

A COMPARATIVE ANALYSIS OF SELECTED
REVENUE COLLECTION OPTIONS

Southern California Rapid Transit District
Operations General Department

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Executive Summary

The present fare subsidization under Proposition A will be eliminated or greatly reduced after July 1985. This will necessitate implementation of a fare structure which is likely to generate an increase in currency fare payments. The drop-type farebox, currently utilized at the District, cannot accept and process large quantities of currency in a cost-effective manner. Installation of a new farebox system equipped with components which can accept unfolded currency should significantly reduce the costs associated with processing dollar bills. Such a farebox system should also result in recovery of additional revenues due to the District through the equipment's ability to electronically verify full patron fare payment.

The purpose of the following study is two-fold. First, this report will examine several selected farebox procurement options. And, second, it will identify potential departmental and procedural changes which will result from the procurement of a new farebox system. The first option examined involves outfitting the active fleet with fully registering electronic fareboxes. The key features of this type of equipment are its ability to count individual fare drops, to accept unfolded currency and to gather passenger and revenue data. The annual operating and amortized capital costs for this option are projected to be \$3.6 million.

The second option involves equipping the active fleet with non-registering electronic fareboxes which are able to count individual fare drops and to accept unfolded currency. These fareboxes may be upgraded to fully registering equipment at a later date. The annual operating and amortized capital costs for this option are projected to be \$2.4 million.

The third option involves a combination of the two previous choices. Under this option, the majority of the fleet would be outfitted with non-registering fareboxes while the remainder would be equipped with fully registering fareboxes. This option will enable the District to gather passenger and revenue data on selected routes without incurring the higher capital and maintenance costs associated with an entire fleet of registering fareboxes. The annual operating and amortized capital costs for this option are projected to be \$2.6 million each year.

The final option examined involves continuation of the current drop-type farebox system. The annual operating costs for this option are projected at \$855,000.

Installation of a new farebox system would result in some procedural modifications. In addition, a labor intensive preventive maintenance program will be necessary for this equipment. However, a thorough planning effort should alleviate any transitional difficulties.

I. PURPOSE OF STUDY

During fiscal year 1980-1981, when the District had a base fare plus transfer charge equaling one dollar, approximately \$2.2 million was spent to process the currency fares collected from bus patrons. Lost revenue from patron underpayment on buses, during the same time span, was estimated at \$4.8 million. By combining those two figures, it can be estimated that the District faces potential annual unrealizable revenue of around \$7 million or more if fares are collected with the current equipment after July 1985. At that time, the present fare subsidization will be eliminated or greatly reduced, and currency fare payments will be increased. Installation of a new farebox system equipped with components that enable verification of full patron fare payment and which hold unfolded currency should significantly ameliorate the amount of unrecovered District revenues.

A series of reports by the Operations General Department addressed the topic of revenue collection. The first report entitled, "An Analysis of Revenue Collection Costs" presented a description of revenue collection and processing at the District. The second study, "Revenue Collection Alternatives for Cash Fare Payment and Monthly Passes" identified several issue areas related to fare collection which required further study. The primary issue areas identified as being of greatest concern to the District were the verification of full cash fare payments from bus riders and the costs associated with the processing of currency fare payments. The last report, entitled "An Inventory of Revenue Collection Equipment", described farebox systems available to the transit industry. The study also identified three equipment procurement options which were felt to best meet the predicted District needs over the next decade. This current study evaluates those three options in greater detail as well as the alternative of continuing the District's present revenue collection system.

This study is designed to provide an overview of the benefits and costs associated with the four farebox alternatives. The study also defines the degree and the types of impact that each of the proposed alternatives would have upon the District if it were implemented. In this way, management may take appropriate action prior to the discontinuance of the Prop A fare subsidy.

II. METHODOLOGY

The evaluations contained in this study are based on research conducted by District staff, reports from other transit agencies, equipment performance test results, and information provided by manufacturers. Electronic fareboxes have only recently been introduced into the transit industry. This has severely limited the availability of in-service performance data. Thus, it has been necessary to make certain projections based upon the best available information.

III. DESCRIPTION OF EACH FAREBOX EQUIPMENT PROCUREMENT ALTERNATIVE

The previous report "An Inventory of Revenue Collection Equipment", critiqued the various farebox systems available to the transit industry against a set of District needs and specifications. As a result of the review, it was determined that the following four equipment procurement options should be examined in greater detail.

