am to 2:00am)	47 (60%) excludes Freq Svc
Peak-only service	6:00 a.m. to 9:00a.m. 3:00 p.m. to 6:00 p.m.	20 (25%)

TriMet bases future service changes on its Transit Investment Plan (TIP). The TIP is a rolling five-year plan that is updated annually. More information on the TIP is included in Section 5.

4.2 Route Performance Monitoring – Fixed Route

TriMet has established a process to identify low-performing lines and to either improve ridership or discontinue the route in order to improve service to other lines with greater need. The first step

is to ensure that riders, local jurisdictions, and other interested parties are invited to participate in the review of a route's performance. The initial focus is to find ways to increase ridership. This could be achieved by restructuring the service, adding more service, improving bus stops or access to them, implementing programs to increase demand, undertaking promotional campaigns, or targeting service to new developments along the line. A strategy is then developed and implemented on a trial basis.

Generally, lines are given six months or more to reach an acceptable ridership productivity level. If that level is not achieved, the service may be reallocated to other lines that need more capacity. TriMet will look first to reallocate the service within the same community. TriMet will provide some form of safety net service for those riders who have special needs, particularly seniors and people with disabilities.

Fixed route bus lines have a desired minimum of 15 boarding rides per vehicle hour and a maximum operating cost of \$6.50 per boarding ride. The operating cost per ride guideline is roughly twice the bus system average, \$2.94. Lines that do not attract at least 15 boarding rides per vehicle hour are low performing lines that should be addressed to improve productivity.

Table 4-2 lists present low performing and marginally performing lines and line segments. As a whole, these account for approximately 5 percent of weekly bus system vehicle hours, 2 percent of boarding rides and 5 percent of peak buses.

Table 4-2. Low Performing Lines (<15 BR/VH), Fall 2012

Route	BR/VH	Cost/Ride
84-Kelso/Boring	6.6	\$14.91
11-Rivergate/Marine Dr	7.2	\$13.64
18-Hillside	9.4	\$10.50
154-Willamette	9.8	\$10.02
37-Lake Grove	10.2	\$9.62
59-Walker/Park Way	12.1	\$8.14
36-South Shore	12.3	\$8.00
43-Taylor's Ferry Rd	12.4	\$7.94
47-Baseline/Evergreen	12.7	\$7.77
30-Estacada	13.3	\$7.38
16-Front Ave/St Helens Rd	14.2	\$6.93
23-San Rafael	14.2	\$6.94
34-River Rd	14.3	\$6.87
46-North Hillsboro	14.9	\$6.60
50-Cedar Mill	14.9	\$6.59

Source: TriMet Operations Support

TriMet also modifies bus schedules and routes to manage capacity and maximize service productivity. Productivity is measured as the portion of time that buses spend serving passengers (revenue hours) compared to the total time that buses are out of the bus yard (vehicle hours). Vehicle hours include revenue hours, time between ends of lines and the garages (deadhead hours), and schedule recovery/operator break times during the day (layover hours). Productivity enhancements balance layover hours to provide schedule recovery time when and where it is most needed. This increases the overall usefulness of transit service by reallocating service (lines and parts of routes) with low ridership to lines with higher ridership potential. Allocation of service to meet customer demand is important for ensuring adequate frequency and availability of seats.

Table 4-3. Bus Schedule Efficiency (RH/VH)

	Revenue Hours	Vehicle Hours	Efficiency
June-02	122,141	166,439	73.38%
June-03	124,879	168,110	74.28%
June-04	128,516	171,803	74.80%
June-05	123,758	166,260	74.44%
June-06	123,673	165,237	74.85%
June-07	123,166	162,485	75.80%
June-07	123,166	162,485	75.80%
June-08	125,505	164,039	76.51%
June-09	129,982	169,745	76.57%
June-10	118,172	155,794	75.85%
June-11	111,530	147,341	75.70%
June -12	111,346	145,428	76.56%

Source: Monthly Performance Report

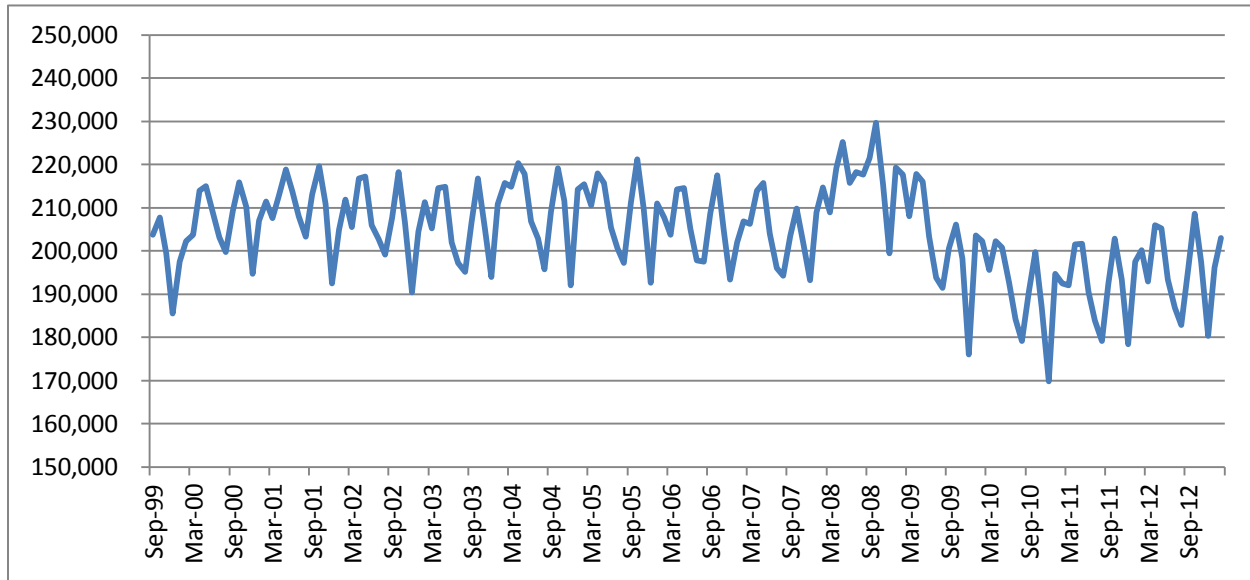
TriMet improves internal operations to ensure that buses leave the end of the line on time, that schedules reflect realistic running times, provide balanced layover times, and that service disruptions are addressed quickly. Efforts are also underway to work with operators and other field personnel to improve on-time performance and operating conditions, and adjust run times when appropriate.

4.3 Ridership – Fixed Route

Fixed Route

The portion of weekday riders served by Frequent Service increased from 17 percent in 1998 to 56 percent (for FY2012). All of the net bus system ridership growth since FY1999 has been on Frequent Service lines. Overall, TriMet ridership increases faster than other indicators of regional growth, including population and automobile vehicle miles traveled.

