

13899776

SCR TD METRO RAIL PROJECT

PRELIMINARY ENGINEERING

EVALUATION of the SCR TD FARE STRUCTURE

WBS 14 DAJ

Prepared by

BOOZ, ALLEN & HAMILTON Inc.

TRANSPORTATION CONSULTING DIVISION

JUNE 1982

EXECUTIVE SUMMARY

This study has reviewed the current SCRTD fare structure with the objective of identifying immediate-term recommendations which can meet current revenue needs, as well as establishing a rationale and policy framework for the bus system which can assist in the complementary design for the rapid rail system. The review focused on four key areas -- an overview of the current fare structure and issues, reduced fares, monthly passes, and a peak/off-peak pricing strategy. The findings and recommendations from these reviews are presented as separate chapters of the report and are summarized below.

The data contained in the report and the conclusions which were drawn are based on conditions which existed in March and April 1982. In May 1982, local tax revenues were enacted through Proposition A. Accordingly, many of the actual pricing recommendations cannot be implemented. Fare structure simplification and the formalization of fare policies can and should proceed, however, to the extent that the Proposition A mandated fare structure permits.

OVERALL FARE STRUCTURE

The current fare structure should be simplified. Only seven categories of fares are now producing 90 percent of the revenue. Through careful evaluation of the remaining elements, it is possible to target for elimination those with relatively high administrative costs and low levels of use. Simplification will ease overall fare structure administration as well as operator and passenger confusion.

Administrative difficulties exist and can be attributed to three primary issues -- dollar bill handling, fare evasion and verification, and sales outlet servicing. Administrative costs can be contained by vigorously enforcing the ban on dollar bills, developing a long-term strategy for fare collection, and establishing more rigid criteria for sales volumes at outlets.

REDUCED-FARE PROGRAMS

The District should consider charging full fares to elderly and handicapped persons during the peak period and raising the monthly pass pricing multiple. Current fares are below those offered by several other major transit systems. Blind persons could be charged the same fare as other handicapped persons. Administration of reduced fares could also be simplified by consolidating identification instruments and monthly passes for elderly and handicapped persons.

Student pass documents should also be consolidated. The enforcement difficulties of the college/vocational student monthly pass suggest its elimination.

The limited use of all five discount express stamps suggests that they be consolidated and priced according to the Step 2 fare. Further simplicity can be obtained by discontinuing the tourist passes, director's pass, and free travel privileges for government employees to all but uniformed personnel.

MONTHLY PASS PROGRAM

Though the current pricing multiple for adult passes is in line with that charged by other large transit systems, it is significantly lower than the actual boarding rate by pass users. Accordingly, the base pass multiple could be raised to 50 in order to generate additional pass revenue. Express stamps

should be conconsolidated from five to three. Little-used passes, such as the Ticketron and inter-agency passes, should be eliminated. The Fullerton and subscription pass should be replaced by a special stamp on the regular base pass.

Revisions to other prepayment media are in order, also. Token sales should be marketed aggressively. Ticket denominations can be reduced substantially from 40 to 5. Little-used tickets, such as the Greyhound ticket and SCRTD Form SKEL-16, should be discontinued.

Should pass prices increase, further development of prepayment options should consider the introduction of weekly or bi-weekly passes. Replacement of flash passes with punch cards should be further evaluated.

PEAK/OFF-PEAK PRICING STRATEGY

Costs of operating SCRTD service were computed for the peak and base service to illustrate the extent to which peak hour service is more expensive to operate. Resulting deficits in the peak period are 1.7 times the deficit incurred during the base period (e.g., \$2.93 deficit per mile in the peak period; \$1.74 deficit per mile in the base period). A three-variable, peak-base cost allocation model was developed for this analysis using Section 15 financial and operating statistics for FY 1981. These findings support the recommendation to implement graduated fares with a peak/off-peak pricing strategy.

FARE STRUCTURE SIMPLIFICATION

Adoption of the recommendations contained in this report will greatly simplify the SCRTD fare structure. The number of documents will drop by 60 percent from 123 fare payment and identification documents to 49. Additional streamlining is

possible through the cooperative simplification of the inter-agency fare structure established by SCRTD and other transit systems in neighboring counties.

REVENUE IMPACTS

Revenue impacts for selected pricing changes were calculated by applying market-specific arc elasticities. Five pricing strategies were included in this evaluation -- raising the adult base pass price, charging full fares to elderly and handicapped persons during peak periods, raising the elderly and handicapped pass price, and consolidating the number of adult and discount express steps. The combined results are an estimated annual increase in revenue of \$18.5 million.

NEXT STEPS

Further efforts are suggested beyond this fare structure evaluation. They include increased enforcement of the dollar bill ban, joint efforts with surrounding counties for further fare structure simplification, and creation of a set of formal fare policies. This last suggestion is intended to establish the rationale for the different fare elements and provide a foundation for the integration of bus and rapid transit fares.

TABLE OF CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY	
CHAPTER 1 - INTRODUCTION	1
1.1 Background	1
1.2 Study Purpose	3
1.3 Organization	3
CHAPTER 2 - OVERVIEW OF THE SCRTD FARE STRUCTURE	4
2.1 Description of the Present SCRTD Fare Structure	4
2.2 Ridership and Revenue By Fare Category	21
2.3 Monthly Pass Sales	25
2.4 Current Issues Regarding The Fare Collection System	31
CHAPTER 3 - REDUCED FARE PLANS	42
3.1 Senior Citizens and Handicapped Persons Fares	42
3.2 Student Fares	44
3.3 College/Vocational Students	45
3.4 Blind Persons	46
3.5 Children's Fares	46
3.6 Tourist Passes	47
3.7 RTD Passes	47
3.8 City and County Personnel	48
CHAPTER 4 - MONTHLY PASS PROGRAM	49
4.1 Pricing Multiples	49
4.2 Pass Printing	52
4.3 Other Monthly Passes	53
4.4 Administrative Costs	54
4.5 Weekly and Bi-Weekly Passes	55
4.6 Investment Strategies	56
4.7 Other Prepayment Media	56

TABLE OF CONTENTS
(Continued)

	<u>Page</u>
CHAPTER 5 - PEAK/OFF-PEAK PRICING STRATEGY	59
5.1 Applications Elsewhere	59
5.2 Peak/Off-Peak Pricing Rationale	61
5.3 Graduated Fare Alternatives	62
5.4 Calculation of RTD Peak and Base Costs	63
5.5 Implementation of Peak/Off-Peak Fare	71
CHAPTER 6 - CONCLUSIONS AND RECOMMENDATIONS	73
6.1 Key Findings	73
6.2 Fare Structure Simplification	77
6.3 Revenue Impacts	79
6.4 Next Steps	81

LIST OF EXHIBITS

<u>Exhibit No.</u>		<u>Page</u>
2-1	Present Fare Structure	5
2-2	Surface Transit Fare Structures Cash Fares	10
2-3	Surface Transit Fare Structures Prepayment Programs	12
2-4	Surface Transit Fare Structures Elderly & Handicapped Reduced Fares	15
2-5	Surface Transit Fare Structures Student Fares	18
2-6	Comparison of Single-Trip Fares	20
2-7	SCRTD Fare Payment and ID Methods January 1982	22
2-8	Comparison of Number of Documents For Fare Payment and Identification	24
2-9	Ridership Categories	26
2-10	Major Revenue Categories	28
2-11	Comparison of Ridership and Revenue By Fare Category	29
2-12	1981 Pass Sales By Category	32
2-13	SCRTD - Revenue Collection Costs Fiscal Year 1980-1981	37
2-14	SCRTD - Revenue Collection Costs Vs. Amount of Revenue Collected	38
2-15	Work Trip Boardings Per Month By Type of Pass	40
4-1	RTD Fares and Pass Prices 1967-1981	51

LIST OF EXHIBITS
(Continued)

<u>Exhibit No.</u>		<u>Page</u>
5-1	Existing Peak/Base Fares	60
5-2	FY 1981 Operating Statistics Used As Input to Peak/Base Cost Analysis	67
5-3	Annualized Operating Statistics	68
5-4	Peak/Base Cost Allocation Model	69
5-5	Comparison of Peak and Base Costs	70
6-1	Major Fare Structure Simplifications	78
6-2	Revenue Impacts of Selected Pricing Strategies	80

CHAPTER 1 INTRODUCTION

This report contains an evaluation of the SCRTD fare structure in existence in April 1982. It was conducted in accordance with the second amendment to Booz, Allen's contract with the District for professional services as systems engineering and analysis consultant to the SCRTD Metro Rail project. It will serve as input to the bus component of an integrated bus/rail transit system.

1.1 BACKGROUND

This study was initiated in March 1982 at a time when the District was considering a series of fare increases and service cutbacks to take effect with the new fiscal year beginning July 1, 1982. The impetus behind these proposals and the resulting fare structure review was the loss of federal operating subsidies without a replacement source of revenue. SCRTD was confronting a \$48 million budget deficit for the coming fiscal year and was proposing to adjust service and fares to offset the loss.

This report was prepared under those conditions. Two objectives in reviewing the fare structure were to reduce the costs of its administration and generate more revenue. This report's recommendations were to guide the staff and Board in their deliberations regarding future fare structures. The draft report was submitted in May 1982, shortly before the Board was scheduled to meet to decide on the fare increases.

Shortly after the draft version of this report was received, the California Supreme Court ruled in favor of the enactment of Proposition A, a 1/2¢ increase in the sales tax in Los Angeles County dedicated to transit operating and capital programs. The effect of this decision on this analysis was two-fold:

- . It established a revenue source of approximately \$250 million a year, eliminating the anticipated budget shortfall. Revenues will be divided among fare reductions, service improvements, and construction projects.
- . It mandated specific reductions in bus fares for a three-year period. These include:
 - A countywide cash base fare of 50¢;
 - An unlimited use transfer charge of 10¢;
 - A base monthly pass of \$20.00;
 - A 20¢ basic cash fare for the elderly, handicapped, and students;
 - A \$4.00 monthly pass for the elderly, handicapped, and students; and
 - Comparable reductions in express fare to 25¢ cash increments and \$7.00 monthly express stamps.

Obviously, many of the recommendations contained in this report regarding pricing changes are now moot. Changing the price of certain elements or modifying their use will not be possible for the next three years. However, other recommendations regarding simplification of the fare structure with the intent of eliminating little-used elements and reducing administrative costs are still valid. Additionally, the need for a fare policy framework for bus service alone as well as integration with the Metro Rail project is still apparent.

1.2 STUDY PURPOSE

The short-term objective of this fare structure review is to evaluate each fare structure element relevant to its pricing rationale and to identify issues related to the simplicity and ease of administration of the fare structure and collection system. In addition to review of the overall fare structure, the study delves into pricing and administration issues surrounding reduced-fare plans, monthly pass programs, and a peak/off-peak pricing strategy.

A long-term objective of this review is to document current fare collection methods and policies for the bus system as a step towards their integration with the rapid transit system. The District will be making long-range decisions on fare collection and this review will be a key input in that process.

1.3 ORGANIZATION

This report is organized into six chapters. The first is this introduction. The next chapter is an overview of the fare structure and current ridership and revenue volumes. It identifies issues relating to the pricing of different fare elements; the simplicity and ease of administration of the fare structure and the fare collection system. The third through fifth chapters review problems and opportunities regarding reduced fares, monthly passes, and peak/off-peak fare differentials. Chapter 6 summarizes these recommendations and suggests policies and pricing strategies for the SCRTD fare structure.

CHAPTER 2
OVERVIEW OF THE SCRTD FARE STRUCTURE

This chapter reviews the overall SCRTD fare structure in terms of pricing of individual elements, ridership and revenue generation and fare collection concerns. Comparisons with 13 other major transit systems are made to show RTD's relative standing. Data contained in this chapter are based on RTD fares and ridership in April 1982 and fares of other transit systems in March 1982.

2.1 DESCRIPTION OF THE PRESENT SCRTD FARE STRUCTURE

SCRTD's current fare structure consists of a single trip basic fare, transfer, and express charge; and a multi-trip monthly pass and monthly express charge. Different fares are charged to four primary groups of users. These are adults, senior citizens and handicapped persons, school students under the age of nineteen, and college and vocational students. Fare levels, eligibility, terms of use, and media are summarized for each of these fare categories in Table 2-1 and are discussed below.

