Fleet Equipment Asset Management Performance Measures

Requested by
Larry Orcutt, Division of Equipment

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The Caltrans Division of Research and Innovation (DRI) receives and evaluates numerous research problem statements for funding every year. DRI conducts Preliminary Investigations on these problem statements to better scope and prioritize the proposed research in light of existing credible work on the topics nationally and internationally. Online and print sources for Preliminary Investigations include the National Cooperative Highway Research Program (NCHRP) and other Transportation Research Board (TRB) programs, the American Association of State Highway and Transportation Officials (AASHTO), the research and practices of other transportation agencies, and related academic and industry research. The views and conclusions in cited works, while generally peer reviewed or published by authoritative sources, may not be accepted without qualification by all experts in the field.

Executive Summary

Background

With the recently enacted *Moving Ahead for Progress in the 21st Century*, the Federal Highway Administration (FHWA) requires the use of several fleet performance measures for fleet management:

1. Utilization
2. Preventive maintenance
3. Retention (equipment replacement life cycle)
4. Availability/downtime

These fleet performance measures will provide metrics to measure the Caltrans Division of Equipment's effectiveness in managing and providing fleet equipment to its programs' users. They will also be used to justify resources in the Caltrans Division of Equipment's zero-based budgeting exercise.

Caltrans Division of Equipment would like to determine how other State DOTs use these performance metrics in order to benchmark its quantitative requirements against those of other DOTs.

Summary of Findings

Consultation with Departments of Transportation

We contacted six state departments of transportation in Illinois, New York, North Carolina, Pennsylvania, Texas and Virginia concerning their fleet budgeting methods and use of performance metrics. We also attempted to reach a representative from Washington State DOT but were unsuccessful. Findings include:

- None of the interviewed DOTs use zero-based budgeting. Generally their budgets are based on that of the previous year (or an average of previous years), along with adjustments for trends and inflation. How much of this budget is devoted to equipment replacement often depends on anticipated replacement need as determined by such metrics as hours used, mileage and repair costs. Funding for Illinois and Texas budgets come from fuel taxes rather than general revenue.

- North Carolina and Virginia rent equipment to their divisions, with the resulting revenue used to fund equipment replacement. The divisions are funded directly by the state. For North Carolina, performance measures are used to determine rental rates, which in turn determine the available funds for equipment replacement.
- Virginia's budget is tied to the amount of depreciation its rental fleet generates in the previous 12 months and is expected to generate in the next 12 months.
- Each state tracks or has tracked the four performance measures. Texas and Virginia currently do not track or use measures because they lack the personnel to do so after a change in systems.
- In order to collect data, most states use computer-based systems that lack Web-based interfaces. Data is generally input directly into computers, although Texas and Virginia rely on paper records that are then keyed into their systems.
- States spend anywhere from $20 to $60 million annually on equipment replacement. All states except North Carolina have serious equipment backlogs. Often budget limitations are more a matter of politics than a lack of funding. Cost reduction measures and methods for coping with this backlog include greening and fuel efficiency policies; fleet size reduction and reliance on equipment leasing; extending the life of equipment and prioritizing replacements; and reduction in services. Fleet reduction was the most common cost reduction method with the most significant budget impact.
- Illinois, Pennsylvania and Virginia provided documentation related to their use of performance metrics (see Appendices A through C). Materials from New York are pending; North Carolina asked to be contacted directly for materials; and Texas declined to provide materials because of its current problems collecting metrics.

Gaps in Findings

- We were unable to get in touch with Greg Hansen of WSDOT (or a suitable alternative contact).
- We are currently awaiting materials from New York, and will provide them to Caltrans when they become available.

Next Steps

Caltrans might consider:

- Following up with Dick Bonistalli of VDOT for further information about performance measures.
- Contacting NCDOT directly for documentation related to performance measures, as well as its forthcoming report on utilization (available in early 2013).
- In the near future, looking for the forthcoming NCHRP report on DOT equipment backlogs.
- Following the advice of Bob Martz of NYSDOT to contact Arizona and Indiana about their practices.

Contacts

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Consultation with Departments of Transportation

Illinois

Contact: Lori Campbell, Interim Bureau Chief of Business Services for IDOT, made a referral to two interviewees, Budget Office Bureau Chief Joanne Woodworth and Fleet Administration Unit Chief Marty Morris.

Budgeting Method
IDOT does not use zero-based budgeting; it bases its budget on that of the previous year (maintenance of effort).

Performance Measures
Performance measures include:

- Utilization/Replacement Life Cycle: mileage (for light vehicles) and hours used (for heavy vehicles). Light vehicles are not eligible for replacement before 150,000 miles.
- Preventative Maintenance: this is not a performance measure per se; IDOT has a maintenance management information system, and specifies routine maintenance based on hours and mileage.
- Downtime/Repairs: IDOT tracks downtime because of repairs as part of the calculation for replacing vehicles.

Data Collection and Reporting
IDOT's Maintenance Management Information (MMI) system is a computer-based system without a Web interface (although they have proposed a new system with a Web-based interface and are awaiting funding). See Appendix A for sample reporting forms.

Spending Justifications/Relation of Budget to Performance Data
Budgets are justified by quantifying need, comparing performance data to what's required to continue to perform a given amount of services (mowing, plowing snow, and so on). Fleet replacement justifications include the hours a piece of equipment has been used, its mileage, whether it's inoperable or in need of repair, and whether its repairs would cost more than the piece of equipment is worth.

Equipment Costs and Backlogs
The department has a fleet of about 4,700 vehicles, and last year it spent $20,700,000 on fleet replacement.

IDOT has a significant equipment replacement backlog but has no plans to reduce its equipment backlog in the immediate future – primarily because of political concerns at the state government level about spending looking bad to the public. (The only viable measure for reducing backlogs is to lobby the state legislature at the executive level). These political pressures exist despite the fact that IDOT is not funded from general revenue but from its own fund that comes from road fuel taxes; it has an ample funds available with no shortfall, but nevertheless cannot spend adequately. Because of these pressures, IDOT's goal of a 10-year replacement cycle for vehicles has become a 14-year replacement cycle, and urgent needs go unmet (for instance, the department is desperately in need of light pickup trucks).

Cost Reduction Measures
Cost-reduction and asset management innovation measures include:

- Green policies, including reducing idling time; the use of biofuels and electric cars (IDOT just began purchasing electric cars last year); and for buildings, the regulation of lighting and temperature controls to reduce heating and cooling costs.
- Longer intervals between oil changes.
- Changes in travel budgeting, including the use of the Zipcar service instead of using a motor pool; IDOT has a calculator to see which option is more cost-effective depending on the travel destination.
- Equipment leasing instead of buying; a good portion of IDOT's mowing tractors are leased.
- A reduction in services – for instance, IDOT has reduced the frequency of mowing its right of way.
- Making purchases from government surplus auctions.
- Moving away from the use of individually assigned vehicles (which have often been used to reward employees and end up getting used inappropriately for non-business purposes, including commuting).
- Greater fuel efficiency: As new purchases are made, the fuel efficiency of the fleet increases and this reduces costs.

New York

Contact: Bob Martz, Acting Director, Office of Fleet Administration and Support, New York State Department of Transportation

Budgeting Method
NYSDOT does not do zero-based budgeting. On an annual basis, it submits a budget to the Division of Budget based on anticipated need from a historical three-year average, with irregularities (such as Hurricane Sandy) factored in. The equipment replacement budget depends on anticipated replacement needs as determined by hours used, mileage and repair costs.

Performance Measures
NYSDOT tracks the following performance measures:

- Fleet uptime.
- Utilization in terms of hours and mileage, which helps determine whether equipment will be replaced or reallocated.
- Preventative maintenance compliance – whether PMs are performed on time.
- Retention: varies based on equipment (a large snow or ice vehicle will last 13 years and won't time out because of mileage; but at a certain point, repair costs become too great to retain equipment).

Data Collection and Reporting
NYSDOT uses the same software as Caltrans, Fleet Anywhere. Data is input directly into computers.

Martz will provide documentation on performance measures and reporting (CTC will forward these documents to Caltrans as they become available).

Spending Justifications/Relation of Budget to Performance Data
Budget justifications are based on quantification of need, which is tied to performance measures, including repair costs. More than the costs of repairs are calculated: the number of maintenance labor hours and size of the fleet allow a calculation of the number of technicians that are needed. NYSDOT does not do all of its own maintenance in house but contracts it out depending on what's most cost effective.

Equipment Costs and Backlogs
NYSDOT's equipment replacement budget is about $40 million a year.

NYSDOT has had an equipment backlog for years, and it's an industry problem (NCHRP has a forthcoming report addressing this issue). NYSDOT deals with this problem by strategic replacement – prioritizing its purchases. If it cannot keep up with the replacement of a certain kind of equipment, then NYSDOT looks at contracting functions (such as mowing and pavement treatments like crack sealing). NYSDOT would like to move to a fee-for-service environment.

Cost Reduction Measures
NYSDOT's biggest and most successful cost reduction measure is fleet right-sizing. It evaluates the equipment and the programs they support and the relative costs of alternative methods for meeting program needs (such as contracting out services). The department has been downsized a great deal, and has given up equipment related to services that can easily be obtained from contractors. Right-sizing is an ongoing process, and every three to five years NYSDOT takes a high level look at its fleet. It has found big returns in purchasing the right equipment – equipment that's more versatile. For example, it used to buy road wideners – large and expensive machines – but determined that it doesn't need them; it can use attachments on existing equipment that are very suitable for the jobs it needs to do. NYSDOT saved a lot of money this way. There are a lot of versatile kinds of equipment today that are essentially tool carriers and with attachments can serve multiple functions.

Martz noted that NYSDOT has learned a great deal from Caltrans, which it views as more advanced in the area of fleet management. He also recommended looking to Arizona's practices, especially when it comes to fuel management, as well as those of Indiana.

North Carolina

Contact: Bruce Thompson, Fleet Procurement Manager, North Carolina Department of Transportation

Budgeting Method
NCDOT's central fleet division is not a general fund agency, but has a revolving fund; it is essentially a large rental house. It rents equipment to field divisions, and rental payments come back into the revolving fund to pay for fuel, repairs, maintenance, replacement and salaries. The central fleet division doesn't have to submit budget requests. State funding flows directly to division maintenance groups, and they each justify their budgets individually. Some of this money comes from the general state budget, including expenses related to paving roads and renting equipment.

For equipment replacement, the central office tracks how much rent is paid by each of its 14 divisions and gives these divisions a percentage of the total equipment replacement budget according to the proportion of rental fees it has paid. These divisions can purchase equipment using an online catalogue created by the central office, which then procures the equipment for the divisions annually.

Performance Measures
NCDOT tracks:

- Utilization: In order to determine hourly rental rates, NYCDOT tracks salaries, fuels and repairs, and utilization (hours used and mileage).
- Preventative maintenance, so that preventative maintenance work orders are automatically generated.
- Replacement life cycle (but NCDOT wants to move away from this, entirely toward utilization, because its replacement life cycle figures are probably not correct).
- Downtime.

NCDOT is moving toward tracking utilization, and is having a study performed that is analyzing its fleet and determining utilization algorithms: when to turn a piece of equipment over, what its useful life should be, and many other factors. Over the years NCDOT has used numbers they felt were appropriate, but this is the first time it has performed an analysis to determine what those numbers should be. The report for this study will be available in early 2013.

Data Collection and Reporting
NCDOT uses SAP to capture data for all of its equipment (there is no Web-based interface); the IT department builds custom reports that help it determine, by equipment class and field division, which equipment has low utilization.

Thompson asked to be contacted directly by Caltrans to discuss specific documentation and utilization reports needed.

Spending Justifications/Relation of Budget to Performance Data
Performance measures are used to determine rental rates but not to justify budgets. Budget decisions are left to the field divisions. Ultimately, NCDOT would like to be able to track equipment and make equipment replacement recommendations while leaving some of the decision making process to them.

Equipment Costs and Backlogs
NCDOT does not have an equipment backlog, although depending on the political climate spending may be discouraged. This is never for a lack of funding – money is always returning to the equipment fund from rentals and auctioning off of old equipment. NCDOT replaces 1,500 to 2,000 pieces of equipment a year, and its equipment replacement budget varies from $35 million to $60 million. Its depreciation rate, not as low as it would like, is about 45 percent.

