

IMPROVING PROGRAM PERFORMANCE

REPORT FOR FISCAL YEAR 1977

January, 1978

District of Columbia Government
Executive Office of the Mayor
Office of Budget and Management Systems
Resource Management Improvements Division

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DEPARTMENT OF TRANSPORTATION

Developing a balanced transportation system to meet the needs of Washington, D.C., is the goal of the Department of Transportation (DOT). The Department provides transportation-related services which include: maintaining streets, bridges, and sidewalks; caring for all street-line trees, small parks, and landscaped areas; maintaining and operating traffic control devices; testing and licensing vehicle operators; inspecting and registering all vehicles; maintaining and planning public and metered parking facilities; maintaining and operating the street lighting system; planning and administering a bicycle network; and planning, promoting, and coordinating transportation with the Washington Metropolitan Area Transit Authority.

Two major DOT improvement projects were completed in Parking Meter and Central Motor Pool operations during FY 77. In the Parking Meter project, revenue collections in FY 77 reached \$2.8 million — double what they were in FY 75, with the help of a new collection and management control system. In the Central Motor Pool project, per passenger costs for transporting City employees by shuttle bus were cut in half, while ridership more than doubled as a result of implementing a new three-route transit system. These improvement projects, conducted with OBMS assistance, are discussed in more detail in subsequent sections.

Also during FY 77, new management controls and procedures were implemented in the Highway Location Survey program, which performs the engineering surveys needed for roads, bridges, and other projects. A work order system, instituted by a joint DOT-OBMS task force, is used to assign and monitor progress on all survey jobs. Information provided by the new system, specifying the nature of the survey work required and the estimated time for completion, strengthens program management's capacity to schedule the work of survey teams. In

addition, the system provides a more effective tool for evaluating team work performance, by providing data on actual times to complete each phase of a survey work assignment.

DOT has two other major projects underway to improve the quality and efficiency of transportation services:

- The Comprehensive Parking Enforcement and Administrative Adjudication of Minor Traffic Offenses project is designed to improve traffic movement, to better conditions for economic growth in commercial areas, and to provide safer streets for motorists and pedestrians. A joint effort of DOT, the Metropolitan Police Department, Superior Court, Corporation Counsel, and OBMS, the project proposes a comprehensive program to discourage illegal parking through civilian ticket writing, increased towing and impounding operations, and expanded booting activities. The project would also remove minor traffic offenses from the Superior Court, thereby freeing judicial resources for more serious law enforcement tasks. Legislation to implement this proposal was presented to City Council on July 21, 1977. When all elements are enacted and implemented, the program is expected to net the City \$13 million annually in increased revenues.
- The Motor Vehicle Control project is working to install work scheduling and methods improvements which will reduce motor vehicle inspection and registration waiting times and achieve a more efficient use of the workforce. Current project efforts are aimed at implementing the Staggered Motor Vehicle Registration Act of 1976, which gave the Mayor the authority to spread motor vehicle registration dates throughout the year.

Nine DOT programs were monitored by PMS during FY 77. Detailed discussions of performance trends, as well as program improvements, follow.

PARKING OPERATIONS

Parking meter revenues have more than doubled in the last two fiscal years, so that in FY 77 collections totaled \$2.8 million (see Figure 01). In addition, the percentage of meters out-of-order on any day has decreased from 10% to 1%, while maintenance crew productivity has risen 19% in the past year. These dramatic gains occurred primarily as a result of improvements installed by an interagency project team charged with redesigning parking meter operations. The City's parking meter system not only generates needed revenues for the District, but also facilitates improved traffic flow and increased business activity.

The project to improve parking meter operations began in January, 1976, after a management review identified opportunities for further maximizing revenue yields and for improving management practices in the areas of rate structure, coin