Adult Fares

- Single Trip - The basic fare is 85¢ for all local service at all times. This is the next to highest base fare in the country. Only Chicago is higher at 90¢. A comparison of RTD with 13 other large transit systems follows as Table 2-2. The single trip fare can be paid by coin, token, or ticket. Transfer coupons are sold for 15¢ for each use. RTD operates 48 freeway express routes and 10 park-n-ride routes on which distance-based charges are imposed: for each

TABLE 2-1
PRESENT FARE STRUCTURE

Fare Type	Fare Level	Eligibility	Terms of Use	Media	Method of Purchase
1. ADULT					
a. Single Trip					
1) Basic	\$0.85	No restrictions	<ul style="list-style-type: none"> · all local service · additional fare required on express service · all times 	coins, tokens, tickets	payment on boarding bus; tokens, tickets may be pre-purchased at 300 RTD-designated outlets.
2) Transfer	\$0.15 each use	No restrictions	<ul style="list-style-type: none"> · all local service, restricted by direction of travel & up to 1 hour for transfer · maximum 2 uses 	transfer coupon	issued by 1st driver; additional \$0.15 if not surrendered on boarding 2nd bus
3) Express Charge	\$0.40 additional per 4-airmile increment on freeway, e.g., 2-6 miles: \$0.40	No restrictions	<ul style="list-style-type: none"> · added to base fare on express service · 5 distance steps 	coins, tokens, tickets	payment on boarding bus
b. Multi-Trip					
1) Monthly Pass	\$34.00	No restrictions	<ul style="list-style-type: none"> · all local service · additional fare required on express service 	pass	pre-purchase at 300 RTD-designated outlets
2) Monthly Express Charge	\$12 per 4-airmile increment on freeway	No restrictions	<ul style="list-style-type: none"> · added to monthly base fare on express service · five distance steps 	stamp affixed to monthly pass	pre-purchase with monthly pass

TABLE 2-1
PRESENT FARE STRUCTURE
(Continued)

Fare Type	Fare Level	Eligibility	Terms of Use	Media	Method of Purchase
2. SENIOR CITIZEN/ HANDICAPPED a. Single Trip 1) Basic	..... \$0.40	<ul style="list-style-type: none"> . age 62-65 = not employed full time . age 65+ = no restrictions . qualified transportation for handicapped (physical or developmental impairments) 	<ul style="list-style-type: none"> . all local service . additional fare required on express service . all times 	<ul style="list-style-type: none"> . coins, tokens, tickets 	<ul style="list-style-type: none"> . acceptable ID must be presented on boarding . handicapped require RTD-Reduced Fare Card
2) Transfer	. \$0.05 each use . .	<ul style="list-style-type: none"> . same as above 	<ul style="list-style-type: none"> . same as full-fare transfer 	<ul style="list-style-type: none"> . same as full-fare transfer coupon 	<ul style="list-style-type: none"> . issued by 1st driver, additional \$0.05 if not surrendered on boarding 2nd bus
3) Express Charge	\$0.20 additional per 4-airmile increment on freeway	<ul style="list-style-type: none"> . same as above 	<ul style="list-style-type: none"> . same as full-fare express charge terms 	<ul style="list-style-type: none"> . coins, tokens, tickets 	<ul style="list-style-type: none"> . payment on board bus

TABLE 2-1
PRESENT FARE STRUCTURE
(Continued)

Fare Type	Fare Level	Eligibility	Terms of Use	Media	Method of Purchase
2. SENIOR CITIZEN/ HANDICAPPED (continued)					
b. Multi-Trip					
1) Monthly Pass	..... \$7.50	same as above	same as the adult monthly express stamp terms	1 sr. citizen base pass w/SC monthly stamp affixed 2 monthly reduced fare pass for handicapped	1 sr. citizen obtains base pass at ten (10) RTD centers, purchases monthly stamp at 300 outlets handicapped reduced fare ID card obtained through application to RTD (\$1 fee), purchases monthly pass at 300 outlets
2) Monthly Express Charge	\$6 additional per increment	same as Single Trip/Basic	same as the adult monthly express stamp terms	reduced fare express stamp (showing no. of steps covered)	pre-purchase at 300 RTD-designated outlets

**TABLE 2-1
PRESENT FARE STRUCTURE
(Continued)**

<u>Fare Type</u>	<u>Fare Level</u>	<u>Eligibility</u>	<u>Terms of Use</u>	<u>Media</u>	<u>Method of Purchase</u>
3. STUDENT (under 19)					
a. Single Trip					
1) Basic	..... \$0.65	full-time student under 19 w/RTD school ID card	all local service additional fare on express service all times	coins, tickets	RTD school ID card presented on boarding; tickets may be prepurchased at 300 outlets; ID card requires application & photo at 300 outlets and renewable annually
2) Transfer	\$.05 each use ..	same as above	same as full-fare transfer	same as full-fare transfer	issued by 1st driver, additional \$.05 if not surrendered on boarding 2nd bus
3) Express Charge	\$0.20 additional per increment	same as above	same as full-fare express charge terms	coins, tokens, tickets	RTD school ID card presented on boarding
b. Multi-Trip					
1) Monthly Pass	..... \$22.00	same as above	same as the adult montly pass terms	student ID card (base pass) with monthly stamp affixed	card application obtained from school; ID card & stamp purchased at 300 outlets

TABLE 2-1
PRESENT FARE STRUCTURE
(Continued)

<u>Fare Type</u>	<u>Fare Level</u>	<u>Eligibility</u>	<u>Terms of Use</u>	<u>Media</u>	<u>Method of Purchase</u>
3. STUDENT (under 19) (continued)					
b. Multi Trip					
2) Monthly Express Charge	\$6 additional each increment	same as above	same as adult express pass terms	discount express stamp	express stamp purchased at 300 outlets
4. COLLEGE/ VOCATIONAL					
a. Single Trip					
Fares are same as adult — no discount					
b. Multi-Trip					
1) Monthly Pass	\$26.00	full-time student with 12 semester units or equivalent for minimum of 3 months	all local service additional fare on express service all times	base pass (photo ID) w/monthly pass stamp affixed	base pass application from school; pass obtained at 10 RTD sales offices; monthly stamp purchased at 300 outlets, renewable annually
2) Monthly Express Charge	\$6.00	same as above	same as the adult monthly express stamp terms	discount express stamp affixed to base pass	express stamps purchased at 300 outlets

**SURFACE TRANSIT FARE STRUCTURES
CASH FARES**

<u>Transit System</u>	<u>Peak Fare</u>	<u>Express Surcharge</u>	<u>Zone Charge</u>	<u>Base Fare</u>	<u>Transfer Charge</u>
New York City Transit Authority	\$0.75	\$1.75 (\$2.50 fare)	----	----	Free — 1st only
Chicago Transit Authority	\$0.90	\$0.10	----	----	\$0.10
Southeastern Pennsylvania Transportation Authority	\$0.70	----	\$0.45	----	\$0.15
Massachusetts Bay Transportation Authority	\$0.50	\$0.25	\$0.25	----	N.A.
Washington Metropolitan Area Transit Authority	\$0.65	\$0.25-\$0.50	\$0.25-\$0.30	\$0.60 D.C. \$0.65 Md/Va	Free
Metropolitan Atlanta Rapid Transit Authority	\$0.60	----	----	----	Free
New Jersey Transit	\$0.60	----	\$0.00-\$0.20	----	\$0.15
Port Authority of Allegheny County	\$0.75	----	\$0.15-\$0.20	----	\$0.25
Mass Transit Administration (Baltimore)	\$0.60	\$0.15 express \$0.30 premium	\$0.10-\$0.25	----	\$0.10
Municipality of Metropolitan Seattle	\$0.60	----	\$0.30	\$0.50	Free
Dallas Transit System	\$0.70	\$0.80	\$0.50-\$0.80	----	\$0.10
Denver Regional Transit District	\$0.70	\$0.35 \$0.70 regional svc.	----	\$0.35	Free
Orange County Transit District	\$0.75	\$0.75	----	\$0.60	Free
Southern California Rapid Transit District	\$0.85	\$0.40-\$2.00	----	----	\$0.15

four air mile increment on the freeway, a 40¢ distance "step" charge is collected. Routes range from one to five steps and their fares range from \$1.25 to \$2.85. Single trips fares may be paid by coin, token, or ticket. RTD operates two mini-bus routes with reduced fares of 25¢ for the downtown shuttle bus and 10¢ for the Westwood shuttle bus.

- Multi-Trip - A monthly pass for the basic trip is sold for \$34.00, the price of 40 trips at 85¢. This is similar to other large transit systems which price passes between 35 and 44 trips, as is shown in Table 2-3. The pass is printed on counterfeit-resistant material which gives off a rainbow image. Stamps are affixed to the monthly pass for each of the five express steps. Each stamp costs \$12.00 so that the base pass plus one express stamp costs \$46.00 while the base pass with the number 5 stamp costs \$94.00 (\$34.00 plus \$60.00). Other monthly passes are sold for RTD's eight subscription routes operating to downtown. A separate pass is also issued for the Fullerton Park-n-Ride service operating from Orange County under a contractual arrangement with the Orange County Transit District. Each of these passes is printed on safety paper. The subscription passes double as a means of reservation. The Fullerton pass is separate because it is only accepted on three lines and because the revenue is allocated to Orange County which pays the operating costs for this service.

Senior Citizen's and Handicapped Person's Fares

- Single Trip - A 40¢ cash fare is charged to eligible senior citizens and handicapped persons for all local service at all local times. An acceptable identification card must be presented upon boarding. Handicapped persons must display an RTD reduced fare i.d. card. This card is available for those persons who qualify and are certified as transportation handicapped (physical or developmental impairments). Senior citizens must display identification also. They may

TABLE 2-3
SURFACE TRANSIT FARE STRUCTURES
PREPAYMENT PROGRAMS

Transit System	Tokens		Tickets		Passes		
	Available	Price	Type	Price	Type	Price	Multiple
New York City Transit Authority	Yes	Face Value	None		None		
Chicago Transit Authority	Yes	10/\$ 8.50	None		Monthly	\$ 40.00	44.4
Southeastern Pennsylvania Transportation Authority	Yes	Face Value	None		Monthly Weekly	\$ 35.00 9.00	50.0
Massachusetts Bay Transportation Authority	Rail		10-ride exp. bus	\$14.00	Monthly	\$ 18.00	36.0
Washington Metropolitan Area Transit Authority	Yes	20/\$12.25	10-ride	Many at face value	Bi-weekly	\$ 12.50 w/ 6:00 rail	19.2
Metropolitan Atlanta Rapid Transit Authority	No		None		Monthly Weekly	\$ 21.00 5.00	35.0 8.3
NJ Transit	No		10, 20, 35	Many at 20% off	Monthly	\$ 22.00	36.6
Port Authority of Allegheny County	No		10-ride suburban	10% off	Monthly Weekly Annual	\$ 21.25 + 5.50 + 280.00 +	\$0.10 drop \$0.10 drop \$0.10 drop
Mass Transit Administration (Baltimore)	Yes	Face Value	None		Monthly	\$ 22.50	37.5

- 12 -

TAB 2-3
SURFACE TRANSIT FARE STRUCTURES
PREPAYMENT PROGRAMS
(Continued)

Transit System	Tokens		Tickets		Passes		
	Available	Price	Type	Price	Type	Price	Multiple
Municipality of Metropolitan Seattle	No		Book of \$0.60 & \$0.30 tickets	\$18.00	Monthly Annual	\$ 23.00 253.00	38.3 11 mos.
Dallas Transit System	No		None		Monthly	\$ 26.00	37.1
Denver Regional Transit District	Yes	Face Value	None		Monthly	\$ 24.00	34.3
Orange County Transit District	No		40 at \$0.75	\$27.00	Monthly	\$ 21.50	28.7
Southern California Rapid Transit District	Yes	10/\$ 8.00 .10/\$ 9.50	Individual and 10-ticket books	40 denominations sold at face value	Monthly	\$ 34.00	40.0

choose from one of four identification cards -- a medicare card, an SCRTD senior citizens identification card, the State Department of Motor Vehicles identification card, or an SCRTD senior citizen monthly pass that has not been validated for that particular month. Reduced fares for senior citizens are available to all persons over the age of 62; those between the ages of 62 and 65 may not be employed full time. Senior citizens and handicapped persons also receive reduced fares of 5¢ for transfers and 20¢ for express increments. All of these fares are one-half the adult fares rounded down to the nearest nickel. This is common to many transit systems though hours for half fares vary, as shown in Table 2-4.

- Multi-Trip - A monthly pass for senior citizens and handicapped persons is sold for \$7.50. This price is equivalent to 19 trips at 40¢. Five other transit systems offer a monthly pass (Table 2-4). Pricing multiples commonly range from 13 to 36 trips. Those charging reduced fares of half the adult fare are at the higher end of this range. The handicapped persons pass is printed on safety paper and says reduced fare across the top. It is used in conjunction with the photo identification card. The senior citizen pass consists of the base pass with a photo attached. Each month the senior citizen must purchase a validation stamp and appropriate discount express stamps if desired. Discount express stamps are sold at the price of \$6.00 for each increment, half of the price of the regular fare. Thus, for zone 1 express service a monthly pass costs \$13.50; the zone 5 pass costs \$37.50.

Student Fares

- Single Trip - Full time students under the age of 19 may ride for 65¢ upon presentation of an RTD student identification card. This fare is 76% of the adult fare. Applications for the photo identification card are distributed through the schools; the completed applications are processed at RTD outlets.