Cost Reduction Measures
Cost control measures include:

- Right-sizing: A few years ago NCDOT had an auditor determine that the fleet was larger than it needed to be and identify spare equipment to get rid of. Currently it's trying to get the size of its fleet down so that it doesn't have a lot of spare equipment.
- NCDOT does all its own maintenance in house; it owns shops and fuel sites and fuels its equipment from these sites.
- Auctioning of old equipment: The equipment division holds public auctions three to four times a year and sells more than 1,000 pieces of equipment a year.

Pennsylvania

Contact: Jim Smith, Chief, Equipment Division, Pennsylvania Department of Transportation

Budgeting Method
PennDOT does not use zero-based budgeting. It has a need-based budget based on actual utilization over the previous three years of 27 primary types of equipment.

Performance Measures
PennDOT has an annual Fleet Model report that is completed for every individual organization (see Appendix B). These are then rolled up into the various districts (11 districts comprising 67 county-level organizations in the state). Performance measures for the fleet model include data on:

- Fleet size and compliance with approved quotas.
- Equipment utilization and average age: each organization tracks units in service that are beyond the life cycle for that category of equipment.
- Vehicle idle time (percentage).
- A number of additional items (see Appendix B.2).

A Monthly Dashboard (Appendix B.1) is used to monitor the functions within the shop facilities as they relate to the day-to-day operations:

- Percentage of overdue time-based preventative maintenance.
- Percentages of overdue fuel consumption preventative maintenance.
- County cost vs. usage percentage.
- Various reporting errors.

Data Collection and Reporting
Data is collected and managed using a customized program for vehicle management within SAP; users at county level organizations input data using this system.

Personnel of the central Fleet Management Division complete a District Dashboard (see Appendix B.1) for each organization (Smith purposely set up a system that does not burden field organizations with requirements from the Central Office). They then provide this information to organizations, which are in turn responsible for correcting errors and improving inefficiencies.

Spending Justifications/Relation of Budget to Performance Data
Although there is not a direct correlation, much of the information taken from the Fleet Model is used in preparing the following year's budget request. The average hours of use are used to determine the number of units that need to be replaced to remain on the Department's replacement cycle.

Smith creates an annual report (Appendix B.2) with a Red/Yellow/Green matrix of gains and losses for equipment groups. He uses this report to make the strongest case to senior management, and they determine how much they will take out of the overall state maintenance budget for the purpose of buying equipment. For example, a few years ago the Equipment Division's front end loader fleet was very old and cost a large amount of money to maintain. Smith made a pitch for additional funding and showed how PennDOT would benefit. The funding was applied to the loader fleet and then the benefits communicated in an easy to understand manner. In general, Smith said he has never been successful at being allocated the total need.

Equipment Costs and Backlogs
PennDOT has a serious equipment backlog. Over the last six years, budgets have varied from meeting 80 percent of need to 28 percent of need (for the current year). PennDOT's backlog is only increasing, although it manages to sustain the average age of the most important units. It manages the backlog by deliberately extending the life on equipment that has lower utilization, has proven to be reliable and can be rented locally. For instance, the Equipment Division has 45 John Deere motor graders that are over 20 years of age, but these are used only three to four times a year for under 300 hours each (for shoulder cutting and, if necessary, heavy snow removal). If there is a catastrophic failure of a piece of equipment, a choice is made between replacement or sharing between districts and counties. In fact, sharing equipment is mandated: an organization is not permitted to own any type of construction equipment if there is the same unit in a contiguous county that does not get used effectively.

Cost Reduction Measures
At present PennDOT's fleet division is struggling to stay afloat. Strategies for dealing with this circumstance include:

- Investigating the potential to contract out more roadways for winter services, thus reducing the need for Department owned trucks and for operators (this will help reduce a little of the strain on the budget). PennDOT currently employs many temporary winter operators.
- Prioritization: The equipment division mandates that all available funding is applied to the purchase of dump trucks (first) and front end loaders (second) with any remaining funding supporting other core equipment (digging units and graders). Counties are permitted to spend some of their maintenance funding to purchase specialized equipment such as oil distributors, chip spreaders, milling machines and wideners in support of their long term programming.

Texas

Contact: Johnie Muller, Fleet Coordinator, Texas Department of Transportation

Budgeting Method
TXDOT does not use zero-based budgeting. It has an appropriated budget approved by the legislature every two years. It justifies its budget each year for capital equipment, maintenance, and overhead, based on a replacement schedule determined by equipment age, repair cost and usage.

Performance Measures
TXDOT tracks:

- Utilization – hours used and mileage.
- Preventative maintenance: percentage of the fleet overdue for preventative maintenance.
- Life cycle – for example, for pickup trucks after 10 years, 110,000 miles, and when 100 percent of the original value has been spent in repairs.
- Downtime: the percentage of time equipment is available.
- Repair costs.

Data Collection and Reporting
Data is collected on paper and then entered into a mainframe computer. There is no Web-based interface.

Muller asked that the following be kept confidential: Four years ago TXDOT tried to move toward a utilization-only system, but this transition is incomplete. Because of organizational changes, reporting is

very unreliable (it is currently trying to remedy this problem). With its system in disarray, it cannot share any documentation on reporting or performance measures.

Spending Justifications/Relation of Budget to Performance Data
Performance measures are used to create estimates of need that determine how a total budget is divided up among five divisions. But this total budget is not itself determined by need. Rather, there is a set amount of funding based on gas tax revenues; fleet division funding does not come from general state appropriations.

Equipment Costs and Backlogs
Currently TXDOT has an equipment replacement backlog because of budget issues, including shortfalls from gas taxes. TXDOT now replaces 8 percent of its equipment annually, which costs $40 to $50 million. There have been years (2006) in which no replacements have been made, and in the past it has usually replaced 10 percent of its equipment annually.

TXDOT goes through a triage system to replace as much equipment as it can given their budget, which never entirely meets their needs, and then right-size accordingly. The division did a right sizing in 2008 and dropped 1,000 vehicles from inventory. For the past four years they have not been replacing 100 percent of their vehicles. The result has been an inordinate increase in repair costs.

Cost Reduction Measures
Because of lack of reliable data, TXDOT has not engaged in cost reduction measures; eventually it would like to analyze alternatives such as leasing.

Virginia

Contact: Virginia Department of Transportation State Equipment Manager Erle Potter suggested talking to Dick Bonistalli, who is responsible for performance measures; and Larry Maready, who is responsible for budgeting and fleet replacement. Dick Bonistalli was on vacation, and the following results are based on the input of Larry Maready.

Budgeting Method
VDOT does not use zero-based budgeting. It bases its budget on projections calculated from expenditures from the previous year by equipment units. This process takes into account fuel, employee labor and overhead, and parts. Each subgroup is examined, and an inflationary factor is added based on the past several years.

As an accounting tool, VDOT rents its equipment to its different divisions in order to fund the replacement of equipment.

Performance Measures
VDOT is in a state of transition. It had tracked utilization and a lot of different performance metrics in an old computer system. Two years ago they replaced this mainframe system, which they'd had for 15 years. Since then they haven't had the resources and manpower to get performance metrics put back in place.

When they did track performance measures, these included:

- Utilization.
- Preventative maintenance performance; preventative maintenance work as a percentage of total repairs.

- Life cycle, in terms of age, meter usage (miles or hours), and repair costs. Once a piece of equipment hit a threshold for any of these three categories, it was eligible for replacement, although usually not considered until it met the criteria for two of the categories.
- Availability/downtime.
- Staffing.
- Equipment inventory levels.
- In-house work versus contracted work.
- Technician wrench time as opposed to leave/training time.

Maready recommended talking to Dick Bonistalli about performance metrics.

Data Collection and Reporting
Most reports were generated from information collected in the computerized equipment management system. Technician time sheets were keyed into the financial system.

Spending Justifications/Relation of Budget to Performance Data
Budget justifications are based on spending in the last 12 months, along with trends (upcoming changes such as pay increases, the most recent fuel price increases, and the cost of parts).

In recent years funding has been based on the amount of depreciation that the rental fleet generates in the previous 12 months and what's expected to occur in the next 12 months – this is how the fund for replacing equipment is generated. VDOT is looking at changing some of its depreciation schedules to increase revenue.

Each of nine districts is given a funding authorization for replacing equipment, and reports are generated using Fleet Focus M5 to identify units most in need of replacement. Districts prioritize which units they want to purchase based on their given funding authorization and submit a request to the central office, which manages procurement.

For documentation of performance measures, Maready provided the VDOT Maintenance Division's Equipment Performance Report from 2009 (again, these metrics haven't been used in two years). See Appendix C.

Equipment Costs and Backlogs
VDOT normally spends $20 million annually on equipment replacement (again, this is usually tied precisely to the depreciation of fleet equipment). This year the budget increased to $45 million based on the commissioner's recognition that VDOT has an old fleet and in the last 10 years had not done a good job of replacing it. In the future, VDOT would like to keep the budget at $45 million by changing depreciation terms and salvage values. Unless it can keep its budget at $45 million, it will continue to fall behind on equipment replacement. Currently it averages 9.75 years for the age of its rental equipment and would like to drive that down to five years.

Cost Reduction Measures
VDOT's main cost reduction measure has been reducing the size of the rental equipment fleet. Three years ago it reduced the size of its fleet by 14 percent, which was the percentage of equipment determined to be underutilized. They also reduced equipment shops and supervisory staffing by 50 percent, and technicians by 12 to 15 percent. Now VDOT relies more on outside services for maintenance of equipment. Maready does not think this is the most efficient cost reduction measure because it leads to greater repair costs, and often these repairs require traveling longer distances.

Washington

We were unable to get in touch with Greg Hansen of WSDOT (or a suitable alternative contact).

Illinois Department of Transportation

APPENDIX A

MMIS P.M. Worksheet
All Passenger Vehicles, Light Duty Trucks & Crewcabs

Inventory No: _____ Hour Meter Reading: _____ Mileage: _____

Location: _____ Date: _____

Place check ☐ in box if okay R, if repair is needed

PM Type A: 4,000 Miles

Action

- ☐ Change engine oil/filters.
- ☐ Lubricate Chassis complete.

Inspect

- ☐ All fluid levels, power steering, trans, etc.
- ☐ Wipers, washer, horn, heater & defroster controls.
- ☐ Instruments for proper operation.
- ☐ Oil, water and grease.
- ☐ Batteries for water level.
- ☐ Interior and exterior lights.
- ☐ Tires-wear, condition, pressure.
- ☐ Steering suspension of front wheel-drive axle boot and seals

PM Type B: 12,000 Miles

Action

- ☐ A plus the following:
- ☐ Air intake system and emission control system.
- ☐ Change fuel filter(s).
- ☐ Rotate Tires.

Inspect

- ☐ Brakes,pads, lining & check parking brake. Adjust and repack wheel bearings.
- ☐ Exhaust system (leaks or loose mountings).
- ☐ Drive belts for condition and tension.

PM Type C: 24,000 Miles or 12 Mo.

Action

- ☐ A & B plus the following:

Inspect

- ☐ Driveline universal joints and carrier bearings, if equipped.
- ☐ Loose lug bolts, wheels for cracking.
- ☐ Suspension-springs and shock absorbers for leakage and wear.
- ☐ Check condition of spark plugs and wires.
- ☐ Differential lubricant (include transfer case, if equipped.)
- ☐ Clean and inspect all battery connections including starter and ground.

PM Type D:48,000 Miles or 24 Mo.

- ☐ A, B, & C plus the following:
- ☐ Change transmission fluid & filter.
- ☐ Pressure test & flush cooling system - refill to -40 degrees.

Remarks: _____

Date Completed: _____ Signed Mech/Service Man: _____ Approved: _____

MAI-2101A (Rev. 4/90)

Illinois Department of Transportation

MMIS P.M. Worksheet
Trucks, Dumps, Stake, Utility, Special & H.D. T52 Thru T85

Inventory No: _____ Hour Meter Reading: _____

Location: _____ Date: _____

Place check ✔ in box ☐ if okay, or R if repair needed

PM Type A: 250 Hours

Action

- ☐ Change engine oil/filters.
- ☐ Change by-pass element, if equipped.
- ☐ Service water separator on diesel engines.
- ☐ Lubricate chassis – complete.