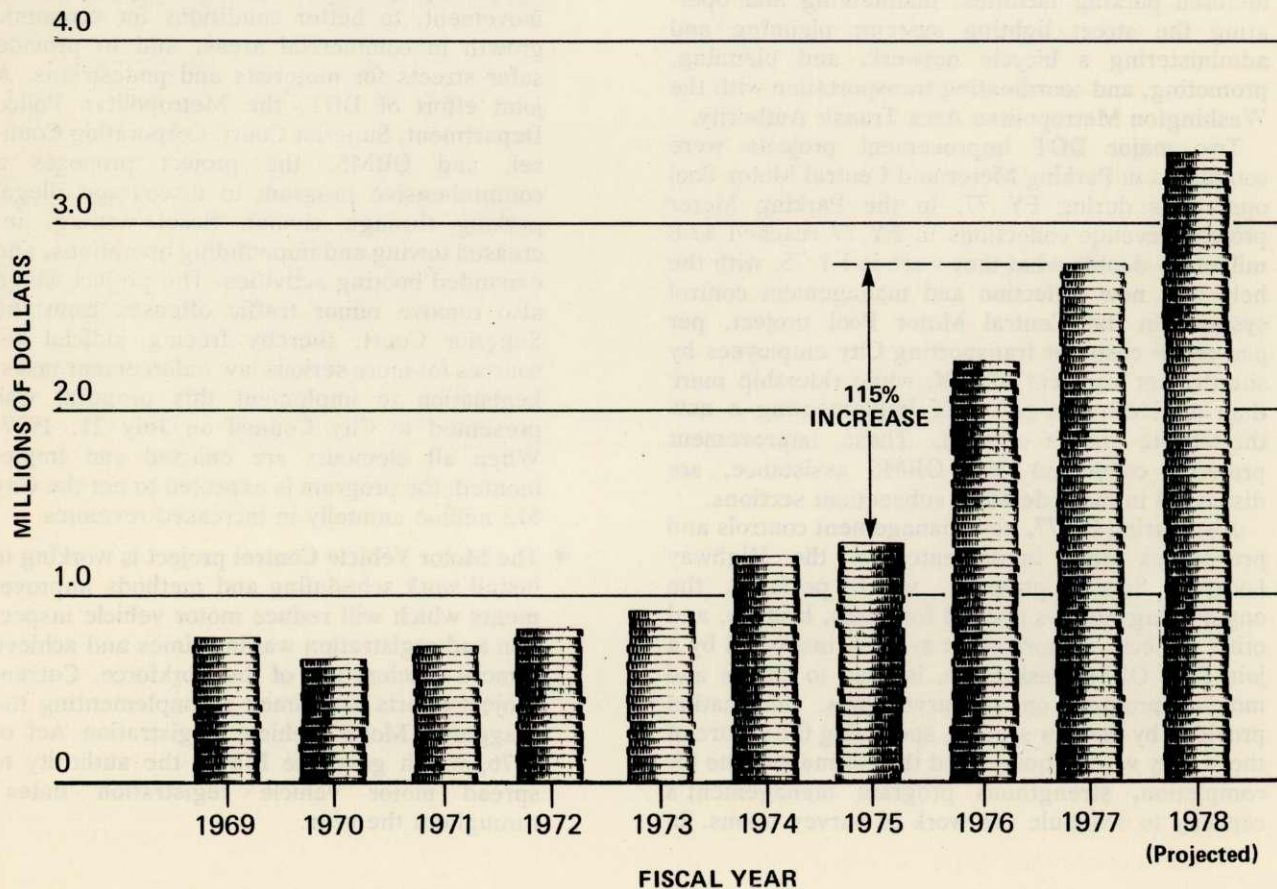
collection, coin counting, and meter maintenance. Because responsibility for the system's operation was divided between DOT and the Department of Finance and Revenue (DFR), staff from those agencies were assigned to the project along with technical assistance staff from OBMS.

After a detailed study of the District's parking meter system, parking meter management practices of six major cities, and coin handling and collection procedures of several private companies, the project team made a series of recommendations, all of which were implemented by September, 1977. These improvements included:

- *Parking meter management responsibilities consolidated.* Collection, counting, and maintenance responsibilities, which were previously handled by three different organizational units located in DOT and DFR, were placed under the direction of a parking administrator in DOT. This step was taken to provide the needed coordination, control, and accountability for these functions. As an added control measure, a new unit was established under the administrator with the responsibility for ensuring that all

Figure 01

INCREASE IN PARKING METER REVENUE



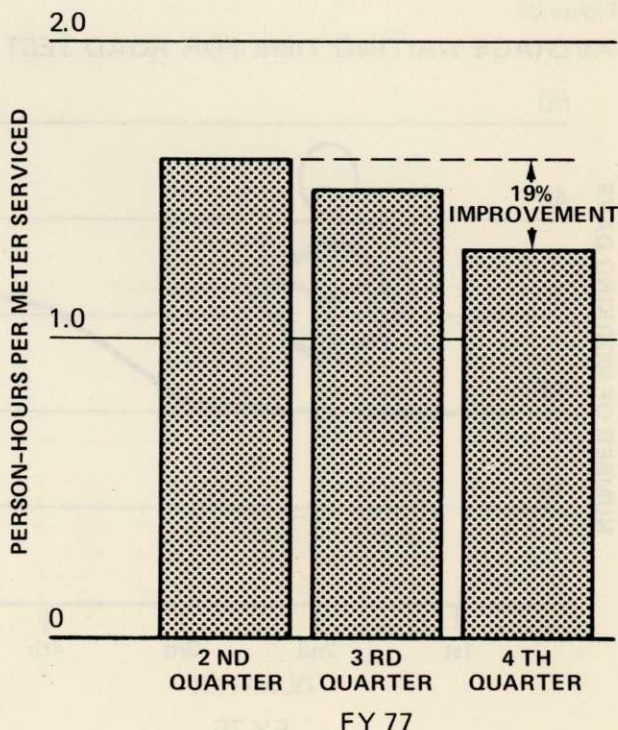
parking meter vault keys are stored securely and accounted for at all times. Keys are kept in a secured room in a safe to which only two persons have access. Security has been further enhanced by the establishment of a four-person security unit reporting to the Deputy Director of DOT and responsible for ensuring compliance with upgraded security procedures in collections, coin counting, and meter maintenance. The unit's activities include putting marked coins in meters and collection canisters and making certain that they are returned through the coin counting operation.