1. Registering Farebox Option

The first equipment option presented for consideration involves outfitting the active fleet (approximately 2500 buses) with registering fareboxes. The capital investment required for this option is approximately \$20 million.

The registering farebox was introduced to the transit industry in 1974 and the key features are its ability to count individual fare drops, to gather cumulative fare and passenger information, and to accept and store flat, unfolded dollar bills in a separate cashbox chamber. These features are intended to lower revenue losses associated with patron fare underpayment, to eliminate the manual and time consuming task of gathering passenger information, and to reduce the cost of processing currency.

The components that enable the farebox to perform the functions of counting and data storage are sophisticated and intricate. They require greater preventive and on-going maintenance efforts than the simple drop-type farebox currently in use at the District. This maintenance effort would require 23 mechanics for an annual cost of approximately \$870,000. The annual cost for spare parts is projected to be \$690,000. Thus, total operating costs for this option will be around \$1.6 million per annum.

2. Non-Registering (Counting) Farebox Option

A second option for consideration involves equipping the active bus fleet with non-registering fareboxes. The capital investment required for this option is approximately \$13 million.

The non-registering electronic farebox was introduced to the transit industry in 1982 and the key features of this farebox are its ability to accept unfolded currency, count individual fare transactions, and its capability of being upgraded to fully registering fareboxes at a later date. While this type of farebox can count individual fare payments, it does not have the data gathering feature and the complex registering components of the more sophisticated fully registering farebox.

Maintenance efforts required for this type of farebox are expected to be lower than for a registering farebox due to their simpler componentry. However, they would exceed the costs associated with maintaining the District's current system. This maintenance effort would require 18.5 mechanics for an annual cost of about \$700,000. The annual cost for spare parts is projected to be \$444,000. Thus, total operating costs for this option will be \$1.1 million per annum.

3. Mixed Procurement Option

A third option for a District revenue collection system involves a combination of the two previous choices. Under this third option, the majority of the bus fleet would be outfitted with non-registering fareboxes and the remainder of the buses would be outfitted with fully registering fareboxes. The capital investment required for this option is \$14 million.

The non-registering fareboxes will count individual fare drops and accept dollar bills, and may be upgraded to fully registering boxes. On the balance of the fleet, fully registering fareboxes would be installed with the intent of utilizing registering equipped buses for data collection as needed. Buses equipped with registering fareboxes could be assigned

to lines needing passenger and fare data on a rotating, on-going or as-needed basis. This alternative has the advantage of giving the District the means to gather passenger and fare information without incurring the higher maintenance and capital investment costs associated with an entire fleet of registering fareboxes.

The maintenance effort for this option would require 18.6 mechanics for an annual cost of \$705,000. The annual cost of spare parts is projected to be \$478,000. Thus, total operating costs will be \$1.2 million per annum.

4. Present System

A final option for consideration involves continuation of the current drop-type farebox system. Under this option, strengthening of the Central Cash Counting facility and intensified marketing efforts would be necessary in light of the expected increase of cash fares once the Proposition A fare subsidy ends in July 1985.

Maintenance of the current system requires 10 mechanics for an annual cost of \$378,000. The annual cost of spare parts is about \$477,000. Thus total operating costs for this option are \$855,000.

IV. IMPACTS OF A NEW REVENUE COLLECTION SYSTEM UPON DISTRICT OPERATIONS

The following section identifies the departments linked to the revenue collection process and a discussion of how those departments would be impacted if a new farebox system were installed. Under each departmental heading is a summary of the changes which may result from the installation of a new revenue collection system. It can be assumed that regardless of the type of electronic farebox selected, these changes would occur. Retention of the current system would, of course, not result in these impacts.

MAINTENANCE AND EQUIPMENT DEPARTMENT

Of all the units within the District, the Maintenance Department is expected to experience the greatest impact if a new farebox system were implemented. The realm of the Maintenance Department's functions is

broad and extends to all operating divisions as well as to the main farebox repair facility at Division 4. The farebox vaulting, repair, preventive maintenance and installation functions all fall under the responsibility of that department.

Vaulting

The construction of permanent vaulting stations will be required at the nine older divisions as well as the purchase and installation of "Master" cash receptacles. Receptacles, not individual cashboxes, will be transported to the Central Cash Counting Office. Master receptacles will greatly reduce the number of cashboxes needed and eliminate the procedure of moving individual cashboxes to the Central Cash Counting Office. Procedures for vaulting will have to be modified to accommodate the new facility arrangements.