Inspect

- ☐ All fluid levels, power steering, transmission etc.
- ☐ Brake lines for cracks and leaks.
- ☐ Exhaust system (leaks or loose mountings).
- ☐ Drive belts for condition and tension.
- ☐ Wipers, washer, horn, heater & defroster controls.
- ☐ Instruments for proper operations.
- ☐ Loose lug bolts, wheels for cracking.
- ☐ Oil type wheel seals for leaks and proper oil level.
- ☐ Hydraulic hoses for chafing, cracking, or cuts.
- ☐ Oil, water, and grease leaks.
- ☐ Batteries water level.
- ☐ Hydraulic oil level.
- ☐ Interior / exterior lights.
- ☐ Parking brake.
- ☐ Tire–wear, condition, pressure.

PM Type B: 500 Hours

Action

- ☐ A plus the following:
- ☐ Change fuel filter (s).
- ☐ Pressure clean engine area.
- ☐ Road test.

Inspect

- ☐ Suspension for broken springs and rear axle U-bolts for proper torque.
- ☐ Throttle linkage.
- ☐ Driveline U-joint and carrier bearings if equipped.
- ☐ Air intake system and emission control system.
- ☐ Any special or accessory equipment and perform manufacturer's recommended service as needed.

PM Type C: 1000 Hours or 12 Mo.

Action

- ☐ A & B plus the following:
- ☐ Change coolant conditioner if equipped.
- ☐ Pressure test & flush cooling system – refill to -40 degrees F.
- ☐ Change transmission fluid / lubricant and filter when equipped.

Inspect

- ☐ Adjust and repack wheel bearings.
- ☐ Clean and inspect all battery connections on starter and ground.
- ☐ Differential lubricant (including transfer case when equipped).
- ☐ Brake pads, linings & air brake assembly for leaking and adjustment.
- ☐ Driveline U-joints and carrier bearings, if equip.
- ☐ Suspension for broken springs & rear axle U-bolts for proper torque.

Remarks: _____

Date Completed: _____ Work Performed by: _____ Approved by: _____

1/5/2007

EQUIPMENT CATEGORY TABLE - VEH

EQUIP CTG	EQUIPMENT CATEGORY DESCRIPTION	HR or MI
P23	AUTO REAR DRIVE 4 DOOR 2-2.9L	MI
P24	AUTO FRONT DRIVE 4 DOOR 2-2.9L	MI
P26	AUTO FRONT DRIVE WAGON 2-2.9L	MI
P28	VAN - PASSENGER TYPE - 2-2.9L	MI
P31	AUTO REAR DRIVE 2 DOOR 3-3.9L	MI
P33	AUTO REAR DRIVE 4 DOOR 3-3.9L	MI
P34	AUTO FRONT DRIVE 4 DOOR 3-3.9L	MI
P35	AUTO REAR DRIVE WAGON 3-3.9L	MI
P36	AUTO FRONT DRIVE WAGON 3-3.9L	MI
P38	MINI-VAN PASSENGER - 3-3.9 L	MI
P43	AUTO REAR DRIVE 4 DOOR 4-4.9L	MI
P45	AUTO REAR DRIVE WAGON 4-4.9L	MI
P46	AUTO FRONT DRIVE WAGON 4-4.9L	MI
P48	VAN - PASSENGER TYPE - 4-4.9L	MI
P53	AUTO REAR DRIVE 4 DOOR 5-5.9L	MI
P55	AUTO REAR DRIVE WAGON 5-5.9L	MI
P58	VAN - PASSENGER TYPE - 5-5.9L	MI
P59	UTILITY VEHICLE SUBURBAN	MI
P60	UTILITY VEHICLE 4X2	MI
P61	UTILITY VEHICLE 4X4	MI
P62	SHUTTLE VEHICLE	MI
P63	UTILITY VEHICLE 4x2, HYBRID	MI
T00	TRUCK - VAN UP TO 6,499 GVW	MI
T01	TRUCK - PICKUP UP TO 6,499 GVW	MI
T02	UTILITY VEH. UP TO 6,499 GVW	MI
T06	TRUCK-PKUP 4X4 UP TO 6,499 GVW	MI
T10	VAN - 6,500-7,499 GVW	MI
T11	TRUCK - PICKUP 6,500-7,499 GVW	MI
T12	TRUCK -UTILITY 6,500-7,499 GVW	MI
T16	TRUCK-PKUP 4X4 6,500-7,499 GVW	MI
T20	VAN - 7,500-9,999 GVW	MI
T21	TRUCK - PICKUP 7,500-9,999 GVW	MI
T22	TRUCK -UTILITY 7,500-9,999 GVW	MI
T23	TRUCK - 7,500-9,999 GVW	MI
T25	TRUCK SP EQUIP 7,500-9,999 GVW	MI
T26	TRUCK-PKUP 4x4 7,500-9,999 GVW	MI
T31	TRUCK -CC PKUP 7,500-9,999 GVW	MI
T32	TRUCK -CC UTIL 7,500-9,999 GVW	MI
T34	TRUCK -CC DUMP 7,500-9,999 GVW	MI
T35	TRUCK-CC SP EQ 7,500-9,999 GVW	MI
T41	WRECKER - UP TO 15,999 GVW	MI
T42	TRUCK - UTIL 10,000-15,999 GVW	MI
T43	TRUCK-STK/PL 10,000-15,999 GVW	MI
T45	TRUCK -SP EQ 10,000-15,999 GVW	MI
T47	TRUCK-CC SP EQ 10000-15999 GVW	MI
T49	AERIAL LIFT 7,500-15,999 GV	
T50	TRUCK - 2-AXLE STEP VAN	
T52	TRUCK - CC UTILITY 2 AXLE	
T53	TRUCK - 2 AXLE-UTILITY	
T54	H.D. CREW CAB UTILITY BOI	
T55	TRUCK - 2 AXLE BOX VAN	
T57	TRUCK - 2AW PRO Dump	
T58	TRUCK - 2 AXLE-TRACTOR	
T59	TRUCK - TANDEM AXLE TRA	
T64	TRUCK - 2 AXLE DUMP	
T65	TRUCK - 2 AXLE CC DUMP/H	
T66	TRUCK - TANDEM AX DUMP	
T67	TRUCK - TANDEM AX DUMP/	
T68	SP TANDEM AX 50,000 GVW	
T69	TRUCK - HD 4 X 4 DUMP	
T71	TRUCK - 2 AXLE STAKE/PLA	
T72	TRUCK - 2 AXLE CC STAKE/F	
T73	TRUCK - TANDEM AX-STAKE	
T74	TRUCK - 2 AXLE SP EQUIP	
T75	TRUCK - 2 AXLE CC SP. EQU	
T76	TRUCK - TANDEM AX SP EQ	
T77	TRUCK - 4X4 SP EQUIP	
T78	TRUCK - 2 AXLE WITH VACT	
T79	TRUCK -TANDEM AXLE WITI	
T80	TRUCK-2 AXLE WITH AERIAI	
T81	TRUCK-TANDEM AX-AERIAL	
T83	TRUCK-BRIDGE INSP/CRANI	
T87	TRUCK-CORE DRILL	
T88	TRUCK-STRUCTURAL BORII	
T89	TRUCK-WITH WATER TANK	
T91	TRUCK - 2 AXLE WRECKER	
T92	TRUCK-TANDEM AXLE WRE	
T95	TRUCK-PAINT SUPPLY W/TA	
T96	TRUCK - TRAFFIC STRIPER	
T98	TRUCK - DIGGER-DERRICK	

T70 TAND 6x6 Dump

HEAVY

P64- Electric Vehicles -

District/County Equipment Dashboard month ending October 2012

APPENDIX B.1

Green= on target Yellow= nearing target range Red= unacceptable range

FA	#	Measure	Target	Status									Comments
				7877	7801	7821	7828	7867	7822	7836	7838	7850	
				District 8	0810	0820	0830	0840	0850	0870	0880	0890	
District/ County Efficiency	1	% of overdue Time Based PM's for Organization of all PM'able equipment	Less than 1%	0.00%	0.00%	0.54%	1.30%	0.00%	0.00%	0.00%	0.00%	0.00%	Plant Maintenance IW28/variant EQ_PM_LATE NF/ by county get total # of late PM's. Then divide by total # of PM'able equipment. Plant Maintenance IP17/variant EQ_PM_TOTAL_JS/by county move decimal point 2 places to right for percentage. A score of 1% or less is GREEN, all others will score RED
	2	% of overdue Fuel Consumption PM's for Organization of all PM'able equipment	Less than 1%	0.00%	0.00%	0.54%	1.30%	0.00%	0.00%	0.40%	0.00%	0.00%	Run repot Y_DC1_32000858-Equipment-> Reports-> Equipment flagged for high fuel to get total # of fuel consumption PM's that are OVER on their maximum gallons allowed. Then divide by total # of PM'able Equipment Plant Maintenance IP17/variant EQ_PM_TOTAL_JS/by county move decimal point 2 places to right for percentage. A score of 1% or less is GREEN, all others will score RED
	3	County Cost vs. Usage Percentage	Statewide Average 62.70%	72.78%	70.36%	56.29%	47.34%	61.46%	70.51%	62.27%	66.41%	56.39%	Run business warehouse BEX Analyzer. Utilize template in EQ DIV/ ED INBOXES/ intranet/ShopProductivityDashboardTemplates. Compare county to statewide average and score will appear at top. 5-4 = GREEN 3-2= YELLOW 1-0= RED
	4	Monitor BW report Fuel w-GL Codes for incorrect data entries and charges for fuel that are not charged to the correct standing work orders	0 Data/errors on report	0	0	0	0	0	0	0	0	0	Run Business Warehouse BEX Analyzer / utilize template in ED inbox / Intranet /ShopProductivityTemplates/open respective template for criteria 4....run report for 12-13 fiscal year,investigate parts $ column for amounts. It is exception based reporting so any return of information in parts column associated with 88113 will be an error. 0 errors Green. 1-3- Yellow, 4 or above- Red
	5	Monitor BW report Internal Orders w-GL Codes for incorrect data entries and charges for 813 equipment repair parts and consumable items not charged to valid work order #'s	0 data/errors on report	0	0	1	0	0	0	0	0	0	Run Business Warehouse BEX Analyzer/ utilize template in ED inbox/ intranet/ShopProductivityTemplates/open respective template for criteria 5... run report for 12-13 fiscal year, investigate parts $ column for amounts. It is exception based reporting so any return of information in parts column wil be an error. 0 errors= green. 1-5=yellow. 6 or above=red.
	6	Monitor BW Report materials 261 issued for incorret data entries and charges for 813 equipment repair parts not charged to valid work order #'s	0 data/errors on report	0	0	0	0	0	0	0	0	0	Run Business Warehouse BEX Analyzer/ utilize template in ED inbox/ intranet/ShopProductivityTemplates/open respective template for criteria 6....run report for 12-13 fiscal year, investigate parts $ column for amounts. Any return of information in parts column associated w/ equipment repairs wil be an error. 0 errors= green. 1-5=yellow. 6 or above=red.