- *Collection system redesigned and collection responsibilities contracted out.* Under the new system, the City is divided into 59 collection routes, as opposed to 10 routes under the old system. Because the number of meters per route now averages 170, compared to 1,000 meters in the old system, it is possible to pinpoint revenue changes to small areas of the City so that security measures can be concentrated where needed. Moreover, collection canisters are now sealed and tagged by route number so that revenue yields for each route can be counted separately. As a result, DOT recently detected a motorist using slugs instead of coins in certain meters in one neighborhood and was able to refer the situation for successful police action. The security and efficiency of collections were further enhanced when DOT contracted out the collecting function to a private armored car company, effective October 1, 1976. To assure that proper security is maintained during the collection process, procedures were specified in the contract, including the requirement that the company remain in constant radio contact with the DOT security unit and that its employees wear uniforms and photo identification cards. Collections supervisors sign the keys out at the beginning of each day and return them at the end of the day. Collection routes are randomly assigned from day to day, and meter vault locks are changed periodically for added control.
- *Standard meter maintenance procedures established.* The project reorganized meter inspection and repair functions and established a new preventive maintenance program. The field repair crew was divided into three teams, each responsible for inspecting 3,000-4,000 meters in a specified area of the City each week. Meter mechanisms were outfitted with new devices to signal meter malfunctioning, and the teams were given responsibility for making repairs on the spot or replacing meters with rebuilt ones from the repair shop. As an added measure, the collection contractor was also instructed to report out-of-order meters so that repair teams

could be radio-dispatched to fix them. In addition to rebuilding meters, the repair shop began a program of cleaning, adjusting, and changing worn-out parts of all meters in the City. Meters are brought in by repair teams on a regular schedule which will allow all meters to receive preventive maintenance every three years. A one-hour per meter work standard was established for preventive maintenance activities, and, as seen in Figure 02, progress has been made in reaching that goal. The time required to service a meter declined from 1.6 hours in the Second Quarter of FY 77 to 1.3 hours in the Fourth Quarter, a 19% improvement in productivity. Furthermore, the number of meters malfunctioning has been reduced 90% so that on any given day only 100 out of the City's 10,700 meters are out of order.

- *Parking meter equipment and facilities upgraded.* To enhance security and efficiency of collection operations, 8,000 new meter vault locks were installed, and new collection canisters and carts were purchased. Moreover, the project team designed a more secure facility for the coin counting function, including locked-door access, television monitoring equipment, and one-way glass observation windows. Additionally, employees are required to wear pocketless uniforms. The purchase of a high-speed coin counter has doubled the speed at which coins

Figure 02
LESS TIME EXPENDED PER PARKING
METER SERVICED



can be counted. Repair shop layout was also improved, with separate and secure areas for servicing, cleaning, and storing meters.

- **Parking meter management information system implemented.** This system, consisting of seven separate reports, is designed to transmit revenue collection and productivity information to various managers and to provide an early warning device to identify any operational or security problems which may arise so that timely action can be taken. Revenue yields are projected for each route and actual collections reported by route on a daily and monthly basis. Other reports document the location and type of meter malfunctions, productivity in the repair shop, and changes in the meter locations. Data provided by this system, implemented in August, 1977, have already prompted DOT to shift the location of meters from low-yield to high-yield areas where commercial activity would benefit by greater parking turnover.

The changes made in parking meter operations have been documented in a draft operations manual due to be printed in January, 1978. This manual will contain all operational procedures and forms used in the system to ensure that the improvements made do not deteriorate over time. With these operational changes, DOT expects that parking meter revenues for FY 78 will reach \$3.4 million, 21% above FY 77 revenues and 162% above revenues in FY 75 before improvements were made.