Farebox Repairs

A registering type of farebox is expected to have a greater rate of repair needs than the current drop boxes due to the intricate nature of the registering components. The distinguishing factors between the registering and non-registering fareboxes will be the number of mechanics needed to perform repairs, road calls and parts inventory. The current procedure of performing all farebox repairs at a central location will continue.

The existing job description for farebox mechanics will have to be altered to reflect the additional tasks required to conduct a new preventive maintenance program. It is also anticipated that farebox mechanic skill requirements will have to be upgraded to provide personnel capable of working on solid state electronic equipment. Additionally, the Maintenance Department may well wish to establish a roving farebox crew to address in-service farebox failures occurring in the Central Business District area.

The technology of the more sophisticated components may dictate that Telecommunications Department personnel play a major role in repairs. Whether the facility remains under direct supervision of maintenance management at the Central Maintenance Facility or is placed in Telecommunications, consideration must be given to providing sufficient space for conducting repair work.

Preventive Maintenance

The registering components appear to be sensitive to environmental factors, and certain parts are prone to wear out faster than others. For example, during the cyclone vacuuming step of bus cleaning, fareboxes may need to be covered for protection from flying dust particles. Dust particles can easily become embedded in the electrical components, leading to malfunctions. Time allotments for cleaning buses may have to be adjusted to allow for placing and removing hoods if this is found to be necessary. Provisions for purchasing and storing farebox "hoods" may also have to be made. In-service test results may determine the need for such hoods. All of the suggested farebox options will require a strong preventive maintenance program to insure proper, reliable in-service operation.

Farebox Installation

The Maintenance Department will have to work with the contractor to develop a time schedule for installing fareboxes. This planning is important for minimizing initial service disruptions. Contract provisions with the vendor should include installation supervision by their trained personnel. The District will also have to make arrangements to have qualified personnel inspect and accept installed equipment.

ACCOUNTING AND FISCAL DEPARTMENT

Sorting and Counting Bus Fare Revenue

The Accounting Department's primary involvement with the revenue collection process is the Central Cash Counting Office. Within this facility, bus fares are received from the operating divisions, sorted, counted and prepared for delivery to the District's commercial bank. Improved efficiency within the facility will result from the introduction of a new revenue collection system. The expected improvements are attributable to the utilization of master cash vaults and to the separation of bills and coins. Conversion to a master cash vault system will require less personnel and time to complete this task. However, the physical layout of the cash counting facility may have to be altered to accommodate the master cash vaults.

A previous study on cash counting costs projecting a dollar base fare showed that manpower requirements of up to 87 positions were needed for fare processing. This is more than double the projected personnel requirements, 37 positions, under a farebox system that sorts dollar bills.

Historically, the cash counting facility has operated with two eight hour shifts in order to count and process bus revenue collected under an \$.85 base fare and a \$.15 transfer structure. Eliminating the need to unfold bills, and other time saving benefits associated with a new system, should enable the cash counting facility to completely count the daily bus revenue in one shift.

Further, the internal procedures of vault delivery, personnel and management manuals, and work flow will have to be altered to reflect changes resulting from the introduction of a new farebox system.

TRANSPORTATION DEPARTMENT

Operator Training

Bus operators will have the most frequent interaction with the new fareboxes and must be able to answer the public's inquiries until the farebox becomes a familiar object. Thus, a training program will have to be designed, possibly with vendor assistance, for bus operators. Operators should be exposed to the operating aspects of the equipment, how to resolve anticipated problems, and how to handle the public's reaction to the new equipment. The revised farebox training program should also be incorporated into the new operator training program.

If the District elects to equip some or all of the buses with electronic registering fareboxes, the operator's role and expectations concerning data entry will have to be defined. Finally, the operator's procedural manual will have to be altered to reflect the changes produced by the fareboxes.

MARKETING AND COMMUNICATIONS DEPARTMENT

Pre-Introductory Marketing Campaign For Patrons

The Marketing Department will have the responsibility of educating patrons regarding the new fareboxes and the new fare structure that will be effective July, 1985. A prerequisite to a successful farebox

implementation program will be a thorough marketing campaign on the proper use of the new system. The Marketing Department might design a program to include internal or external bus ads, patron brochures, news releases, and media coverage of the new system via a press conference.

