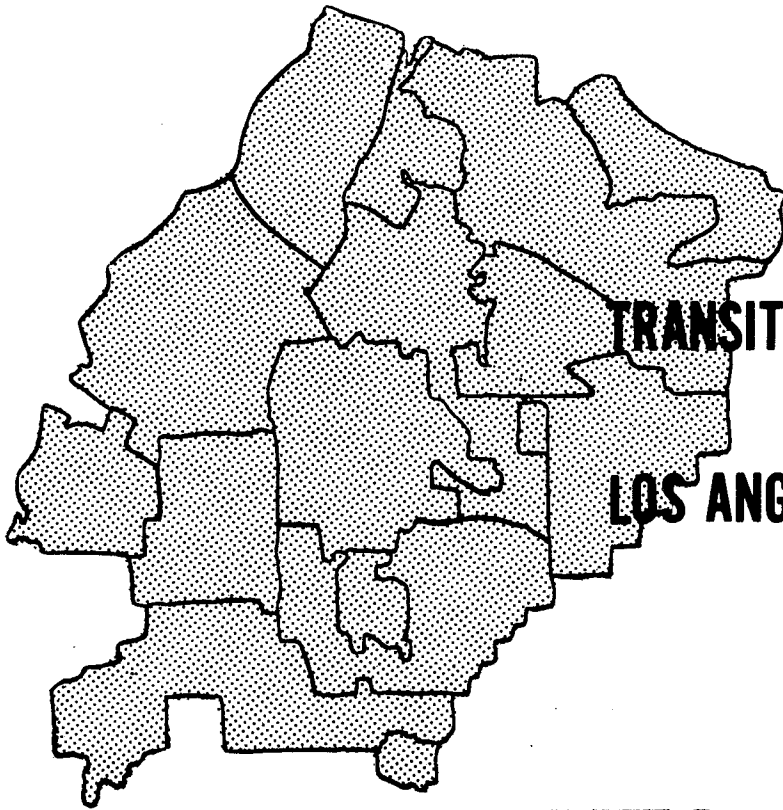


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**RECOMMENDED
TRANSIT IMPROVEMENT PLAN
FOR THE
LOS ANGELES MID-CITIES AREA**

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**SHORT RANGE
TRANSIT IMPROVEMENT
PROGRAM**

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CENTS
TRANSIT OPERATIONS & PLANNING DIVISION
in conjunction with

SCRTD
PLANNING & OPERATIONS STAFFS

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ABOUT THE WORK...

This plan was prepared by the staff of CENTS' Transit Operations and Planning Division in close association with the senior SCRTD planning staff headed by Mr. Howard Beardsley. Unlike most such efforts, where the work is presented through a report after its completion, the CENTS staff met daily with their SCRTD counterparts. As concepts for changing routes and ideas for improving service emerged, the experience and policy perceptions of the SCRTD staff were brought to bear on these concepts. Consequently, this summary report, and the more detailed report on which it is based, are an anticlimax. Before either report was prepared, the SCRTD planning and operational staffs that worked with CENTS knew as much about the plan and each step of its formulation as did the CENTS staff.

The process of evaluating the existing transit services and formulating route and service changes included 24 separate meetings between the CENTS staff and planning agency officials from each of the 12 cities in the study area. Each of these meetings was attended by a member of the SCRTD staff. The first meeting was designed to acquaint city officials with the purpose for the project, to assure them that they would have an opportunity to react to any transit changes affecting their cities before these were codified, and to obtain from them information on travel patterns and transportation requirements as they and the communities that they represented perceive them. At the second meeting the principal concepts of the plan were presented along with alternative ideas for improving service. The reactions and suggestions from this second meeting are reflected in the transit improvement plan.

Besides the information and data supplied by the cities and operators of the major shopping centers, the evaluation of existing services used passenger check data and schedules supplied by SCRTD and demographic and travel data from the 1970 U.S. Census.

SCRTD TRANSIT IMPROVEMENT PROGRAM...

The plan for improving transit services in the Mid-Cities area is part of a comprehensive Short Range Transit Improvement Program that SCRTD initiated recently to evaluate and elevate the quality and effectiveness of its bus services in the entire Los Angeles Metropolitan area. The program is designed to bring existing SCRTD service into conformance with existing and emerging travel patterns.

Certain areas in the Los Angeles Basin have experienced intense development and population growth that has produced radical changes in the travel behavior in those areas. The divergence between transit services and mobility requirements in local areas have become more pronounced since the elimination of fare zones.

This report summarizes the work that was undertaken to evaluate the transit services in one such area - Mid-Cities - and to develop an operational plan for improving such service. The desired plan had to be sufficiently detailed to be implemented without further analysis.

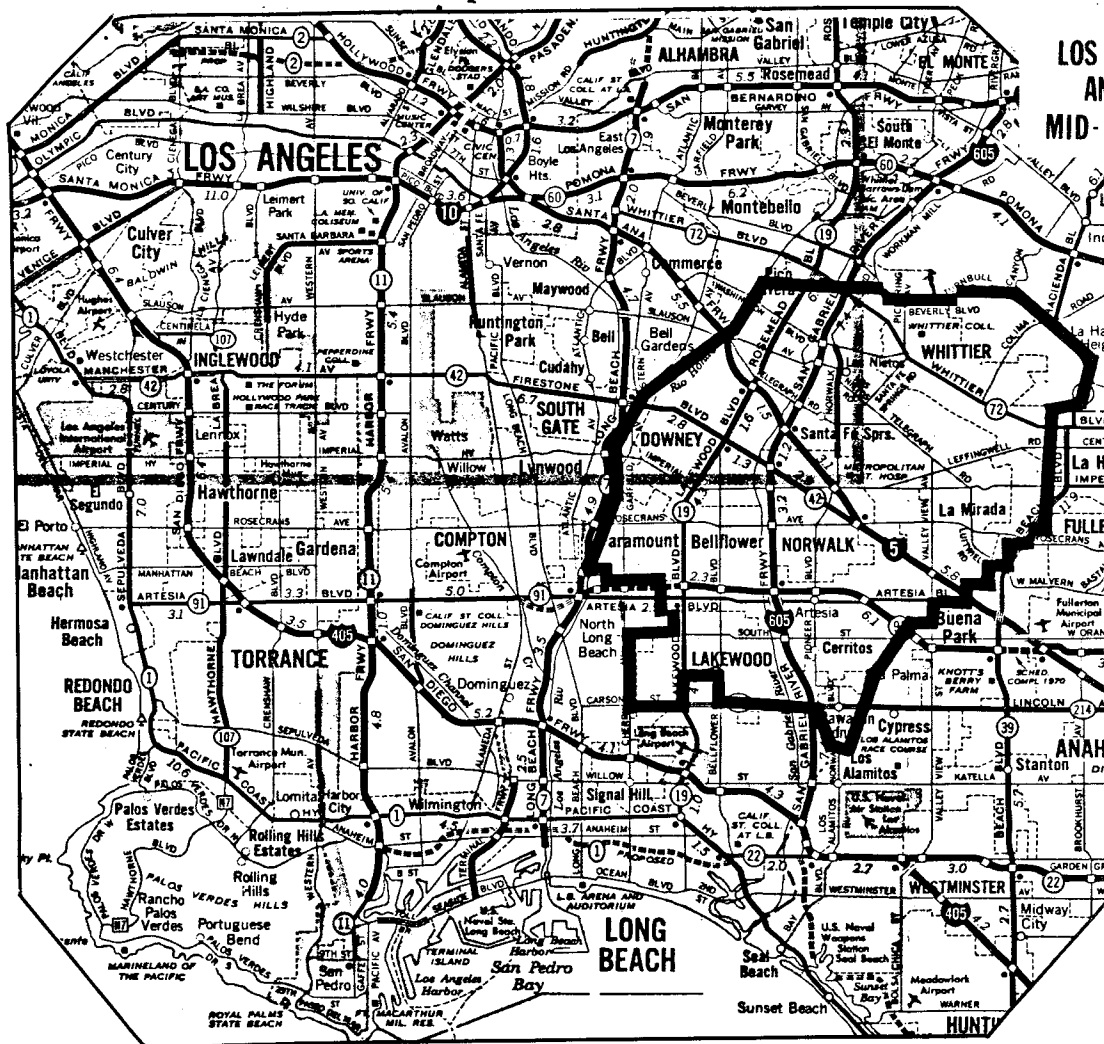
GEOGRAPHY AND PEOPLE OF THE MID-CITIES AREA...

The Mid-Cities area covers 105 square miles of southeast Los Angeles County and houses a population of over 625,000. The population has grown from 520,000 to 588,000 between 1960 and 1970, an increase of 13 percent. Between 1970 and 1974, it is estimated that the area's population has increased by 6.5 percent. In contrast, the population of the Los Angeles Basin has *declined* by 2 percent over the same period.

The topography of much of the study area is flat, the only exceptions being the Puente Hills area in Whittier, and the Los Coyotes Hills in La Mirada. The relative absence of other topographic obstacles (the Los Angeles and San Gabriel Rivers do not present a major obstacle to travel) has helped to produce a net-

work of arterial streets that have facilitated movement within the area. North of Imperial Highway the inclination of the road grid is along a southeast-northwest axis. This pattern is determined by the hills to the northeast and by the railroad right-of-way. Major roads that follow this inclination are, from north to south: Whittier Boulevard, Washington Boulevard; Telegraph Road, Firestone Boulevard, and the Santa Ana Freeway.

From Imperial Highway South, the area exhibits a more or less conventional square grid pattern aligned along a north-south axis. Major east-west arterials south of Imperial are: Rosecrans Avenue, Alondra Boulevard, Artesia Boulevard, South Street, Del Amo Boulevard, and Carson Street.



LOS ANGELES AND THE MID-CITIES AREA

There are several major arteries that traverse the entire study area in the north-south direction. Where the two grid patterns meet, the orientation changes for streets such as Paramount Boulevard, Lakewood-Rosemead Boulevards, Bellflower Boulevard, Studebaker Road, Pioneer Boulevard, Norwalk Boulevard, Carmenita Road and Valley View Avenue.