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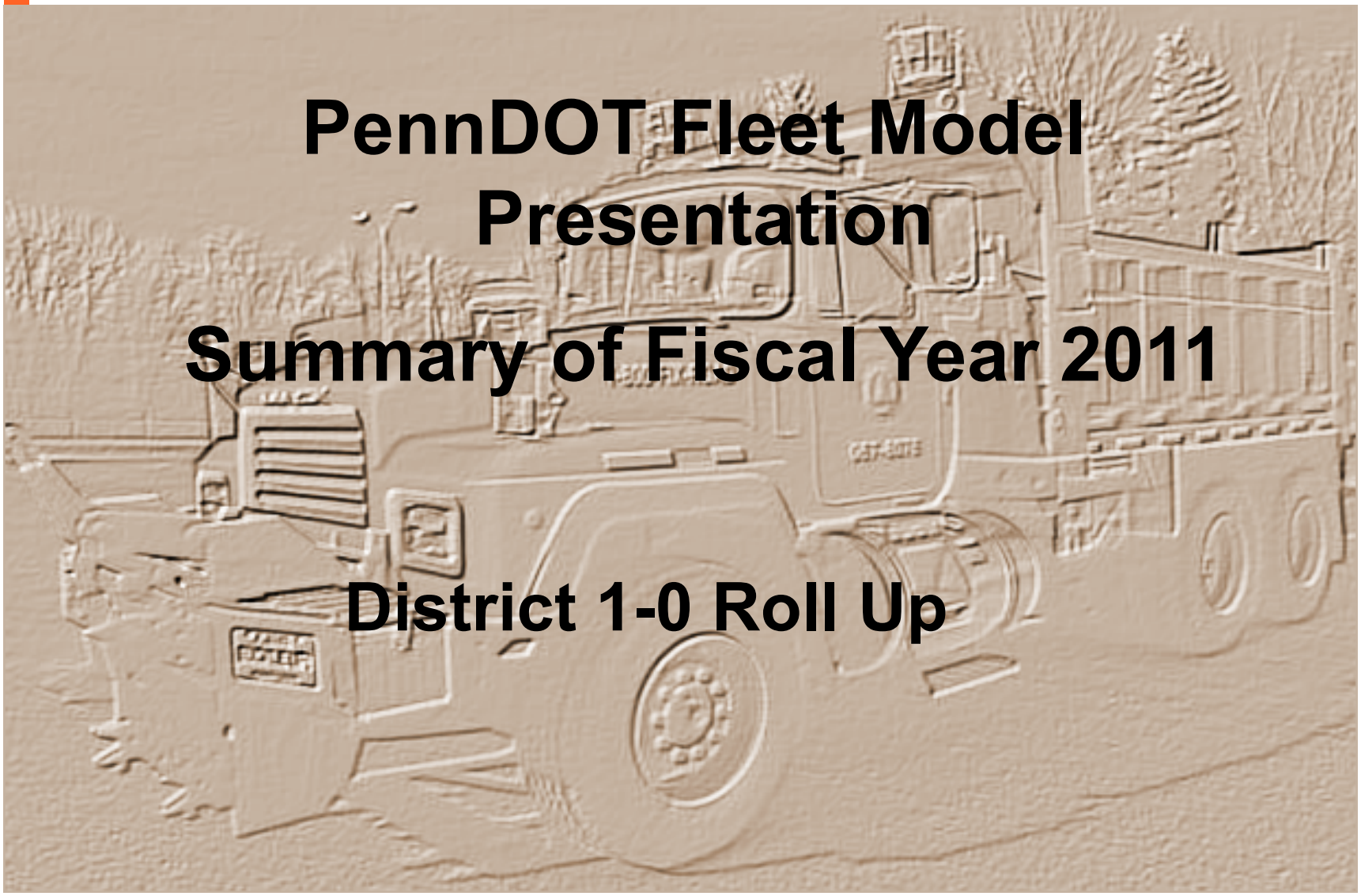

PennDOT Fleet Model Presentation

Summary of Fiscal Year 2011

District 1-0 Roll Up

Equipment Inventory

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	ECC	App Quota 2011	Current Inventory	Average Age	Equipment Type	ECC	App Quota 2011	Current Inventory	Average Age
Single axle Dump Truck	A15*	46	41	6	Finish Pavers	C34AS*	3	3	6
Tandem Axle Dump Truck	AA1*	122	119	5	Three Wheel Rollers	CRW*	1	1	25
Tri-Axle Dump Truck	AA4*	17	19	4	Paving Roller	CRA*	7	8	14
	Dump Total	185	179	5	Riding Patch Roller	CRP*	11	10	12
					R/T Roller	CRT*	8	8	12
Loaders 2 Cu. Yd	E27AHDJ3* E27LIDJ3* E27DVHJ3*	27	24	8	Comb Roller	C43JJ*	0	0	0
Large Loaders 3 Cu. Yd	E27AHDJ5* E27DVHJ5* E27LIDJ5*	13	16	7	Patch Roller Vibratory	CC2*	14	16	16
Skid Steer Loaders	EB2*	15	16	7	Belt Loaders	EB1*	4	4	11
Graders	E21*	8	7	12	Side Dozers	EC3*	1	1	17
Backhoes	E54AO*	12	11	12	Tractor Mowers	D55*	10	9	9
Excavators R-Tire All	E18*	6	4	7	Boom Arm Mowers	D55HS*	10	10	10
Excavators, Track Med & Lg	EETCHHBC* EETCHHBD*	8	9	8	S/Propelled Sweepers	FD6*	1	1	1
Oil Distributors	AA6*	6	6	12	Fuel Trucks	AA5*	5	5	9
Chip Spreaders	C95*	3	3	5	Lube Trucks	AD7*	5	3	16
Wideners	C63BUI*	5	5	9	Lowboy Tractor	A56*	8	7	8
Motor Pavers	CPL*	0	0	0					

Equipment Inventory Non Scored

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- Equipment Type

Non Scored

Crew Cabs	Approved Quotas 2011	Current Inventory
A13*	82	85
A12* Other	15	11

- Staff Vehicles

	Approved Quotas 2011	Current Inventory	Temporary Units assigned under Marcellus Shale	Number of Units assigned as "Emergency Class"	Number of Units assigned under 80% Utilization or 6000 Average Business miles	Number of units assigned with Justification letter on file
G36* Pickup Trucks	44	44		23	21	0
G45* Sedans	51	49	2 One has been totaled	29	20	0
G51* Wagons	5	5		4	1	0
G59* SUV's	4	4		4	0	0
G60* Van's	11	11		2	10	0

Age of Core Equipment

Scored

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The goal is to maintain the average age of the core equipment fleet at 50% of the expected life as defined by SAP

	ECC	50 % of Expected Life	Average Age From Aging Report	Number of Units That exceed Average Age by ECC
Single Axle Dump Trucks	A15*	6	6	0
Tandem Axle Dump Trucks	AA1*	6	5	0
Tri-Axle Dump Trucks	AA4*	6	4	0
Loaders	E27*	7.5	7	2
Backhoes	E54AO*	7.5	12	2
Crew Cabs	A13*	4.0	4	4
Spec Crew Cabs	A12*	4.0	9	9

Score Based on District Average from Aging Report For ECC A15*, AA1* and AA4*

The average age scoring will be supplied by your Regional Advisor at the close of the fiscal year.

Category meets 50% of expected life.	5
Category one (1) year older than 50% of expected life	4
Category two (2) years older than 50% of expected life	3
Category three (3) years older than 50% of expected life	2
Category four (4) year older than 50% of expected life	1
Category greater than four (4) year older than 50% of expected life	0

Score 5.0

Industry Standard Hours

Core Equipment

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	ECC	Industry Standard Use Hours	Number of Units That Exceed Industry Standard Hours By ECC In the County/ District	Projected Units That Will Exceed Industry Standard Hours based on One Additional Year at Minimum Usage in the Fleet
Single Axle Dump Trucks	A15*	14, 000 Hours	1	3
Tandem Dump Trucks	AA1*	14, 000 Hours	16	12
Tri-Axle Dump Trucks	AA4*	14,000 Hours	0	1
Loaders	E27*	10,000 Hours	22	8
Backhoes	E54AO*	10,000 Hours	2	1

Number of Units Exceeding Standard 31 **Total of Projected Units** 25

Life Cycle Extension Pilot Districts 5, 9, and 10

	ECC	Standard Life Cycle	Extended Life Cycle	Capture the Number of Units officially approved for extension by ECC for each County/District
Single Axle Dump Trucks	A15*	12Years/14,000 Hours	14 Years	
Tandem Dump Trucks	AA1*	12Years/14,000 Hours	14 Years	
Tri-Axle Dump Trucks	AA4*	12 Years/14,000 Hours	14 Years	
Loaders	E27*	15 Years/10,000 Hours	18 Years	
Excavators	EETCHHBC* EETCHHBD* * E18*	14,000 Hours	16,000 Hours	
Crew Cabs	A13*	8 Years	10 Years	

Record the number of units enrolled by ECC, Units officially approved for enrollment must be removed from slides 4, 5 and 7 to prevent negative impact of extension on Fleet Model Scores. Average Age scores must be mathematically calculated with exclusion of the enrolled units. Score Must be entered in whole numbers round down if below (.5) or round up if (.5) and above.

Age of Equipment Not Scored

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Support Equipment

The goal is to maintain the support equipment fleet within the expected window.

	ECC	Industry Standard Use Hours	Number Of Units That Exceed Industry Standard Hours of Usage
Rollers	CRA* CRW* CRP* CRT* CC2* C43JJ*	9,000 Hours	5
Excavators	EETCHBC* EETCHBD*E18*	14, 000 Hours	2
Oil Distributors	AA6*	14, 000 Hours	1
Chip Spreaders	C95*	6, 000 Hours	0
Wideners	C63*	6, 000 Hours	0
Motor Pavers	CPL*	6, 000 Hours	0
Finish Pavers	C34AS*	6, 000 Hours	0
Belt Loaders	EB1*	14, 500 Hours	0
Fuel Trucks	AA5*	10, 000 Hours	2
Graders	E21*	14, 000 Hours	1
		Total number of units exceeding Industry Standard	11

Minimum Use Standard Scored

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The goal is to maintain on the following types of equipment at a level that exceeds the minimum use standard. This minimum use standard is defined as the minimum usage that is economically feasible for owning that type of equipment and should not be interpreted as an acceptable level of equipment utilization.

Equipment Type	ECC	Min Use Std.	# Less Than Min. Use Std.	Equipment Type	ECC	Min Use Std.	# Less Than Min. Use Std.
Single Axle Dump Trucks	A15*	700	0	Chip Spreaders	C95*	150	0
Tandem Axle Dump Trucks	AA1*	700	0	Wideners Self Propelled	C63BUI*	200	0
Tri-axle Dump Trucks	AA4*	700	0	Motor Pavers	CPL*	200	0
Loaders	E27*	500	0	Finish Pavers	C34AS*	200	0
Graders	E21*	300	0	Three Wheel Rollers	CRW*	200	0
Backhoes	E54AO*	300	0	Paving Rollers	CRA*	200	0
Excavators, R Tire All	E18*	400	0	Rubber Tire Rollers	CRT*	150	0
Excavators, Track Med & Lg	EETCHHBC* EETCHHBD*	400	0	Combination Rollers	C43JJ*	150	0
Oil Distributors	AA6*	250	0	Belt Loaders	EB1*	200	0

All equipment meets minimum use standard	5
1 to 2 pieces of equipment do not meet minimum use standard	4
3 to 4 pieces of equipment do not meet minimum use standard	3
5 to 6 pieces of equipment pieces of equipment do not meet minimum use standard	2
7 to 8 pieces of equipment pieces of equipment do not meet minimum use standard	1
More than 8 pieces of equipment pieces of equipment do not meet minimum use standard	0