Timing and coordinating such a campaign well in advance of the farebox installation will be important. A marketing goal might be acquainting the patrons with the new system to such a degree that the transition from the old system will not cause unnecessary boarding delays.

MANAGEMENT INFORMATION SYSTEMS DEPARTMENT

Data Processing

Should the District elect to equip some or all of the buses with electronic registering fareboxes, the Management Information Systems Department (M.I.S.) will need to evaluate the data implications of the new farebox system. M.I.S. should be able to determine whether or not the data retrieved from electronic registering fareboxes can interface with one of the District's data bases. If registering fareboxes are utilized, M.I.S. will have to enter and process data retrieved from fareboxes.

In addition, to maximize the benefit of the data gathering feature, M.I.S. staff and the users should discuss the types of data available as well as the quantity of data that may be useful to these groups. This will ensure the greatest utilization of the data.

EQUIPMENT ENGINEERING DEPARTMENT

Pre-Installation Tasks

The Equipment Engineering Department will oversee the tasks involved with bidding, testing, selection and acceptance of a new farebox system. Technical assistance and evaluation of equipment will be conducted by the Equipment Engineering staff.

Equipment Engineering will be responsible for defining equipment specification, the pre-test procedures of selected equipment, testing equipment and evaluating the test results. Equipment Engineering, with the support of the Purchasing Department, will advertise for vendor bids, and will be instrumental in awarding a contract to a selected vendor. The delivery, inspection and acceptance of

the final farebox equipment will also be overseen by Equipment Engineering. In addition, administration and development of a warranty program will fall under the auspices of this department.

BUS FACILITIES ENGINEERING DEPARTMENT

Modifying Bus Facilities

Should any modifications be required at the operating divisions to accommodate a new farebox system, the Bus Facilities Engineering Department will be responsible for instigating the necessary tasks. The most probable change to occur would be the construction of permanent vaulting stations at the entrance to the bus yards. Actual specifications would depend on the type of vaulting system selected.

V. BENEFIT COST ANALYSIS

The capital investment and projected operating costs of a new farebox system should be off-set by their potential for long-term revenue increase and the expected reduction in manpower costs needed to process revenue. Table I summarizes the benefits and costs associated with each farebox procurement option. This table compares each new farebox procurement option to the current farebox system. Appendices A through D outline the assumptions and calculations used to produce Table 1.

Registering and non-registering electronic fareboxes are both equipped with features which enable verification of full patron fare payment and acceptance of unfolded currency. These cost saving devices are projected to recover approximately \$7 million annually for the District. The key difference between the two fareboxes is that the registering farebox is capable of tabulating passenger information while the non-registering farebox is not. However, the non-registering farebox may be upgraded with the data gathering and storage capability at a later date for an approximate cost of \$500 per unit.

The operating cost for the District's current farebox system, including 10 mechanics and spare parts, is around \$855,000. The unrecovered revenue is estimated at \$7 million. Thus, the total annual cost for the current system is \$7,855,000.

The amortized capital investment required for Option 1, fully registering fareboxes, is approximately \$2 million. The annual operating cost, including 13 additional mechanics and spare parts, is estimated to be \$1.6 million. Thus, the net benefit of Option 1 is projected to be \$4.3 million.

The amortized capital investment required for Option 2, non-registering fareboxes, is approximately \$1.3 million. The operating cost, including 8.5 additional mechanics and spare parts, is estimated to be \$1.1 million. Thus, the net benefit of Option 2 is projected to be \$5.4 million.

The amortized capital investment required for Option 3, farebox mix, is approximately \$1.4 million. The operating cost, including 8.6 additional mechanics and spare parts, is estimated to be \$1.2 million. Thus, the net benefit of Option 3 is projected to be \$5.3 million.

VI. CONCLUSION

There are both positive and negative aspects associated with changing the District's entire farebox system. Initial changes will require modifications in many departmental procedures.

The positive benefits of a new farebox system include increased farebox revenue, improved revenue processing efficiency, and data gathering capabilities. The new fareboxes should greatly reduce operator confrontation with patrons when verifying fare drops.