New residential construction within the last 10 years and the street pattern have contributed to the development of large shopping plazas and commercial corridors. The principal shopping plazas include the Quad and Whittwood in Whittier; Stonewood in Downey; La Mirada Center in La Mirada; Norwalk Square in Norwalk; Los Cerritos Center in Cerritos; and Lakewood Center in Lakewood. These centers provide not only shopping for area residents, but employment as well.

The population of the Mid-Cities area is predominantly middle class. The average annual household incomes are distributed over a relatively narrow range with 80 percent of the area's population having incomes between \$10,000 and \$15,000 per year. Within this range, the various income groups are distributed throughout the area, although the western half tends toward the lower end of the income range while those in the eastern sections of the area, i.e. La Mirada and eastern Whittier, are more affluent.^{1/}

The poor, the elderly and the young that traditionally represent the transit dependent group are a small minority of the Mid-Cities area population. With few exceptions, the elderly represent less than 10 percent of the population in most Mid-Cities' census tracts. There are

concentrations of elderly in Downey, Whittier, Santa Fe Springs and Bellflower but these are generally below 20 percent of the population in those census tracts. The population below the poverty level is generally below 7 percent of the total population. Only a few pockets of poverty exist in a few of the census tracts in Artesia, Paramount/Downey, Pico Rivera, Hawaiian Gardens and Norwalk.

Unlike many areas of Southern California where the low income population is largely of Spanish descent and is concentrated in a geographic area, the Spanish speaking population in the Mid-Cities area is generally small and widely dispersed throughout the area. The only important exceptions are Pico Rivera and a section of Santa Fe Springs.

In most suburban areas, transit usage varies inversely with auto ownership. Auto ownership for the Mid-Cities study area is high, being above 1.6 autos per household. Where auto ownership is low, it correlates with low income. There is very little correlation between transit use for work trips and auto ownership. Where transit usage is above average for the area, auto availability tends to be low. However, there are a sufficient number of exceptions, e.g. census tracts in La Mirada and Bellflower, to discourage a convenient generalization.

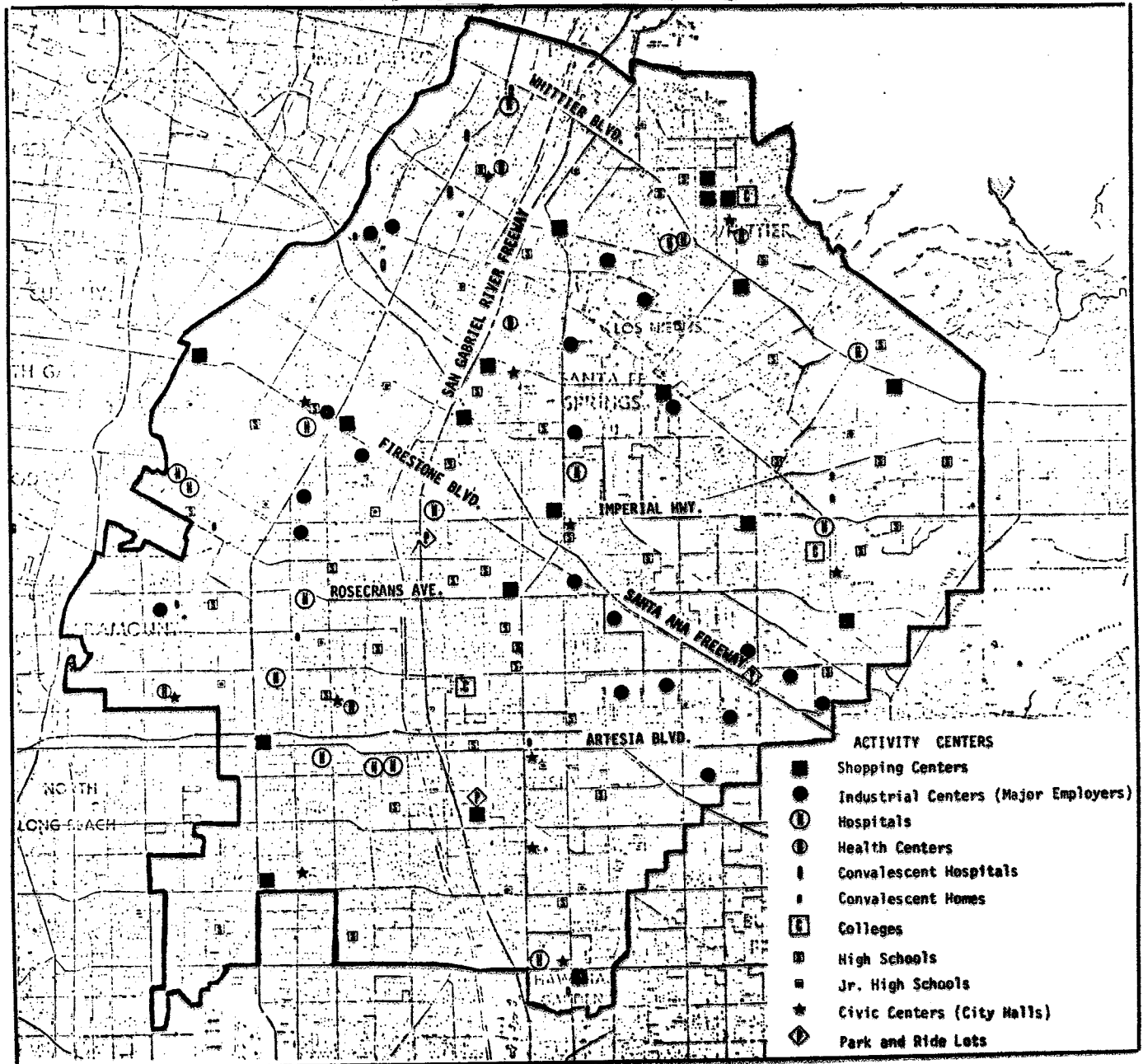
The uniformity of income and their distribution throughout the area accounts, to some extent, for the diffusion of travel patterns in the area. The Los Angeles CBD is a work trip destination for only 1 to 7 percent of all work trips. In many census tracts the percentage is below 1 percent.

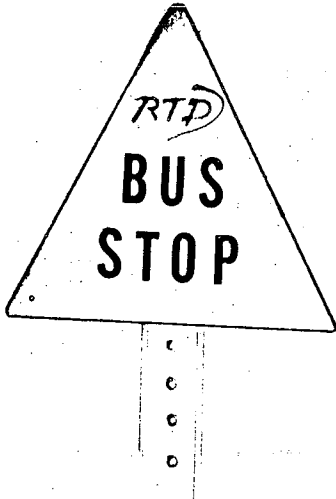
^{1/} Based on 1970 U.S. Census

Planning officials in the 12 cities believe that the comparatively recent commercial and industrial growth of the area has resulted in more travel to destinations within

the area. Regardless of the destination, however, transit use is low. In only a few census tracts are more than 2 percent of the work trips made by public transportation.