Score 5.0

Hours per Gal, Fuel Comparison

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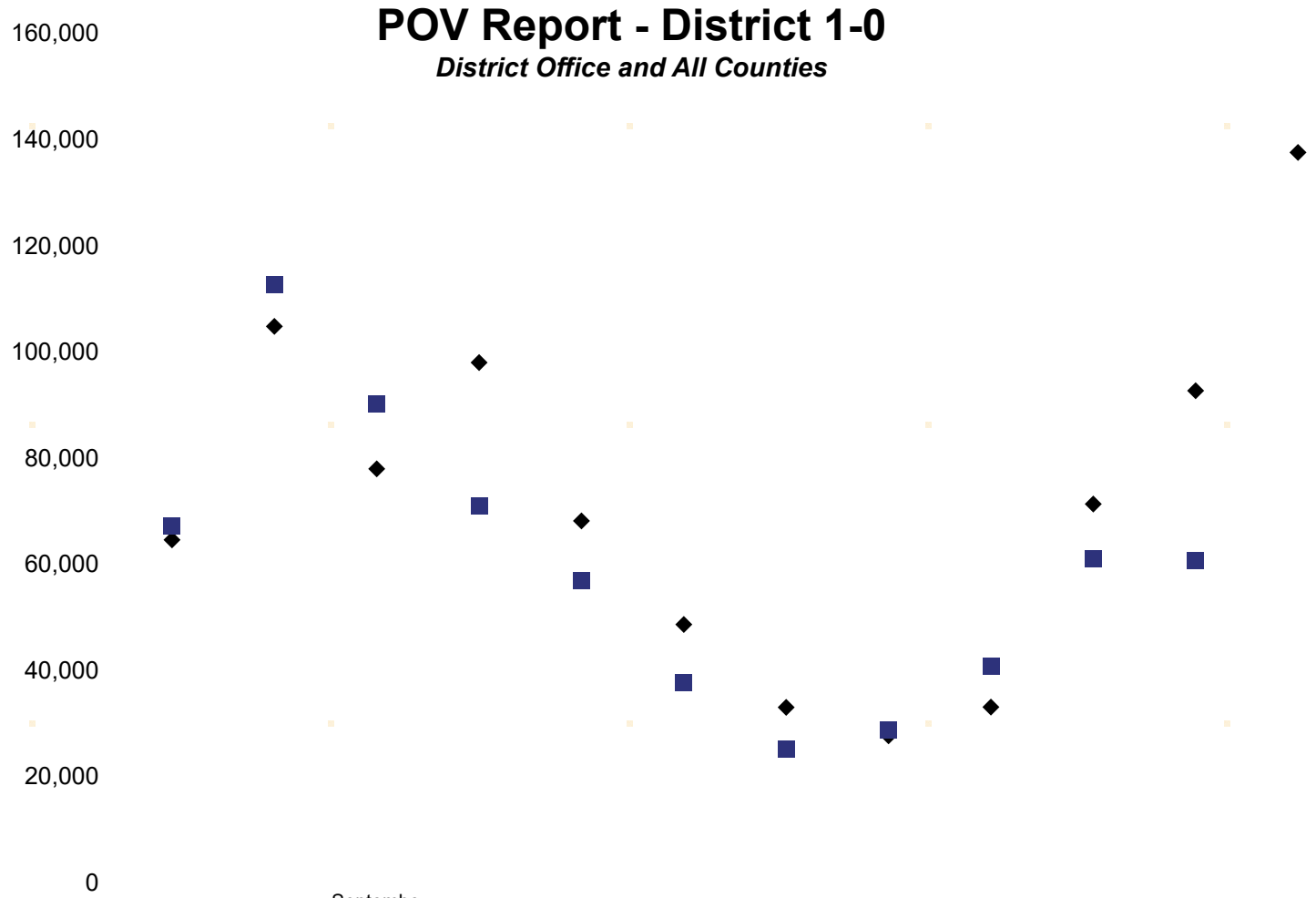
GOAL: Maintain Equipment Within 70-120% of Statewide Average Hours Per Gallon Per Equipment Type.

BOMO INTRANET/ED/MONTHLY REPORTS - DATA TREND ANALYSIS

Equipment Type	Statewide Average	Established Goal	District 1-0 Average
Single Axle Dump	0.6968	0.4878 to 0.8362	0.6245
Tandem Axle Dump	0.4712	0.3298 to 0.5654	0.3778
Loader	1.5099	1.0569 to 1.8119	1.1599
Grader	0.9001	0.6301 to 1.0801	0.7860
Crew cab	0.7242	0.5069 to 0.8690	0.6734

POV Compliance Review



	July	August	September	October	November	December	January	February	March	April	May	June
FY10 Monthly Money Totals	$32,129	$52,237	$38,817	$48,829	$33,914	$24,159	$16,678	$13,945	$16,705	$36,213	$47,099	$69,993
FY11 Monthly Money Totals	$34,104	$57,259	$45,827	$36,059	$28,817	$19,040	$12,704	$14,514	$20,604	$30,934	$30,813	
◆ FY10 Monthly Mileage Totals	64,257	104,474	77,634	97,657	67,827	48,317	32,702	27,343	32,754	71,006	92,351	137,241
■ FY11 Monthly Mileage Totals	66,870	112,272	89,857	70,703	56,503	37,333	24,910	28,460	40,400	60,655	60,417	

Equipment Fleet Mix Non Scored

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Liquid Capability

This goal is to capture the number of trucks with a pre-wet system by District

Number of trucks with a mounted pre-wet system	179	Number of trucks without a pre-wet system	0
Number of Truck anti-icing inserts	7	Number of trailer mounted anti-icing units	0
Number Of Dedicated Anti-Icing Tank Chassis	4	Average Age Of Dedicated Anti-Icing Tank Chassis	13
Number of Approved Dumps with ECC change and Installed Inserts	0	Average age of Anti-Ice Insert trucks	
Number of Stockpiles in District	29	Number of Stockpiles with Brine Storage Tanks in District	29

Cost Versus Usage

This Standard will be scored this year

Ratio Above Statewide Average	Score
1.05 to 1.0999	5
1.10 to 1.1499	4
1.15 to 1.1999	3
1.20 to 1.2499	2
1.25 to 1.2999	1
1.30 and above	0

The goal is to improve the "cost versus usage" ratio that is compiled in the BW Report. The score will be based on each Counties performance against the "Cost versus Usage" statewide average.

Cost Versus Usage Scores will be calculated from the Monthly Dashboard and sent to each County/District by the Regional Fleet Advisors

Statewide Average 71.76

District 1-0 Average

78.74%

5.0

IDLE FUEL DATA

This Standard will not be scored this year

County Totals	Moving Time	Idle (delayed)	Idle (all)	Variable Speed Govener	Total	Idle (delayed) %	Idle (all)%	Variable Speed Govener%	Moving + Idle (all)	Idle (delayed) %	Idle (all)%	Variable Speed Govener%
1-1	72550.0	28152.8	39833.6	2071.0	116978.4	24.07%	34.05%	1.77%	112383.60	25.05%	35.44%	1.84%
1-2	125504.0	50445.5	74343.7	3936.7	205327.6	24.57%	36.21%	1.92%	199847.70	25.24%	37.20%	1.97%
1-3	46749.2	25201.4	24168.0	691.4	76323.3	33.02%	31.67%	0.91%	70917.20	35.54%	34.08%	0.97%
1-4	75737.8	49158.9	57784.8	6441.8	143357.0	34.29%	40.31%	4.49%	133522.60	36.82%	43.28%	4.82%
1-5	35675.8	19861.4	22469.5	2582.3	62559.5	31.75%	35.92%	4.13%	58145.30	34.16%	38.64%	4.44%
1-6	97456.9	39687.7	63048.3	3065.4	166367.8	23.86%	37.90%	1.84%	160505.20	24.73%	39.28%	1.91%

Idle Time Worksheet Combined Data

Notes:

District Total	Moving Time	Idle (delayed)	Idle (all)	Variable Speed Govener	Total	Idle (delayed) %	Idle (all)%	Variable Speed Govener%		Idle (delayed) %	Idle (all)%	Variable Speed Govener%
Dist 1	453673.7	212507.7	281647.9	18788.6	770913.6	27.57%	36.53%	2.44%	735321.60	28.90%	38.30%	2.56%

Rented Equipment Summary

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District 1-0 Top 10 Rented Equipment		
Equipment Type	Usage Hours	Dollars Spent
Crusher	1002	$295,231
Boom Mower	1198	$90,784
Milling Machine	205	$55,078
Sewer Cleaner	422	$45,599
Dozer	255	$35,582
Street Sweeper	186.5	$24,431
Wrecker	68.4	$19,569
Crane	35	$14,096
Tanker	1200	$13,800
Paver	33	$10,593

Projected Equipment Purchases

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District 1-0

Projected Equipment Purchases

Equipment Type	Est Rep Cost	2013/2014		2014/2015		2015/2016		2016/2017		2017/2018	
Equipment		Qty	Est	Qty	Est	Qty	Est	Qty	Est	Qty	Est
Truck, Single Axle	$137,117	4	$548,468	3	$411,351	5	$686,585	2	$274,234	3	$411,351
Truck, Tandem Axle	$175,100	8	$1,400,800	11	$1,926,100	10	$1,751,000	13	$2,276,300	12	$2,101,200
Truck, Tri Axle	$186,600	1	186,600	1	$186,600	2	$373,200	2	$373,200	2	$373,200
Loaders, Large	$121,253	1	$121,253	1	$121,253	2	$242,506	0	$0	1	$121,253
Loaders, Std	$104,100	4	$416,400	0	$0	3	$312,300	2	$208,200	1	$104,100
Graders (6X6)	$176,000	1	176,000	0	$0	1	$176,000	1	$176,000	0	
Backhoes (4X4)	$73,000	0	$0	2	$146,000	0	$0	0	$0	2	$146,000
Excavators	$323,000	1	$323,000	1	$323,000	0	$0	0	$0	1	$323,000
Excavators Track	$94,000	0	$0	1	$94,000	0	$0	0	$0		$0
Crew Cabs	$55,300	10	$553,000	11	$608,300	11	$663,600	11	$608,300	12	$663,600
Totals		30	$3,725,521	31	$ $3,816,604	36	$4,298,191	31	$3,916,234	33	$4,243,704

PM / QA and Shop Compliance

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District 1-0 Average Scores

•Fleet Advisor PMQA score	4.45
•DEM PMQA score	4.66
•County Average PMQA Score	4.56
•Shop Score	2.78
•614 Score	1.60
•Shop Compliance Review Score	2.63
•Warranty Recovery Score	4.67
•Shop Compliance Score Final Factored	4.50
•AFS Score	4.27

Fleet Model Wrap UP

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CMMT Score #8	Score	Weight	Total
Age of Core Equipment	5	X .34	1.70
Minimum Use Standards	5	X .33	1.65
Cost Versus Usage	5	X.33	1.65

Fleet Model Final Score: 5.0

Closing Comments, Concerns, Issues, Suggestions

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- ❖COST vs. USAGE- Ensure equipment that is shared has usage credited to the owning organization rather than to the organizations work order that is borrowing the equipment.
- ❖1 of the 2 Sedans provided to support the Marcellus Shale effort has been determined to be a total loss as a result of an accident.
- ❖Current A13 and A12 quota is exceeded due to arrival of new Crew Cabs. We will get back to quota. We will not grow the fleet.
- ❖A process should be developed to determine usage based on Fuel Consumption rather than Payroll hours.
- ❖An ongoing effort has been made to ensure the average age for "A" series vehicles is adhered to.
- ❖Our focus now turns to not only maintaining the age of "A" series but also reducing the age of Support Equipment. This effort is greatly dependent upon funding levels.
- ❖District 1-0 continues to engage in Equipment sharing. We have on several occasions sent crews to other Districts to accomplish Milling and Cold recycling.
- ❖The Projected Equipment purchase slide is representative of the funding needs to maintain just the Core Equipment. In order to achieve and maintain life cycle recommendations for both Core and Support Equipment additional funding is required.

Percentage Downloaded

Not scored---------- Proposed Idle Download Scoring for the Fleet Model Presented in Spring of 2013

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Percentage Downloaded Cha	Score
100% down to 90%	5
89% down to 80%	
79% down to 70%	
69% down to 60%	
59% down to 50%	1
49% and below	0

Percentage of trucks Downloaded by each County or District at the Conclusion of the Fiscal Year

Score will be multiplied by .5 to achieve one half of the total idle process score

County or
rict score

Idle Percentage

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Not scored---------- Proposed Idle Download Scoring for the Fleet Model Presented in Spring of 2013

Accumulated Idle Percentag	Score
0% to 5%	5
6% to 10%	
11% to 15%	
16% to 25%	2
26% to 35%	1
36% and above	0

The goal: constantly reduce Idle time and reduce fuel costs

This score will be multiplied by .5 and factored for with the percentage downloaded to achieve the overall

County/ ct Score

Final Idle Score

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Not scored---------- Proposed Idle Download Scoring for the Fleet Model Presented in Spring of 2013

Percentage Of trucks successfully Downloaded Score	Idle Pe	Final Score for Idle Download ocess	Your County/ District Score
Ex: 5 x .5 = 2.5	Ex: 5 x .5 = 2.5	2.5 +	

Fleet Model Wrap UP

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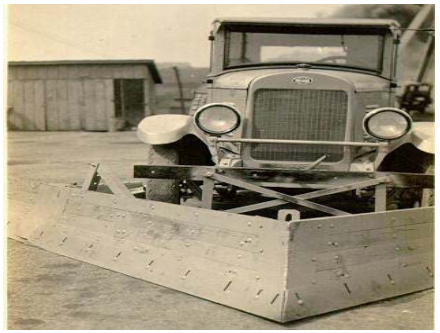
Not scored---------- Proposed Idle Download Scoring for the Fleet Model Presented in Spring of 2013

CMMT Score	Score	Weight	Total
Age of Core Equ	5	X .25	
Idle Data Capture Process	5	X.25	
Minimum Use Standards		.25	
Cost Versus Usage		X .25	

Fleet Model Final Sc

APPENDIX C



Virginia Department of Transportation

Maintenance Division

EQUIPMENT PERFORMANCE REPORT

Annual Edition

July 1, 2008 through June 30, 2009

STATEWIDE

OVERVIEW

In the summer of 2002, the Equipment Program published its first report on Equipment performance. From modest beginnings, the report has evolved ever since, and has now become institutionalized with quarterly, semi-annual, and annual reports. Over the years, more measurements were added as new data became available, and as Departmental priorities changed. This version continues that tradition with increased emphasis in the areas of utilization, radios, emergency operations, pool cars and, where known, impacts of the ongoing budget crisis. **The chart to the lower right shows some continued improvements planned for the near future.**

Questions concerning this document should be directed to Erle Potter.