FIGURE 4-1. FIXED ROUTE BUS RIDERSHIP 1999-2013



4.4 Passenger Load Standards – Fixed Route

TriMet’s service standards list acceptable passenger capacities for different vehicles. These standards encourage ridership by preventing passenger overcrowding and ensuring that everyone has a comfortable ride. Alleviating crowding can require greater capital and operating resources for more buses and trains, operators, mechanics, supervisory personnel, and equipment.

Table 4-4. Achievable Passenger Capacities per Fixed Route Vehicle

Type of Vehicle	Passenger Capacities (Average during peak one hour in peak direction of travel)		
	Seated	Standing	Total
30-Foot Bus	28	2	30
40-Foot Bus	39	12	51

Load Factor Evaluation – Fixed Route

Ridership information is collected daily from APCs at bus doors. 100 percent of TriMet’s bus fleet is APC-equipped. Ridership summaries are prepared quarterly to determine if passenger overcrowding is occurring or is projected to occur within the next year. The counters on buses provide monthly ridership counts, peak load checks, and data for the National Transit Database and information for service adjustments. TriMet’s passenger loading standards are used to determine if a bus is overcrowded.

4.5 Factors Influencing Peak Period Ridership – Fixed Route

Demand for service is greatest on weekday mornings and afternoons. However special events can influence peak period ridership as well, especially when they occur during the PM peak, when TriMet experiences its greatest demand for service. Sporting events are a common reason to deploy contingency buses to meet high ridership demands. Special events such as these occur on an average two to three times a year and can require as many as 10 contingency buses to accommodate the increased demand for service. Efforts are made to balance the deployment of operators and vehicles among all three garages when possible.

Increases in service productivity help offset the need for more buses in the afternoon peak.

Table 4-5. Fixed Route Buses in Service

Qtr	Weekday				Sat	Sun
	6 a.m.-9 a.m.	9 a.m.-3 p.m.	3 p.m.-6 p.m.	6p.m.		
	Am Pk	Midday	Pm Pk	Evening		
Jun-02	527	316	561	205	275	197
Jun-03	521	315	552	205	276	198
Jun-04	510	315	541	201	271	204
Jun-05	492	308	525	198	265	204
Jun-06	492	305	526	195	268	206
Jun-07	480	307	529	not available	269	205
Jun-08	488	311	528	not available	274	217
Jun-09	496	310	541	not available	268	221
Jun-10	461	282	514	189	245	203
Jun-11	445	257	496	168	212	178
June-12	456	248	498	not available	213	180
June-13	451	255	498	not available	215	182

Notes:

Beginning with Sept-02, does not include two vans assigned to Cedar Mill service during peak periods (Line 42). Beginning with June-03, does not include two weekday and three weekend buses on Washington Park Shuttle (Line 73). Blue Lake Shuttle not included (summer only). No buses required (or saved) for construction reroutes are included in this data.

Sept-00 represents the historic peak for bus pullouts.

Peak pullouts are projected based on existing service needs and planned service changes. Projecting peak pullouts assists the agency with planning for future bus purchases and fleet retirement. Table 4-6 is calculated by multiplying peak pullouts by the agency spare ratio. Over one-half of all TriMet buses are now low-floor vehicles and are equipped with APCs. All buses are now ASA-equipped.

Table 4-6. TriMet Fixed Route Fleet FY2009-2013

	FY09	FY10	FY11	FY12	FY13 PLAN
Standard Low Floor	361	361	360	415	485
Standard High Floor	280	254	226	180	110
Current Fleet Plan	641	615	586	595	595
Required Fleet (spare ratio x pk pullouts)	639	605	586	588	588
Peak pullouts*	541	514	496	498	498
Spare ratio	18%	18%	18%	18%	18%
Bus Purchases	40	0	0	55	70
Percent low floor (% of Current Fleet)	56%	59%	61%	70%	82%
APC Equipped (% of Current Fleet)	79%	81%	86%	100%	100%
ASA Equipped (% of Current Fleet)	56%	59%	61%	70%	100%
Service Assumptions:					
Passenger crowding				1	
Reliability				2	
Service productivity		--27	-18	-1	
Sellwood Bridge Weight Limits	-2				
Restore Line 71 schedule	-1				
TOTAL	-3	--27	-18	2	

4.6 ADA Paratransit

TriMet has provided demand response transportation services through the LIFT Program to people with disabilities since 1976, fifteen years before passage of the Americans with Disabilities Act (ADA) mandated the service. The LIFT Program is a shared-ride, public transportation service for people who are unable to use fixed route buses or MAX due to a disability or disabling health condition. LIFT operates during the same hours as bus and MAX services, generally 4:30-2:30 a.m., seven days a week. The boundary of the LIFT service area is three-fourths of a mile on either side and from the outermost portions of TriMet's bus and MAX lines and includes all locations inside that boundary, except for areas that are not part of the TriMet service district. All rides are by advance reservation only and must be requested no later than 5:00 p.m. the day before the trip. The LIFT Program operates primarily door-to-door with some curb-to-curb service for specific locations, according to service standards that exceed or are equal to the standards established by the ADA.

LIFT service fares are \$2.45 for a 2 hour ticket. A book of 10 tickets costs \$24.50, and a LIFT Monthly Pass is available for \$72.00.