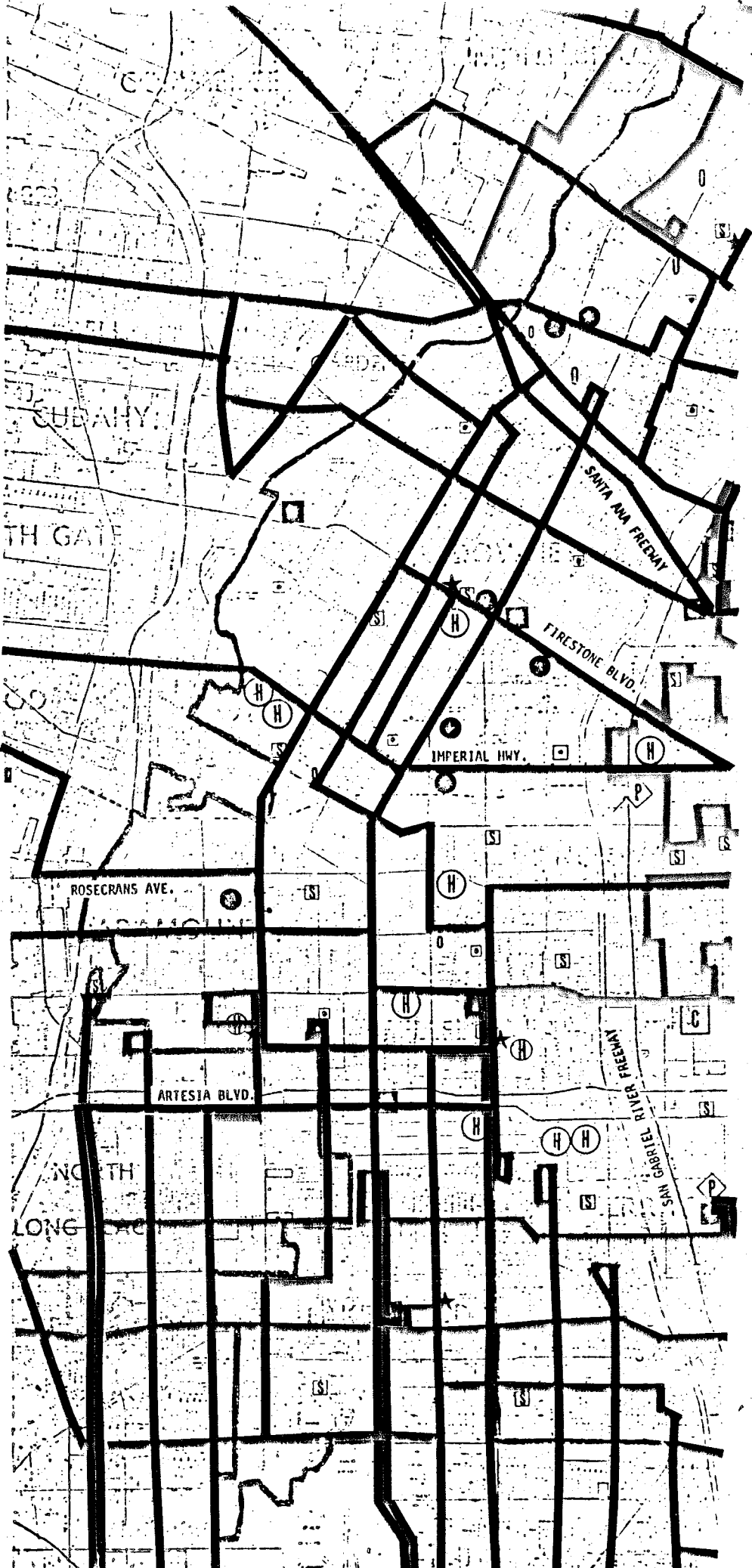
MID-CITIES MAJOR ACTIVITY CENTERS



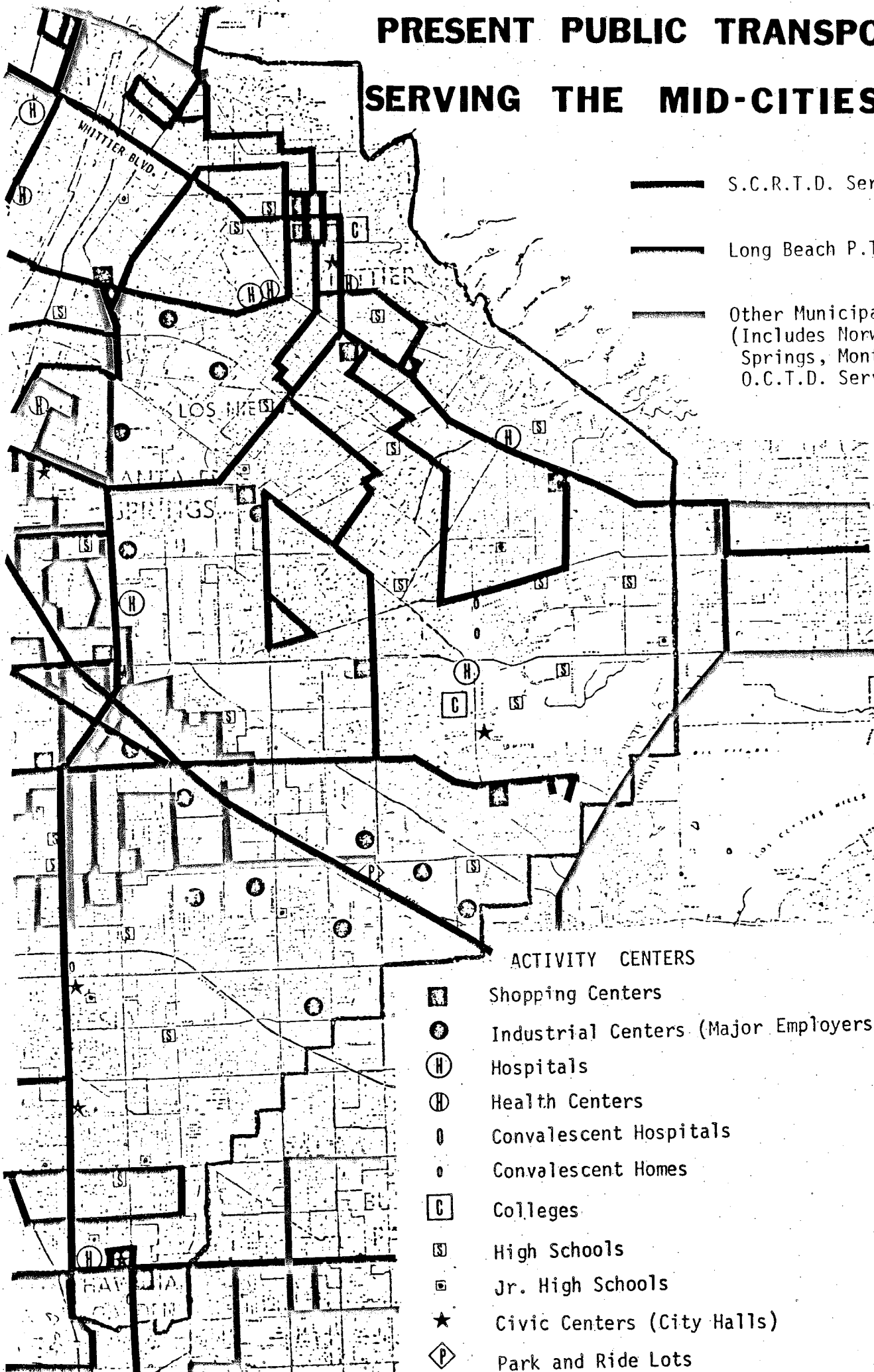





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PRESENT PUBLIC TRANSPORTATION SERVING THE MID-CITIES AREA



-  S.C.R.T.D. Service
-  Long Beach P.T.C. Service
-  Other Municipal Service
(Includes Norwalk, Santa Fe Springs, Montebello and O.C.T.D. Services)

- ACTIVITY CENTERS**
-  Shopping Centers
 -  Industrial Centers (Major Employers)
 -  Hospitals
 -  Health Centers
 -  Convalescent Hospitals
 -  Convalescent Homes
 -  Colleges
 -  High Schools
 -  Jr. High Schools
 -  Civic Centers (City Halls)
 -  Park and Ride Lots

EXISTING TRANSIT SERVICES...

Transit services are provided to the Mid-Cities area by RTD, which connects the 12 cities with the region; Long Beach Public Transportation Company, which connects Long Beach with Lakewood, Bellflower and Paramount; the Norwalk Transit System, which operates within that city; the Santa Fe Springs Public Transit System, which serves residents of that city; and the Montebello Transit System, which provides service in Pico Rivera and Whittier. The City of La Mirada operates a Dial-A-Bus System that serves the entire city.

TRANSIT SYSTEMS HEADWAYS

RTD LINES	HEADWAYS IN MINUTES			
	AM PEAK	BASE	PM PEAK	EVENING
*34 L.A.-Lynwood-Paramount-Bellflower	20	60	24	100
38 Long Beach-Whittier-El Monte	240	240	240	-
* 46 E. Florence Ave-Slauson Ave	20	30	20	30
* 54 South Gate-Inglewood-Westchester	15	20	15	30
55 L.A.-Newport Beach-Balboa	40	80	40	150
58 Los Angeles-Santa Ana	11	22	8	46
72 L.A.-Whittier-Fullerton	4	20	4	30
* 77 Maywood-Bell	20	20	20	30
111 Bellflower-Huntington Park	40	40	30	200
112 Whittier-Huntington Park	120	120	120	-
113 Compton-Whittier	60	60	60	-
116 Compton-Paramount-Bellflower-Norwalk-La Mirada	60	60	60	-
117 S. Whittier-La Mirada	30	30	30	-
118 Whittier-E. Washington Blvd.	120	120	120	-
124 L.B.-Anaheim-Fullerton-Knotts B.F.-Disneyland	60	80	60	150
132 Hawaiian Gardens-Artesia-Downey-Lakewood	60	60	60	-
134 El Monte-Durfee Ave-Peck Rd-Whittier	60	60	60	-
136 Pico Rivera-Passons Blvd	60	60	50	-
137 El Segundo-Inglewood-Norwalk	60	60	40	-
MONTEBELLO M.B.L.				
10 Whittier Blvd	11	13	11	20
40 Beverly Blvd	60	60	60	-
60 Paramount	60	60	60	-
NORWALK TRANSIT SYSTEM				
1 Red	30	30	30	30
2 Blue	15	30	15	30
3 Green	15	30	15	30
SANTA FE SPRINGS DAILY TRAM SCHEDULE				
	60	60	60	-
LONG BEACH PUBLIC T.C.				
1 Pacific Coast Hwy-Easy Avenue	20	20	20	30
2 Santa Fe-Cherry Avenues	20	20	20	60
6 Atlantic Avenue	20	30	20	60
7 Orange Avenue	20	30	20	60
9 E.7th St-Bellflower Blvd-Woodruff Ave	15	15	15	30
10 Carson St-Crosstown	40	40	40	-
11 E. Broadway-Lakewood-Bellflower	15	15	15	30
15 Del Amo Blvd	30	30	30	-
16 Crosstown Streaker	30	30	30	-

* Included to indicate changes although not operating within the study area.

TRAVEL TIMES BY PRESENT TRANSIT SYSTEM

	PICO RIVERA	WHITTIER	SANTA FE SPRINGS	DOWNEY	PARAMOUNT	NORWALK	LA MIRADA	BELLFLOWER	ARTESIA	LAKWOOD	CEPRITOS	HAWAIIAN GARDENS	TOTAL TRAVEL TIME TO ALL POINTS
PICO RIVERA	45	86	105	151	92	132	185	161	202	176	188	1522	
WHITTIER	45	82	93	139	119	87	143	158	269	173	185	1473	
SANTA FE SPRINGS	85	82	71	117	37	114	87	76	161	91	103	1024	
DOWNEY	105	93	71	76	41	118	80	89	59	95	107	925	
PARAMOUNT	151	139	117	76	86	133	36	86	80	101	113	1118	
NORWALK	92	119	37	41	86	77	50	39	111	54	66	772	
LA MIRADA	132	87	114	118	137	77	97	52	158	97	109	1174	
BELLFLOWER	185	143	87	80	36	50	97	80	74	95	107	1034	
ARTESIA	161	158	76	80	86	39	52	80	85	45	57	919	
LAKWOOD	202	269	161	59	80	111	158	74	85	100	112	1411	
CEPRITOS	176	173	91	95	101	54	97	95	45	100	42	1069	
HAWAIIAN GARDENS	188	185	107	107	113	66	109	107	57	112	42	1189	
TOTAL												13,670	

Points are from City Halls of each city.
All times listed are in minutes of bus running time plus average waiting time and transfer time, if applicable.