TABLE 2-4
SURFACE TRANSIT FARE STRUCTURES
ELDERLY & HANDICAPPED REDUCED FARES

<u>Transit System</u>		<u>A m o u n t</u>		<u>Time</u>	<u>Prepayment</u>
New York City Transit Authority		½	\$0.35	All but a.m. Peak (7-9)	None
Chicago Transit Authority		—	\$0.40	All Times	Monthly pass at \$18
Southeastern Pennsylvania Transportation Authority	Elderly:	—	Free	All but Peak	None
		½	\$0.35	Peak (6-9; 3:30-6:30)	
Massachusetts Bay Transportation Authority	Handicapped:	Full	\$0.70	Peak	None
		½	\$0.35	Off-Peak	
	Elderly:	—	Free	9:30-4:00 M-F	
		½	\$0.25	All Other Times	
Handicapped ^(a)	Full	\$0.50	Peak	None	
	—	Free	9:30-4:00 M-F		
	½	\$0.25	All Other Times		
Washington Area Metropolitan Transit Authority			\$0.20 D.C. \$0.30 Md/Va \$0.50 Interstate	All Times	None
Metropolitan Atlanta Rapid Transit Authority		½	\$0.30	All but a.m. Peak (7-9)	None
New Jersey Transit		½	\$0.30	All but Peak	None
Port Authority of Allegheny County	Elderly:	—	Free	Off-Peak	None
		Full	\$0.75	Peak	
	Handicapped:	½	\$0.35	Off-Peak	
		Full	\$0.75	Peak	

(a) Blind persons ride free at all times.

TAB 2.4
SURFACE TRANSIT FARE STRUCTURES
ELDERLY & HANDICAPPED REDUCED FARES
(Continued)

Transit System	A.m o u n t		Time	Prepayment	
Mass Transit Administration (Baltimore)	—	\$0.20 token	All Times	None	
Municipality of Metropolitan Seattle	—	\$0.15	All Times	Monthly pass at \$2; Annual pass at \$24	
Dallas Transit System	—	\$0.25	All Times	Monthly pass at \$9	
Denver Regional Transit District		\$0.05	All but Peak (6-9; 3-6)	Monthly pass at \$8	
Orange County Transit District	Elderly:	½	\$0.35	Monthly pass at \$12	
		—	Free		
	Handicapped:	Full	\$0.75		Peak All Other Times
		½	\$0.35		Peak All Other Times
Southern California Rapid Transit District		½	\$0.40	All Times	Monthly pass at \$7.50

Full time students are also eligible for reduced transfer charges (5¢) and reduced zone fare charges (20¢). These are the same discounts charged to senior citizens and handicapped persons.

- Multi-Trip - A monthly pass for full time students is sold for \$22.00 (65% of the adult fare). Students receive an annual base pass which becomes effective September 1st of each year. The pass is printed on heavy-weight cardboard and is folded in half. On the inside is the student's photograph; opposite that is a monthly stamp and a discount express stamp if applicable. Applications for the base pass are distributed through the schools. RTD is the only transit system that offers students a choice of cash or pass fare. All other offer only one, usually at a rate negotiated with the local school department (Table 2-5).

College/Vocational Student Fares

- Single Trip - No discounts are provided to college and vocational students for single trips. They pay full fare for the basic charge, transfers, and zone charges.
- Multi-Trip - Full time college or vocational school students may purchase a monthly pass for \$26.00 (76% of the full fare). This pass is unique among other large transit systems. The base pass is oversize cardboard with space for a photograph, monthly stamp, and discount express stamp. The pass is issued twice annually to coincide with the school semesters. Applications for the pass are available from the schools. Students bring the completed application with proof of enrollment as a full time student (12 semester units or the equivalent, for the minimum of three months) to an RTD customer service center.

These fare categories represent the primary groups of users of SCRTD bus service. Most fares are paid by cash or by monthly pass. Discounted tokens are sold for the 85¢ and \$1.00

TABLE 2-5
SURFACE TRANSIT FARE STRUCTURES
STUDENT FARES

<u>Transit System</u>	<u>Amount</u>	<u>Mechanism</u>
New York City Transit Authority	—	..... Flash Pass
Chicago Transit Authority	\$0.40	.... Cash Fare with ID Card
Southeastern Pennsylvania Transportation Authority	\$0.50	..... Token
Massachusetts Bay Transportation Authority	\$0.25	..... Cash Fare
		o r
		Passes for Desegregation Students without Other Available Trans- portation
Washington Area Metropolitan Transit Authority	\$0.20	Tokens by Application to WMATA; DC Schools Only
Metropolitan Atlanta Rapid Transit Authority	—	—
New Jersey Transit	\$0.75	..... Cash Fare
Port Authority of Allegheny County	\$0.10	... With Monthly Pass at \$20
Mass Transit Admin- istration (Baltimore)	\$0.40	.... Cash Fare with ID Card
		o r
		.... Tickets for City Schools
Municipality of Metropolitan Seattle	—	—
Dallas Transit System	—	Punch Card: 20 at \$7; 40 at \$14
Denver Regional Transit District	—	—
Orange County Transit District	—	Monthly Pass: \$0.75 fare at \$18
Southern California Rapid Transit District	\$0.65	..... Cash Fare w/ID Card
		o r
		..... \$22 Monthly Pass

fare (85¢ base fare plus 15¢ transfer). A roll of ten \$1.00 tokens is priced at \$9.50, and a roll of ten 85¢ tokens is sold for \$8.00. Tickets are sold at face value for 40 different denominations, either individually or in books of ten.

Adult tokens are sold at 94 percent of the fare value for a single-ride cash fare. This is the same discount offered by the CTA, another major system that is trying to induce token use to curb dollar bill use. The three other systems that sell tokens do not discount them. This information is provided in Table 2-6, along with a comparison of percentage discounts offered to students, elderly persons, and handicapped persons.

Free travel is offered to a number of individuals. Temporary and permanent RTD employees have passes which entitle them to ride for free. Their spouses and minor children are also extended this benefit as are retired employees. A special pass is issued to members of the Board of Directors. Government officials who are permitted to ride free upon presentation of appropriate identification include LA County Sheriff's employees, LA County Marshall employees, LA County District Attorney Bureau of Investigation employees and LA City Police. Blind individuals also ride free as a result of a County Board of Supervisors action in the mid-1970s. Children under 5 ride for free, also. Up to five children can be transported free for each adult fare paid.

Additional fare provisions exist for service that RTD operates in neighboring Orange, Riverside, and San Bernardino Counties. Different adult fares, student fares, and senior citizen and handicapped person fares are in effect on these routes. Monthly passes are honored in accordance with that county's policies. A monthly interagency pass is sold for \$94

TABLE 2-6
COMPARISON OF SINGLE-TRIP FARES

System	City	Adult Fare	Percentage of Adult Fare			
			Adult Token	Student	Elderly	Handicapped
SCRTD	Los Angeles	\$0.85	94%	75%	47%	47%
SEPTA	Philadelphia	\$0.70	100%	71%	50% peak 0% base	100% peak 50% base
CTA	Chicago	\$0.90	94%	44%	44%	44%
WMATA	Washington, D.C.	\$0.65	—	94%	31%	31%
MARTA	Atlanta	\$0.60	—	—	30%	30%
MBTA	Boston	\$0.50	—	50%	50% peak 0% base	100% peak 0% midday weekdays 50% all other times
MTA	Baltimore	\$0.60	100%	67%	33%	33%
Metro	Seattle	\$0.60	—	—	25%	25%
DTS	Dallas	\$0.70	—	50%	36%	36%
RTD	Denver	\$0.70	100%	—	7%	7%
OCTD	Orange County	\$0.75	—	—	47% peak 0% base	100% peak 47% base

for unlimited travel on any SCRTD or Orange County Transit District route. Transfer provisions also exist for inter- and intra-county travel among the carriers. Separate transfer provisions also exist within Los Angeles County for travel involving both the RTD and municipal carriers.

Finally, RTD accepts LA County school tickets that are distributed by the schools to students for special trips. These tickets are sold to the schools at the student cash rate. Greyhound tickets are honored on some routes, also. Visitors to the Los Angeles area may purchase passes for unlimited travel for either three, five, seven, ten, or fifteen days, priced at a rate of \$2.00 per day. All of these fare payment methods and identification cards add up to 123 different documents which the bus operator must verify as part of the fare collection process. A list of these documents which were in effect at the beginning of 1982 follows as Table 2-7. Cash fares are excluded from this list. A similar list of documents was compiled for several other transit systems (Table 2-8). Only SEPTA (Philadelphia) has more documents than RTD. However, 100 different rail/bus tickets will be replaced with a single monthly pass and free travel for some city government employees will be curtailed. After implementation in July, this number will drop drastically to 19. Other systems have in the range of 17 to 50 documents.

2.2 RIDERSHIP AND REVENUE BY FARE CATEGORY

In spite of the multiplicity of fare categories, a majority of SCRTD's annual weekday ridership occurs on regular local service. This includes the regular local pass, local cash fare, and local transfer. If senior local passes and student local passes are also considered, these five categories account

TABLE 2-7
SCR TD FARE PAYMENT AND ID METHODS
JANUARY 1982

	<u>No. of Documents</u>
Passes	
- Ticketron issued regular monthly pass	1
- Regular monthly pass	1
- Express zone stamps numbered 1-5	5
- Park & Ride monthly pass	1
- Subscription monthly pass	1
- Handicapped monthly pass	1
- Senior citizen monthly pass	1
- Student (18 and under) monthly pass (2 parts)	1
- College/vocational student monthly pass (2 parts)	1
- Reduced cost express zone stamps numbered 1-5	5
- Director's pass	1
- Tourist passes for 3, 5, 7, 10, and 15 days	5
- Employee temporary pass	1
- Annual employee passes — 1 with male employee pictured, 1 with female employee pictured, 1 for spouse, 1 for minor child, 1 for retired employee, and 5 special passes — 1 for union personnel, 1 for L.A. City schools personnel, and 3 for different L.A. Fire Department personnel	10 ^(a)
- Orange County monthly passes — senior/handicapped reduced local, regular local, express, regional, and student/handicapped (peak period)	5
- Orange County annual passes — employee, dependent	2
- Riverside County monthly passes — general, elderly/handicapped student, dial-a-ride	4
- San Bernardino monthly passes — regular, elderly/handicapped	2
Methods of ID	
- L.A. County Sheriffs ID (3 parts)	1
- L.A. County Marshall, ID	1
- L.A. City Police ID	1
- L.A. County District Attorney Bureau of Investigation ID	1
- California ID Card	1
- SCR TD Senior Citizen Reduced Fare Permit	1
- Health Insurance (Social Security Act) card	1
- Senior Citizen monthly pass	1
- Braille Institute student card	1

TABLE 2-7
 SCR TD FARE PAYMENT AND ID METHODS
 JANUARY 1982
 (Continued)

	No. of Documents
Methods of ID (cont.)	
- Handicapped reduced fare card	1
- Student discount card	1
- Omnitrans senior/handicapped identification	1
 Tickets	
- L.A. County Schools' tickets — 1 coupon (green), \$0.50 school (pink), and local school fare student under 19 (orange)	3
- Riverside County, \$0.25 tickets	1
- Greyhound tickets — passenger and training	2
- SCR TD ticket (Form SKEL-16)	1
 Tickets/Tokens/Transfers	
- Ticket denominations — \$0.05, \$0.10, \$0.15, \$0.20, \$0.25, \$0.35, \$0.40, \$0.45, \$0.50, \$0.65, \$0.80, \$0.85, \$0.95, \$1.00, \$1.05, \$1.20, \$1.25, \$1.30, \$1.45, \$1.65, \$1.75, \$1.85, \$1.90, \$2.00, \$2.05, \$2.10, \$2.20, \$2.40, \$2.60, \$2.70, \$2.80, \$2.85, \$3.00, \$3.10, \$3.40, \$3.50, \$3.80, \$3.90, \$4.30 and a blank ticket.	40
- Tokens — MTA and SCR TD	2
- Omnitrans transfers (gold, white, blue, green, pink and yellow)	6
- RTD L.A. County transfers - outside agency to RTD and RTD to outside agency ^(b)	2
- RTD other Counties transfers — RTD to Riverside or San Bernardino, RTD to Orange	2
- OCTD transfers — dial-a-ride, park and ride, regular	3
- Riverside County transfer	1
	123

(a) *Annual employee passes now include only the adult and child photograph card. Those for spouses, retired employees, union officials, etc. use the same base card with the additional distinction superimposed. Special passes for LA City School personnel and LA Fire Department personnel have been discontinued.*

(b) *Regular RTD transfer used for the latter.*

TABLE 2-8

COMPARISON OF NUMBER OF DOCUMENTS
FOR FARE PAYMENT AND IDENTIFICATION

<u>Transit System</u>	<u>Total Number of Documents</u>	<u>Passes</u>	<u>ID Cards</u>	<u>Tickets</u>	<u>Transfers</u>	<u>Other</u>
Chicago Transit Authority	50	12	35	0	2	1
Dallas Transit System	24	5	5	4	1	9
Mass Transit Administration (Baltimore)	30	16	10	1	1	2
Massachusetts Bay Transportation Authority (Boston)	17	7	6	2	2 ^(a)	1
Orange County Transit District	29	7	9	4	9	0
Southeastern Pennsylvania Transportation Authority (Philadelphia)	135	7	22 ^(b)	101 ^(c)	3	2
Southern California Rapid Transit District	123	48	12	47	14	2

(a) Used as an emergency fare receipt only.