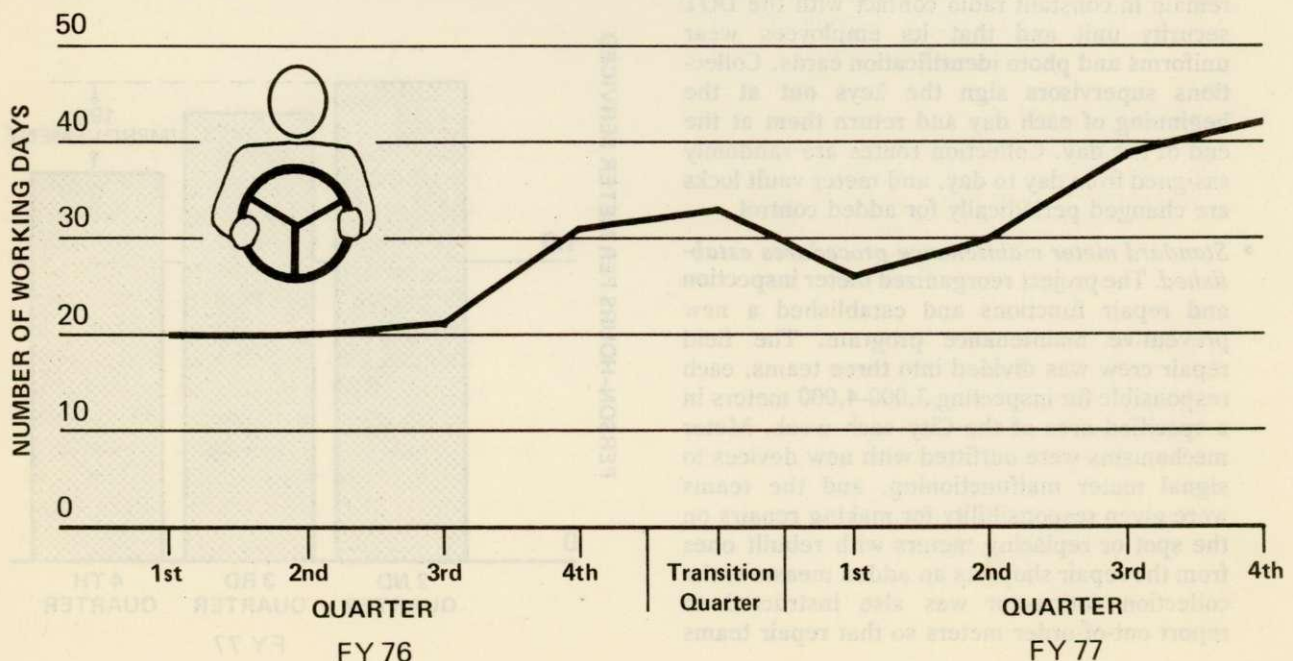
PERMIT CONTROL

The time citizens must wait for an appointment to take the road test portion of their driver's license examination continued to be the focus of management attention in the Permit Control program. This program issues District of Columbia operator's permits to residents who pass both written examinations and road tests. The former tests an applicant's knowledge of D.C. traffic laws, and the latter, driving ability. This program also administers the District's Point System to ensure that D.C. driver's permits are retained only by competent and safe drivers. The Point System provides for a driver's permit to be revoked after a driver has been cited for an excessive number of driver violations.

After PMS data identified that waiting time for a road test appointment had increased from an average of 20 working days during the first three quarters of FY 76 to 31 days during the Fourth Quarter and 33 days during the Transition Quarter (see Figure 03), DOT management transferred three employees to the Permit Control program. The number of road test examiners went from 10 to 13, and, as a result, waiting time decreased by 16% to an average of 26 days during the First Quarter of FY 77. However, due to attrition, the number of road test examiners had dropped back to 10 by the end of FY 77. As this attrition occurred, waiting time again increased gradually to 42 days by the Fourth Quarter of FY 77.

Figure 03

AVERAGE WAITING TIME FOR ROAD TEST APPOINTMENTS



Waiting time is a concern in this program because a learner's permit is valid for only 60 calendar days. Fifty-nine calendar days are consumed when a prospective new driver has to wait 42 working days for a road test appointment. Thus, if waiting time remains this high, some applicants may have only one chance to pass their road tests before the expiration of their learner's permits. This issue is presently being investigated by a special task force reviewing the organizational structure and procedures of all motor vehicle services, including Permit Control. In the meantime, to prevent waiting time from increasing further, program management will continue to redeploy any available staff on a temporary basis.

MOTOR VEHICLE CONTROL

Decreasing citizens' waiting time and increasing worker productivity are the objectives of a special project team which is working to improve vehicle registration and inspection operations. While administratively separate, both operations are affected by the March 31st expiration date for license tags.

The Motor Vehicle Registration operation processes new registrations for vehicles throughout the year and registration renewals—90% of the workload—during the six-week tag rush period. To handle the large volume of renewals, the Department hires temporary staff and redirects staff from vehicle inspection operations. For example, during the FY 77 tag rush, DOT issued some 240,000 registrations, which required the use of \$11,800 for overtime and temporary staff and the redirection of 27 employees from the inspection operation.