RTD operates 16 lines that traverse the area. From the point of view of the current users of the RTD transit services, the system offers impracticably long travel times, and infrequent service. By way of illustration, travel times between the city halls of the 12 cities exceeds 60 minutes in 76 percent of the cases. In 24 percent, the travel is over two hours in duration, reducing the effective speed to that of walking.

Infrequent service, measured by the headways between buses, is, to a large extent, responsible for the long trip times. Even during the peak morning and evening hours, headways of 60 minutes and over prevail on half or more of the RTD lines operating in the study area. Three of the lines operate at either 2 or 4 hour headways during the peak hours.

For the same reasons, those in the community who would otherwise use public transit are turned from it by the prevailing service levels. Potential users face not only excessive travel times, but they are unable to reach certain, much frequented, destinations. Cerritos College cannot be reached by Long Beach residents traveling on LBPTC bus lines directly, even though a significant number of them use it.

Interconnections between LBPTC and SCRTD lines are often absent where they are most needed. In several cases, the lines from the two companies come within a few blocks of each other, discouraging transfers between lines. On several routes the two companies compete, providing superfluous service and depriving the community of service in areas where it is needed.

The productivity of the service that SCRTD provides in the Mid-Cities area is far below the average for the rest of its system. The lines that

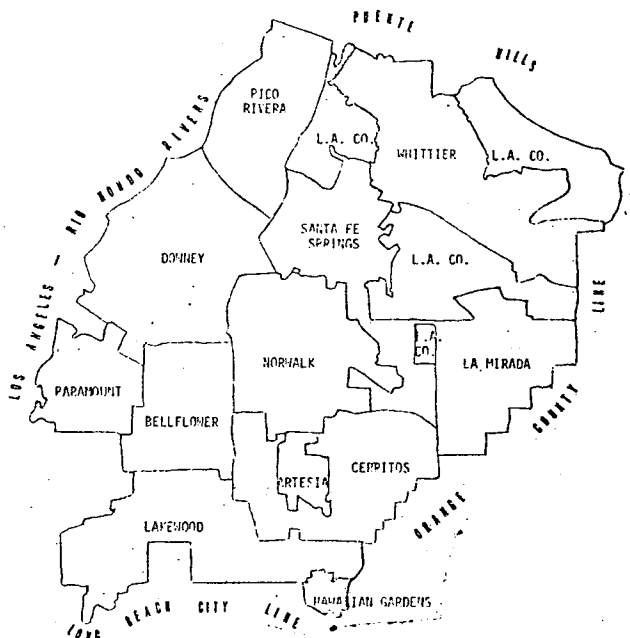
serve the Mid-Cities area operate at only 1.04 passengers per bus mile compared to an average of 3.40 passengers per bus mile for the system. The average load factor on SCRTD buses in the Mid-Cities area is well below 0.5.

There are other parameters that measure efficiency with which resources (labor, vehicles) are applied in revenue service. One such measure, the ratio of layover time to operating hours, is indicative of scheduling and routing efficiency. The current system averages 23 percent of the operating hours in layovers, with 5 lines averaging over 30 percent. Operating speed is another measure of efficiency for the operator. For a given level of demand, the higher the operating speed, the higher the efficiency with which vehicles and drivers are used in revenue service. The average speed of bus services is 17.0 miles per hour, which is above average.

REQUIRED TRANSIT IMPROVEMENTS...

The existing deficiencies crystallize into the following requirements for improving service:

1. Routes must be restructured to facilitate travel within the area.
2. Service on the new routes must be elevated above that of the current system. Headways should be kept at 60 minutes or less, and travel times should, where possible, be at least halved.



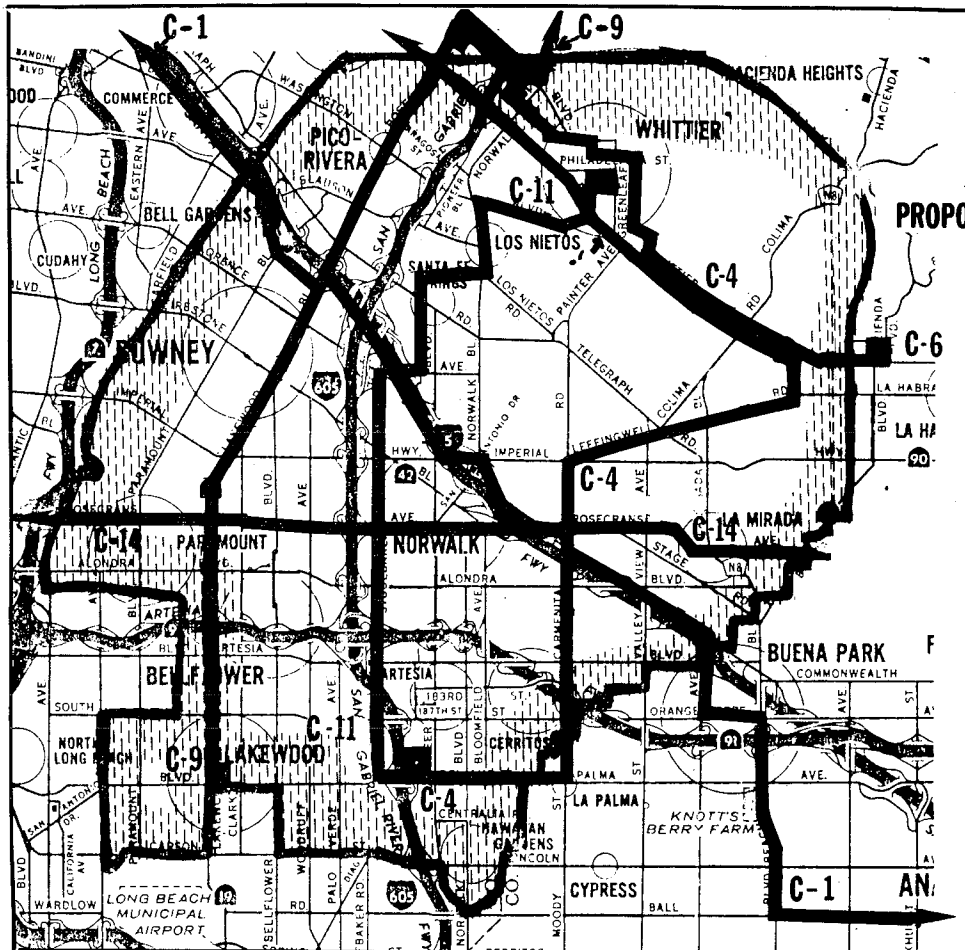
RECOMMENDED TRANSIT SYSTEM...

The recommended SCRTD system consists of 16 lines. Because the lines are new, each has a prefix C. The lines are routed to facilitate movements between principal activity centers within the Mid-Cities area and to provide direct and frequent service from selected points in the Mid-Cities area to known principal destinations in other parts of the region.

The structure of the recommended system consists of six lines: C-1, C-4, C-6, C-9, C-11 and C-14, that form the skeleton of the new routes. An additional ten lines serve as tributaries to the six skeletal lines. The skeletal lines are routed largely along principal thoroughfares in the area in order to interconnect principal destinations in the Mid-Cities area and to facilitate interregional travel. The spine of the skeletal

network is the C-1 line which would operate along the Santa Ana Freeway. This freeway is the principal high-speed arterial to the Los Angeles CBD and to such major activity centers in Orange County as Disneyland, Knotts Berry Farm, and major employment centers. Since it virtually bisects the Mid-Cities area diagonally, it is easily accessible from all parts of the area.

The C-1 line is designed to receive passengers collected by other lines from all parts of the Mid-Cities area and it would serve to bring people from other parts of the region into the Mid-Cities area. The C-1 line would operate on the freeway, leaving it at selected interchanges within the Mid-Cities area to discharge or acquire passengers from other lines.



PROPOSED SKELETAL RTD LINES

The ten tributary RTD lines that interconnect the 12 cities comprising the Mid-Cities study area have been routed through the principal residential sections and connect them with the principal activity centers. Lines C-5, C-10, C-13 and C-16 are designed to facilitate circulation within the Mid-Cities area. The remaining tributary lines are designed to connect with the 6 skeletal lines and in some cases, to facilitate travel between the Mid-Cities area and the region.

An important consideration in designing the routes for the proposed 16 RTD lines was that of taking full advantage of the municipal bus operations that are already in existence. The level of service offered by these systems would be uneconomical for RTD to duplicate. Furthermore, duplicating the services would be detrimental to both RTD and the municipal operators and would not serve the public. The 16 proposed RTD lines provide new and more effective interchanges with the existing municipal lines.

In harmonizing the services of the RTD lines and those of the existing municipal lines, the concept paid particular attention to the predominant movement patterns. In cases where such movements could be best streamlined by avoiding a transfer between an RTD and municipal line, and extending one or another line to serve a destination, this course was followed.

The routing of the 16 proposed RTD lines and the level of service proposed for them was also governed by the desire to offer frequent transfer opportunities while minimizing the delays that attend them. The resultant transit network forms a systematic grid that offers the user fairly uniform travel times for equal distances regardless of origin, destination, or travel direction.