(b) Eighteen (18) different types of City employees now offered free travel; to be discontinued.

(c) Approximately 100 different rail/bus combination tickets being replaced July 1, 1982 by a monthly pass.

for 84.8% of SCRTD weekday ridership. SCRTD maintains ridership records for 34 different fare categories. These categories are listed in descending order in Table 2-9.

The five major fare categories for ridership also account for 82.1% of revenue. Seven major revenue categories, listed in Table 2-10, produce almost 90% of RTD farebox revenue. In descending order these categories are regular cash, regular pass, student pass, regular transfer, express cash, express pass, and senior citizen and handicapped regular pass. Together they produce \$147 million annually.

The percentage of system ridership and revenue can be compared for each major fare category to show any serious differences (Table 2-11). Regular local fares account for 63.6% of system ridership and 73.4% of system revenue. Within this category, revenue per boarding by pass users is lower than that for cash users due to the high frequency of pass use. An estimate of 100 boardings per month is assumed although the pass is priced at 40 boardings per month. Express fares, though only 3% of system ridership, account for 9.8% of system revenue. On the contrary elderly and handicapped individuals account for 14.2% of local ridership but only 5.2% of revenue for local service. Another difference is also apparent with student fares, as students account for 9.8% of ridership and 5.6% of revenue for local service.

2.3 MONTHLY PASS SALES

Monthly bus passes are available at more than 300 locations around LA County. Most sell all major monthly passes, that is the regular pass, the student pass, college and vocational student pass, reduced fare pass for handicapped persons and senior citizens monthly pass. Ticketron outlets (56 throughout

TABLE 2-9
RIDERSHIP CATEGORIES

<u>Percent of Total</u>	<u>Category</u>	<u>Annual Weekday Ridership (000)</u>
<i>MAJOR FARE CATEGORIES</i>		
25.41%	Regular Local Cash	80,121
25.37%	Regular Local Pass	80,021
12.81%	Regular Local Transfer	40,404
11.54%	Senior Local Pass	36,392
9.69%	Student Local Pass	30,557
<hr/>		
84.82%		267,495

MINOR FARE CATEGORIES

3.52%	Children under 5 (Free)	11,096
2.90%	College Local Pass	9,194
2.00%	Senior Local Cash	6,305
1.48%	Regular Express Pass	4,675
0.93%	Regular Express Cash	2,938
0.78%	Tickets	2,465
0.73%	Senior Local Transfer	2,307
0.71%	RTD Employee (Free)	2,241
0.37%	Regular Express Transfer	1,179
0.37%	Regular Express Pass and Cash	1,168
0.27%	Senior Express Pass	850
0.19%	Blind (Free)	601
0.14%	Tourist Pass	442
0.13%	Miscellaneous Cash	394
0.12%	Student Local Cash	388
0.11%	Senior Express Pass and Cash	331

TABLE 2-9
RIDERSHIP CATEGORIES
(Continued)

<u>Percent of Total</u>	<u>Category</u>	<u>Annual Weekday Ridership (000)</u>
<i>MINOR FARE CATEGORIES (continued)</i>		
0.09%	Subscription	280
0.07%	Orange County Park-Ride	220
0.06%	Student Express Pass	178
0.05%	College Express Pass	167
0.05%	Civil Service (Free)	158
0.03%	Senior Express Cash	95
0.02%	Student Local Transfer	74
0.02%	Student Express Pass and Cash	67
0.02%	Senior Express Transfer	50
0.02%	College Express Pass and Cash	50
0.00%	Student Express Transfer	8
0.00%	Student Express Cash	5
0.00%	Contract	0
<hr/>		
15.18%		47,881

TABLE 2-10
MAJOR REVENUE CATEGORIES
(Dollars in Millions)

<u>Percent of Total</u>	<u>Category</u>	<u>Annual Revenue</u>
49.4%	Regular Cash	\$ 80.98
19.7%	Regular Pass	32.25
5.4%	Student Pass	8.80
4.3%	Regular Transfer	7.05
3.9%	Express Cash	6.40
3.7%	Express Pass	6.12
3.3%	Elderly and Handicapped Regular Pass	5.42
<hr/>		<hr/>
89.7%		\$147.02

**TABLE 2-11
COMPARISON OF RIDERSHIP AND REVENUE
BY FARE CATEGORY**

<u>Category</u>	<u>Percentage of System</u>	
	<u>Ridership</u>	<u>Revenue</u>
Regular Fares		
Cash	25.4%	49.4%
Pass	25.4%	19.7%
Transfer	12.8%	4.3%
Total	63.6%	73.4%
Express Fares		
Cash	0.9%	3.9%
Pass	1.5%	3.7%
Pass and Cash	0.4%	1.3%
Transfer	0.4%	0.9%
Total	3.2%	9.8%
E&H Regular Fares		
Cash	2.0%	1.8%
Pass	11.5%	3.3%
Transfer	0.7%	0.1%
Total	14.2%	5.2%
E&H Express Fares		
Cash	0.0%	0.1%
Pass	0.3%	0.2%
Pass and Cash	0.1%	0.2%
Transfer	0.0%	0.0%
Total	0.4%	0.5%
Student Regular Fares		
Cash	0.1%	0.2%
Pass	9.7%	5.4%
Transfer	0.0%	0.0%
Total	9.8%	5.6%

TABLE 2-11
 COMPARISON OF RIDERSHIP AND REVENUE
 BY FARE CATEGORY
 (Continued)

<u>Category</u>	<u>Percentage of System</u>	
	<u>Ridership</u>	<u>Revenue</u>
Student Express Fares		
Cash	0.0%	0.0%
Pass	0.1%	0.0%
Pass and Cash	0.0%	0.0%
Transfer	0.0%	0.0%
Total	0.1%	0.0%
College Regular Fares		
Pass	2.9%	2.4%
College Express Fares		
Pass	0.1%	0.1%
Pass and Cash	0.0%	0.0%
Tickets	0.8%	2.8%
Free	4.5%	0.0%
Other	0.4%	0.2%
	<hr/>	<hr/>
TOTAL	100.0%	100.0%

the service area) also print a monthly pass. They sell only the regular monthly pass good for unlimited local travel. Ten RTD offices throughout the service sell all of the major passes as well as the interagency monthly pass, the Fullerton Park-n-Ride pass, and ticket books. RTD ticket offices and check cashing outlets alone account for nearly half the pass sales. Food markets, departments stores, and miscellaneous outlets count for an additional 43%. Fifteen percent of RTD's pass sales outlets produce 75% of all monthly pass sales.

Sales of monthly passes dropped considerably in 1981 as a result of a July 1st fare increase. Six month sales figures for the period January through June 1981 and July through December 1981 which follow as Table 2-12 show that sales have decreased in all categories except the handicapped monthly pass. Decreases shown in student and college and vocational pass sales should be tempered by seasonal decreases caused by summer vacations. A review of regular pass sales over the past several years, shown in Figure 2-1, indicates a general increase in pass sales volumes until late 1981, commensurate with the July 1, 1981 fare increase.

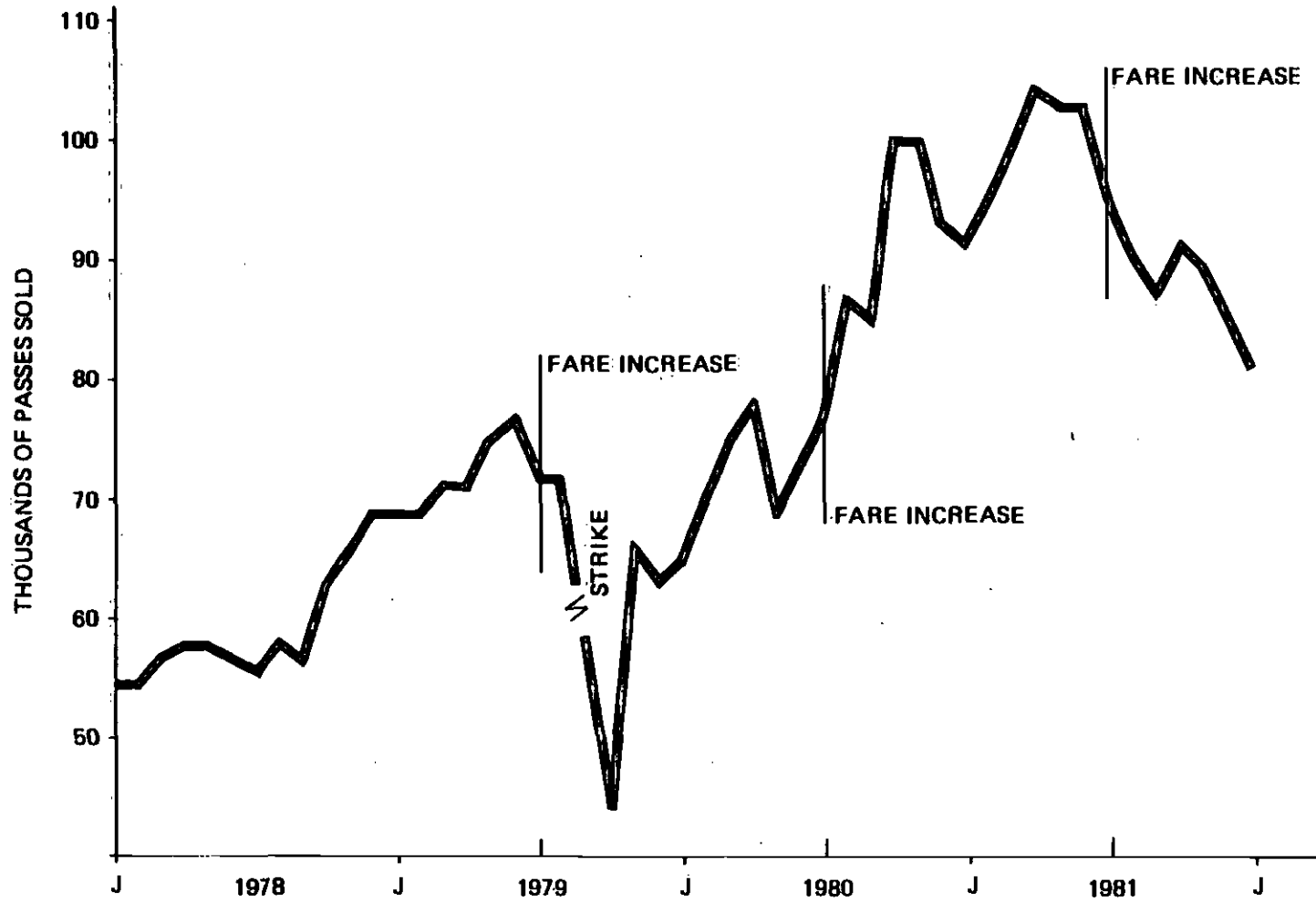
2.4 CURRENT ISSUES REGARDING THE FARE COLLECTION SYSTEM

There are four major issues regarding the current SCRTD fare structure and fare collection system. These are the complexity of the fare structure; problems with correct fare verification and fare evasion; administrative costs for cash fares and prepayment programs; and the cost-effectiveness of the fare structure. Each of these is discussed in a separate section below.

TABLE 2-12
1981 PASS SALES BY CATEGORY

<u>Category</u>	<u>January through June</u>	<u>July through December</u>	<u>Difference</u>
Regular Monthly	593,701	536,474	(57,227)
Senior Citizen	316,077	314,597	(1,480)
Handicapped	58,561	63,131	4,570
College/Vocational	72,473	65,707	(6,766)
Student	233,430	117,509	(115,921)
Interagency	127	74	(53)
Fullerton Park and Ride	3,085	2,751	(334)
Summer Youth	—	27,254	—
Express 1	19,129	16,453	(2,676)
Express 2	19,696	16,698	(2,998)
Express 3	21,153	16,892	(4,261)
Express 4	11,010	7,719	(3,291)
Express 5	6,242	4,100	(2,142)
Reduced Express 1	—	7,399	—
Reduced Express 2	—	4,192	—
Reduced Express 3	—	4,012	—
Reduced Express 4	—	1,654	—
Reduced Express 5	—	910	—

FIGURE 2-1
SCRTD FARE POLICY STUDY
HISTORY OF REGULAR PASS SALES



2.4.1 Complexity

The large number of fare elements contained in the current SCRTD fare structure is a cause for concern. There are 123 documents in addition to cash fares that the operator must be able to recognize and from which the user must be able to select. Though some are applicable only to service operating in neighboring counties, this overall complexity is greater than that of most other transit systems. SCRTD operators must be trained to recognize the appropriate fare structure elements. Their effectiveness in doing this is tied to their critical role in verifying that the correct fare has been paid, that the user is eligible for that particular fare and for dispelling a user's confusion over which fare is applicable.