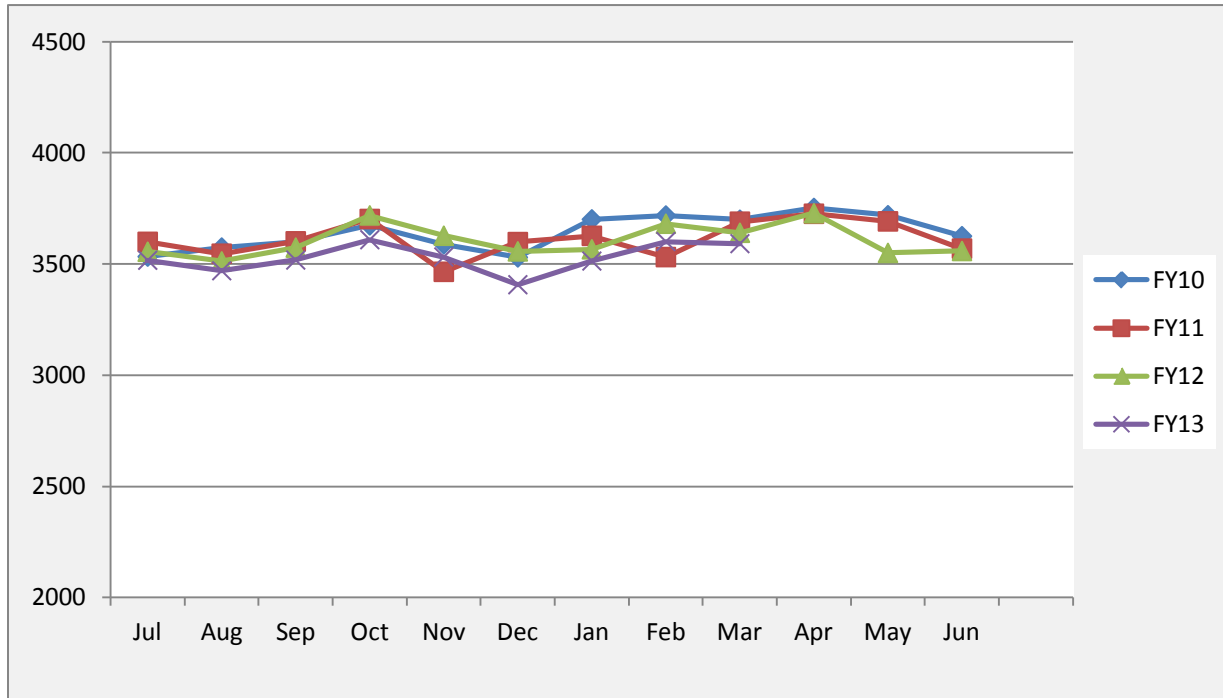
Contractors are responsible for providing LIFT service, representing three distinct organizational areas: transportation, dispatch, maintenance, and a supplemental taxi contractor. LIFT performance is measured against the following goals (FY13):

- LIFT On-Time Performance (percent of vehicle arrivals for customer pickup within the 30- minute scheduled window) $\geq 93.5\%$.
- Monthly Rides per Vehicle Hour ≥ 1.76
- Operating Cost per Vehicle Hour $\leq \$29.76$ (includes maintenance costs).
- LIFT Miles/Chargeable Road call are currently being evaluated and a solid goal shall be established in June 2013
- LIFT Miles/Vehicle Accident $\geq 130,000$
- LIFT Complaints per 1000 Rides ≤ 1.25

In FY12, the LIFT program met or exceeded On-Time Performance, Miles/ Chargeable Road call, Miles/ Vehicle Accident, and LIFT Complaints per 1,000 rides. Operating Cost per Ride was 4% higher and Rides per Vehicle hours was 0.5percent lower. Operating costs of LIFT service have increased by 427 percent in the twenty years since the Americans with Disabilities Act became law in 1992. LIFT ridership has increased by 159percent during that period, and has surpassed on million each year beginning in FY05. The cost to provide a one-way ride on LIFT is now approximately \$29.85. TriMet's LIFT costs have been in line with the national average.

TriMet, like many transit agencies throughout the country, struggles to meet the demand for ADA complementary paratransit services.

FIGURE 4-2. LIFT AVERAGE WEEKDAY RIDES FY10-FY13



LIFT Ridership is projected to grow at an average rate of 1.5percent per year over the next 10 years.

In response to the combined pressures of ridership demand, customer demands for service quality improvements and limited funding, TriMet, the three counties, Ride Connection and consumer groups in the region are working together to improve mobility for persons with disabilities through cost efficient, innovative services, marketing fixed route as a transportation preference and a variety of fixed route travel training programs.

The comprehensive approach includes the following programs:

1. An Improved Fixed Route Foundation

- Disability Awareness and Sensitivity Training for fixed route operators.
- Ride Wise, a partnership between TriMet, Ride Connection, and other organizations includes intake and referral services, fixed route travel training, a “train the trainer” program, consumer education and outreach, fixed route familiarization, specialized one-on-one training, and a peer trainer program. Program began November 2004.

2. LIFT Eligibility Process improvements

- TriMet opened a centralized transit mobility center in February 2010 to perform in-person evaluation of a LIFT applicant’s functional abilities to determine the most

appropriate mode of travel and educate customers on the services available to them based on their abilities.

3. Innovative Services for LIFT-eligible Riders

- Shopper Shuttles
- Local community-based services (North/Northeast RideAbout service began May 2004)
- Coordination with the private non-profit transportation network

Organizations that have taken this approach have been able to slow the growth of expensive door-to-door services.

TriMet does not anticipate the need for additional LIFT vehicles over the next four years, due to decreased service demand. TriMet is projecting the need for an additional six to eight LIFT vehicles a year over the fifth through tenth year in our ten year vehicle expansion projection plan. These costs are included in the agency's financial forecast.

FIGURE 4-3. LIFT ANNUAL RIDERSHIP FY07-FY22

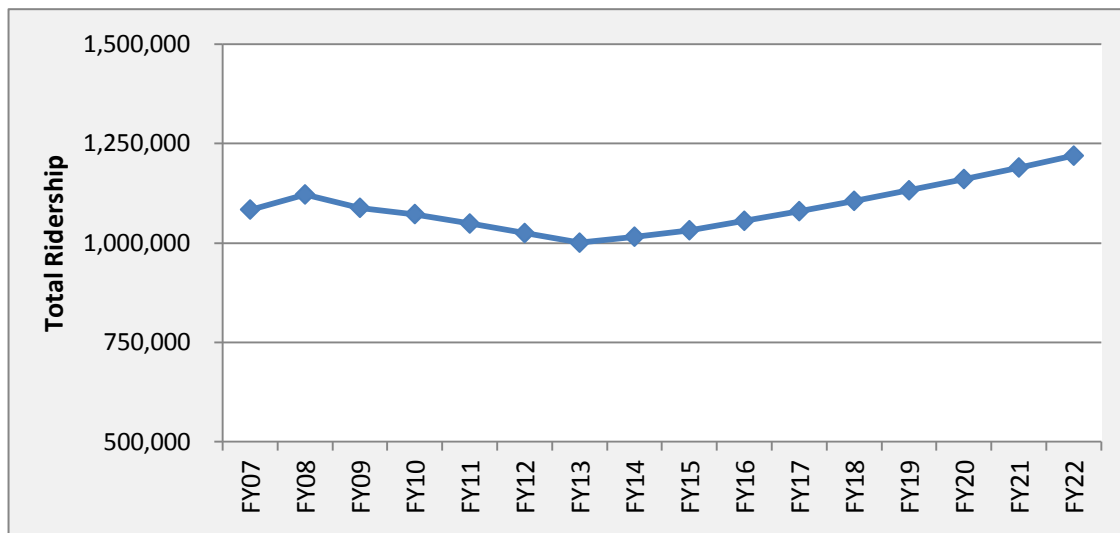


Table 4-7. Four-Year History and a Projection of LIFT Vehicle Needs through 2018

Year	Peak Vehicles	Total
2008	221	259
2009	232	268
2010	235	268
2011	234	268
2012	228	268
2013	224	268
2014	224	268
2015	225	268
2016	225	268
2017	226	268
2018	226	268

5. Future System

TriMet's TIP provides a framework for how transit investments will be made in the Portland region. It outlines where transit will grow in the future and establishes the priorities for where TriMet will expand bus service. The growth and expansion of the TriMet system has obvious implications on its bus fleet.