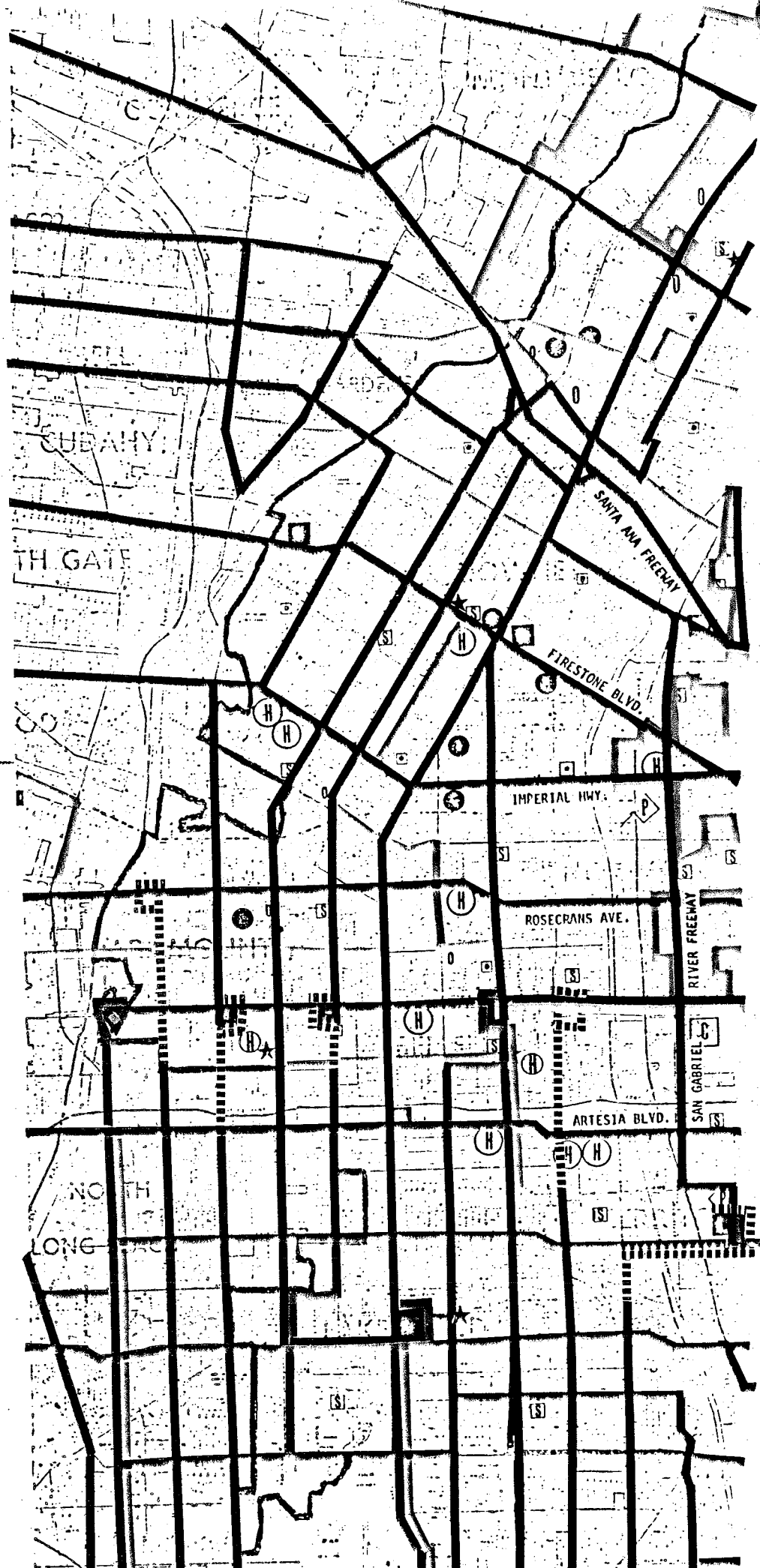
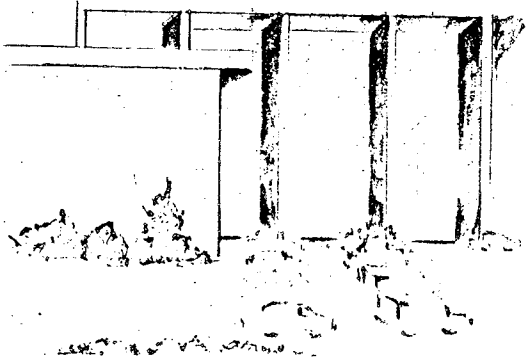
In arriving at levels of service, the availability of resources, e.g. buses, drivers, and support facilities, had to be considered. Accordingly, three service level alternatives were conceived. The *Base Level Service* operates buses at headways that result in approximately the same number of buses and drivers being required as now serve the Mid-Cities area. What is considered a Base Level Service headway for one line can, of course, differ from that of another line. The headways of a line during the peak, base, and night hours are governed by either demand for service or, when demand is very light, by a policy decision. Since demand for the foreseeable future is going to remain light, the maximum policy headway was chosen as 60 minutes. Certain lines, because of actual or potential patronage, or because of the types of people and destinations that they serve, require more frequent headways.

The next higher proposed service level is *Developmental Level A*. This level decreases the headways on the entire system to 30 minutes throughout the day, and provides for at least 60 minute headways throughout evening operation on most routes. Service *Developmental Level B* is an extension of the service offered at Developmental Level A, adding to the latter ad-

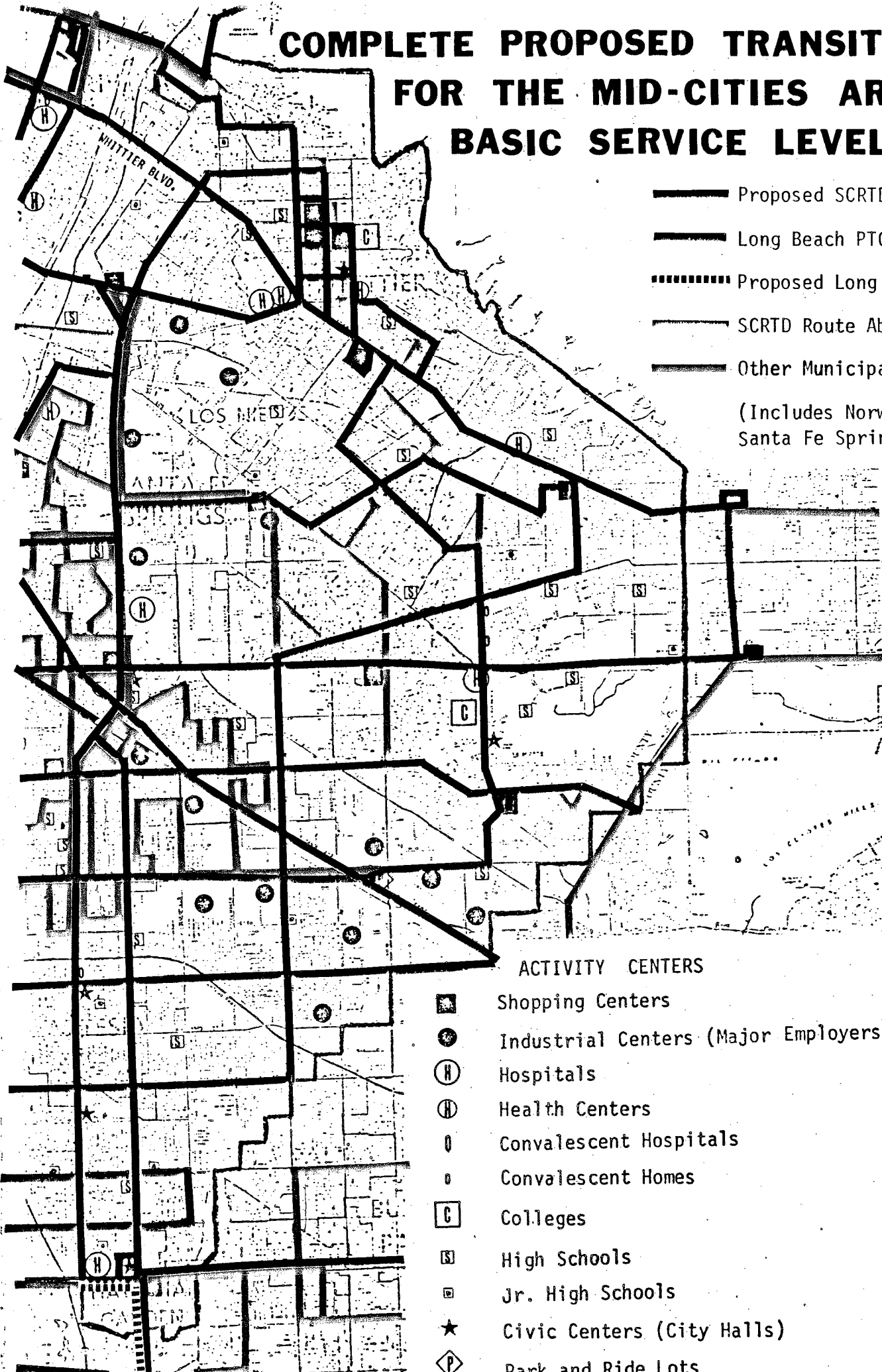
**TRANSFER POSSIBILITIES
PROPOSED RTD SYSTEM**






LINE	C-1	C-2	C-3	C-4	C-5	C-6	C-7	C-8	C-9	C-10	C-11	C-12	C-13	C-14	C-15	C-16
C-1		x		x	x				x			x	x	x		
C-2	x			x	x				x				x			x
C-3												x		x	x	x
C-4	x	x			x	x		x	x	x	x	x	x	x	x	x
C-5	x	x		x		x	x	x	x			x		x	x	x
C-6				x	x			x	x	x		x				
C-7												x		x	x	x
C-8				x	x	x			x	x	x	x	x	x		x
C-9	x	x		x	x	x		x		x		x		x	x	x
C-10				x		x		x	x		x	x	x	x	x	x
C-11				x		x		x	x		x		x	x	x	x
C-12	x		x	x	x		x	x	x	x			x			x
C-13	x	x		x		x		x		x	x	x		x	x	x
C-14	x		x	x	x		x	x	x	x		x			x	x
C-15		x	x	x	x		x	x	x	x	x	x	x	x		x
C-16			x	x	x		x	x	x	x		x		x	x	x












the ELIJAH WAY



COMPLETE PROPOSED TRANSIT SYSTEM FOR THE MID-CITIES AREA- BASIC SERVICE LEVEL



-  Proposed SCRTD System
 -  Long Beach PTC Service
 -  Proposed Long Beach Extensions
 -  SCRTD Route Abandonments
 -  Other Municipal Services
- (Includes Norwalk, Montebello, Santa Fe Springs and OCTD)

- ACTIVITY CENTERS
-  Shopping Centers
 -  Industrial Centers (Major Employers)
 -  Hospitals
 -  Health Centers
 -  Convalescent Hospitals
 -  Convalescent Homes
 -  Colleges
 -  High Schools
 -  Jr. High Schools
 -  Civic Centers (City Halls)
 -  Park and Ride Lots

ditional tributary lines in selected areas. These are routed so as to approach a uniform level of accessibility to bus service in the more densely populated sections of the Mid-Cities area.