The Motor Vehicle Inspection operation conducts periodic safety inspections of public and private vehicles. In FY 77, 242,672 such vehicles were inspected. As noted above, during the annual license tag renewal period, inspection personnel are redirected to registration processing. This redirection occurs by closing one of the two inspection stations.

The Staggered Motor Vehicle Registration Act of 1976 was introduced by the Mayor and enacted by Council to enable DOT to spread the vehicle registration workload evenly throughout the year as one way of improving both registration and inspection operations. This and other alternatives will be evaluated during FY 78 on the bases of administrative feasibility, probable impact on the public, and cost. DOT plans to select one method for implementation during the 1979 registration renewal period.

CENTRAL MOTOR POOL

Ridership on the D.C. Government employee shuttle bus has more than doubled and costs per

passenger trip have been cut in half since an improved and expanded three-route system was initiated in April, 1977, (see Figures 04 and 05). In addition, drivers' productive time has been increased 14%, while expensive, centrally dispatched pool car service has been eliminated in the downtown area served by the shuttle bus routes. These improvements were the results of a productivity project effort begun in FY 76 and completed this year.

The Central Motor Pool has been providing transportation services since 1972 to D.C. employees who must visit other offices in the course of their work. Prior to the project, these services included:

- A shuttle bus system which operated five vans on a one-way circular route between 12 major District offices in the downtown area.
- A fleet of 14 radio-equipped pool cars which were centrally dispatched upon request.
- About 20 cars which were available to employees on a first-come, first-served basis for "drive-yourself" service.

Because of the high cost of the Motor Pool and frequent complaints concerning the reliability of the shuttle bus system and the availability of centrally dispatched cars, the Director of DOT requested OBMS assistance for a joint team effort to improve the efficiency and effectiveness of D.C. employee transportation.

The project team found that the shuttle bus system transported about 53,000 persons in FY 75, only 211 per working day. Some of the reasons for the low usage included:

- Mechanical breakdowns caused nearly 20% of the runs to be cancelled;
- The one-way route made round-trips inconvenient; and
- Buses stopped running before the end of the workday.

Similar analysis showed that 47,000 persons were transported by the centrally dispatched cars in FY 75, at an average per passenger cost of \$4.80. Like the shuttle bus service, these cars were underused. The number of passengers per car was only 10 to 15 per day, compared to private taxicabs which transport about 30 persons per day. Most of this underusage was determined to be inherent in the operations of the centrally dispatched car system. Because a limited population was served and transportation was provided to offices located throughout the District, drivers logged many hours deadheading from field offices to the downtown area or vice versa. At the same time, the limited fleet of cars could not handle peak demand periods which caused Motor Pool dispatchers to turn down nearly 20% of the requests for service. Misuse of the service was also a problem. Although centrally dispatched cars were not supposed to be used for trips totally within the

area served by the shuttle bus, the project team estimated that 25% to 30% of these car trips could have been made by shuttle bus. Another 10% of the trips were between buildings served by the shuttle bus and a cluster of buildings not far from the bus route.

In contrast to the shuttle bus and centrally dispatched car systems, the cost of the drive-yourself fleet was low. Drive-yourself cars were signed out to authorized users at the beginning of each workday, usually for the entire day. Because the total cost of operating the service averaged less than \$4.00 per vehicle-day, the project team focused attention on the shuttle bus and centrally dispatched car services.

Following the analysis of existing operations, alternative transportation systems for the downtown area were identified and evaluated. These alternatives included using mass transportation and improving the shuttle bus system. For transportation needs outside the downtown area, mass transportation, taxicabs, and increased use of drive-yourself vehicles were considered as alternatives. The proposed alternatives were compared on the bases of cost, travel time, feasibility, and ease of administrative control.

As a result of this analysis, the project team determined that the existing shuttle bus system could be expanded and improved significantly, thereby increasing ridership, lowering per passenger costs, minimizing travel time, and creating an operation which could be easily managed. Exclusive dependence on mass transportation was ruled out, because more travel time would be consumed since

Metrobuses do not make direct door-to-door service between most City offices. Also, there was no administratively feasible way to control the cost of using public buses.

To improve and expand shuttle bus services, the project team designed three new routes which came within one block of 16 major District office buildings in the downtown area while avoiding heavily trafficked streets and intersections with long lights. Each route was labeled by a color code: red, green, or blue, for ease of identification. Shuttle bus scheduling was also revised. The hours of service were extended to cover all of the normal working day, and buses were scheduled about 15 minutes apart, while drivers were not required to drive more than an hour without a break.