The number of fare elements has grown over time. It is apparent that the fare structure has not been targeted to specific groups of users. Rather, each element tries to suit the needs of many types of riders. The existence of 40 different ticket denominations is one example of a fare structure that has been over-extended. A less complex fare structure targets a specific fare and prepayment media to each unique type of rider rather than offering each rider a number of options. For example, frequent users would use passes and occasional riders would use tickets and tokens. Media not widely used would be eliminated after a regularly scheduled review rather than carried indefinitely as part of the fare structure. Examples of infrequently used but retained elements include the SKEL-16 ticket, Ticketron pass, and Greyhound tickets.

2.4.2 Verification and Evasion

SCRTD's bus fleet is outfitted with non-registering fare-boxes. Passengers deposit their coins onto a metal drop plate; the driver reads the coins and deposits them into the vault.

With the complexity and number of coins required to pay the 85¢ base fare, it is likely that a number of passengers are underpaying the correct amount of fare. Farebox manufacturers estimate that as much of 5% of revenue can be lost through underpayment without registering fareboxes. Applied to fiscal year 1981 revenue, this 5% would have been \$4.7 million.

The prevalence of counterfeit monthly passes and the revenue loss that this reflected resulted in a recent switch to printing these passes on counterfeit-resistant paper. This produced a ten-fold increase in printing costs but has greatly decreased the ability to counterfeit the pass. Three other major transit systems, SEPTA (Philadelphia), PAT (Pittsburgh) and NJ Transit (Newark), also plagued by serious counterfeiting problems have also switched to counterfeit-resistant material and have noted significant increases in pass sales revenue with a corresponding absence of counterfeit passes.

Other passengers not using the regular monthly pass nor paying the cash fare present a variety of different identification cards, passes, and tickets to the driver. Some of these documents may be seen very rarely; however, the driver is expected to inspect and verify that the person is in fact eligible for a reduced or free fare. There are no estimates on possible revenue losses to the District as a result of improper identification or the ineligibility of some persons who are paying reduced fares but may in fact not be properly certified. The tourist, student, and college/vocational pass are all highly susceptible to misuse.

2.4.3 Administrative Costs

Each of the different fare media must be printed and distributed to the RTD fare outlets. A recent staff report calculated total annual fare collection costs to be \$5.05 million

for fiscal year 1980-1981. This is approximately 6.3% of all revenue collected. This amount was divided among prepayment expenses and cash handling expenses: \$2.35 million for prepayment and \$2.7 million for cash handling. A breakdown of these costs for farebox and prepaid sales revenue collection follows as Table 2-13. These costs are presumed to have risen for the present fiscal year. Though farebox costs are higher than prepayment costs, farebox revenues are almost double the amount of prepayment sales revenue, as Table 2-14 shows.

Much of the cost of farebox revenue collection is associated with sorting and counting dollar bills and attending to related maintenance difficulties. Though official District policy bans the collection of dollar bills, approximately 130,000 dollar bills are collected each weekday. Unfolding, stocking, and counting this currency is the responsibility of 49 of the District's 66 cash clerks. Though dollar bill use did decline when the ban was first imposed, it has since increased as a result of the July 1981 fare increase which raised the base fare to 85¢ and established a transfer charge of 15¢. Personnel costs for processing the dollar bills should be added to increased maintenance costs as a result of jammed fareboxes when calculating the full cost of dollar bill collection. The increase in dollar bill use is the major reason why fare collection costs are presumed to be greater than the FY 1980-81 cost figures.

Other media collected by the SCRTD must also be sorted and counted. This includes the numerous tickets and two types of tokens that are sold. However, their use is relatively minor at this time and thus the magnitude of their fare collection costs is minimal when compared to that of the dollar bills.

TABLE 2-13
 SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
 REVENUE COLLECTION COSTS
 FISCAL YEAR 1980-1981

	<u>Farebox</u>	<u>Prepaid Sales</u>	<u>Total</u>
Personnel	\$1,878,952.60	\$1,041,408.51	\$2,920,361.11
Material and Supplies	163,287.88	250,698.36	413,986.24
Contract Services	180,020.59	1,057,852.44	1,237,873.03
Capital	492,400.00	0.00	492,400.00
Total	\$2,714,661.07	\$2,349,959.31	\$5,064,620.38

Source: "An Analysis of Revenue Collection Costs, FY '80-81," SCRTD, Operations General Department, October 1981.

TABLE 2-14
 SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
 REVENUE COLLECTION COSTS
 VERSUS
 AMOUNT OF REVENUE COLLECTED
 FISCAL YEAR 1980-1981

	<u>Farebox</u>	<u>Prepaid Sales</u>	<u>Total</u>
Total Revenue	\$90,088,279.25	\$50,247,312.75	\$140,335,592.00
Total Costs	\$ 2,714,661.07	\$ 2,347,959.31	\$ 5,064,620.38
Cost per Dollar Collected	\$0.03	\$0.047	\$0.036

Source: "An Analysis of Revenue Collection Costs, FY '80-'81," SCRTD Operations General Department, October 1981.

2.4.4. Cost Effectiveness

A major concern is whether or not passengers are paying a fair share of the cost of their transit trip. Monthly pass multiples that are significantly lower than the actual number of boardings by pass users represent a decrease in the average fare per trip that the pass user pays. The regular monthly pass is priced at 40 boardings. A recent survey of pass users conducted by the SCRTD marketing department indicated that the average overall number of work trip boardings is 87 per month, though monthly boarding tends to decrease among users of 3-, 4-, and 5-express stamp passes. Most pass users are riding two buses to complete a one-way work trip. In addition, about 74% of the regular pass buyers ride the RTD on Saturdays and 62% ride on Sundays. Table 2-15 summarizes work trip boardings by type of pass. It is important to note that these boarding figures reflect weekday work trips and do not include any additional trips that might be made during the day or evening for non-work trips. SCRTD staff estimates that when all trips are added, boardings are in excess of 100 per month. The pricing multiples for reduced fare trips are also dramatically low when compared to actual boardings. Passes for senior citizens and handicapped persons are priced at 19 boardings a month. Student passes are priced at 34 trips at 65¢ for regular students and at 31 trips at 85¢ for college and vocational students.

* * * * *

This chapter has provided an overview of the current SCRTD fare structure and some concerns for its administration. A major focus of this study is to identify opportunities to simplify the fare structure and increase passenger revenue.

TABLE 2-15
WORK TRIP BOARDINGS PER MONTH BY TYPE OF PASS

Type of Pass	None	1 to 50	51 to 100	101 to 150	151 to 200	200 or More	Total	No. of Respondents	Median Boardings
\$26	3.81%	22.33%	42.73%	21.48%	6.93%	2.73%	100.01%	3,520	88.1
\$34	1.50%	27.82%	45.11%	17.29%	8.27%	—	99.99%	133	86.7
\$42	1.16	34.68%	33.53%	21.39%	6.36%	2.89%	100.01%	173	85.2
\$50	—	47.67%	38.86%	8.29%	4.15%	1.04%	100.01%	193	63.5
\$58	—	74.63%	22.39%	2.99%	—	—	100.01%	67	33.5
\$66	—	53.33%	33.33%	6.67%	—	6.67%	100.00%	30	46.9
Total	3.35%	25.29%	41.84%	20.31%	6.66%	2.55%	100.00%	4,116	86.8

Source: SCRTD Marketing Department Survey of Monthly Pass Users, 1981.

Accordingly, the remainder of this report looks into three specific fare elements and recommends possible changes which meet these objectives. The next chapter discusses reduced fare programs.

CHAPTER 3

REDUCED FARE PLANS

Reduced fare plans currently offered by the District are reviewed in this chapter. A key objective of this review is to identify opportunities for consolidating the number of reduced fare plans and for increasing passenger revenue. The experiences of other major transit systems in the country are referenced where applicable.

SCRTD currently offers reduced fares to senior citizens and handicapped persons, students, college and vocational students, and tourists. Free travel is also offered to RTD employees, personnel in various LA City and County Departments, blind persons, and children. Recommendations regarding each of these elements is discussed in more detail in this chapter.

3.1 SENIOR CITIZENS AND HANDICAPPED PERSONS FARES

Reduced fares for senior citizens and handicapped persons are available at all times. Many of the major transit systems, however, charge different fares to senior citizens and handicapped persons during peak and off-peak periods. For the most part, those that do have severe peak congestion problems. New York, Philadelphia, Boston, and Pittsburgh all charge full fares to handicapped persons during the peak period. These systems introduced their reduced fare programs with these provisions and have not changed them. SEPTA (Philadelphia) was able to raise its elderly and handicapped fares in its suburban divisions several years ago; handicapped persons and senior citizens now pay full fare during the peak period.

Current ridership by senior citizens and handicapped persons within the SCRTD system is already heavily concentrated during the mid-day period; 64.3% of all trips occur at this time. RTD's peak hour service is more expensive to operate. Standing loads are often transported at this time. Therefore, it is recommended that full fares be reinstated for elderly and handicapped persons during the peak period; the current reduced fares should remain in effect at all other times. Reduced fares, transfer charges and express premiums should also continue during the off-peak period.

Identification cards for the payment of reduced cash fares should be consolidated wherever possible. One common photo identification card should be made available to senior citizens and handicapped persons. Identification should not be required for the payment of cash fares from those persons with visible handicaps. However, a person with a visible handicap will still need a photo identification card in order to purchase a monthly pass. The possibility of developing a county-wide or regional identification card should be explored. Similar to the Chicago RTA's Special Users Travel Card, this would be accepted by SCRTD and the municipal carriers within Los Angeles County. It might also be suitable for use by transit systems in surrounding counties. Such a card could greatly simplify the current identification process.

In addition to consolidating identification cards for senior citizens and handicapped persons, SCRTD should also consolidate the monthly passes. One common monthly pass should be printed for both senior citizens and handicapped persons. To further consolidate and simplify identification, the same card should be used in conjunction with the pass. Rather than requiring an elaborate pass, it could be printed on safety paper and accepted in conjunction with the photo identification

card. SCRTD might wish to supply a plastic folder for both the card and the pass at the time the card is issued. Use of a monthly pass should be encouraged as part of the District's policy to collect a high proportion of revenues through prepayment. However, the monthly pass should be priced at a much higher multiple to reflect a more accurate number of boardings. The current pass is priced at only 18.75 boardings per month. Possible prices are as follows:

<u>Boardings</u>	<u>Price</u>
25	\$10
30	\$12
33	\$15
40	\$18

Few transit systems offer a monthly pass to senior citizens and handicapped persons. Those that do, however, price it at a much higher multiple. The Dallas Transit System's monthly pass is priced at 36 trips; the Orange County Transit District's senior citizen monthly pass is priced at 34 trips.

Monthly passes would be priced at the off-peak fare and honored only during off-peak hours. Discount express stamps should continue. However, since sales are minimal, for administrative simplicity it is recommended that a single express surcharge be imposed rather than the current five steps. The single surcharge would be established at the equivalent price of Step 2. This is the current average trip length for express stamp users.

3.2 STUDENT FARES

Rather than the current 2-part pass for boys and girls, the same type of pass being established for senior citizens and handicapped persons should also be established for students.

They should be issued a photo identification card and folder to hold a safety paper-printed monthly pass. The identification cards should continue to be issued by RTD. However, the District should explore the possibility of selling monthly passes directly through the schools, as most major transit systems already do. The District should clearly establish that this reduced fare is for school trips, not for trips made by students at any time of the day. Discount express stamps should continue. As with senior citizens and handicapped persons, they should be consolidated from 5 to 1 and sold at the equivalent price of Step 2. This simplifies administration of a little used prepayment medium with little positive or negative impact on revenue.

3.3 COLLEGE/VOCATIONAL STUDENTS

SCR TD is the only major transit system to offer a reduced fare to college students. (Pittsburgh's U-Ticket is the only thing similar. It is a discounted punch ticket sold only at universities.) As with fares for students under the age of 19, this reduced fare program also poses eligibility problems and is difficult to enforce. Proof of full-time registration is required to purchase the pass. However, there are reports of part-time students and people registered but not attending classes obtaining this pass. The objective of this pass program is to reduce the fare for trips being made to college and vocational schools. This is virtually impossible to determine and control with the current monthly pass. Abuses are common. It is recommended that the discount monthly pass offered to college and vocational students be discontinued. Discontinuing this pass meets both objectives of simplifying the reduced fare plans and increasing revenues.