South Corridor Phase 2: Portland to Milwaukie Light Rail Transit

This 7.3 mile light rail transit alignment will connect downtown Portland, the South Waterfront District, the Oregon Museum of Science and Industry (OMSI) and the central eastside industrial area, densely populated southeast Portland neighborhoods and the community of Milwaukie and just south of Milwaukie at Park Avenue on McLoughlin Blvd. Frequent Service buses from the Clackamas and Oregon City Regional Centers will connect to the line. The project will be approximately 7.3 miles with 10 new stations and 2,000 Park & Ride spaces. Early demand modeling projects 27,400 weekday riders in the year 2030.

5.1 Expanding Fixed Route (Bus) Service

Investments in Frequent Service would both expand the number of Frequent Service lines and add more service to existing lines in the early morning and evening. Table 5-1 identifies planned Frequent Service improvements that will help achieve the Regional Transportation Plan's 20-year strategy for transit.

Two new Frequent Service lines and three span-of-service increases to existing Frequent Service lines have been identified as top-tier priorities as funding for operations and bus fleet expansion becomes available. The cost to upgrade service is measured by peak buses added and additional weekly vehicle hours required (\$99.39/VH in FY11). Table 5-1 illustrates the locations of these Tier 1 Priority expansions within the context of existing Frequent and Regular Service. A more in-depth description of each of these expansions then follows.

Table 5-1. Frequent Service Expansion Priority

Type	Line	From	To	Weekly Vehicle Hour Increase	Peak Bus Increase
Tier 1 priority					
New	76-Beaverton/Tualatin	Beaverton TC	Tualatin	390	3
New	31-King Rd	Milwaukie TC	Clackamas TC	240	2
Span	4-Division/Fessenden	Portland Mall	Gresham TC	50	0
Span	8-Jackson Park/NE 15th	Portland Mall	Marquam Hill	25	0
Span	15-Belmont/NW 23rd	Portland Mall	92nd Ave	75	0
Total				860	5
Tier 2 priority					
Extension	54-Beaverton-Hillsdale Hwy	Beaverton TC	Scholls Ferry Rd	225	2
Extension	33-McLoughlin	Oregon City TC	Clackamas Community College	260	2
New	35-Macadam/Greeley	Oregon City TC	Portland Mall	605	0
Extension	31-King Rd	Clackamas TC	152nd	125	1
Span	12-Barbur/Sandy Blvd	Portland Mall	Durham Rd	60	0
Span	12-Barbur/Sandy Blvd	Portland Mall	Parkrose TC	40	0
Span	33-McLoughlin	Portland Mall	Oregon City	160	0
Total				1,475	5
Tier 3 priority					
Extension	12-Barbur/Sandy Blvd	Durham Rd	Sherwood	140	2
New	79-Clackamas/Oregon City	Clackamas TC	Oregon City TC	305	3
New	87-Airport Way/181st	NE Sandy Blvd	SE Powell Blvd	380	2
Total				825	7

Note: Span refers to hours of service (e.g. 6 a.m. to 11 p.m.)

5.2 Bus Service Changes Related to South Corridor Phase 2

The Milwaukie community has for many years expressed a desire to shift the location of bus stops that now comprise downtown Milwaukie’s on-street transit center and reduce the bus layovers in downtown Milwaukie. The City of Milwaukie and TriMet agreed to reduce the impact of the on-street transit operations by reducing bus layovers. With the opening of the Green Line in September 2009 and interlining of several bus routes and other adjustments, the number of weekly bus layovers in downtown Milwaukie was reduced by 52 percent from 2004 levels. Improved bus stops in the form of Level III shelters and other amenities are now of bus stops on SE Jackson Street between Main and 21st. Reconstruction of Jackson Street and bus stop improvements were completed in Fall 2011. Future alignments for bus service in downtown Milwaukie are now under consideration in the context of the Portland-Milwaukie light rail project. TriMet, City and project staff is assessing alternatives for bus routing, stops, and bus-rail connections. There will be further consultation with the City Council and community stakeholders before a final plan for bus service in downtown Milwaukie is affirmed.

Areas of future focus

TriMet will continue to work with Milwaukie, Oregon City, Gladstone and Clackamas County to identify and support other capital improvements that can build service in this corridor, consistent with the South Corridor work program.

5.3 Bus Service Changes Related to Columbia River Crossing Project

At this time, there are no sustentative changes to the TriMet bus service as a result of this project.

5.4 Maintenance Facilities Expansion

TriMet’s bus maintenance facilities have parking capacity for 760 vehicles (225 at Powell, 285 at Center, 250 at Merlo). Maximum annual bay hours total 341,880 (55 bays multiplied by 24 hours per day multiplied by 359 days per year). Present annual maintenance requirements are below 236,000 work hours.

Table 5-2 shows the capacity at each bus garage facility and compares it to the current use.

Table 5-2. Fixed Route Garage Capacity

	Capacity	# Buses Assigned	Additional Capacity
Center	285	265	20
Merlo	250	121	129
Powell	225	210	15

Paratransit

The Nela location has parking for 90 LIFT buses and 15 LIFT minivans. The Powell LIFT operating facility in SE Portland has parking for 100 LIFT buses. The Merlo LIFT operating

facility in Beaverton currently has parking for 80 LIFT buses. Vehicles operating from the two outlying LIFT sites are brought to the Nela location for maintenance.

Table 5-3 shows the capacity at each LIFT facility and compares it to the current use:

Table 5-3. LIFT Garage Capacity

-----	Capacity	Actual	Additional Capacity
Nela	93	58 buses 15 vans	24 (15 vans = 11 bus spaces)
Powell	100	112	-12
Merlo	80	83	-3
	273	268	9

It would appear from Table 5-3 that TriMet will need to expand capacity at its LIFT facilities within the next few years, as the LIFT fleet has grown and is likely to continue to grow as the demand for paratransit service increases.

However, TriMet is looking at several strategies for LIFT facility utilization in the future. The strategies are:

- Purchase smaller vehicles than the 24' LIFT buses to fit more vehicles in less space,
- Consider development of a parcel of TriMet-owned property to replace or augment existing facilities.

5.5 Planned Bus Procurements

Vehicle Replacement – Fixed Route

TriMet replaces 40-foot fixed route buses after approximately 16 years, as the most cost-effective life cycle. The FTA minimum replacement standard for fixed route buses is 12 years. By seven to eight years of age, TriMet’s buses have accumulated in excess of 350,000 miles and are in need of engine and transmission overhauls. Having invested in overhauls, TriMet keeps its buses the additional years to get the full value from the overhaul expenses that take place at mid-life.