The following benefits were achieved with the implementation of new routes and schedules in April, 1977:

- Ridership during the last six months is up by over 6,000 passengers per month to 10,894 in September, 1977.
- Costs per passenger trip have declined from an average of \$2.86 during the first half of FY 77 to \$1.45 in the second half.
- Maximum employee travel time has been reduced from 35 to 30 minutes, while four more District office buildings are covered than previously.

Figure 04
INCREASED SHUTTLE BUS USAGE

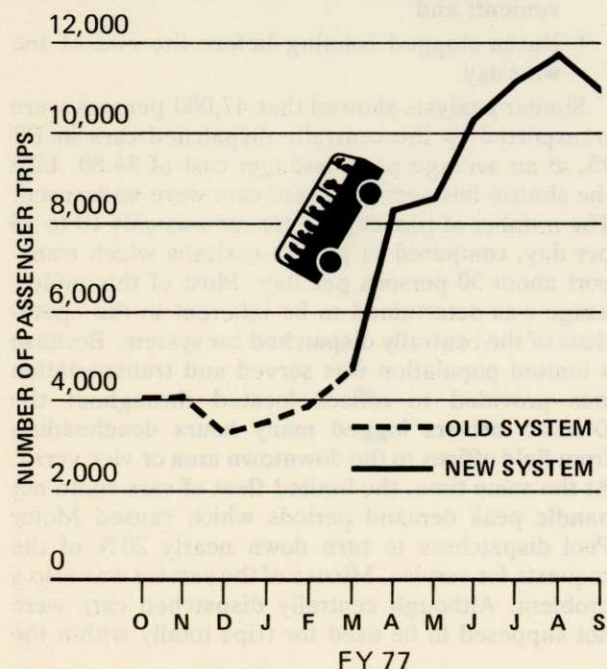
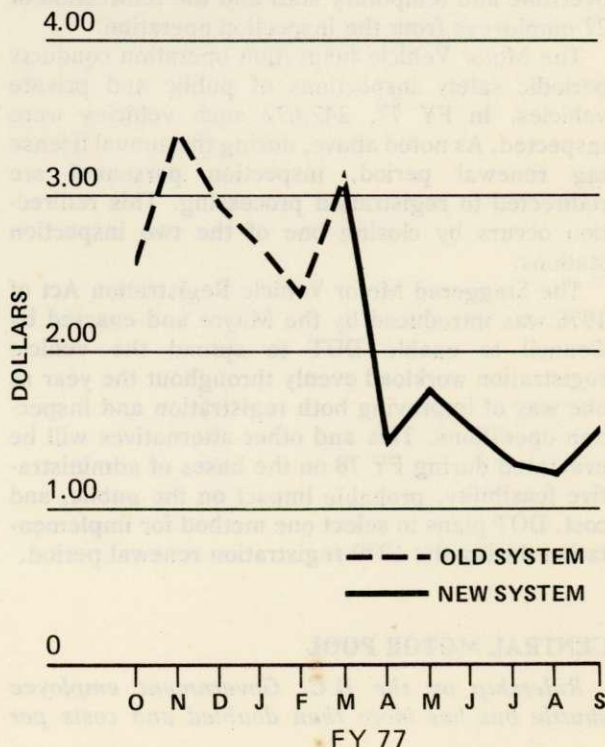


Figure 05
REDUCED SHUTTLE BUS COST
PER PASSENGER TRIP



- Drivers are scheduled to drive during 85% of their working day, a 14% increase over the previous schedule.
- Management of the operation is improved and simplified, because no lunch-time replacements are needed for drivers and each driver stays with one bus and is held accountable for its condition.

In addition to the new route design and schedule, DOT obtained eight new 12-passenger vans for the system. They were brightly painted, air-conditioned, and color-coded as to route. The entire system was marketed through a full-page, multi-color centerfold in the District employees' newspaper. Three thousand copies of the centerfold were printed and distributed on the buses. Drivers were trained on specific routes and briefed on the entire system so that they could inform riders about any aspect of the new system's operation. Moreover, color-coded signs were installed at all bus stops, and bus route maps were posted in D.C. office buildings near each stop.

The team determined that an expanded shuttle bus service would decrease, but not eliminate, the need for centrally dispatched cars, which were used throughout the District. As a result of the new shuttle bus service, the number of employees requiring centrally dispatched cars was expected to be only 28,000 per year, 40% fewer than the 47,000 previously transported. Several alternative ways of serving these 28,000 passengers were considered. Exclusive reliance on mass transportation was ruled out, because service to Government offices outside downtown was not sufficiently frequent or direct to meet District employees' needs. Increasing the number of drive-yourself vehicles was determined to be impractical because of parking, administrative, and control problems. Therefore, a reduced centrally dispatched car service has been maintained. As of the end of FY 77, the number of full time drivers had been reduced from 12 to six. Three drivers were needed as full time shuttle bus operators in the expanded system, two voluntarily resigned, and one was reassigned to more productive work.