The routes that comprise Developmental Level B have not been specified to the level of detail as those of the two other service levels. The additional routes are B-1, Downtown Whittier to Cerritos Center; B-2, Lakewood Center to Stonewood Center; B-3, South Los Angeles to Rio Hondo College; B-4, South Gate to Whittwood Shopping Center.

An important consideration in designing service in the Mid-Cities area was simplicity of operation and use. Headways and routes are kept as uniform as possible in order to simplify the amount of knowledge that users and potential users of the system would have to have in order to utilize it. Branching of lines, for example, has been avoided because they confuse patrons, especially occasional ones, and because they reduce service on each branch.

The 16 proposed RTD lines would supplant the service offered by the RTD Lines 38, 46, 54, 58, 72, 111, 112, 113, 116, 117, 118, 132, 136 and 137. Lines 34, 55 and 77 would continue but in an altered form. Lines 34 and 77 would be slightly rerouted and would operate on reduced headways. Line 55 would terminate at the Orange County Line. Its service would be interlined with the proposed C-9 line so that headways and operating costs would be minimized.

The recommended system is described by a map showing the new SCRTD service into Long Beach, and the extensions of the Long Beach Public Transportation Company system into the Mid-Cities area. The per-

formance of each line is described on a Line Summary Form which specifies running time by mileage segment, layover points, routing and transfer points. The Line Summary Form for Line C-5 illustrates the format of the information. The line parameters and the level of detail are sufficient for scheduling purposes. Service frequencies are presented for each service level alternative. The CENTS staff has traveled every segment of a recommended route to verify the feasibility of turning movements and the speeds and travel times included in the summaries.

SUMMARY OF LINE NO. C-5

FROM: Pico Rivera		TO: Lakewood Shopping Ctr.		VIA: Passons & Paramount Blvd.			
ROUTING		TRANSFER POINTS					
When Southbound:		When Northbound:		To Line No.: Location:			
From layover:		From layover:		C-1 Paramount & Santa Ana Fwy.			
S. on Deland Avenue		S. on Hazelbrook Avenue		C-2 Paramount & Artesia			
E. on Beverly Rd.		W. on Del Amo Blvd.		C-4 Beverly & Durfee			
S. on Durfee Avenue		N. on Paramount Blvd.		C-6 Whittier & Durfee or Passons			
E. on Whittier Blvd.		E. on Telegraph Road		C-7 Paramount & Suva			
S. on Passons Blvd.		N. on Passons Blvd.		C-8 Passons & Washington			
W. on Telegraph Road		W. on Whittier Blvd.		C-9 Telegraph & Rosemead or Lakewood S.C.			
S. on Paramount Blvd.		N. on Durfee Avenue		C-12 Paramount & Imperial			
E. on Del Amo Blvd.		N. on Beverly Blvd.		C-14 Paramount & Rosecrans			
N. on Greywood Avenue		S. on Deland Avenue to layover		C-15 Paramount & Firestone			
W. on Drive to May Co.				C-16 Paramount & Alondra (also 3 Long Beach Lines)			
				AREAS SERVED			
				Pico Rivera, Downey, Paramount, Lakewood, N. Long Beach, Lakewood Shopping Center, three high schools and a medical center.			
				RECOMMENDED LAYOVER POINTS:			
				North - S. on Deland Ave. in advance of Beverly Road.			
				South - Back of May Co. at Lakewood Shopping Center.			
SERVICE FREQUENCY AND REQUIREMENTS				MILEAGE SEGMENTS			
	Base Level	Devel. Level-A	Devel. Level-B	Time Point	Miles	Running Time	Speed
Avg. 1-way Route Miles	15.2	15.2	15.2	Beverly at Deland			
Miles Within Study Area	15.2	15.2	15.2	Passons at Whittier	.94	3	17
% of Miles in Study Area	100	100	100	Passons at Washington	1.49	6	15
Hours of Operation	5:30-10:30	6am-10am		Telegraph at Rosemead	1.46	5	18
Peak Hour Headway	1:30	1:20	1:20	Paramount at Santa Ana Freeway	1.14	3	18
Base Hour Headway	1:00	1:30	1:30	Paramount at Firestone	1.88	6	20
Total Daily 1-way Trips	41	72	72	Paramount at Imperial	1.52	5	20
Avg. 1-way Running Time	1:54	1:54	1:54	Paramount at Rosecrans	1.52	5	20
Average Operating Speed	16.9	16.9	16.9	Paramount at Alondra	1.00	3	20
Daily Operating Miles	621.56	1023	1092	Paramount at Del Amo	2.91	8	20
Daily Operating Hours	52.53	90.76	90.76	Lakewood Shopping Center	1.30	5	15
Total Daily Layover Time	15.67	26.10	26.10				
% of Op. Hours in Layover	29.8	28.9	28.8				
Vehicles Needed- A.M. Peak	6	9	9				
Vehicles Needed- P.M. Peak	6	8	8				
Vehicles Needed- Base Hrs	3	6	6				

EFFECTS OF THE RECOMMENDED CHANGES...

The proposed RTD lines and the changes proposed for the LBPTC and OCTD lines dramatically improve the service available to most transit patrons, offer access to new destinations for the residents and do so within the resource capabilities of RTD.

Current patrons of the RTD system in the Mid-Cities area could expect major reductions in headways. Even at the Base Service Level, no line would operate at more than 60 minute headways during the day and evening. This is in sharp contrast to existing service where, even during the peak hours, several lines operate at two hour headways. Of the new RTD lines, 65 percent would operate at peak hour headways of 30 minutes or less. By contrast, only 25 percent of the existing RTD lines operate at peak hour headways of 30 minutes or less. Improvements in base hour headways would be even more impressive. Among the current RTD lines, 31 percent operate base hour headways above 60 minutes, compared to none for the proposed system.

The number of cities that a passenger in a given city could reach would, at least, double for more than 80 percent of the Mid-Cities passengers. Using the earlier illustration of travel time between city halls, the new system would offer RTD patrons an average travel time reduction of 28 percent at the Base Level Service. This average masks the more important travel time reductions of over 50 percent for those destinations where current travel times approach or exceed 2 hours.

At the Base Level Service, 12 of the 66 origin-destination pairs would have trip times above those possible with the current RTD system. By operating Lines C-2, C-4, C-9 and

C-16 at Developmental Level A, these deficiencies would not only be eliminated by the trip times of these 12 origin-destination pairs, but would be reduced. Although the proposed routing does remove service from some patrons, the number is small. Based on work trips that are currently made by transit, it is expected that less than two percent of the trips would be displaced.

HEADWAY & SERVICE HOURS OF PROPOSED SYSTEM

PROPOSED ROUTES M.C.A. - BASE LEVEL	SERVICE HOURS	HEADWAYS IN MINUTES			
		AM Peak	Base	PM Peak	Evening
C 1 Santa Ana Freeway	5A- 2A	15	30	15	60
C 2 Artesia Boulevard	5A- 7P	60	60	60	-
C 3 Slauson-Garfield	5A- 1A	30	60	30	60
C 4 Cerritos-Whittwood-Beverly	6A- 7P	60	60	60	-
C 5 Passens-Paramount	6A-10P	30	60	30	60
C 6 Whittier Boulevard	5A- 2A	10	20	10	40
C 7 Gage-Downey	5A- 1A	60	60	60	60
C 8 Olympic-Washington	6A- 8P	60	60	60	-
C 9 Lakewood-Rosemead	6A- 1A	15	60	15	60
C 10 Whittwood-Bellflower	6A- 7P	60	60	60	-
C 11 Studebaker	6A- 7P	30	60	30	-
C 12 Imperial Highway	5A- 7P	30	60	30	-
C 13 Pioneer Boulevard	6A- 6P	30	60	30	-
C 14 Rosecrans Avenue	6A-10P	30	60	30	60
C 15 Firestone-Norwalk	5A- 1A	30	60	30	60
C 16 Alondra Boulevard	6A- 7P	60	60	60	-
RTD 77 (Revised) Maywood-Bell	5A- 1A	15	30	15	60

TRAVEL TIMES BY PROPOSED TRANSIT SYSTEM

	PICO RIVERA	WHITTIER	SANTA FE SPRINGS	DOWNNEY	PARAMOUNT	NORWALK	LA MIRADA	BELLFLOWER	ARTESIA	LAKEMOOD	CERRITOS	HANFORD GARDEN	TOTAL TRIP TIME TO ALL POINTS	% REDUCED FROM PRESENT SERVICE
PICO RIVERA	45	77	77	58	70	67	99	104	72	96	104	104	869	43
WHITTIER	45	47	75	103	34	52	100	58	113	64	74	74	755	49
SANTA FE SPRINGS	77	47	47	73	86	53	89	58	77	100	83	93	836	18
DOWNNEY	77	75	73	75	46	140	74	81	88	87	60	60	876	5
PARAMOUNT	58	103	86	75	75	81	123	69	74	41	89	90	860	21
NORWALK	70	34	53	46	81	73	78	39	90	45	48	48	657	15
LA MIRADA	67	52	89	140	123	73	102	107	138	113	123	123	1127	4
BELLFLOWER	99	109	58	74	69	78	102	48	18	68	40	40	754	27
ARTESIA	104	58	77	81	74	39	107	48	48	57	36	46	727	21
LAKEMOOD	72	113	100	88	41	90	138	18	57	56	51	824	42	
CERRITOS	96	64	83	87	80	45	113	68	35	56	40	40	768	28
HANFORD GARDEN	104	74	93	60	90	48	123	40	46	51	40	40	769	35
TOTAL													9852	28

3/ Trip times refer to base hour service.
Points are from City Halls of each city.
All times listed are in minutes of bus running time plus average waiting time and transfer time, if applicable.