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Equipment Inventory 2
Equipment Repair Resources 3
Equipment Workload 4
Equipment Utilization 5
Equipment Replacement 6
Equipment Maintenance and Repair 7
Equipment Operations 8
Equipment Budgets 9
Mobile Radios 10
Emergency Operations 11
Pool Vehicles 12

Planned Improvements

- Real Time Measurements – FleetFocus M5 Dashboard
- Blueprint Impacts on Equipment Program Performance
- Technician Productivity Measures
- Individual Repair Facility Backlog Measures
- Blueprint Equipment Inventory Reductions
- Warranty Program Measures

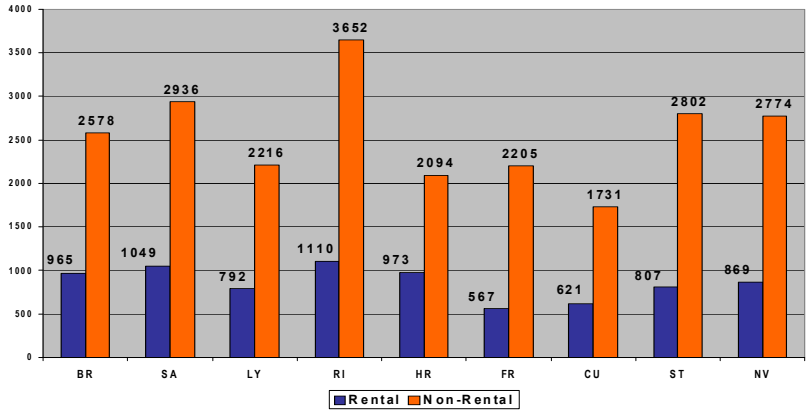
EQUIPMENT INVENTORY

Purpose: To show the size, location, and types of VDOT's equipment.

Total Statewide Rental Inventory = 7,753
(Purchase Value = $383.1M)

Total Non-Rental Inventory = 22,988
(Purchase Value = $95.3M)

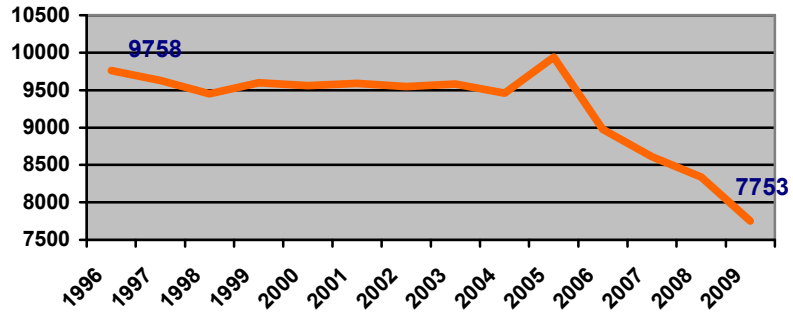
2A – INVENTORY BY DISTRICT
As of June 30, 2009



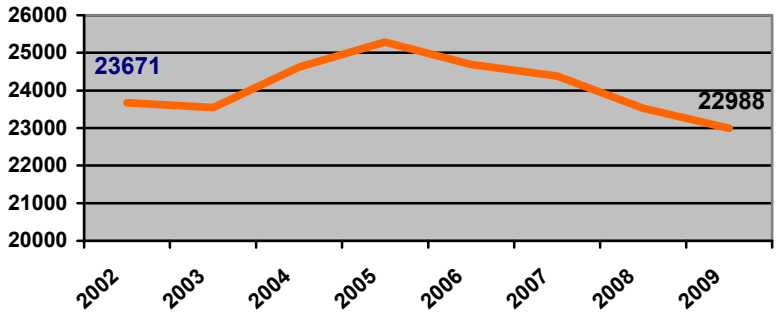
2B – RENTAL INVENTORY BY TYPE BY DISTRICT
As of June 30, 2009

	BR	SA	LY	RI	HR	FR	CU	ST	NV	Totals
Lt Trk	271	325	257	398	428	226	189	257	426	2777
Med Trk	276	291	212	327	240	141	170	233	236	2126
Hvy Trk	76	77	38	60	70	49	39	54	51	514
Ldr	72	71	53	57	42	37	50	67	42	491
Trct/Mwr	127	124	109	145	100	68	69	91	20	853
Grdr	53	55	40	38	18	16	34	40	20	314
Misc	90	106	83	85	75	30	70	65	74	678
Totals	965	1049	792	1110	973	567	621	807	869	7753

2C – STATEWIDE RENTAL INVENTORY TRENDLINE
1996-2009



2D – STATEWIDE NON-RENTAL INVENTORY TRENDLINE
2002-2009



EQUIPMENT REPAIR RESOURCES

Over one-third of all shops are "Blue Seal!"

Purpose: To highlight equipment repair staffing levels and professional accomplishments

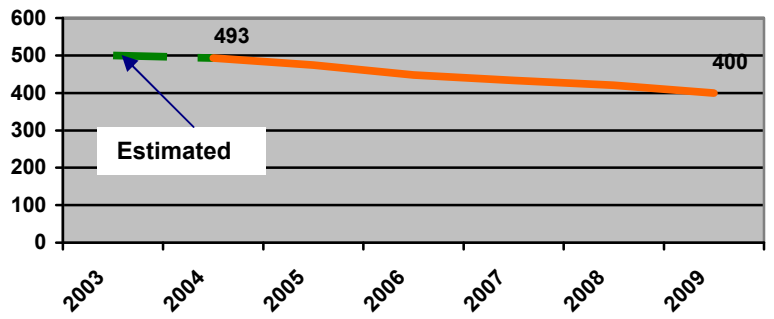
3A – EQUIPMENT STAFFING LEVELS
As of June 30, 2009

District	Authorized Positions	Current Staffing	% Fill
Bristol	47	46	98%
Salem	75	69	92%
Lynchburg	38	38	100%
Richmond	56	54	96%
H. Roads	63	55	87%
Fredericksburg	38	35	92%
Culpeper	30	29	97%
Staunton	41	41	100%
NOVA	46	33	72%
Statewide	434	400	92%

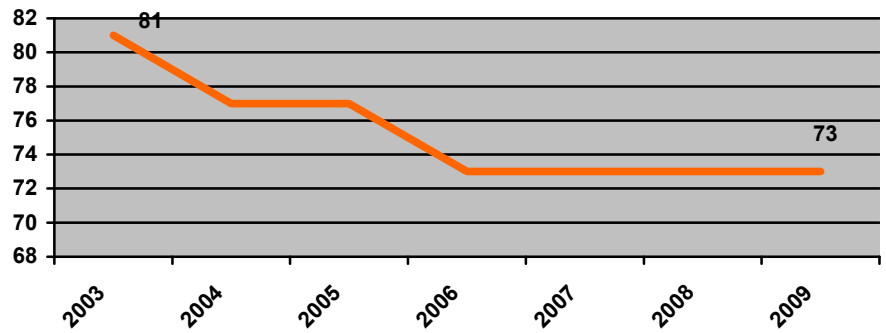
3B – EQUIPMENT REPAIR CERTIFICATIONS
As of June 30, 2009

	MGRS/TECHNICIANS/TRADES			Shops		
District	Current Repair Staffing	Certifications	Avg Certs/Tech	Total	Blue Seal	% Blue Seal
Bristol	41	341	8.3	13	0	0%
Salem	62	563	9.1	13	6	46%
Lynchburg	34	390	11.5	7	5	71%
Richmond	45	494	11.0	7	6	86%
H. Roads	51	551	10.8	8	3	38%
Fredericksburg	34	374	11.0	9	3	33%
Culpeper	27	223	8.3	5	1	20%
Staunton	37	274	7.4	7	3	43%
NOVA	29	387	13.3	4	2	50%
Statewide	360	3597	10.0	73	29	40%

3C – STAFFING TRENDLINE
2003-2009



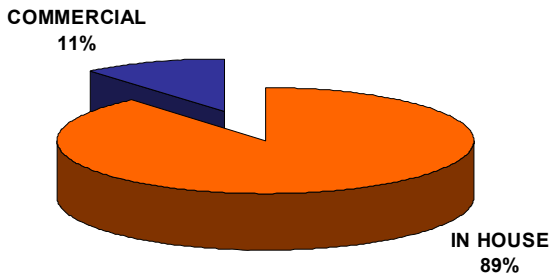
3D – SHOPS TRENDLINE
2003-2009



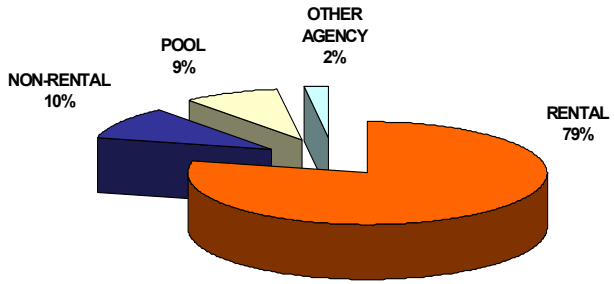
EQUIPMENT WORKLOAD

Purpose: To describe the types of work performed by the technician workforce

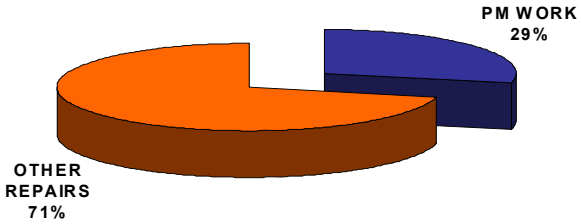
4A – IN-HOUSE VS OUTSOURCED
January 1, 2009 through June 30, 2009



4B – WORK BY EQUIPMENT TYPE
January 1, 2009 through June 30, 2009



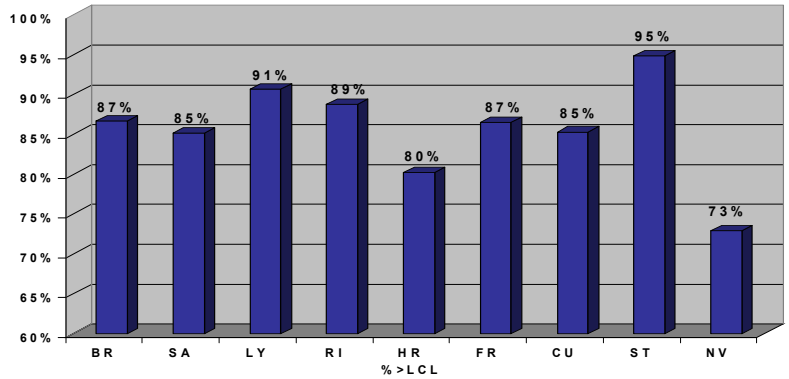
4C – PM WORK VS OTHER WORK
January 1, 2009 through June 30, 2009



