

Road Call Analysis

A road call is defined as a call-in to dispatch reporting a mechanical problem. Depending on the nature of the problem, dispatch may instruct operators to continue driving their routes. However, a road call may stem from an issue that requires the bus to stop driving, allowing for roadside mechanical repair or towing back to the maintenance facility. Road call's and average miles (driven) between road calls (MBRC) are important reliability indicators for your transit agency. Monitoring road calls is arguably the single most important indicator of an agency's overall performance. Road call reports should include types of failures and mean distance between failures. For the purpose of analysis an occurrence of a road call can be recorded regardless of its relative severity.

Road calls can be categorized as listed below.

Major Mechanical

A failure of some mechanical element of the revenue vehicle that prevents the vehicle from completing a scheduled revenue trip or from starting the next scheduled revenue trip because actual movement is limited or because of safety concerns.

Examples: Brakes not holding, Wipers inoperative, etc.

Other Mechanical

A failure of some other mechanical element of the revenue vehicle that, because of local agency policy, prevents the revenue vehicle from completing a scheduled revenue trip or from starting the next scheduled revenue trip even though the vehicle is physically able to continue in revenue service.

Farebox jammed, Destination sign not working, etc.

When a road call occurs an analysis must be made to find the root cause of the problem to eliminate and prevent future failures.

Failures can be analyzed by checking for:

- Fleet Defect(s)
- Wrong/Faulty Parts(s)
- Driver(s) Procedures/Training
- Mechanic(s) Procedures/Training
- Written Procedures
- Frequency of Maintenance Procedures
- Passenger Abuse/Vandalism

Road Call Calculations

The most widely used road call calculation is the mean distance between failures. It is essential that a road call report be generated at least monthly and analyzed for repeat failures of the same vehicle(s), types of failures, and the frequency of failures.

Mean distance between failures = Scheduled revenue miles / Number of road calls

Example: July's total revenue mileage was 107,246 miles and there were 39 road calls. The mean distance between failures would be 2,750 ($107,246/39 = 2,749.89$). The goal of the maintenance department would be to increase the mileage between road calls through failure analysis. By adjusting the preventive maintenance program as necessary, providing training to mechanics, and continued analysis future failures can be prevented.

Road Call by Major Systems

8 Road Calls – Engine related $107,246/8 = 13,405.75$ miles between Engine related failures
8 Road Calls – Chassis related $107,246/8 = 13,405.75$ miles between Chassis related failures
5 Road Calls – Air system related $107,246/5 = 21,449.2$ miles between Air system related failures
4 Road Calls – Lift system $107,246/4 = 26,811.5$ miles between Lift system failures
12 Road Calls – HVAC $107,246/12 = 8,937.16$ miles between HVAC related failures
2 Road Calls – Interior $107,246/2 = 53,623$ miles between Interior related failures

Each of these system failures can be broken down into subsystems.

By classifying failures into specific bus subsystems maintenance can identify trends, determines the underlying cause of the problem, and can help in making modifications to the Preventive Maintenance Program.

1. Engine
 - a. Warning Lights, Tune-Up, Turbo, Air Intake System, Exhaust System
 - b. Oil – Leaks, consumption, contamination, pressures
 - c. Coolant – Leaks, hoses, water pump, radiator, thermostats, filter, overheat
 - d. Electrical – Alternator, batteries, wiring
 - e. Belts – Pulleys, bearings, belt alignment
 - f. Hydraulic – Leaks, filter, pumps, motors
 - g. Mounts
2. Transmission
 - a. Shifting – Warning Lights, slipping, unusual noise
 - b. Fluid – Leaks, discolored, contamination, filters, lines
 - c. Drive Shaft, U-Joints
 - d. Mounts

3. Air System
 - a. Compressor – Governor, all valves
 - b. Lines – Routing
 - c. Drier – Expello valve
 - d. Tanks – Drains, contamination
 - e. Leaks – All

4. HVAC
 - a. A/C compressor – Clutch, oil, lines, valves, filter drier
 - b. Cores – Condition, leaks, cleanliness
 - c. Refrigerant – Leaks, condition, pressures
 - d. Motors – Condenser, evaporator, heating
 - e. Electrical – Switches, thermostats, wiring
 - f. Mode Selection – Defrost, floor, dash
 - g. Marine/Boost Pump

5. Chassis/Body
 - a. Tires – Wheels, lugs, seals, flats
 - b. Brakes – Stopping, noise, leaks, odor
 - c. Steering – Alignment, linkage, shaft, steering wheel
 - d. Suspension – Shocks, air springs, leaf springs, MoRyde, coil springs
 - e. Differential – Leaks, noise, axles
 - f. Frame
 - g. Exterior Body – panels secure, glass, mirrors, doors
 - h. All lighting, Wipers

6. Interior
 - a. Driver’s seat – operation, belt, comfort
 - b. Mirrors – All glass, emergency exits
 - c. Emergency equipment
 - d. Dash – Gauges, switches, lighting
 - e. Passenger – Seats, stanchions, doors, signals, flooring, steps

7. Wheelchair Lift
 - a. Lift operation
 - b. Belts and retractors

8. Fareboxes
 - a. Operation – Electrical
 - b. Jammed – Coin, Dollar
 - c. Trim Unit