Transit users in the Mid-Cities area would derive new mobility from the proposed interconnections between RTD, LBPTC and OCTD lines. These interconnections would:

- give Lakewood residents direct access to Cerritos College and to major shopping centers in the Mid-Cities area.
- give Orange County and Mid-Cities residents better interchange between OCTD and RTD bus lines.

The proposed transit system would also improve interconnections between RTD lines serving the Mid-Cities area and those that serve the

rest of the region. Specifically:

- service on Line C-6 would improve access from other regions to the Whittwood Shopping Center and the Whittier Boulevard Corridor.
- service on Lines C-2, C-12 and C-14 would, for the first time, provide effective and direct east-west service between the Mid-Cities area and the South Bay communities.
- service on Lines C-3, C-9, C-8 and C-15 would link the Mid-Cities area with dozens of RTD lines that traverse the South Central area.

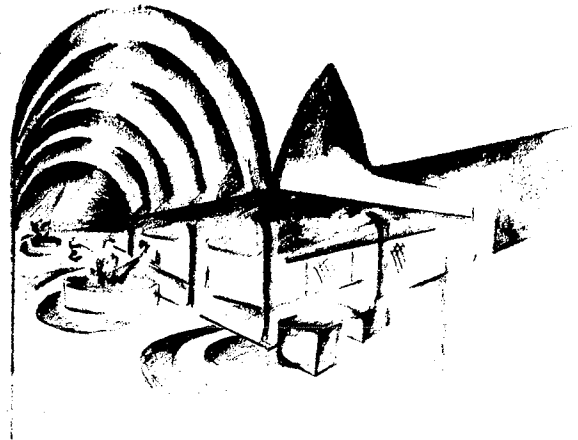
SERVICE COMPARISON BY CITY

	PRESENT ROUTES*		RECOMMENDED BASE-LEVEL SYSTEM**		PERCENT CHANGE
	OPERATING MILES	MILES PER 1,000 Pop	OPERATING MILES	MILES PER 1,000 Pop	
Artesia	37.0	2.5	153.0	10.4	+314
Bellflower	471.0	9.2	514.4	10.0	+9
Cerritos	20.8	1.3	401.1	25.3	+1828
Downey	1036.8	11.7	1229.6	13.9	+19
Hawaiian Gardens	51.1	4.9	77.6	7.5	+52
Lakewood	900.4	10.8	1377.6	16.6	+53
La Mirada	107.0	3.3	343.7	10.7	+221
L.A. County	207.4	4.7	242.0	5.5	+17
Norwalk	405.2	4.6	1053.0	11.9	+160
Paramount	340.0	9.8	553.2	15.4	+57
Pico Rivera	822.2	15.8	852.5	16.4	+4
Santa Fe Springs	172.4	12.9	456.6	34.2	+165
South Whittier	124.0	2.7	208.9	4.5	+68
Whittier	767.8	10.5	1268.4	17.4	+65
Total	5463.1	8.5	8713.6	13.4	+57

*Includes service presently operated by RTD, LBPTC, and Montebello. Service operated by the local public transit systems of La Mirada, Norwalk and Santa Fe Springs is not included.

**Includes recommended service to be operated by RTD, LBPTC, OCTD and Montebello. Service operated by the local public transit systems of Norwalk, La Mirada and Santa Fe Springs is not included.

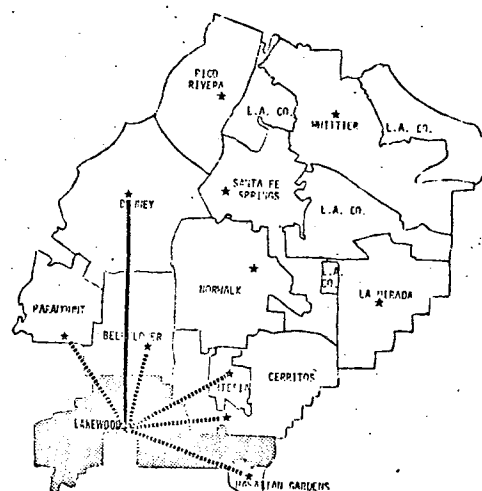
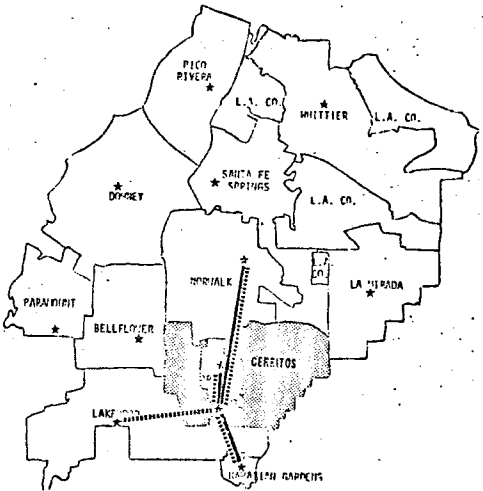
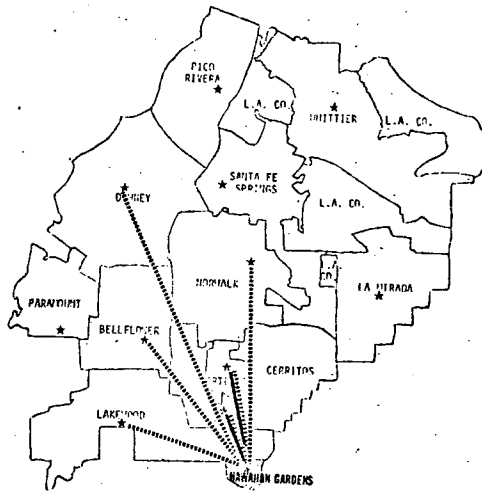
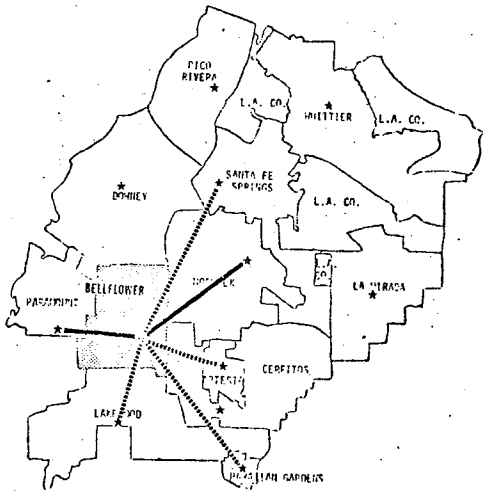
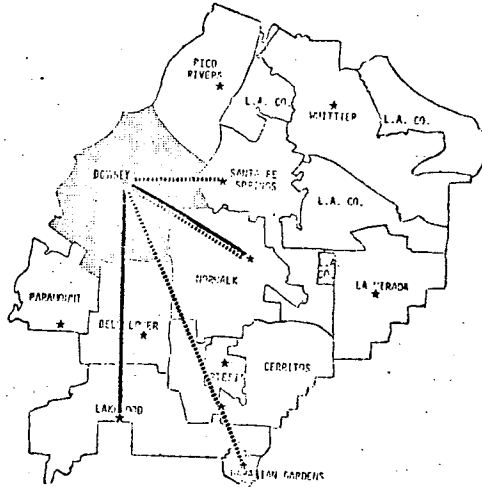
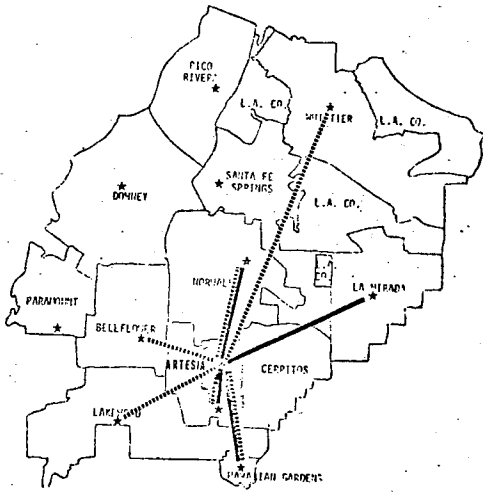
The increased bus miles offered by the proposed RTD system and the improvements in route distribution would increase both the amount of area and the population covered by transit service. It is reasonable to assume that such increased coverage would stimulate eventual increases in patronage. Using bus miles per 1000 population as a measure of the population being covered, the proposed system would increase the coverage by an average of 57 percent. Although the population coverage falls far below the desired 50 bus miles per 1000 population, the improvement for those 12 cities that are now among the most poorly covered is several hundred percent.



The proposed service offers improved access to the most frequented shopping plazas. Each of the six major shopping plazas would be served by no less than 3 transit lines compared to one or two lines operating at infrequent headways. One way of illustrating the improvements in mobility and accessibility offered by the proposed system is a comparison of the number of places that can be reached within a 60 minute travel time by the current and proposed systems.