In the 1990s and 2000s, TriMet purchased buses unevenly (108 one year, ten the next, etc.) and found that this caused peaks in maintenance costs. To remedy this, the buses purchased in the 90s and 2000s are being replaced in even increments each year, requiring that some buses be kept for 20 – 24 years.

Because of the recent recession, we had to suspend bus purchases for FY09 and FY10. For FY12 through FY17, bus replacement shall be at an accelerated pace between 55 and 70 buses a year to help expedite replacement of the older fleets and will then revert back to a 40 bus a year schedule, meeting the majority of the age standards noted above and better supporting TriMet’s financial plan. Appendix B of this report illustrates the fixed route vehicle replacement program

included in TriMet's Capital Improvement Plan. Bus replacement is a top priority of the district. Costs of the replacement purchases, as planned, are included in the financial forecast.

Vehicle Expansion – Fixed Route

Due to the recent economic recession, plans for fleet expansion have been put on-hold for the foreseeable future.

Vehicle Replacement - LIFT

LIFT small buses are currently replaced every eight years. Replacement of LIFT vehicles is a top priority of the district. LIFT vehicles have been replaced on schedule. Appendix A of this report includes the Accessible Transportation Program LIFT vehicle replacement table from the Capital Improvement Plan. Costs of this replacement schedule are included in Appendix E of this report.

Vehicle Expansion – LIFT

In the past, LIFT service increases have required adding a minimum of eight vehicles per year to the LIFT fleet. TriMet is forecasting minimal increases in LIFT ridership over the next four years, which will not require adding vehicles to the fleet until after 2014.

5.6 Financial Forecasting

TriMet's financial forecast focuses on whether TriMet has adequate resources to operate and maintain the transit system including current service levels, capital replacement requirements and improvement capital projects, plus increases in bus and MAX service in addition to new rail projects. Financial forecasts are conducted for planning horizons that extend anywhere from five to 25 years, depending on the need.

A recent financial forecast is included in TriMet's Portland-Milwaukie Light Rail Project Agency-Wide Capital and Operating Finance Plan. This report covers, in detail, the forecasting process and assumptions for current and future bus, light rail and ATP service increases, including bus maintenance and capital replacement and expansion.

Budgets for these are presented in Appendix A of that report. Detailed revenue and expenditure assumptions and analysis are included in Chapter 3.0.

APPENDICES

This page left blank intentionally.

Weighted Fleet Age

2.48 2.59 3.49 2.92 2.02

Total Fleet Requirement					
WD Ridership % Increase	0.5%	0.5%	0.5%	0.5%	0.5%
Peak Pullouts	225	228	230	230	230
Spare Ratio**	19.11%	17.54%	16.52%	16.52%	16.52%
Total Fleet Requirement	268	268	268	268	268
Replacement Bus	84	27	0	49	51
Replace Sedans (or Vans) with Vans	0	0	0	0	15
Expansion Bus	0	0	0	0	0
Expansion Van	0	0	0	0	0
Total Vehicle Purchase	84	27	0	49	66

Note:

** Does not reflect separate spares for bus and van fleets.

TABLE 3B. ATP/LIFT CAPITAL REQUIREMENTS - VEHICLES

ATP/LIFT VEHICLES - CAPITAL REQUIREMENTS

BUS MAKE & DESCRIPTION	# OF VEHICLES	YEAR NEEDED	REPLACEMENT CYCLE	FY13	FY14	FY15	FY16	FY17	FY13-FY17 TOTAL
BDS Components/Installation Replacement Buses									
24 FT Paratransit Vehicles	27	2013	7 & 10 Years	\$2,362,500					\$2,362,500
24 FT Paratransit Vehicles	0	2014	8 Years		\$0				\$0
24 FT Paratransit Vehicles	49	2015	8 Years			\$4,287,500			\$4,287,500
24 FT Paratransit Vehicles	51	2016	8 Years				\$4,462,500		\$4,462,500
24 FT Paratransit Vehicles	0	2017	8 Years					\$0	\$0
Replacement for Sedans									
Passenger Van	15	2016	5 Years				\$727,500		\$727,500
Total Replacement				\$2,362,500	\$0	\$4,287,500	\$5,190,000	\$0	\$11,840,000
Expected Expansion Buses									
24 FT Paratransit Vehicles	0	2013	8 Years	\$0					\$0
24 FT Paratransit Vehicles	0	2014	8 Years		\$0				\$0
24 FT Paratransit Vehicles	0	2015	8 Years			\$0			\$0
24 FT Paratransit Vehicles	0	2016	8 Years				\$0		\$0
24 FT Paratransit Vehicles	0	2017	8 Years					\$0	\$0
Expected Expansion Vans									
Passenger Van	0	2013	5 Years	\$0					\$0
Passenger Van	0	2014	5 Years		\$0				\$0
Passenger Van	0	2015	5 Years			\$0			\$0
Passenger Van	0	2016	5 Years				\$0		\$0
Passenger Van	0	2017	5 Years					\$0	\$0
Total Expected Expansion				\$0	\$0	\$0	\$0	\$0	\$0
Total ATP/LIFT Requirements				\$2,362,500	\$0	\$4,287,500	\$5,190,000	\$0	\$11,840,000

Carryover from FY12
STP Funds
TM General Funds
Total Carryover From FY12

For FY12 Budget
Federal Funds
TM General Funds
Carryover from FY12

Grand Total FY12 + Carryover

- 15 Minivans
- 45 LIFT Buses
- Communication Components/Installation

Cost	
24 FT Replacement Bus	\$87,500
24 FT Expansion Bus	\$89,000
Van Replacing Van	\$48,500

This page left blank intentionally.