Many problems associated with a new farebox system will be temporary, yet unavoidable and they should lessen over time. Service disruptions during the installation program will be a temporary inconvenience, however, increased road call frequency due to farebox malfunctions may be a continuing reality. In addition, preventive maintenance efforts required by a new system will necessitate a significant increase over the current system's requirements. A strong preparatory program provided by the Marketing and Transportation Departments should help employees and patrons become acquainted with a new system, and should reduce some transitional problems.

TABLE 1
BENEFIT COST ANALYSIS
Farebox Procurement Options

Annual Costs	<u>Registering-Option 1</u>			<u>Non-Registering-Option 2</u>			<u>Farebox Mix-Option 3</u>		
	Current System	Option 1	Savings	Current System	Option 2	Savings	Current System	Option 3	Savings
Amortized Capital Costs	0	\$1,979,600	<\$1,979,600>	0	\$1,299,600	<\$1,299,600>	0	\$1,388,400	<\$1,388,400>
Operating Costs									
- Labor	\$ 378,000	\$ 870,000	<\$ 492,000>	\$ 378,000	\$ 700,000	<\$ 322,000>	\$ 378,000	\$ 705,000	<\$ 327,000>
- Materials & Supplies	\$ 477,000	\$ 690,000	<\$ 213,000>	\$ 477,000	\$ 444,000	\$ 33,000	\$ 477,000	\$ 478,000	<\$ 1,000>
Lost Revenue	\$7,000,000	0	\$7,000,000	\$7,000,000	0	\$7,000,000	\$7,000,000	0	\$7,000,000
Total Annual Cost	\$7,855,000	\$3,539,600		\$7,855,000	\$2,443,600		\$7,855,000	\$2,571,400	
Net Benefit			\$4,315,400			\$5,411,400			\$5,283,600

APPENDIX A

Capital Cost For Farebox Options

<u>Farebox Equipment Costs</u>	<u>Registering</u>	<u>Non- Registering</u>	<u>Mix</u>	<u>Current</u>
Active Fleet	\$9,721,000.00	\$6,247,500.00	*\$6,538,000.00	-0-
Reserve Fleet	1,828,000.00	1,175,000.00	1,175,000.00	-0-
Spare Units	1,155,000.00	742,500.00	771,000.00	-0-
Receiver Units	720,000.00	720,000.00	720,000.00	-0-
Data Process- ing Units (For Registering Fareboxes Only)	378,000.00	N/A	360,000.00	-0-
Sub-Total	\$13,802,000.00	\$8,885,000.00	\$9,565,000.00	-0-
<u>Installation Costs</u>	\$ 447,000.00	\$ 447,000.00	\$ 447,000.00	-0-
<u>Miscellaneous Costs</u>				
Initial Spare Parts Inventory	1,380,200.00	888,500.00	956,500.00	-0-
Shipping	163,000.00	163,000.00	163,000.00	-0-

*The cost of 209 registering fareboxes that equates the number of buses on the District's heaviest line plus, the cost of 2290 non-registering fareboxes.

	<u>Registering</u>	<u>Non-Registering</u>	<u>Mix</u>	<u>Current</u>
10% Annual Inflation	\$1,579,220.00	\$1,094,150.00	\$1,113,150.00	-0-
Sales Tax	991,650.00	643,200.00	688,700.00	-0-
General and Administrative Costs	54,000.00	37,200.00	37,800.00	-0-
Contingency Funds	1,579,220.00	1,038,350.00	1,113,150.00	-0-
Sub-Total	\$19,996,293.00	\$13,196,407.00	\$14,084,300.00	-0-
Less Value of Sold Fareboxes	200,000.00	200,000.00	200,000.00	-0-
<u>TOTALS</u>	<u>\$19,796,293.00</u>	<u>\$12,996,407.00</u>	<u>\$13,884,300.00</u>	-0-
Annual Amortized Capital Costs Over A Ten Year Period	\$ 1,979,629.00	\$ 1,299,640.00	\$ 1,388,430.00	-0-

APPENDIX B

Computational Basis of Capital Costs

Farebox Costs

Active Fleet	= 2499 Buses (Cost per Unit)
Reserve Fleet	= 470 Buses (Cost per Unit)
Spare Units	= 10% (Reserve & Active Fleet) (Cost per Unit)
Receiver Units	= (\$20,000 Cost per Unit) (36) 36 = 3 Units for Each of the 12 Divisions