In addition to these efforts, the project team developed a set of performance measures and implemented monthly and quarterly reporting through PMS. Monitoring will assure that the Motor Pool continues to provide effective employee transportation at reduced costs.

TREES AND LANDSCAPING

Measures being added to PMS will monitor the output and productivity of DOT staff and outside contractors. The Trees and Landscaping program planted 1,996 new trees, sprayed 41,385 trees, and trimmed 9,715 trees during FY 77. Below freezing temperatures in the height of the tree planting and

spraying season prevented the program from meeting targets in these areas. In fact, 1,004 fewer trees were planted and 13,615 fewer trees were sprayed than planned. The Trees and Landscaping program is responsible for maintaining more than 100,000 trees, approximately 700 acres of landscaped public area along freeways, and 162 small park areas at street intersections. While all work related to tree trimming and spraying is carried out by departmental forces, some tree planting is contracted out to private companies.

To obtain a comprehensive picture of this program in FY 78, PMS will monitor tree maintenance and landscaping efforts by both DOT and outside contractors. PMS data on tree planting will include the number of trees planted by departmental forces and by contractors and the average number of manhours per tree planted by departmental forces. Productivity data on contractor tree planting is already available from the contract process. Departmental tree maintenance operations will also be measured through PMS in terms of the average number of trees sprayed per manhour and the average manhours per tree trimmed.

STREET MAINTENANCE

During FY 77, a system for rating street surface conditions was designed and tested. Carried out as part of the Neighborhood Services Improvement Project, described elsewhere in this volume, the procedure involves an observer's sitting in a slowly-moving vehicle, monitoring what the vehicle passes over, and writing down standard codes for various kinds of surface defects: cracks, potholes, bumps, or dips. Data from these observations are then analyzed so that each street can be rated as well maintained, less well maintained, and poorly maintained. The system was tested in four different parts of the City in February and March, 1977, and produced reliable ratings of street surface conditions which could be used to direct Street Maintenance crews to areas where asphalt repair work most needs to be done. The system would be most useful for identifying problems in residential areas, where complaints now are the chief source of information. One rating could be made in the spring to check the extent of winter damage from freezing and thawing, and another rating might be made in the autumn to determine what had been achieved in repair and resurfacing over the course of the warm weather work season. These and other potential uses of a street surface rating system will be developed and reviewed jointly by DOT and OBMS personnel in FY 78.

To monitor DOT street maintenance productivity, four new performance measures were developed and tested in FY 77. Previously, PMS had monitored only permanent street repair and resurfacing work, which

is contracted out to private companies by DOT. Data showed that, as a result of the priority placed on completing needed permanent repairs, 54,326 square yards of road surface were patched, 50% more than target and 58% more than in FY 76.

As a result of development work in FY 77, the productivity of DOT's in-house street maintenance crews will be measured in FY 78. The DOT labor force of 94 asphalt workers is responsible for emergency and temporary repairs to streets prior to permanent repair and for all repairs to alleys and sidewalks. The new measures will provide productivity data on the number of manhours per ton of asphalt used for repairs and the total cost per ton of asphalt used for repairs. This information will greatly improve management's ability to plan, schedule, and monitor its street maintenance labor force and to compare productivity with that of similar jurisdictions.

STREET LIGHTING

During FY 77, DOT management started a comprehensive re-engineering program for optimum spacing and location of street lights. DOT has primary responsibility for planning and coordinating the street lighting activities so as to provide an acceptable standard of light in the District. DOT contracts with the Potomac Electric Power Company (PEPCO) to provide the energy and maintenance services needed for lights on District streets and highways.

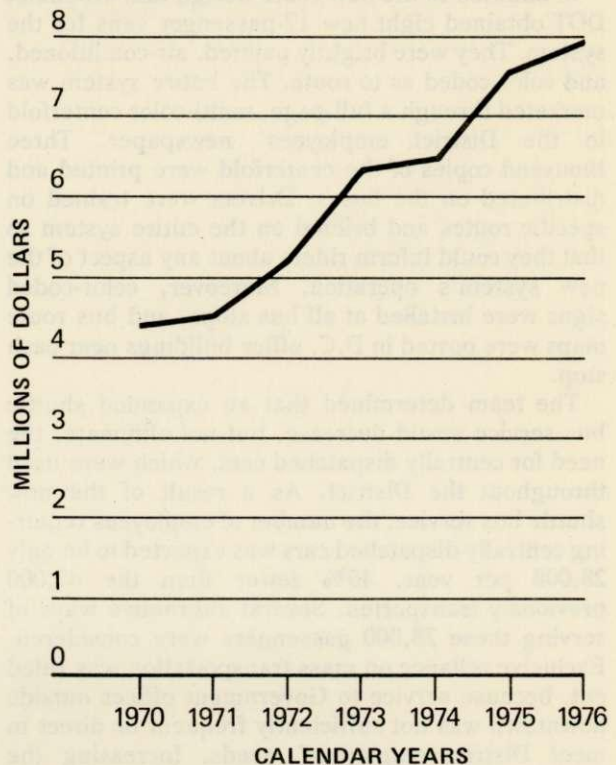
In January, 1970, DOT initiated a high-intensity street lighting program as a nighttime crime deterrent measure. At that time, the goal was to convert a large number of mercury vapor and incandescent lights to sodium vapor. The situation did not permit DOT engineers to undertake a comprehensive re-engineering program for optimum pole spacing and location, since it would have involved extensive and time-consuming reconstruction work. In addition, the program was carried out at a time when energy consumption was not a major cost factor. Thus, high-intensity sodium vapor lamps replaced the lower intensity mercury vapor and incandescent lamps on a one-to-one basis. The result was high-intensity lamps spaced closer than necessary for adequate lighting.