Appendix B. Detailed Fixed Route Fleet Management Sheets

TABLE 1A. FIXED ROUTE BUSES - ACTIVE FLEET

2014

BUS FLEET	FY ACQ	BUS LNGTH	FLEET SIZE	BUS MAKE & DESCRIPTION	AGE FY14	REPLACE END FY	BUSES 4/12/2013	ACTIVE FLEET SIZE AT FISCAL YEAR END				
								2014	2015	2016	2017	2018
37	1991	40	63	Gillig 1400s	23	2014	23	23	0	0	0	0
38	1991	30	30	Gillig 1600s	23	2013	10	10	0	0	0	0
39	1991	30	13	Gillig 1600s	23	2013	6	6	0	0	0	0
40	1992	40	108	FkMetro 1700's	22	2014	48	0	0	0	0	0
41	1993	30	10	FkMetro 1900's	21	2013	6	6	0	0	0	0
44	1995	40	27	FkMetro 1800's	19	2014	25	11	0	0	0	0
46	1998	40	22	New Flyer (Low Floor)	16	2017	22	22	18	0	0	0
47	1998	40	60	Gillig 2100s	16	2017	60	60	60	14	0	0
48	1998	40	5	Gillig 2100s	16	2017	5	5	5	5	0	0
49	1999	40	58	New Flyer (Low Floor)	15	2019	58	58	58	58	17	0
51	1999	40	60	New Flyer (Low Floor)	15	2020	60	60	60	60	60	37
52	2001	40	60	New Flyer (Low Floor)	13	2022	59	59	59	59	59	59
53	2002	40	2	New Flyer (Diesel-Electric)	12	2022	0	0	0	0	0	0
54	2003	40	55	New Flyer (Low Floor)	11	2023	55	55	55	55	55	55
55	2004	40	25	New Flyer (Low Floor)	10	2024	25	25	25	25	25	25
56	2006	40	39	New Flyer (Low Floor)	8	2025	39	39	39	39	39	39
57	2009	40	40	New Flyer (Low Floor)	5	2026	40	40	40	40	40	40
58	2012	40	51	Gillig (Low Floor)	2	2029	51	51	51	51	51	51
59	2012	40	4	Gillig (Low Floor BAE Hyb)	2	2029	4	4	4	4	4	4
60	2013	40	70	Low Floor	1	2030	0	70	70	70	70	70
61	2014	30	25	Low Floor	0	2030	0	0	22	22	22	22
62	2014	40	38	Low Floor	0	2031	0	0	38	38	38	38
63	2015	40	4	Low Floor (Super Hybrids)	0	2032	0	0	0	4	4	4
64	2015	40	40	Low Floor	0	2032	0	0	0	60	60	60
65	2016	40	40	Low Floor	0	2033	0	0	0	0	60	60
66	2017	40	40	Low Floor	0	2034	0	0	0	0	0	40
67	2018	40	40	Low Floor	0	2035	0	0	0	0	0	0
68	2019	40	40	Low Floor	0	2036	0	0	0	0	0	0
69	2020	40	40	Low Floor	0	2037	0	0	0	0	0	0
70	2021	40	40	Low Floor	0	2038	0	0	0	0	0	0
71	2022	40	40	Low Floor	0	2039	0	0	0	0	0	0
72	2023	40	40	Low Floor	0	2040	0	0	0	0	0	0
73	2024	40	40	Low Floor	0	2041	0	0	0	0	0	0
74	2025	40	40	Low Floor	0	2042	0	0	0	0	0	0
75	2026	40	40	Low Floor	0	2043	0	0	0	0	0	0
76	2027	40	40	Low Floor	0	2044	0	0	0	0	0	0
77	2028	40	40	Low Floor	0	2045	0	0	0	0	0	0
78	2029	40	40	Low Floor	0	2046	0	0	0	0	0	0
79	2030	40	40	Low Floor	0	2047	0	0	0	0	0	0
Total Fleet Size (Without Expansion or Special Services* Buses)							596	604	604	604	604	604
ACTIVE FLEET CONTINUED												
Weighted Average Replacement Fleet Age At Year End								11.11	9.96	9.15	8.52	8.39
Weighted Average Active (Replacement + Expansion) Fleet Age At Year End								11.11	9.96	9.15	8.52	8.36
Low Floor Fleet (w/o Expansion Buses) =>							413	483	539	585	604	604
Standard (High Floor) Fleet (w/o Expansion Buses) =>							183	121	65	19	0	0
Replacement Buses								40	40	40	40	40
Expansion Buses								0	0	0	0	0
Total Buses Purchased								40	40	40	40	40
Average # of Buses Purchased Annually:					42							
Average # of Replacement Buses Annually:					41							
Total Fleet Size Including Expansion Buses							604	604	604	604	606	

TABLE 1B. VEHICLE SYSTEMS - FIXED ROUTE BUSES

CAPITAL REQUIREMENTS

ITEM REQUIRED	# OF VEHICLES	YEAR NEEDED	OPTIMUM REPLACEMENT CYCLE	2014	2015	2016	2017	2018	FY14-FY18 TOTAL
Replacement Buses									
Low Floor 40-foot Buses	70	2014	16 Yrs/675,000	\$30,940,000					\$30,940,000
Low Floor 30-foot Buses	25	2015	16 Yrs/675,000		\$10,675,000				\$10,675,000
Low Floor 40-foot Buses	35	2015	16 Yrs/675,000		\$25,077,500				\$25,077,500
Low Floor 40-foot Hybrid Buses	4	2016	16 Yrs/675,000			\$2,866,000			\$2,866,000
Low Floor 40-foot Buses	60	2016	16 Yrs/675,000			\$26,520,000			\$26,520,000
Low Floor 40-foot Buses	60	2017	16 Yrs/675,000				\$26,520,000		\$26,520,000
Low Floor 40-foot Buses	40	2018	16 Yrs/675,000					\$17,680,000	\$17,680,000
Total Replacement . . .				\$30,940,000	\$35,752,500	\$29,386,000	\$26,520,000	\$17,680,000	\$140,278,500
Expansion Buses									
Low Floor 40-foot Buses	0	2014	16 Yrs/675,000	\$0					\$0
Low Floor 40-foot Buses	0	2015	16 Yrs/675,000		\$0				\$0
Low Floor 40-foot Buses	0	2016	16 Yrs/675,000			\$0			\$0
Low Floor 40-foot Buses	0	2017	16 Yrs/675,000				\$0		\$0
Low Floor 40-foot Buses	0	2018	16 Yrs/675,000					\$0	\$0
Total Expansion . . .				\$0	\$0	\$0	\$0	\$0	\$0
Procurement Costs¹									
Inspections Costs for Bus Buys									\$0
Total Procurement Costs . . .				\$0	\$0	\$0	\$0	\$0	\$0
TOTAL . . .				\$30,940,000	\$35,752,500	\$29,386,000	\$26,520,000	\$17,680,000	\$140,278,500

This page left blank intentionally.