Installation Costs

Labor	= \$75.00/Unit (Reserve and Active Fleet)
Hardware	= \$25.00/Unit (Reserve and Active Fleet)
Facilities Modifications	= \$20,000.00/Unit (9 Divisions) (For the older divisions utilizing temporary vaulting stations)
Initial Spare Parts Inventory	= 10% (Farebox costs)
Shipping	= \$50.00/Unit
Annual Inflation	= 10% (Farebox Cost + Labor + Hardware + Facilities + Spare Parts Inventory + Shipping)
Sales Tax	= 65% (Fareboxes + Hardware + Spare Parts Inventory)
Contingency Funds	= 10% (Active + reserve fleet + spare units + receiver units + labor + hardware + facilities modifications + initial spare parts inventory + shipping)

Installation Costs (Continued)

General and
Administrative Costs = 34% (Farebox + Labor + Hardware
+ Facilities + Spare Parts +
Shipping)

Recoverable Value
of Old Fareboxes

Salvageable Value = 2/3 (3,000 Boxes) (\$100.00)

APPENDIX C

Calculations For Annual Maintenance Manpower

Hourly Wage
(Mechanic "A") = \$13.73 per hour

Fringe Benefits = 32% (hourly wage)

Total Hourly
Manpower Cost = Hourly wage + fringe benefits

Annual Cost
Per Mechanic = 2080 hours (total hourly manpower costs)

Total Hourly
Manpower Cost = \$13.73 + \$4.39 = \$18.12

Annual Cost
Per Mechanic = 2080 hours (18.12) = \$37,834.56
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APPENDIX D
Maintenance Needs and Costs For Each
Farebox Option

Cost and needs estimates for registering and non-registering fareboxes are based on performance data provided by other transit agencies, manufacturer information, and projections compiled by District engineering personnel.

Registering Farebox Option

Mechanic to farebox ratio	1:150
Daily road call frequency	1 for every 50 boxes in service.
Required time per road call	One hour
Fareboxes	2749*
Annual cost per mechanic	\$37,834.56

2749 Buses = 18 mechanics for on-going maintenance
150

2000 Daily Assigned Buses = 40 road calls a day
50 Daily Road Calls @ one hour each

40 Road Call Hours = 5 mechanics for road calls
8 Hours Per Shift

5 mechanics + 18 mechanics = 23 total mechanics needed

23 (\$37,834.56) = \$870,194.88 total annual manpower cost.

Non-Registering Farebox Option

Mechanic to farebox ratio	1:175
Daily road call frequency	1 for every 100 buses in service
Required time per road call	One hour
Fareboxes	2749*
Annual cost per mechanic	\$37,834.56

2749 Buses = 16 mechanics for on-going maintenance
175

2000 Daily Assigned Buses = 20 road calls a day
100 Daily Road Calls @ one hour each

*2499 + 10% Spares

APPENDIX D (Continued)

20 Road Call Hours = 2.5 mechanics for road calls
8 hours per shift

16 mechanics + 2.5 mechanics = 18.5 total mechanics needed

18.5 (\$37,834.56) = \$699,939.36 total annual manpower cost

Combination of Non-Registering and Registering Fareboxes:

	<u>Registering</u>	<u>Non-Registering</u>
Mechanic to farebox ratio	1.150	1:175
Daily road call frequency	1 for every 50 boxes in service	1 for every 100 boxes in service
Required time per road call	One hour	One hour
Bus fleet	209	2540
Annual cost per mechanic	\$37,834.56	\$37,834.56
<u>209 Buses</u> = 1.39 mechanics	<u>2540 buses</u> 175	= 14.5 mechanics

209 Daily Assigned Buses With Registering Fareboxes = 4 road calls
50 Daily Road Calls @ one hour
each

1791 Daily Assigned Buses With Non-Registering = 18 road calls a day
100 @ one hour each

4 + 18 Road Call Hours = 2.75 mechanics for road calls
8 Hours Per Shift

1.39 + 14.5 + 2.75 mechanics = 18.64 total mechanics needed

18.64 (\$37,834.56) = \$705,236.20 Total Annual Manpower Cost

Current District Farebox Option

Mechanic to farebox ratio	1:329
Road call frequency	One to two a month
Required time per road call	One hour

APPENDIX D (Continued)

Number of mechanics assigned to
preventative maintenance and
repairing of all fareboxes

10

Annual cost per mechanic

\$378,345.60

Road call frequency is so low that farebox mechanics are not required to make road calls.