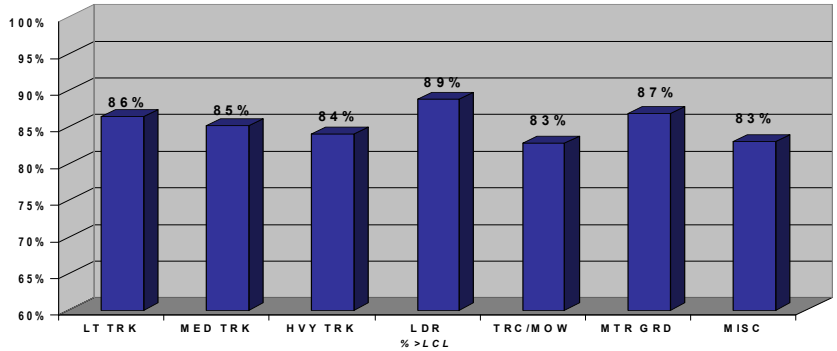
EQUIPMENT UTILIZATION

Purpose: To highlight equipment utilization profiles

5A – METER MILES/HOURS BY DISTRICT
As of June 30, 2009



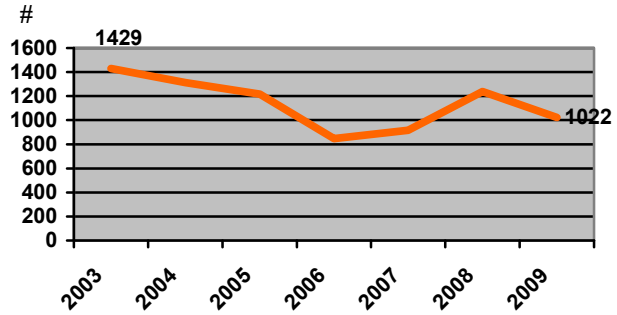
5B – METER MILES/HOURS BY TYPE (STATEWIDE)
As of June 30, 2009



5D – UTILIZATION PERFORMANCE
2003-2009

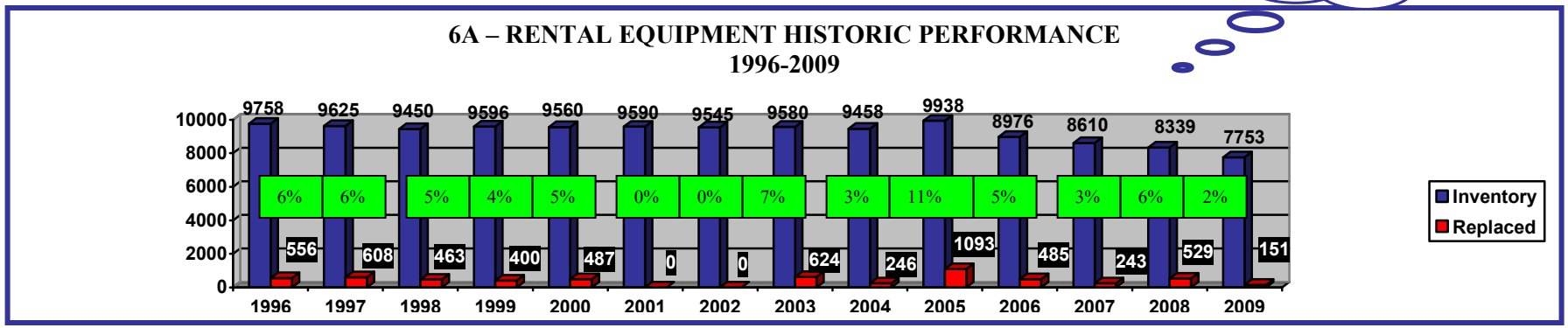
Year	# on Rpt	Residual Value	# Removed	Residual Value
2003	1429	$7.6 M	81	$493k
2004	1313	$12.9M	111	$520k
2005	1216	$12.4M	158	$757k
2006	847	$12.0M	132	$721k
2007	915	$12.8M	77	$487k
2008	1239	$16.1M	116	$566k
2009	1022	$12.1M	Data Being Collected	

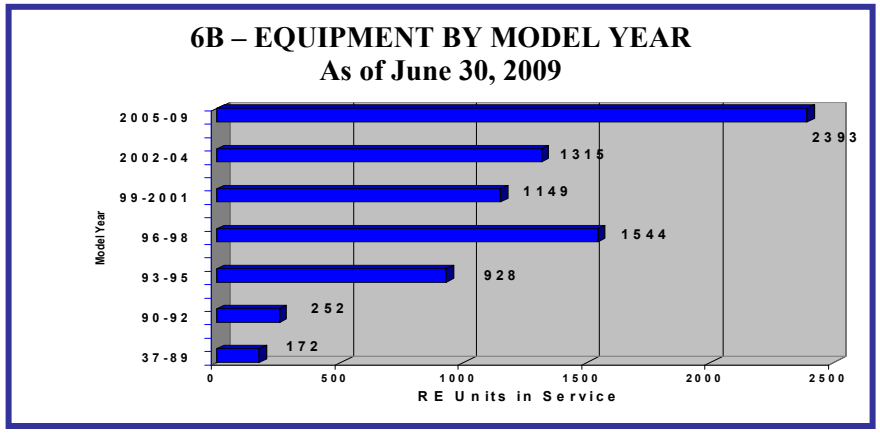
5E – STATEWIDE UNDERUTILIZED TREND
2003-2009

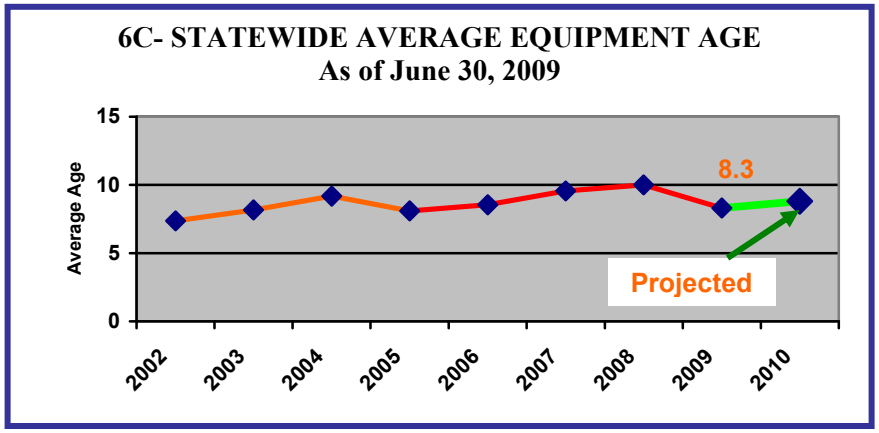


EQUIPMENT REPLACEMENT

Purpose: To show VDOT's equipment replacement profile



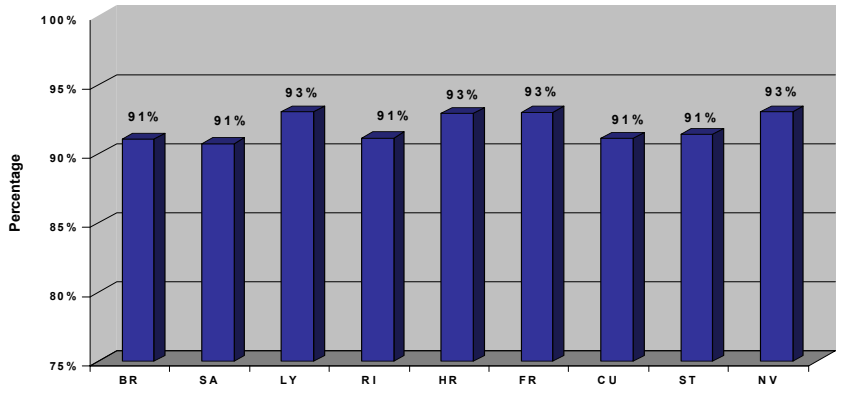




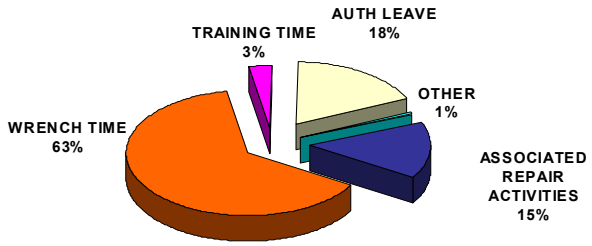
EQUIPMENT MAINTENANCE AND REPAIR (M&R)

Purpose: To illustrate M&R accomplishments and productivity

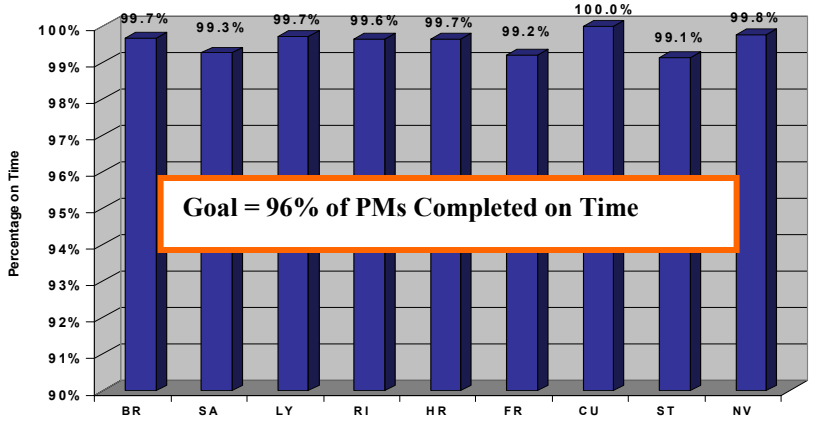
7A – % WORK COMPLETED WITHIN ACCEPTABLE LIMITS
January 1, 2009 through June 30, 2009



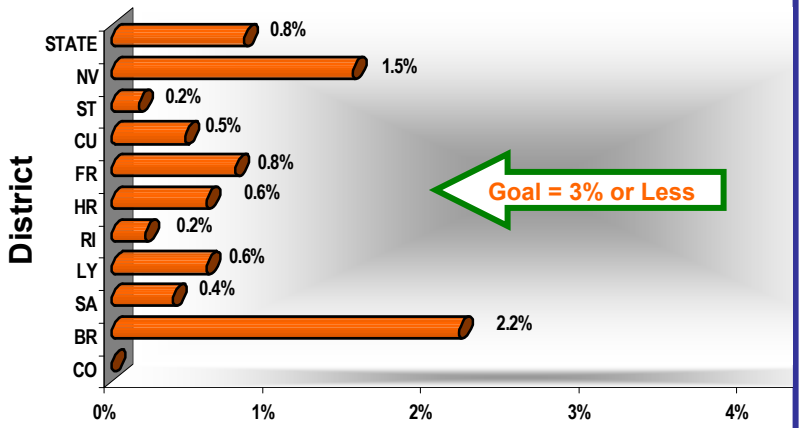
7B – TECHNICIAN TIME DISTRIBUTION
January 1, 2009 through June 30, 2009



7C – PREVENTIVE MAINTENANCE ON TIME
January 1, 2009 through June 30, 2009

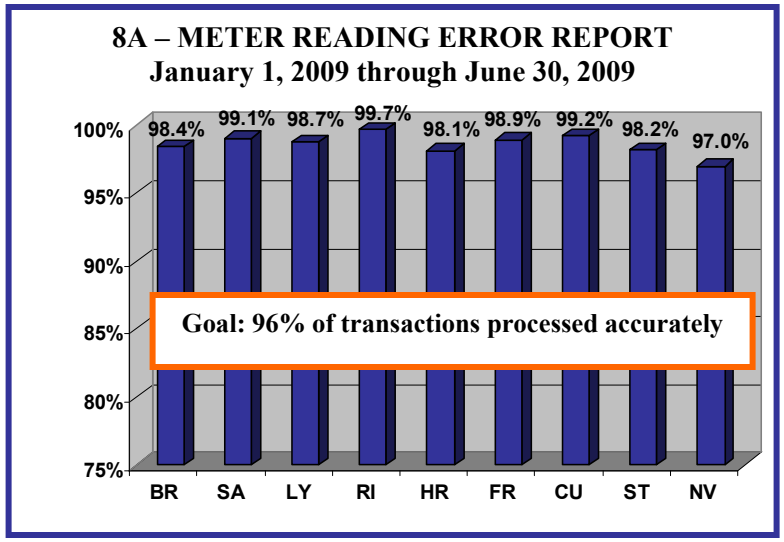


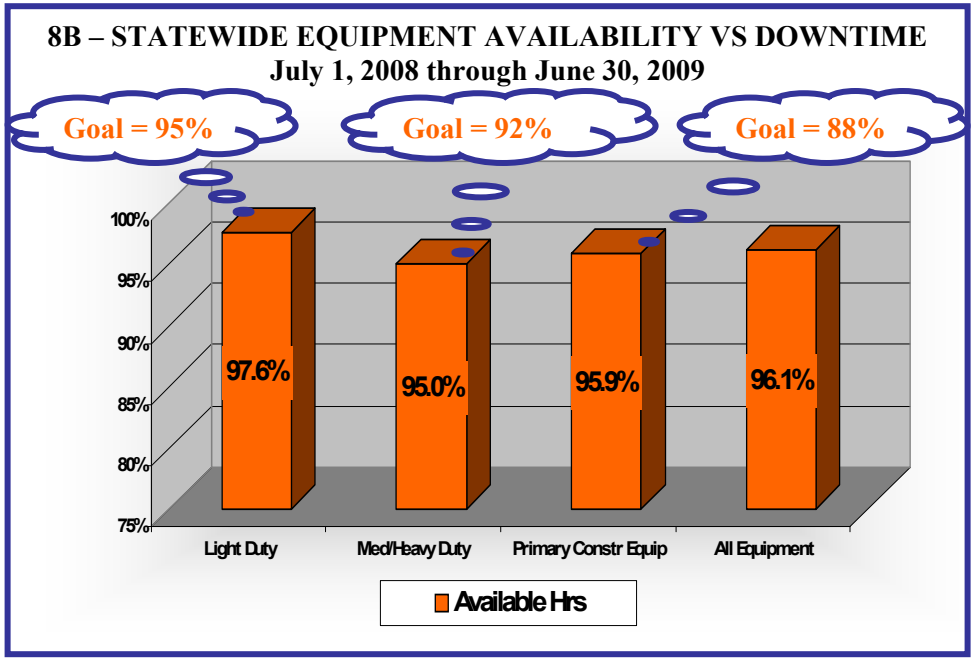
7D – REWORK STATISTICS
January 1, 2009 through June 30, 2009



EQUIPMENT OPERATIONS

Purpose: To display data of an operational nature.