3.4 BLIND PERSONS

Currently, blind persons ride for free on any RTD bus at any time. This is a result of an action by the County Board of Supervisors at the time they provided operating subsidies to the RTD. Their assistance has since ended, but the free fare for blind persons continues. Other than SCRTD, only two other major transit systems offer free travel to blind persons -- the MBTA (Boston) and D-DOT (Detroit). Boston's fare was established by an act of the State Legislature in the 1920s. All other transit systems classify blind persons with the rest of handicapped persons and charge them the same fare.

The reduced fare program for senior citizens and handicapped persons classifies blind persons as handicapped. It is recommended that blind persons pay the same fare as other handicapped persons. Incorporating them into the fare structure would pose little administrative difficulty. As was suggested above for cash fares, blind persons carrying a white cane or travelling with a seeing eye dog would not be required to present identification as proof of eligibility for reduced fares. Others would be certified and carry a reduced fare card.

3.5 CHILDREN'S FARES

Currently, SCRTD permits five children to ride for free for each adult fare paid. This should be reduced to a more common level of two children for every adult fare paid. This should reduce some of the possible abuse that may exist in this fare category. Also, it should be stipulated that those children that are riding for free should not occupy seats on crowded buses.

3.6 TOURIST PASSES

Five different passes are now sold to non-residents for unlimited travel for a period of 3, 5, 7, 10, and 15 days. The passes were implemented when RTD operated airport service. Service has been cancelled but the pass remains. The revenue generated from these five passes is relatively minimal. Though sales are prohibited for residents of Los Angeles, Orange, Riverside, San Bernardino and Ventura Counties, there is reported abuse, particularly on park & ride routes. Tourist passes should be discontinued. They represent another opportunity to simplify the reduced fare plans and reduce the administrative costs of prepayment. As an alternative, it might be feasible to develop a day pass that could be purchased by both residents and non-residents. The pass could be good for unlimited travel beginning after 9:00 a.m. Another alternative is to distribute tokens for sale to major tourist locations.

Some form of visitor pass will be desirable for the 1984 Olympics. It is assumed that RTD's Olympics service will consist of special shuttles and charter service. RTD should develop a special Olympic pass to be used on these routes good only during the period the games are played.

3.7 RTD PASSES

Until recently, there were ten varieties of employee passes. Separate passes were issued for employees, their spouses and children, for retired employees, for union officials, LA City School personnel, and LA Fire Department personnel. The recent consolidation of all these passes into one photo card has helped to simplify the reduced fare program.

In addition, RTD issues an employee pass for new hires and temporary employees. A separate pass is granted to the 11 members of the Board of Directors. The temporary employees pass should be retained as it is an administrative necessity. It should also be used for system visitors. The Director's pass, however, should be abolished and replaced with a regular employee pass. The number of passes required for Directors does not warrant a special document when the District's goal is to simplify the pass program.

3.8 CITY AND COUNTY PERSONNEL

A number of City and County personnel may ride for free upon presentation of an identification card. Use of this privilege is minimal; public complaints have been recorded about its misuse. This practice should be eliminated and free travel restricted to uniformed employees. This restriction would pose little hardship. Departments whose non-uniformed employees tend to ride the bus for official business could be offered tokens which they could dispense for employee use.

* * * * *

Simplifications to SCRTD's reduced fare plans were recommended in this chapter. Key recommendations include the consolidation of senior citizens and handicapped persons in the fare structure, a peak/off-peak fare differential for senior citizens and handicapped persons, streamlined identification processes, the consolidation of discount express stamps, the elimination of vocational student passes, and the elimination of free fares for blind persons. Recommendations to simplify the monthly pass program are presented in the next chapter.

CHAPTER 4

MONTHLY PASS PROGRAM

This chapter identifies strategies to increase passenger revenue through the sale of monthly passes and to simplify the current pass program. Current pass pricing policies are reviewed and the cost of providing prepayment programs are discussed in light of the District's need to increase revenue. Each strategy is discussed in a separate section below.

4.1 PRICING MULTIPLES

Regular monthly passes are currently priced at a multiple of 40 trips. This should be raised to 50. At current fares, this would raise the price of the monthly pass by \$8.50 to \$42.50. The 50 trip multiple is a reflection of the high incidence of linked trips made by pass users. The recent marketing department survey found that an average ride requires two buses are ridden to complete a one-way work trip; the average overall number of work trip boardings is 87 per month. SCTR staff believes total boardings for all types of trips by pass users are more in the range of 100 per month. Raising the price to 50 boardings, then, will not place a significant hardship on pass users but will increase District revenue. The market for the pass will be better defined as those persons who take multiple vehicle trips instead of those taking single vehicle trips. A similar pricing policy has been adopted by SEPTA (Philadelphia). Their monthly passes are priced at 50 times the single vehicle fare and 42 times the two vehicle fare. Even without an apparent discount, SEPTA pass users account for 30 percent of system ridership.

Many transit systems price their monthly passes below 40 single vehicle trips. A discounted pass is presumed to increase sales and encourage use of prepayment mechanisms. However, the trade-off is with significant revenue losses. SCRTD's monthly passes have historically been priced at 40 trips, at the upper range of industry experience, as was shown previously in Table 2-3. As Table 4-1 indicates, the multiple has stayed at 40 trips for all but three years since the program was initiated in 1967. Only once, in 1979, was the pass price lower than 40 trips; for two years (1977 and 1978), the pass was priced higher at 45 and 44 trips, respectively. Thus, to raise the multiple from 40 to 50 will not eliminate a long-standing discount but rather will better reflect the actual number of pass trips that are now being made.

A number of systems that have priced their passes lower are now questioning that policy. The Urban Mass Transportation Administration's Service and Methods Demonstration Program is currently looking at the trade-off among marketing objectives to increase pass sales and financial objectives to increase passenger revenue. A major concern is that discounts are being offered for those trips that are the most expensive to operate. If monthly passes induce additional trips during the off-peak periods, the impact on the system is relatively minor. However, extra trips also occur during peak periods; a portion of the cost of providing that peak hour trip should be reflected in the monthly pass pricing policy.

Express stamps should be consolidated from 5 steps to 3. Sales of 4 and 5 step stamps are minimal and do not justify their administrative costs. The current price for all current step 3, 4 and 5 stamps should be that of step 3.

TABLE 4-1
RTD FARES
AND PASS PRICES
1967 - 1981

<u>Year</u>	<u>Base Cash Fare</u>	<u>Pass Price</u>	<u>Pricing Multiple</u>	<u>Zone or Express Charges</u>	
				<u>Cash Fare</u>	<u>Stamp Price</u>
1967-73	\$0.30	\$12.00	40	—	\$11.00
1974	0.25	10.00	40	—	11.00
1976	0.35	14.00	40	—	11.00
1977	0.40	18.00	45	\$0.20	6.00
1978	0.45	20.00	44	0.20	6.00
1979	0.55	20.00	36	0.20	6.00
1980	0.65	26.00	40	0.20	8.00
1981	0.85	34.00	40	0.20	12.00

Source: *SCRTD Market Research Department, Regular and Express Monthly Pass Buyers' Survey, July 1981, p. 14.*

Multiples for the reduced fare monthly passes should be increased, also. This monthly pass is currently priced at only 18.75 boardings and is below common transit industry experience illustrated previously in Table 2-4. It should be raised to a much higher level, such as 35 boardings, as was discussed previously in Chapter 2.

SCRTD should consider the future replacement of the unlimited use flash pass to a prepayment instrument correlated to the number of boardings. A punch card which would subtract each boarding from the total value is one option. The trade-off in increased revenue per boarding would be with increased dwell time. Alternatively, the implementation would consider the development of a self-validating punch card with more advanced fare collection equipment.

4.2 PASS PRINTING

SCRTD should continue to use counterfeit-resistant material in the printing of monthly passes. The test of this material was prompted by an excessive level of counterfeiting. It was estimated that \$2.85 million a year of lost revenue could be attributed to counterfeit passes. Though the printing costs may be as high as ten times more than the previous method, the material is extremely difficult to counterfeit. Other systems that have switched to it have noticed substantial increases in revenue from pass sales. One system, SEPTA, saw a \$500,000 increase in revenue in just the first six months of using the new material. To date, SCRTD police report virtually no counterfeit passes.

4.3 OTHER MONTHLY PASSES

There are four other types of monthly passes which should be re-evaluated. These are the Fullerton park & ride pass, subscription pass, Ticketron pass, and interagency pass. The Fullerton Pass is distinct since it is a contract service with fares specified by Orange County. Subscription service passes serve a duplicate role -- as these routes are only available to those persons with advanced reservations, the pass also identifies eligible riders. These passes are printed on safety paper and sold in only a few select locations. A minimum printing order must be entered for both passes. Sales are less than half the number printed. Their infrequent use causes driver confusion when they are shown on other routes. Though it is recognized that a distinct card is needed for these services, it is recommended that a special express stamp be developed and affixed to the base pass.

Two other passes which are distinct in appearance and for which there are relatively few sales should be considered for discontinuation. One is the Ticketron pass. Approximately 50 Ticketron outlets throughout the service area serve as pass sales outlets. However, they sell only the regular pass and do not sell any other prepayment media. The Ticketron pass printed by the Ticketron computer, is another fare payment document. It resembles other Ticketron tickets except for a small RTD logo in the printing. The identifying information is difficult to read when the pass is flashed so that substitution with other Ticketron printed media is a continual problem. Sales of Ticketron passes are few, (an average of 1200 per month) compared to the other types of monthly passes. A three percent commission is paid. The additional administrative

costs and complexity that this pass adds to the fare structure as well as the restrictions to users in media options at these outlets are reasons that this pass should be discontinued.

Finally, the interagency pass which allows unlimited ridership on any Orange County Transit District or SCRTD route should be discontinued. Though applaudable in concept, in actuality only 74 of these passes were sold during the last six months of 1981. If the same people are buying this pass each month, the two transit districts are printing, distributing, and maintaining a separate program that only twelve individuals are utilizing.

4.4 ADMINISTRATIVE COSTS

SCRTD should calculate the marginal costs of servicing the nearly 300 outlets that sell monthly passes and other prepayment media. The recent marketing study found that only 15% of these outlets, mostly RTD outlets and check cashing facilities, sell 75% of all monthly passes. The marginal cost of serving the less productive outlets should be reviewed. Servicing each outlet requires staff to distribute passes and reconcile accounts. The choice between numerous outlets and the cost of serving these outlets must be carefully weighed. In recognition of these two conflicting objectives, MARTA (Atlanta) has established a minimum sales level of 100 cards per sales period for each outlet. If sales drop below that volume for three consecutive sales periods, the outlet would no longer be permitted to sell monthly passes on a consignment basis. Instead, they would have the option of outright purchase of the passes for resale via an invoice procedure with no credit for unsold cards. Or, the outlet may choose to drop out of the pass program. Alternative sales distribution practices for SCRTD that

involve major employers or allow for sales through the mail could be evaluated in conjunction with a reduction in the number of regular outlets.

Monthly passes are now sold from the 25th of the month through the 10th. Two-thirds of all passes are sold between the 25th and the 1st day. Ninety-five percent of all passes are sold by the end of the fourth day. A shortening of the number of days that passes are sold, from perhaps the 27th through the 5th day, could reduce the administrative costs of the prepayment program, also. Again, the ability to purchase passes through one's employer or through the mail could compensate for this reduction in public sale days.

4.5 WEEKLY AND BI-WEEKLY PASSES

Some riders have expressed a concern that the price of the monthly pass requires too high a cash outlay. As fares increase, the purchase of a monthly pass will require an even greater one time expenditure. Pass sales have already shown a decrease as a result of the fare increase last July, as was shown previously in Table 2-12. Conversion from a monthly to a bi-weekly pass program could overcome some of these difficulties and could be considered along with future fare increases. The user would have a smaller cash outlay. More individuals might be inclined to purchase passes. This would strengthen the District's objective of switching more users to prepayment so that prepayment becomes the major method for fare collection. Revenue would be enhanced, also. A bi-weekly pass would be sold 26 times, 2 times more than double the monthly sales. This is an 8 percent increase in revenue opportunity. This increase may offset higher costs for printing passes twice as

often. Distribution and accounting costs would also increase as each of the 300 outlets would have to receive the documents, report their sales, and have their accounts reconciled.

4.6 INVESTMENT STRATEGIES

Money received from the sale of monthly passes is payment in advance for services received. Unlike coins deposited in the farebox at time of boarding, revenue from a prepayment program can greatly enhance the District's cash flow. As more and more passengers are encouraged to use prepayment, this amount will become even greater and the investment potential will increase accordingly. Interest received on these monies represents a large untapped source of revenue. Even if these funds are deposited for just a thirty day "float" period, the interest received can help to offset operating costs and particularly the administrative costs of the prepayment program. To do so requires a close working relationship with the local financial community. Board and staff members with expertise in these matters should further pursue this potential for revenue.