As Figure 06 shows, street lighting costs have increased from \$2.9 million in 1970 to \$7.9 million in 1976, an increase of 172%. The higher costs are basically the result of four rate increases and higher maintenance costs for the new sodium vapor lights. In FY 77, DOT developed an energy conservation program in cooperation with the Metropolitan Police Department and citizen groups. Some 2,070 lights were identified as nonessential street lights, primarily in nonresidential areas. It was determined that removing these lights could save 2.5 million

kilowatt-hours of energy, resulting in annual savings of \$50,000 in energy costs and another \$225,000 in maintenance costs. The safety and security of pedestrians and motorists will not be adversely affected by this conservation program. The program started in late FY 77 and is expected to be completed in FY 78.

Figure 06

INCREASE IN STREET LIGHTING COSTS



SIGNS AND MARKINGS

In FY 77, the Signs and Markings program painted 723 miles of traffic lane markings, 16% more than in FY 76, because fewer program resources were directed toward Bicentennial-related activities. The program is responsible for painting pavement markings; operating a sign shop to fabricate traffic, street designation, and special signs; and installing the signs. During FY 76, the miles of traffic lane markings painted had declined 15%, because as many as 8 people—19% of total staff resources—were directed to producing and installing signs related to the Bicentennial celebration. Once these activities lessened, the program was able to resume its normal level of production in painting pavement markings.

In FY 78, productivity measures in pavement marking will be explored. Measurement of the number of lane miles which can be painted per manhour would be useful for scheduling the workload.

TRAFFIC SIGNALS

Plans will be developed for an improved preventive maintenance program to reverse the upward trends in traffic signal malfunctions and downtime. The Traffic Signals program, which is responsible for 24-hour, 7 day-a-week, emergency repair and maintenance service for all traffic signals and controls, reported 8,554 signal malfunctions in FY 77, 20% more than in FY 76 and 49% more than in FY 75 (see Figure 07). With a larger number of signals needing repair, the amount of time a traffic signal remained out-of-order after the malfunction was reported increased 20% between FY 76 and FY 77, from 61 to 75 minutes (see Figure 08). The continued increase in emergency repair calls can be attributed to aging equipment, lack of preventive maintenance, and severe winter weather conditions during FY 77.

The preventive maintenance program will require checking and servicing traffic signals and controls in the field on a regular basis, rather than waiting until a malfunction is reported. When the program is fully implemented, it is expected to increase greatly the reliability of traffic signals, resulting in improved safety of pedestrians and motorists.

Figure 07

INCREASE IN TRAFFIC SIGNAL MALFUNCTIONS

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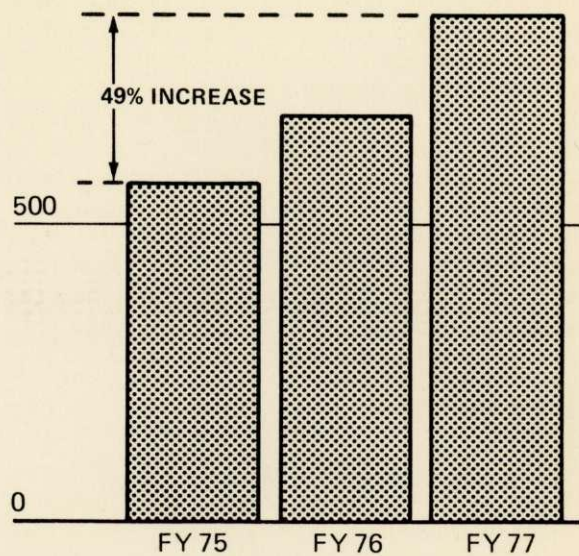


Figure 08

INCREASE IN AVERAGE DOWNTIME FOR TRAFFIC SIGNAL MALFUNCTIONS

