Essential Elements of a Successful Preventive Maintenance Program

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Why Be Concerned with Preventive Maintenance

♦ Required by FTA
♦ Required by ODOT
♦ Fleet Manager Can be Held Liable for Negligent Entrustment
  ○ If You Know or Have Reason to Know a Vehicle is Unsafe or Creates an Unreasonable Risk to Harm to Others, You Can be Held Liable if an Accident Occurs
♦ Maintaining a Safe Fleet is the Right Thing to Do
Why Be Concerned with Preventive Maintenance, Continued

♦ Preventive Maintenance is Essential to Every Effective Maintenance Program as it Helps Ensure:
  ○ Vehicle Reliability
  ○ Safety
  ○ Longevity
What the Regulations Require

♦ The Subrecipient and/or Designated Operator Shall Have the Requisite Fiscal and Technical Capacity to Carry Out the Project and Be Responsible for
  ○ Maintaining Required Insurance Coverage, Property Records, Conducting Physical Inventories, Implementing Adequate Property Control Systems
What the Regulations Require, Continued

- Maintaining the Equipment in Proper Working Condition
- Documentation Must be Available Upon Request
What This Means

♦ Federally-Funded Equipment and Facilities Must Be Kept in Good Operating Order

♦ PTD and Subrecipients Are Responsible for Vehicles and Other Equipment Financed by State or Federal Grants

♦ Vehicles Must Be Maintained in Good or Better Condition and Must Be Used for the Purposes Described in the Grant Agreement
Essential Elements

♦ Personnel Roles and Responsibility
♦ Asset Management
♦ Inspections
♦ Routine Service and Maintenance Intervals
  ○ Each Vehicle Type is Unique
♦ Safety and Security
Essential Elements, Continued

♦ Replacement versus Repair
♦ Warranties
♦ Monitoring
♦ Training
♦ Performance Measures
Personnel Role and Responsibility

♦ Pay Attention to Administrative Details
  ○ Who Does a Driver Report Defect To
  ○ Who Assigns a Replacement Vehicle
  ○ Who Prioritizes Repairs
  ○ Who Decides When a Vehicle is Not Roadworthy
  ○ Who Schedules Maintenance
  ○ Who Monitors Maintenance Repairs
  ○ Who Maintains Maintenance Files
  ○ Who Evaluates Preventive Maintenance Program
Asset Management

♦ Asset Management Policy
  ○ Preventive Maintenance Plan
    ▪ Maintenance Schedule for Each Fleet Vehicle
    ▪ Manufacturer Recommendations
    ▪ Warranty Requirements
    ▪ ADA Equipment
  ○ Inspection Documentation
  ○ Oregon Annual Safety Inspections
Asset Management, Continued

♦ Plan and Procedures for Unexpected Repairs
♦ Vehicle Cleaning Program
♦ Secure Vehicle Storage
♦ System for Scheduling and Tracking Maintenance Activities

♦ Records of Vehicle:
  o Service and Repairs
  o Work Orders
  o Invoices
  o Receipts
Any property with Federal funds valued at $5,000 or more must be accounted for in the agency’s fixed asset listing. The asset listing is to contain the Federally required information.
Asset Inventory Requirements

- Description of the Property
- Serial Number or Other Identification numbers
- Source of the Property (Grant Source, Program Number) Name of the Title Holder
- Acquisition Date
- Cost When New
Asset Inventory Requirements, Continued

♦ Percentage of Federal Participation in the Cost of the Property
♦ Location of the Equipment
♦ Use and Current Condition
♦ Disposition Information (If Applicable), Including Date of Disposal and Sales Price
Vehicle Useful Life

- Large Heavy Duty Transit Bus, 35 to 40+ feet
  - 12 Years and 500,000 Miles
- Medium Heavy Duty Transit Bus, 30 to 35 feet
  - 10 Years and 350,000 Miles
- Medium Size Medium Duty Transit Bus and Truck Chassis Cutaway, 25 to 30 feet
  - 7 Years and 200,000 Miles
Vehicle Useful Life, Continued

♦ Medium Size Light Duty Bus and Van Chassis Cutaway Bus, 20 to 25 feet
  ○ 5 Years and 150,000 Miles

♦ Small Light Duty Bus, 20 to 22 feet
  ○ 4 Years and 100,000 Miles

♦ Modified Vans, < 20 feet
  ○ 4 Years and 100,000 Miles

♦ Modified Minivans
  ○ 4 Years and 100,000 Miles
Inspections

♦ Key to Early Detection
  ○ Improves Safety
  ○ Decreases Vehicle Repair Costs
  ○ Decreases Vehicle Downtime

♦ Drivers and Mechanics Should be Performing Routine Inspections
  ▪ Daily Pre-Trip Inspection
  ▪ Daily Post Trip Inspection
  ▪ Inspections During Routine Maintenance
Inspections, Continued

♦ Management Must be Realistic in Expectations
  ○ A Proper Pre-Trip Inspection Will Improve Reliability, But Will Take 20 to 30 Minutes to Perform
  ○ Post-Trip Inspections May Take 10 Minutes to Perform
Routine Service and Maintenance