Appendix C. Preventive Maintenance Budgets

BUD1 Personnel Services OPERATIONS - ACCESSIBLE TRANSPORTATION PROGRAMS-LIFT

Position Title	09/10	10/11	11/12			11/12	12/13		
	Actual Total	Actual Total	-----Budget----- Base Pos Total			Est Total	-----Budget----- Base Pos Total		
Director, Business Programs	\$ 27,038						\$ 110,000	1.00	\$ 110,000
Mgr, LIFT Service Delivery	87,550	\$ 87,208	\$ 87,550	1.00	\$ 87,550	\$ 87,550	87,550	1.00	87,550
ATP Operations Administrator	69,614	69,343	69,614	1.00	69,614	69,614	69,614	1.00	69,614
LIFT Service Quality Administrator	59,195	58,968	59,195	1.00	59,195	59,195	53,202	1.00	53,202
Administrative Specialist - ATP	42,645	42,490	53,307	0.80	42,645	42,645	53,307	0.80	42,645
Administrative Specialist - ATP	14,571	17,222	41,487	0.50	20,744	20,744	41,487	0.50	20,744
Manager, LIFT Eligibility & Comm. Relations	72,120	74,335	83,608	1.00	83,608	83,608	83,608	1.00	83,608
Senior Eligibility Specialist - LIFT Eligibility	85,149	84,822	85,149	1.00	85,149	85,149	62,244	1.00	62,244
Coordinator - LIFT Eligibility	171,766	152,207	51,318	3.00	153,954	153,954	51,318	3.00	153,954
Coordinator - LIFT Eligibility	51,318	49,300	51,318	1.00	51,318	51,318	51,318	1.00	51,318
Administrative Specialist - LIFT Eligibility	82,975	79,872	41,487	2.00	82,975	82,975	41,487	2.00	82,975
Fringe Benefits	387,307	314,545			322,403	322,403			326,988
Workers' Compensation									421
Total	\$ 1,151,248	\$ 1,030,312		12.30	\$ 1,059,154	\$ 1,059,154		13.30	\$ 1,145,263

BUD2 Materials & Services OPERATIONS - ACCESSIBLE TRANSPORTATION PROGRAMS-LIFT

Expense Category	Actual 08/09	Actual 09/10	Budget 11/12	Estimate 11/12	Budget 12/13	% Change FY12-FY13	% of M & S Total
LIFT Operations:							
LIFT Central Dispatch	\$ 2,085,068	\$ 1,962,481	\$ 1,973,500	\$ 1,987,460	\$ 2,068,888	4.83%	6.64%
Professional & Technical	17,836	4,650	10,000	10,000	10,000	0.00%	0.03%
Office Equipment Service/Repair	864	718	995	875	1,000	0.50%	0.00%
ATP Accident Repair	2,834						0.00%
ATP Central Maintenance Contract	2,173,071	2,005,655	1,938,756	1,976,150	1,996,502	2.98%	6.41%
Background Check Services	11,427	9,262	10,500	13,000	14,160	34.86%	0.05%
Printing Services	11,051	21,497	18,850	15,200	19,500	3.45%	0.06%
Other Services	13,076	7,995	7,900	7,900	8,800	11.39%	0.03%
Other Services-Revenue Vehicle Maintenance	90,213	91,316	100,000	106,000	100,000	0.00%	0.32%
Diesel Fuel - Revenue Vehicles	1,910,363	2,490,624	2,840,412	2,840,412	2,945,811	3.71%	9.45%
Oil & Lubricants	60,374	52,144	75,000	82,000	85,000	13.33%	0.27%
Gasoline - Revenue Vehicles	96,357	107,303	110,500	124,000	124,000	12.22%	0.40%
Tires, Lease/Purchase Revenue	94,403	92,178	70,000	70,000	72,000	2.86%	0.23%
Office Supplies	15,880	7,914	9,500	8,500	8,000	-15.79%	0.03%
Furniture & Equipment <\$5,000	3,713	4,286	7,900	7,900	8,040	1.77%	0.03%
Other Materials	7,061	1,613	7,285	7,285	10,995	50.93%	0.04%
Postage	12,986	5,756	6,500	6,000	8,000	23.08%	0.03%
ATP Maintenance Materials	11,451	12,638	11,500	11,500	11,500	0.00%	0.04%
Telephone	40,936	37,235	36,000	35,060	32,652	-9.30%	0.10%
Insurance Premium	557,281	1,163,866	1,230,729	1,230,734	1,301,482	5.75%	4.18%
Region 2 Insurance Premium	436,106						0.00%
Region 3 Insurance Premium	514,445						0.00%
PI/PD	22,469	(3,634)					0.00%
LIFT Transportation	6,914,199	18,226,392	17,910,884	18,170,664	18,769,820	4.80%	60.24%
LIFT Transportation - Region 2	5,018,871	6,679					0.00%
LIFT Transportation - Region 3	6,438,355	32,741					0.00%
LIFT Supplemental Cab Service	2,695,253	2,788,146	2,653,968	2,645,000	2,675,400	0.81%	8.59%
Quick Response Cab Service	374						0.00%
Local Travel & Meetings	1,028	278	100	100	100	0.00%	0.00%

BUD2 Materials & Services OPERATIONS - ACCESSIBLE TRANSPORTATION PROGRAMS-LIFT

Expense Category	Actual 08/09	Actual 09/10	Budget 11/12	Estimate 11/12	Budget 12/13	% Change FY12-FY13	% of M & S Total
Education & Training	\$ (1,059)	\$ 671	\$ 750	\$ 195	\$ 750	0.00%	0.00%
Out-of-Town Travel	3,100	1,183					0.00%
CAT Committee	26,940	20,868	34,805	28,650	34,805	0.00%	0.11%
Leases	48,876	32,584					0.00%
Sub-Total LIFT Operations:	29,335,202	29,185,038	29,066,334	29,384,585	30,307,205		
LIFT Eligibility:							
Contracted Dispatch		46,066	51,290	50,650	50,051	-2.42%	0.16%
Contracted Eligibility Assessment	96,149	310,053	337,032	326,226	348,230	3.32%	1.12%
Professional & Technical	9,455		1,000		1,000	0.00%	0.00%
Office Equipment Service/Repair	83		1,000	250	1,000	0.00%	0.00%
ATP Central Maintenance Contract	1,394	6,950	13,000	10,585	13,500	3.85%	0.04%
Printing Services	14,363	5,125	7,500	7,500	7,500	0.00%	0.02%
Other Services	12,570	10,540	7,500	18,209	18,500	146.67%	0.06%
Diesel Fuel - Revenue Vehicles	1,689	11,791	5,820	11,750	14,000	140.55%	0.04%
Office Supplies	12,969	10,760	12,000	12,000	12,000	0.00%	0.04%
Furniture & Equipment <\$5,000	456	506	2,500	3,000	2,500	0.00%	0.01%
Other Materials	7,293	2,073	3,000	3,000	3,000	0.00%	0.01%
Postage	8,629	22,491	20,000	15,250	20,000	0.00%	0.06%
Telephone	5,132	1,862	2,200	1,000	544	-75.26%	0.00%
Eligibility Transportation	65,807	105,467	239,300	194,075	217,140	-9.26%	0.70%
Local Travel & Meetings	22	24		25			0.00%
Education & Training	3,115	73	300		300	0.00%	0.00%
Out-of-Town Travel	969		1,300	800	1,170	-10.00%	0.00%
Special Events Service	153						0.00%
Leases	91,191	138,525	136,686	138,900	143,200	4.77%	0.46%
Sub-Total LIFT Eligibility:	331,440	672,308	841,428	793,220	853,635		
	\$ 29,666,642	\$ 29,857,346	\$ 29,907,762	\$ 30,177,805	\$ 31,160,840	4.19%	100.00%

This page left blank intentionally.