4.7 OTHER PREPAYMENT MEDIA

SCRTD's fare structure includes other prepayment media in addition to monthly passes. Tickets and tokens are made available for passenger convenience. Tokens are discounted; tickets are not. Their use is relatively minimal. However, tokens were reintroduced only recently and it is too soon to tell what impact they will have on the fare collection system.

Tokens were reintroduced as a means to combat the dollar bill collection problem. SCRTD has already banned dollar bills. However, this policy is not enforced and collection of dollar bills is up to 130,000 bills per day. The dollar bill

ban should be enforced. The cost of processing these dollar bills should be explained to the public in terms of its impact on the overall system operating cost and the resulting need for increased fares. Token sales should be more heavily promoted to compensate for this enforced ban on dollar bills.

Tickets are now sold individually or in books of ten at RTD sales outlets. A total of 40 different ticket denominations now exist. This should be reduced to five. Tickets should be targeted to the express bus user who does not ride frequently enough to purchase a monthly pass, or does not wish to make this single cash outlay. Other target ticket users are those riders paying reduced cash fares -- senior citizens and handicapped persons during the off-peak period (as previously recommended) and students. Five tickets should be sold -- one for each of the proposed three zone fares (the present \$1.25, \$1.65, and \$2.05 fares), and the 40¢ and 65¢ reduced fares. Demand for other denominations is too insignificant to warrant their production.

Other tickets should be eliminated. This includes Greyhound tickets and SCRTD blank ticket form SKEL-16. Their retention is based more on historical practice than actual levels of use. The elimination of school tickets should also be reviewed with appropriate officials from the LA County schools.

* * * * *

SCRTD's monthly pass program and overall fare structure includes a multiplicity of fare payment options. Part of this extensiveness is due to a lack of targeting of prepayment media

to various groups of users. This chapter has recommended strategies for streamlining the monthly pass program and reducing the administrative costs of prepayment. These recommendations are the first step towards the better identification of target markets for prepayment; the monthly pass priced at a higher level of boardings is targeted to regular users who transfer; tickets should be targeted to frequent but not daily users of express routes and passengers travelling at reduced cash fares; tokens should be marketed to frequent but not daily users of local service. These actions, coupled with the recommendations to streamline the administration of the monthly pass program should induce more people to purchase passes, tickets, and tokens and thereby increase passenger revenue while reducing administrative costs.

CHAPTER 5
PEAK/OFF-PEAK PRICING STRATEGY

A peak/off-peak pricing strategy has been suggested for implementation by SCRTD. The concept has been proposed in recognition of the higher costs associated with providing peak service. This chapter explores the issues revolving around the adoption of different fares for peak and base period service.

5.1 APPLICATIONS ELSEWHERE

Peak period pricing is not uncommon. Public utilities, transportation carriers, and transit systems have been charging higher prices or surcharges during high demand times for many years. Telephone rates and electric power rates are highest during business hours. Other transportation carriers, such as airlines, charge their highest rates during peak travel periods and their lowest when passengers are fewest (e.g., Southwest Airlines reduces all fares to \$29 after 7:00 p.m. and on Saturday; United Airlines' original super-saver fares were lowest on Tuesday, Wednesday and Thursday).

Rail transit systems, particularly commuter railroads, traditionally charge peak and "bargain" off-peak fares. Bus systems have been adopting the concept also. Of the 13 systems surveyed for this study, four have implemented a peak base fare structure. The four are Orange County Transit District, Seattle Metro, Denver RTD, and WMATA. Their peak base fares, shown in Table 5-1, reduce the base fare from 7 to 50% off the peak fare. The first two systems, Orange County and Seattle,

TABLE 5-1
EXISTING PEAK/BASE FARES

<u>Transit System</u>	<u>Peak Fare</u>	<u>Base Fare</u>
Denver Regional Transit District	\$0.70	\$0.35
Orange County Transit District	\$0.75	\$0.60
Municipality of Metropolitan Seattle	\$0.60	\$0.50
Washington Metropolitan Area Transit Authority		
District of Columbia	\$0.65	\$0.60
Maryland	\$0.65	\$0.65
Virginia	\$0.65	\$0.65

recently implemented a peak/base pricing strategy as a means to off-set across-the-board fare increases. In Seattle, the previous fare was retained as the base fare; fare increases occurred for only peak period travel. In Orange County, fare increases were minimized. Prior to the last fare increase, the fare for all local service in Orange County was 50¢. After the fare increase, the fare for local service was raised to 60¢ during the base period and 75¢ during the peak period. The situations in Denver and Washington are somewhat more unique. Denver at one time was participating in an UMTA-sponsored free fare off-peak demonstration. Half fares during the base period replaced free fares when the demonstration ended. WMATA's peak/base fare structure complements peak/base fares charged for their rail system. It is important to note, however, that each jurisdiction making up the WMATA compact determines its own pricing strategy. Currently, only the District of Columbia charges a peak/base fare for bus service.

5.2 PEAK/OFF-PEAK PRICING RATIONALE

Peak service is more expensive to operate. Demand for service is the greatest and utilization of vehicles and drivers is at the highest point of the operating day. Much of the cost of operating a transit system is determined by the level of service during the peak period. Capital investments must be made to have enough buses and related equipment to operate at this time. RTD operates 2,007 buses during the peak period. This number drops by approximately 40 percent to 1,153 buses operated during the mid-day period. Thus, 804 buses must be purchased, maintained, and stored for only a few hours of service each weekday. Operating speeds are slower during the peak as they are constrained by the traffic congestion. This negatively affects fuel consumption and system productivity.

Administrative costs are also driven by peak demands. The total infrastructure of support and administrative services is based on the number of vehicles and drivers that must be operated in the peak period.

The most significant impact on peak operating costs is that of labor. Drivers' wages and fringe benefits are the largest expense item in a transit system. Most labor agreements contain penalties for peak service as they require more pay hours per vehicle hour for peak period service than for base operations. Typical provisions which impact costs include:

- . straight runs insure that at least some peak period drivers will have an uninterrupted work day;
- . combination time prescribes penalties for peak period only drivers to receive a full days pay for less than 8 hours of work;
- . spread time provides premium pay for any work performed beyond the fixed daily time span; and
- . guaranteed time sets minimum weekly pay regardless of hours worked.

All these factors contribute to peak period service being more costly than off-peak service.

5.3 GRADUATED FARE ALTERNATIVES

Two types of graduated fares often are suggested as alternatives. Graduated fares are more efficient in that the user pays a proportional price for their trip. Unlike flat fares, graduated fares consider the time of day the trip is made and the length of the trip.

The two most common types of graduated fares are distance based and time based. The distance based fare is calculated at a unit price per mile. Distance based fares are more commonly used in rail systems through the establishment of fare zones or assisted by sophisticated technology which measures the length of the passenger's trip. New rail systems, such as those operated by BART and WMATA, have adopted a distance based fare. However, fare collection equipment for rail systems is more advanced than that used on buses. Equipment is not currently available with which distance based bus fares could be readily implemented.

Time based fares are another alternative. A peak/off-peak fare is the most common example of a time based fare. This type of fare structure improves the efficiency of the fare structure by establishing fares that are more in line with actual costs at different times of the day. In addition, recent research has shown a correlation between trip length and time of day. Peak period trips tend to be longer as they primarily serve work trips from outer areas to the central business district. Off-peak period trips tend to be shorter as they serve shopping, medical and personal business services within a local area. Therefore, a peak/base time based fare can serve as a surrogate for a distance based fare. It can resolve both efficiency concerns while utilizing existing bus fare collection technology.

5.4 CALCULATION OF RTD PEAK AND BASE COSTS

The following discussion documents the costs incurred by SCRTD to operate service. Through a three-step process, costs are determined for peak period and base period service. A resulting cost per mile and cost per hour are developed for both operating periods. The concept of cost allocation modeling is

commonly applied throughout the transit industry and is documented in numerous publications. One reference describing the peak/base cost allocation model is the paper "Peak-Base Cost Allocation Models" by S.R. Mundle and W. Cherwony published in Transportation Research Record 663, 1978.

5.4.1 Three Variable Model

The first step in demonstrating the cost of peak and base period service is the development of a cost allocation model. The basic premise of the cost allocation model is that each operating expense, such as driver wages, fuel, and repair costs, can be allocated to a particular transit resource or variable, e.g., vehicle miles, vehicle hours, and peak vehicles. By allocating each expenditure to one or more resources, a series of unit cost factors can be derived from system-wide financial and operating data. The Section 15 financial report provides all necessary data to compute the two cost factors. A three variable model was developed for SCRTD using Section 15 financial statistics for FY'81. This model results are as follows:

$$\text{Operating Cost} = \$21.88 \text{ VH} + \$1.40 \text{ VM} + \$30,038 \text{ PV}$$

Where: VH = Vehicle Hours
VM = Vehicle Miles
PV = Peak Vehicles

5.4.2 Peak Adjustment Factors

The three variable approach was modified to account for the differences in labor productivity and service levels in peak and base periods. The vehicle hour unit cost factor in the three variable cost allocation model represents a weighted

average of both peak and base conditions. To more accurately reflect the time of day cost differentials, it is necessary to relate peak and base unit cost per vehicle hour factors to the system-wide unit average cost. This relationship should include some measure of the labor productivity (pay hours/vehicle hours) and the service levels operated in each period (peak/base vehicle hours). Thus, the second step in this process is to develop adjustment factors to incorporate these peak/base utilization measures into the conventional cost allocation model. Data necessary to calculate peak base adjustment factors are 1) vehicle hours operated in the peak and base periods, and 2) pay hours in the peak and base period. Adjustment factors developed in the County's Transit Coordination and Service Program were used for this exercise. These are as follows:

- . peak adjustment factor = 1.166
- . base adjustment factor = 0.895

5.4.3 Peak-Base Model

The final step applies the peak and base adjustment factors to the conventional model's system-wide vehicle hour unit cost value. Two vehicle hour unit cost factors are the product: one for the peak period and another for the base period. Each reflects the labor productivity and service levels in operation during the time of day for which it was derived. The resulting cost formula for the peak base model is shown below:

$$\begin{aligned}\text{Peak Cost} &= \$25.51 \text{ VH} + \$1.40 \text{ VM} + \$30,038 \text{ PV} \\ \text{Base Cost} &= \$19.58 \text{ VH} + \$1.40 \text{ VM}\end{aligned}$$

Calibration of this model was accomplished for operating statistics from the same FY'81 Section 15 report. Statistics

for vehicle miles, vehicle hours, and scheduled vehicles by operating period are shown in Table 5-2. Weekday peak, weekday base, and total base period statistics were tallied. These totals represented single day operating statistics and had to be annualized. The results of this step are presented in Table 5-3. The resulting totals were then inserted into the peak and base cost allocation models listed above to yield total peak period costs and total base period costs. The results, which follow as Table 5-4, yield a total peak cost for FY'81 of \$177 million and a total base cost of \$197 million. More importantly, on a cost per mile basis this yields a peak period cost of \$4.73 per mile compared to \$2.76 per base period mile.

Revenue figures can be subtracted from this amount to derive the deficit per mile in both the peak and base periods. The Section 15 report identifies total annual revenue from passenger fares of \$140,335,592. This amount is not allocated for the peak and off-peak periods. SCRTD staff baseline data show the peak/base split in revenue to be 48% peak and 52% base. In lieu of Section 15 data, these percentages were applied to the total revenue reported to yield peak revenues of approximately \$67 million and base revenues of approximately \$73 million. Dividing these numbers by total miles produced a revenue per mile statistic of \$1.80 in the peak period and \$1.02 in the base period. The deficit per mile which remains is \$2.93 in the peak period and \$1.74 in the base period. These statistics, which follow as Table 5-5, illustrate that peak costs are indeed higher and that a peak/off-peak pricing strategy is justified.