♦ Heart of the Preventive Maintenance Program

○ Maintaining the Vehicle
  ▪ Driver is first line of defense
  ▪ Use certified mechanics

○ Make Service Intervals Mileage Multiples of Some Common Denominator, e.g.
  ▪ Oil change every 3,000 miles
  ▪ Tire rotation every 6,000 miles
  ▪ Change transmission fluid every 24,000 miles
Routine Service and Maintenance, Continued

- Schedule Must Include All Tasks Required to Keep Vehicle in State of Good Repair and Warranty Eligible
  - Maintenance schedules must meet or exceed manufacturer's recommendations
- Documentation of All Maintenance Including Mechanic Follow-up on Reported Problems
Routine Service and Maintenance, Continued

♦ Maintenance Records Including Maintenance Schedules Must Be Kept as Long as the Vehicle Remains in Service Plus 3 Years After Removal From Service
  ○ Includes Back-up Vehicles

♦ ADA Equipment Must Be Included in the Preventive Maintenance Plan and Documented
Routine Service and Maintenance, Continued

♦ Consider Seasonal Variations That May Require Altering Service Intervals
  ○ Harsh Winters May Require More Frequent Oil and Filter Changes
    ▪ Seasonal checks for air conditioning and heating systems
Routine Service and Maintenance, Continued

♦ Consider Service Area and Service Area Road Conditions
  ○ Gravel Roads
  ○ Constant Stops and Starts
  ○ Constant Driving at Low Speeds
Safety and Security

♦ Secure Parking Area
  ○ Fencing
  ○ Lighting
  ○ Alarm System

♦ Key Control System/Policy

♦ Secure Vehicles
  ○ Lock Vehicles
  ○ Remove Fare Boxes
Replacement Versus Repair

♦ “If It Ain’t Broke Don’t Fix It,” May Not be the Best Practice for Preventive Maintenance
♦ Apply Routine Replacement Schedules to Components Where Visual Inspection Is Used
  ○ Belts
  ○ Wiper Blades
  ○ Hoses
Your Vehicles Will Have Many Warranties From Varying Suppliers
  - Become Familiar With All Warranties
  - Know Who Is Responsible for Which Warranty

All Vehicles Purchased Through a State Contract or Competitive Bid Have Warranties
  - At a Minimum These Warranties Cover Labor and Replacement Parts for a 12,000 Miles or One Year, Whichever Comes First
Monitoring System

♦ Track Your Maintenance Provider’s Performance for
  ○ Price
  ○ Quality
  ○ Reliability

♦ Considerations Include
  ○ Repeat Repairs for the Same Problem
  ○ Use of Rebuilt Parts – Upfront Savings, But Shorter Operational Life
Monitoring System, Continued

♦ Documentation is Key

○ Database Enables Establishing Proper Intervals for Routine Service
  - Provides repetitive failure information to establish repair and replacement intervals
  - Information to evaluate performance of rebuilt parts
  - Provides early warning for impending major problems (sudden increase in oil consumption)
  - Back-up information for warranty claims
  - Documentation of driver abuse of vehicle
Quality Monitoring Includes Ensuring the Required Maintenance or Inspection is Actually Completed

- Establish a System to Check Drivers and Mechanics
  - Tag items that should be checked during inspections and require tags to be returned
  - Place mark on oil filters and other filters and check to make sure filters were changed
  - Mark tires to confirm rotation
  - Check oil color after oil change
Monitoring Systems Continued

♦ Daily Review of Vehicle Pre-trip and Post-trip Inspections to
  ○ Establish the Inspection Was Completed
    ▪ Consider security cameras in pre-trip area
  ○ Ensure Safety Issues Have Been Corrected
  ○ Identify and Document New Issues With the Vehicle
  ○ Capture Mileage Information to Plan for Routine Maintenance
Training

Effective Training is Essential to Proper Vehicle Inspections and Identification and Diagnosis of Vehicle Problems

- Ensure Mechanics Are Adequately Trained
  - Includes certifications for maintenance of ADA lift equipment

- Ensure Drivers Receive Pre-Trip and Post-Trip Inspection Training and Refreshers
Performance Measures

- Reporting and Analyzing Summaries and Trends Related to Vehicle Maintenance is Essential for Overall Program Management
- Track, Analyze, Establish Benchmarks for
  - Miles Between Road Calls
  - Average Miles Per Gallon
  - Average Miles Between Tire Replacement
  - Vehicle Downtime for Repairs
  - Average Vehicle Maintenance Cost per Revenue Mile
Performance Measures

Continued

♦ Track Factors that Affect Customer and Public Perception
  ○ Number of Complaints for Dirty or Damaged Vehicle
  ○ Complaints of Inoperable
    ▪ Air conditioner
    ▪ Heater
    ▪ Lifts
    ▪ Interior Lights
Summary

- Clearly Define Roles and Responsibility
- Keep Plan as Simple as Possible
- Properly Train Staff
- Monitor Vehicle Maintenance and Adherence to Plan
- Monitor Inspections and Maintenance Performed
- Establish Performance Measures for Evaluation of Program
Questions?

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