BUD1 Personnel Services OPERATIONS - BUS MAINTENANCE

Position Title	09/10	10/11	11/12			11/12	12/13		
	Actual Total	Actual Total	Base	Pos	Total	Est Total	Base	Pos	Total
Director, Maintenance Operations		\$ 116,700	\$ 117,158	1.00	\$ 117,158	\$ 117,158	\$ 117,158	1.00	\$ 117,158
Director, Bus Maintenance	\$ 121,884								
Garage Manager	258,904	264,838	88,622	3.00	265,865	265,865	88,622	3.00	265,865
Maintenance Supervisor	973,690	939,715	71,280	14.00	997,920	997,920	71,280	9.00	641,520
Maintenance Supervisor							71,280	5.00	356,400
Assistant Supervisor	578,253	586,083	63,294	12.00	761,504	761,504	66,311	12.00	797,882
Journeyman/Apprentice Mechanic	8,668,947	8,410,078	55,045	155.00	8,557,437	8,557,437	57,668	154.00	8,908,585
Maintenance Mechanic	426,429	445,345	54,305	7.00	381,286	381,286	56,952	7.00	399,922
Helper & Spotter	3,512,033	3,239,384	44,485	61.00	2,723,624	2,723,624	46,767	61.00	2,863,737
MMIS/Clerk of Maintenance	295,291	249,576	52,371	7.00	367,748	367,748	54,873	7.00	385,365
Cleaner/Relief MMIS	158,419	135,570							
Cleaner	275,834	212,294	44,604	3.00	134,306	134,306	46,767	6.00	281,679
Tire Servicer	389,520	319,465	54,305	7.00	381,286	381,286	56,948	7.00	399,893
Manager, Maintenance Training	94,903	81,501	81,808	1.00	81,808	81,808	81,808	1.00	81,808
Warranty/Contracts Coordinator	59,675	59,456	59,675	1.00	59,675	59,675	59,675	1.00	59,675
Maintenance Trainer	294,112	280,743	63,294	4.00	253,835	253,835	66,311	4.00	265,961
Stores Supervisor	69,175	68,910	69,175	1.00	69,175	69,175	69,175	1.00	69,175
Assistant Storekeeper	181,869	180,149	59,227	4.00	237,564	237,564	62,834	4.00	252,055
Junior Partsman	263,943	214,012	52,278	4.00	209,768	209,768	57,668	2.00	115,696
Partsman	302,339	300,585	56,338	5.00	282,510	282,510	59,859	7.00	420,268
NRV Mechanic	228,934	203,797	55,049	3.00	165,640	165,640	57,668	4.00	231,392
Fringe	11,366,872	8,227,021			9,019,186	9,019,186			8,523,777
Workers' Compensation	548,562	626,013			558,517	558,517			918,641
Longevity Premium					663,956	663,956			686,014
Night Differential					185,319	185,319			188,416
Training Pay					5,758	5,758			5,758
Tool Allowance					144,053	144,053			150,674
Unscheduled Overtime	363,976	364,084			413,045	413,045			435,405
Unpaid Absence					(72,495)	(72,495)			(72,910)
Union Insured Premium Repayment									148,440
Capitalized Labor/Fringe					(20,507)	(20,507)			
Total	\$ 29,433,564	\$ 25,525,319		293.00	\$ 26,944,946	\$ 26,944,946		296.00	\$ 27,898,249

BUD1 Personnel Services OPERATIONS - BUS MAINTENANCE

Position Title	09/10	10/11	11/12			11/12	12/13		
	Actual Total	Actual Total	Base	Pos	Total	Est Total	Base	Pos	Total
Director, Maintenance Operations		\$ 116,700	\$ 117,158	1.00	\$ 117,158	\$ 117,158	\$ 117,158	1.00	\$ 117,158
Director, Bus Maintenance	\$ 121,884								
Garage Manager	258,904	264,838	88,622	3.00	265,865	265,865	88,622	3.00	265,865
Maintenance Supervisor	973,690	939,715	71,280	14.00	997,920	997,920	71,280	9.00	641,520
Maintenance Supervisor							71,280	5.00	356,400
Assistant Supervisor	578,253	586,083	63,294	12.00	761,504	761,504	66,311	12.00	797,882
Journeyman/Apprentice Mechanic	8,668,947	8,410,078	55,045	155.00	8,557,437	8,557,437	57,668	154.00	8,908,585
Maintenance Mechanic	426,429	445,345	54,305	7.00	381,286	381,286	56,952	7.00	399,922
Helper & Spotter	3,512,033	3,239,384	44,485	61.00	2,723,624	2,723,624	46,767	61.00	2,863,737
MMIS/Clerk of Maintenance	295,291	249,576	52,371	7.00	367,748	367,748	54,873	7.00	385,365
Cleaner/Relief MMIS	158,419	135,570							
Cleaner	275,834	212,294	44,604	3.00	134,306	134,306	46,767	6.00	281,679
Tire Servicer	389,520	319,465	54,305	7.00	381,286	381,286	56,948	7.00	399,893
Manager, Maintenance Training	94,903	81,501	81,808	1.00	81,808	81,808	81,808	1.00	81,808
Warranty/Contracts Coordinator	59,675	59,456	59,675	1.00	59,675	59,675	59,675	1.00	59,675
Maintenance Trainer	294,112	280,743	63,294	4.00	253,835	253,835	66,311	4.00	265,961
Stores Supervisor	69,175	68,910	69,175	1.00	69,175	69,175	69,175	1.00	69,175
Assistant Storekeeper	181,869	180,149	59,227	4.00	237,564	237,564	62,834	4.00	252,055
Junior Partsman	263,943	214,012	52,278	4.00	209,768	209,768	57,668	2.00	115,696
Partsman	302,339	300,585	56,338	5.00	282,510	282,510	59,859	7.00	420,268
NRV Mechanic	228,934	203,797	55,049	3.00	165,640	165,640	57,668	4.00	231,392
Fringe	11,366,872	8,227,021			9,019,186	9,019,186			8,523,777
Workers' Compensation	548,562	626,013			558,517	558,517			918,641
Longevity Premium					663,956	663,956			686,014
Night Differential					185,319	185,319			188,416
Training Pay					5,758	5,758			5,758
Tool Allowance					144,053	144,053			150,674
Unscheduled Overtime	363,976	364,084			413,045	413,045			435,405
Unpaid Absence					(72,495)	(72,495)			(72,910)
Union Insured Premium Repayment									148,440
Capitalized Labor/Fringe					(20,507)	(20,507)			
Total	\$ 29,433,564	\$ 25,525,319		293.00	\$ 26,944,946	\$ 26,944,946		296.00	\$ 27,898,249