8C – AFMP RENTAL EQUIPMENT TRANSMITTERS (VIT)
As of June 30, 2009

District	Total Vehicles	Total Vehicles Requiring VIT	Total Vehicles w/ VIT Installed	Percent Complete
Bristol	965	751	751	100%
Salem	1049	787	786	99.9%
Lynchburg	792	594	585	98.5%
Richmond	1110	819	816	99.6%
Hampton Roads	973	799	668	83.6%
Fredericksburg	567	471	434	92.1%
Culpeper	621	494	481	97.4%
Staunton	807	598	596	99.7%
Northern Virginia	869	749	707	94.4%
Total Statewide	**7753**	**6062**	**5824**	**96.1%**

8D – TOTAL STATEWIDE FUEL ISSUES
(ALL AGENCIES)
July 1, 2008 through June 30, 2009

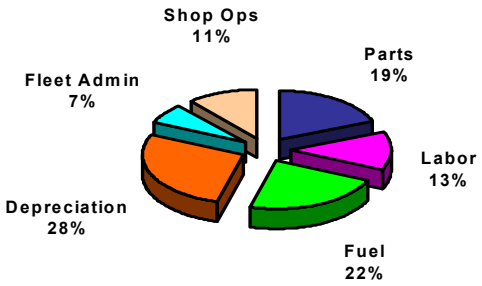
Gasoline	2,828,943.5	Gallons
Diesel	7,726,630.1	Gallons

Total Costs: $25,063,577.61	**Total Sites: 256**

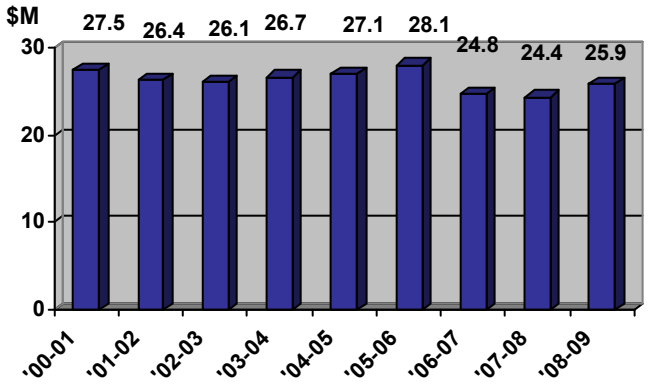
EQUIPMENT BUDGETS

Purpose: To show Equipment Program revenue and expenditure information

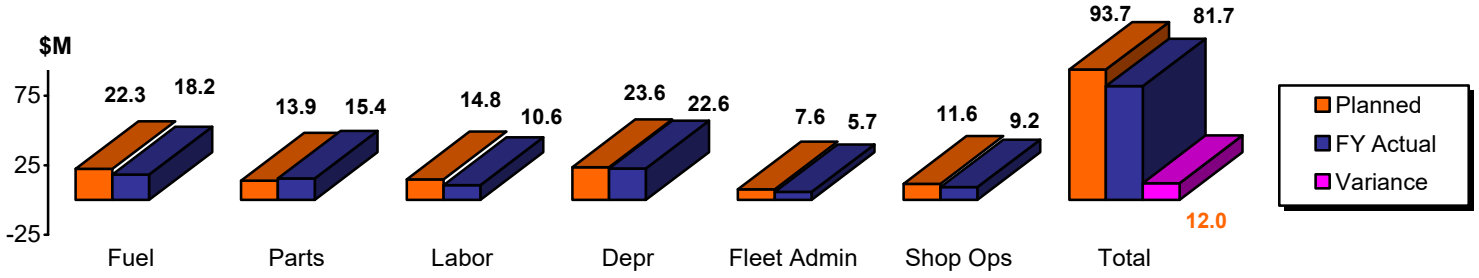
9A – FY09 STATEWIDE RENTAL EQUIPMENT DISBURSEMENTS
July 1, 2008 through June 30, 2009



9B – M&R COST HISTORY



9C – FY 09 BUDGET PERFORMANCE
July 1, 2008 through June 30, 2009



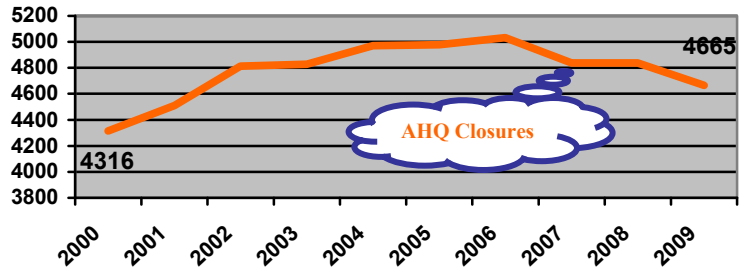
VDOT RADIO PROGRAM

Purpose: To highlight areas of interest with the VDOT Radio Program

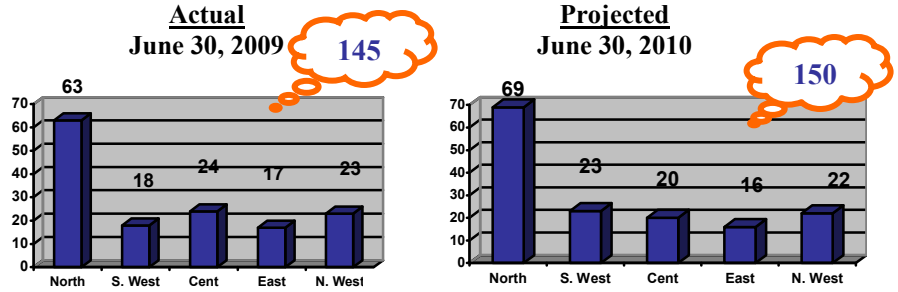
10A – RADIO INVENTORIES
As of June 30, 2009

Mobile Units:	
Bristol	667
Salem	609
Lynchburg	418
Richmond	670
Hampton Roads	478
Fredericksburg	423
Culpeper	466
Staunton	437
Northern Virginia	497
Total Statewide	4665
Base Stations (Statewide)	330
Relay Towers (Statewide)	37

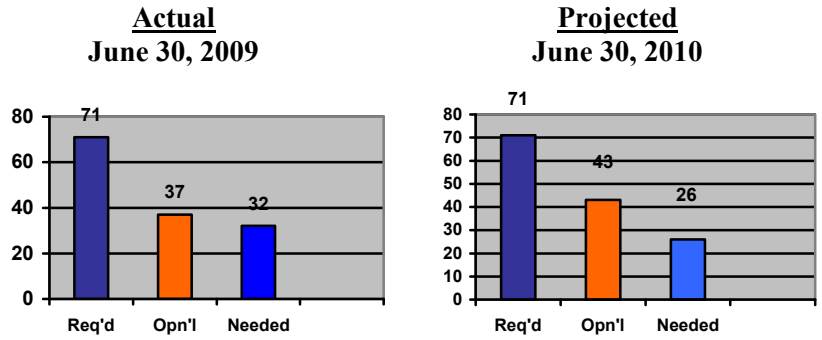
10B – MOBILE RADIO TRENDLINE
2000 to Present



10C – STARS IMPLEMENTATION BY REGION



10D – REPEATER TOWER IMPLEMENTATION STATEWIDE



10E – MOBILE RADIO READINESS
As of June 30, 2009

District	Assigned	Inoperable	Ready Rate
Bristol	667	37	94.4 %
Salem	609	20	96.7 %
Lynchburg	418	5	98.8 %
Richmond	670	9	99.7 %
H. Roads	478	8	98.3 %
Fredericksburg	423	6	98.6 %
Culpeper	466	3	99.3 %
Staunton	437	16	96.3 %
N. Virginia	497	1	99.8 %
Statewide	4665	105	97.7 %

EQUIPMENT EMERGENCY OPERATIONS

Purpose: To describe selected areas of relevance about equipment emergency operations

11B – DEDICATED SNOW/ICE FIGHTERS
As of June 30, 2009

District	Spreaders	Plows	Spray Tanks	Snow Blowers	Snow Fighter Truck	Totals
Bristol	296	438	29	4		767
Salem	331	680	14	10	1	1036
Lynchburg	253	555	14	0		822
Richmond	481	772	20	0		1273
Hampton Roads	143	155	0	0		298
Fredericksburg	282	561	20	0		863
Culpeper	190	456	11	2		659
Staunton	300	732	13	14		1059
N. Virginia	579	1010	5	13		1607
Statewide	2855	5359	126	43	1	8384

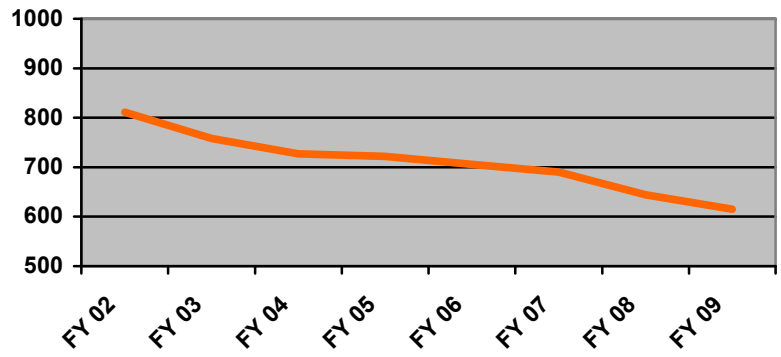
POOL CAR OPERATIONS

Purpose: To show items of interest about VDOT's pool car fleet

12A – POOL CAR INVENTORY BY DISTRICT
As of June 30, 2009

District	Assigned Vehicles
Bristol	63
Salem	60
Lynchburg	54
Richmond	144
Hampton Roads	83
Fredericksburg	46
Culpeper	59
Staunton	45
Northern Virginia	61
Total Statewide	615

12B – POOL VEHICLE TRENDLINE
2001-2009



12C – AFMP POOL VEHICLE TRANSMITTERS (VIT)
As of June 30, 2009

District	Pool Vehicles Requiring VIT	Total Pool Vehicles w/ VITs Installed	Percent Complete
Bristol	42	42	100.0%
Salem	45	45	100.0%
Lynchburg	46	37	80.4%
Richmond	119	119	100.0%
Hampton Roads	73	68	93.2%
Fredericksburg	41	41	100.0%
Culpeper	53	53	100.0%
Staunton	42	42	100.0%
Northern Virginia	54	54	100.0%
Total Statewide	**515**	**501**	**93.4%**

Goal = 100% Installed

Richmond District numbers include Central Office pool vehicles in all three charts