Hourly statistics also illustrate that higher peak period fares are justified. Costs per hour are \$68.37 (peak) and

TABLE 5-2
 FY 1981 OPERATING STATISTICS
 USED AS INPUT
 TO PEAK/BASE COST ANALYSIS

<u>Operating Period</u>	<u>Vehicle Miles</u>	<u>Vehicle Hours</u>	<u>Scheduled Vehicles</u>
A.M. Peak	66,930	4,393	1,889
Midday	123,828	9,345	1,210
P.M. Peak	76,704	5,549	1,948
Night	77,221	4,482	317
Saturday	204,211	14,851	952
Sunday	158,877	11,398	750
Totals			
Weekday Peak	143,634	9,942	—
Weekday Base	201,049	13,827	—
All Base	564,137	40,076	—

Source: SCRTD Section 15 Report

**TABLE 5-3
ANNUALIZED OPERATING STATISTICS**

	<u>Miles</u>	<u>Hours</u>
Weekday Peak	143,634	9,942
Annualization Factor	260	260
Total Annual Weekday Peak	37,344,840	2,584,920
Weekday Base	201,049	13,827
Annualization Factor	260	260
Total Annual Weekday Peak	52,272,740	3,595,020
Saturday	204,211	14,851
Annualization Factor	52	52
Total Annual Saturday	10,618,972	772,252
Sunday	158,877	11,398
Annualization Factor	52	52
Total Annual Sunday	8,261,604	592,696
Total Annual Base	71,153,316	4,959,968

TABLE 5-4
PEAK/BASE COST ALLOCATION MODEL^(a)

$$\begin{aligned} \text{Peak Cost} &= (25.51) (\text{Vehicle Hours}) + (1.40) (\text{Vehicle Miles}) + (30,038) (\text{Peak Vehicles}) \\ &= (25.51) (2,485,920) + (1.40) (37,344,840) + (30,038) (1,948) \\ &= 65,941,309 + 52,282,776 + 58,514,024 \\ &= 176,738,109 \end{aligned}$$

$$\begin{aligned} \text{Base Cost} &= (19.58) (\text{Vehicle Hours}) + (1.40) (\text{Vehicle Miles}) \\ &= (19.58) (4,959,968) + (1.40) (71,153,316) \\ &= 97,116,173 + 99,614,642 \\ &= 196,730,815 \end{aligned}$$

(a) Based on FY 1981 Section 15 data.

TABLE 5-5
COMPARISON OF PEAK AND BASE COSTS

	<u>Peak Period</u>	<u>Off-Peak Period</u>
Allocated Cost	\$176,738,109	\$196,730,815
Total Miles	37,344,840	71,153,316
Total Hours	2,584,920	4,959,968
Revenue	\$ 67,361,084	\$ 72,974,508
Cost per Mile	\$ 4.73	\$ 2.76
Revenue per Mile	\$ 1.80	\$ 1.02
Deficit per Mile	\$ 2.93	\$ 1.74
Cost per Hour	\$ 68.37	\$ 39.66
Revenue per Hour	\$ 26.06	\$ 14.71
Deficit per Hour	\$ 42.31	\$ 24.95

\$39.66 (base). The deficit per hour is \$42.31 during the peak period and \$24.95 during the base period.

5.5 IMPLEMENTATION OF PEAK/OFF-PEAK FARE

The implementation of a peak/off-peak pricing strategy demands a high level of marketing and training to lessen confusion and confrontation between drivers and passengers. In addition to advertising the concept of peak/off-peak pricing and clearly posting the hours, it is essential that peak hour trips be designated on each line's individual timetable. A decision must be made for those trips whose checkpoint times would include both peak and base times. A policy stating that the peak period trips are those which leave the origin or conversely arrive at the destination during set hours should be established. A policy regarding those trips operating late or early and thereby operating in a different time period should also be stipulated. Drivers and passengers alike should be made aware of these policies.

Modified fare collection media should be developed and distributed, also. This includes the adult monthly pass priced for peak hour service, the elderly and handicapped persons pass priced for off-peak service, and different adult tokens for both the peak and base fares. Drivers should be expected to become familiar with these new media and with the restrictions on their use.

* * * * *

This chapter has evaluated the peak/off-peak pricing strategy which is currently proposed. Experience in other cities was reviewed. The fact that peak hour costs are more expensive

than base period costs was demonstrated through the development and application of a peak-base cost allocation model. Considerations for implementing a peak/off-peak pricing strategy were presented, also.

CHAPTER 6
CONCLUSIONS AND RECOMMENDATIONS

This report has identified a number of actions to simplify the current SCRTD fare structure, suggested preferred strategies for increasing revenue, and developed a rationale for each fare element. Recommendations were presented for the overall fare structure, the reduced fare program, the monthly pass program, and a peak/off-peak pricing strategy. Key findings and recommendations are summarized in this last chapter.

6.1 KEY FINDINGS

6.1.1 Overall Fare Structure

Findings

- Current fare structure is too complex -- e.g., 123 documents for fare payment or identification which the operator must recognize
- Administrative difficulties exist
 - .. 300 sales outlets throughout the service area
 - .. underpayment associated with on-board verification
 - .. increasing number of \$1.00 bills (currently 130,000 per weekday)
- Annual administrative costs are in excess of \$5.1 million; dollar bill handling is a major expense item
- Most revenue (90%) is generated by only seven categories of fares

. Recommendations

- Enforce ban on dollar bills
- Develop long term fare collection strategy

6.1.2 Reduced Fare Programs

. Findings

- Senior citizens and handicapped persons fare
 - .. peak period discounts are not offered in New York, Philadelphia, Boston and Pittsburgh
 - .. four different senior identification cards and one handicapped card are accepted for reduced cash fares
 - .. current pass priced at 18.75 boardings per month
- Student fares
 - .. common to many transit systems
 - .. requires different identification cards and monthly passes
- College/vocational students
 - .. a discount unique to RTD
 - .. enforcement difficult
- Blind persons
 - .. currently ride free
 - .. only two other systems permit free travel rather than travel at handicapped persons fare

. Recommendations

- Eliminate peak period discounts for elderly and handicapped persons

- Consolidate elderly and handicapped monthly passes
- Price elderly and handicapped monthly passes at a higher multiple
- Consolidate identification instruments
- Consolidate student passes
- Reduce the number of discount express stamps from five to one
- Eliminate college/vocational student pass
- Charge handicapped persons fare to blind persons
- Other reduced fares
 - .. discontinue tourist pass
 - .. discontinue director's pass
 - .. restrict free travel to uniformed city and county personnel

6.1.3 Monthly Pass Program

. Findings

- Passes are a key fare element -- represent 32% of total revenue collected
- Current pricing multiple for adult riders is in line with that charged by other large transit systems
- Boarding rate is significantly higher than the monthly multiple

. Recommendations

- Increase base pass multiple to 50
- Consolidate express stamps from 5 to 3
- Eliminate ticketron and inter-agency passes

- Replace Fullerton and subscription pass with a special stamp
- Consider introduction of weekly and bi-weekly passes if monthly pass price increases
- Study replacement of flash passes with punch cards
- Reduce ticket denominations substantially from 40 to 5
- Discontinue Greyhound tickets and SCRTD ticket form SKEL-16
- Aggressively market token sales

6.1.4 Peak/Off-Peak Pricing Strategies

. Findings

- Concept has been implemented by four other major transit systems
- Peak service is more expensive to operate
- RTD costs per mile:
 - .. peak period \$4.73; deficit \$2.93
 - .. base period \$2.76; deficit \$1.74
- RTD costs per hour:
 - .. peak period \$68.37; deficit \$42.31
 - .. base period \$39.66; deficit \$24.95

. Recommendations

- Implement graduated fares through peak/off-peak pricing
- Complement introduction with a high level of marketing and training

6.2 FARE STRUCTURE SIMPLIFICATION

Adoption of the recommendations contained in this report will greatly simplify the SCRTD fare structure. The number of documents will drop by 60% from 123 to 49. A summary of these actions is presented in Table 6-1 and includes:

- . Passes (48 to 23 documents) - major simplifications are the reduction in express stamps and elimination of several pass types;
- . Tickets - (47 to 6) - reductions in ticket denominations and the elimination of school, Greyhound, and skeleton tickets;
- . Tokens (2) - no change;
- . Transfers (14) - no changes at this time; simplification should be explored jointly with neighboring transit systems; and
- . Methods of Identification (12 to 4) - consolidation of elderly and handicapped cards and elimination of free travel with city and county employee identification.

This 60 percent reduction in documents could be further increased with the cooperation of surrounding county transit systems. Many of the remaining documents are their passes and transfers. For the most part they have been omitted from this report because of this study's time frame, the interagency actions needed to adopt and implement the changes, and their relative impact on the District's fare structure. Their omission is only a deferral, not an approval of the number of documents. It is recommended that RTD take the appropriate steps to streamline the interagency fare structure.

TABLE 6-1
MAJOR FARE STRUCTURE SIMPLIFICATIONS

<u>Category</u>	<u>No. of Documents</u>		<u>Actions</u>
	<u>Current</u>	<u>Recommended</u>	
Passes	48	23	<ul style="list-style-type: none"> ... Discontinue Ticketron pass, college/vocational pass, director's pass, tourist passes. ... Reduce express stamps to 3 and discount stamps to 1. ... Consolidate employee passes. ... Consolidate E&H passes. ... Simplify student pass to 1. ... Replace park-n-ride, Orange County, and subscription passes with special pass stamps.
Tickets	47	6	<ul style="list-style-type: none"> ... Discontinue school tickets, Greyhound tickets, and Form SKEL-16. ... Condense ticket denominations from 40 to 6.
Tokens	2	2	
Transfers	14	14	<ul style="list-style-type: none"> ... Explore consolidation with other operators.
Methods of Identification	12	4	<ul style="list-style-type: none"> ... Discontinue L.A. City and County IDs, Braille Institute ID, and all but two types of E&H ID. ... Consolidate E&H ID cards.
Total	123	49	

6.3 REVENUE IMPACTS

Revenue impacts for selected pricing changes have been calculated with arc elasticities provided by the SCRTD staff. Arc elasticity is calculated as a ratio of the percentage change in transit use to the percentage change in price. Impacts were projected for the following pricing strategies:

- . Adult Pass - a change in the adult monthly base pass price from \$34.00 (40 trips @ 85¢) to \$50.00 (50 peak period trips @ \$1.00)
- . Elderly and Handicapped Cash - an increase in the peak period cash fare from 40¢ to \$1.00
- . Elderly and Handicapped Pass - a change in the monthly pass to an instrument intended for off-peak travel priced at 35 boardings (\$7.50 to \$14.00)
- . Adult Express Stamps - consolidation of steps 3, 4, and 5 with steps 4 and 5 priced at the new step 3 rate (based on a \$50.00 base pass)
- . Discount Express Stamps - consolidation of all five steps into one with the new price based on step 2 and the appropriate base pass

Current ridership of peak hour senior citizens was obtained from current RTD staff baseline statistics. All other ridership volumes are one month average sales records based on the figures which appeared earlier as Table 2-11. Discount express stamp sales records were disaggregated for elderly and handicapped persons, students, and college students according to their proportion of total discount stamp revenue, as reported in the same baseline information. The combined results, shown in Table 6-2, are an estimated annual increase in revenue of \$18.5 million. Much of the increase comes from adult passes, a

TABLE 6-2
REVENUE IMPACTS
OF SELECTED PRICING STRATEGIES

Category	Arc Elasticity	Present Fare	Proposed Fare	Present Volume	Projected Volume	Revenue Change	Annualized Revenue
Adult Pass	.26	\$34.00	\$50.00	89,412 sales/mo.	83,833	\$1,151,642/mo.	\$13,819,704
E&H Cash (Peak)	.15	0.40	1.00	2.26 M peak boardings per year	2.01 M	1,107,400/yr.	1,107,400
E&H Pass (Off-Peak)	.35	7.50	14.00	62,955 sales/mo.	53,512	277,005/mo.	3,324,060
Adult Exp. Stamps							
Step 4	.26	82.00	86.00	1,287 sales/mo.	1,274	4,030/mo.	48,360
Step 5	0.26	94.00	86.00	683 sales/mo.	847	8,640/mo.	103,680
E&H Discount Express Stamps							
Step 1	.35	13.50	26.00	864 sales/mo.	726	7,212/mo.	86,544
Step 2	.35	19.50	26.00	493 sales/mo.	463	2,424/mo.	29,088
Step 3	.35	25.50	26.00	472 sales/mo.	472	(236)/mo.	(2,832)
Step 4	.35	31.50	26.00	195 sales/mo.	201	(916)/mo.	(10,992)
Step 5	.35	37.50	26.00	107 sales/mo.	112	(1,100)/mo.	(13,200)
Student Express Stamps							
Step 1	.35	28.00	34.00	144 sales/mo.	138	660/mo.	7,920
Step 2	.35	34.00	34.00	83 sales/mo.	83	—	—
Step 3	.35	40.00	34.00	79 sales/mo.	81	(406)/mo.	(4,872)
Step 4	.35	46.00	34.00	32 sales/mo.	34	(316)/mo.	(3,792)
Step 5	.35	52.00	34.00	18 sales/mo.	19	(290)/mo.	(3,482)
							+ \$18,526,756
							- \$ 39,170
TOTAL							= \$18,487,586

108

dominant revenue category. Express stamp impacts are relatively minimal and serve more to simplify the fare structure than to increase revenue.

6.4 NEXT STEPS

These recommendations represent the first step towards the overall simplification of the SCRTD fare structure. Three key areas for additional action are suggested:

- . increased enforcement of the dollar bill ban,
- . joint efforts for further simplification with surrounding counties, and
- . creation of a set of formal fare policies

The last suggestion is intended to formally document the rationale for the different fare elements as District policy. Formal fare policies should also be the foundation of upcoming decisions regarding Metro Rail fares and the subsequent integration of bus and rail fares.