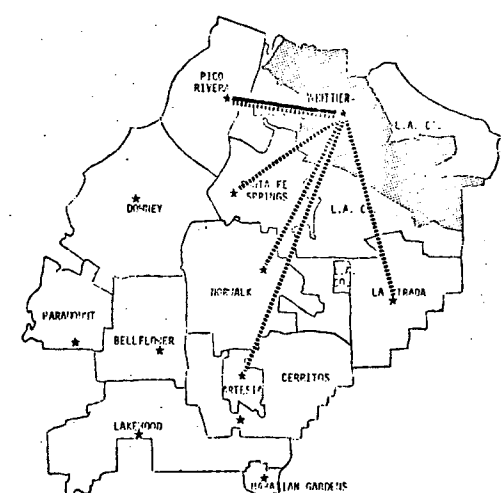
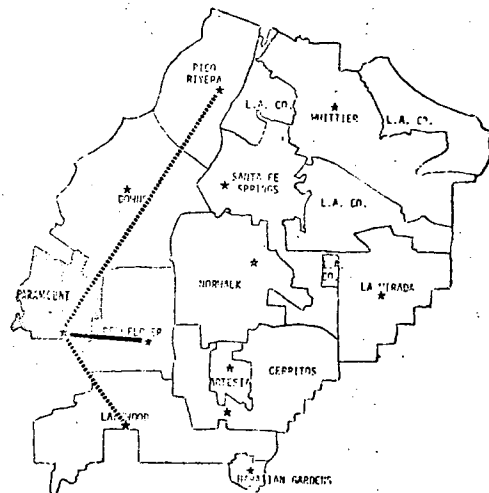
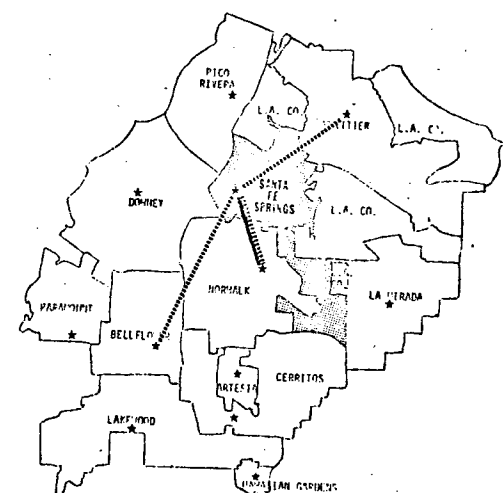
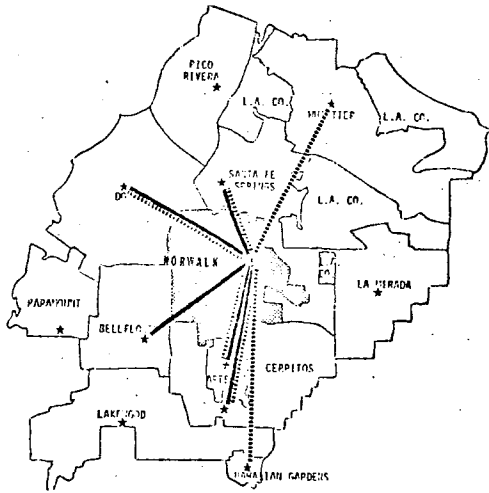
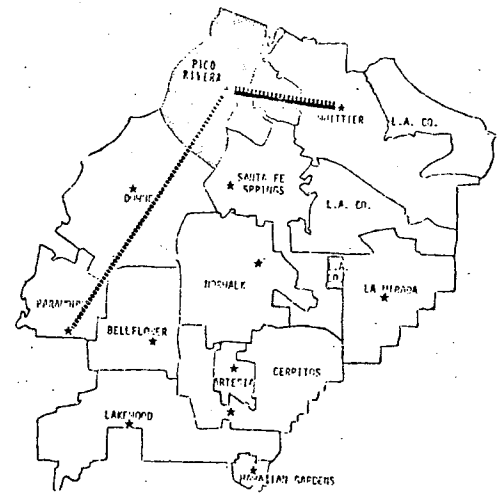
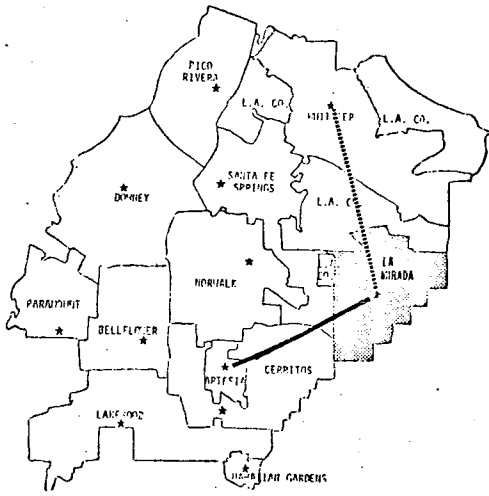
Using as an example the travel between city halls of the 12 cities, the accompanying charts show that in most instances, a resident of a city would be able to reach more cities within 60 minutes via the proposed system than is currently the case. For example, from Hawaiian Gardens, 6 other cities could be reached within 60 minutes compared to 2 cities with the current system. In those cases where the number of cities that are accessible remained the same, the identity of the city changed. For example, the proposed system provides residents of La Mirada access to Whittier in a 60 minute period, replacing the less needed access to Artesia.

CITIES ACCESSIBLE BY PUBLIC TRANSIT FROM A GIVEN CITY WITHIN A 60 MINUTE TRAVEL TIME



***CITY HALL TO CITY HALL**

BY PRESENT RTD SERVICE



..... BY PROPOSED RTD SERVICE (BASE LEVEL)

The effect of the proposed system on the resources of RTD can be shown by comparing the number of vehicles, bus miles, bus hours, and speed of the current and proposed systems. Operating at Base Level Service, only 9 additional vehicles would be needed. This represents a 10 percent increase in the current fleet. Daily bus miles would increase by only 2603. This represents an increase of 16 percent in the total number of bus miles for all lines (terminus-terminus).

Assuming no increase in the work passengers that travel the existing RTD system that serves the Mid-Cities area, productivity would decrease by that amount. Since the current patronage is disproportionately low compared to what RTD experiences elsewhere, it is reasonable to expect that patronage would increase.

The proposed system promises some increase in operating efficiency. One such measure, the ratio of layover time to operating time, would be reduced by an average of 5.4 percent.

A further improvement in headways, travel times and population coverage can be attained by operating lines C-1 and C-6 at Developmental Level A and restoring RTD line 55 in a revised form. This would increase the Mid-Cities bus fleet by another 8 buses and the daily bus miles by an additional 900.

Finally, the proposed Base Level Service could be expanded so that lines C-2, C-4, C-9, C-11 and C-16 are also operated at Developmental Level A and lines B-3 and B-4 are implemented. This expansion would require an additional 25 buses and 4807 bus miles.

COMPARISON OF EXISTING & PROPOSED RTD SYSTEMS

PRESENT ROUTES	OPERATING MILES	OPERATING HOURS	LAYOVER HOURS	VEHICLES REQUIRED A.M. PEAK	VEHICLES REQUIRED P.M. PEAK	% OF OPER HOURS IN LAYOVER	LINE SPEED	OPERATING MILES WITHIN STUDY AREA	OPERATING HOURS WITHIN STUDY AREA	% OF OPL. MILES IN STUDY AREA	% OF OPER. HOURS IN STUDY AREA
No. 34	771.55	40.14	11.66	6	6	29.1	19.2	256.20	13.70	33.2	34.1
No. 38	202.00	10.49	1.30	1	1	12.4	19.2	102.36	5.33	50.6	50.8
No. 46	1,271.72	103.66	20.63	8	7	19.9	12.3	0	0	0	0
No. 54	1,637.66	145.74	29.77	12	11	20.4	11.2	0	0	0	0
No. 55	854.51	36.58	5.05	3	6	13.8	23.4	269.10	12.82	31.5	35.0
No. 58	4,344.05	193.64	37.16	16	21	19.2	22.4	827.99	32.00	19.1	16.5
No. 72	2,290.43	134.29	32.16	25	28	24.0	17.1	691.34	42.02	30.2	31.3
No. 77	803.42	76.46	19.53	5	5	25.4	10.5	0	0	0	0
No. 111	575.84	32.28	14.61	4	4	45.3	17.8	274.85	15.61	47.7	48.4
No. 112	177.79	10.16	1.50	1	1	14.8	17.5	75.60	4.50	42.5	44.3
No. 113	498.52	29.59	3.72	3	3	12.6	16.8	362.14	18.65	72.6	63.0
No. 116	364.36	18.42	3.63	2	2	19.7	19.8	308.78	16.03	84.7	87.0
No. 117	422.88	24.44	7.67	2	3	31.4	17.3	422.88	24.44	100.0	100.0
No. 118	182.40	9.90	1.42	1	1	14.3	18.4	93.70	5.35	51.4	54.0
No. 132	593.97	32.82	12.35	4	4	37.6	18.1	593.97	32.82	100.0	100.0
No. 134	248.01	27.88	5.50	2	2	19.7	8.9	69.84	4.08	28.2	14.6
No. 136	139.62	8.30	4.28	1	1	51.6	16.8	139.62	8.30	100.0	100.0
No. 137	532.61	26.78	10.73	3	3	40.1	19.8	170.37	8.81	32.1	32.9
TOTAL	15,909.05	961.57	222.67	99	109	23.2	17.0	4658.74	244.46	29.3	25.4
PROPOSED SYSTEM (Base Level)											
C-1 Santa Ana Freeway	3,847.40	199.43	40.98	12	16	20.1	19.3	1,065.73	55.24	27.7	27.7
C-2 Artesia Boulevard	548.60	36.83	12.27	3	3	33.3	14.9	200.24	13.44	36.5	36.5
C-3 Slauson-Garfield (46)	1,837.00	138.01	26.37	10	10	19.1	13.3	145.12	10.90	7.9	7.9
C-4 Cerritos-Whittwood-Beverly	517.50	37.31	6.70	3	3	18.0	13.9	517.50	37.31	100.0	100.0
C-5 Passons-Paramount	621.56	52.54	15.67	6	5	29.8	11.8	621.56	52.54	100.0	100.0
C-6 Whittier Boulevard	2,554.53	183.16	14.30	24	27	7.8	13.4	996.06	65.02	35.5	35.5
C-7 Gage-Downey	652.30	47.40	6.72	3	3	14.2	13.8	170.25	12.37	26.1	26.1
C-8 Olympic-Washington	576.00	36.13	3.67	3	3	10.2	15.9	292.61	18.35	50.8	50.8
C-9 Lakewood-Posemead	887.10	78.83	14.58	7	8	18.5	11.3	742.50	65.98	83.7	83.7
C-10 Whittwood-Bellflower	348.40	25.10	5.88	2	2	23.4	13.9	348.40	25.10	100.0	100.0
C-11 Studebaker	437.41	33.33	7.42	4	4	22.3	13.1	437.41	33.33	100.0	100.0
C-12 Imperial Highway	820.80	47.47	4.67	6	4	8.6	17.3	338.99	19.61	41.3	41.3
C-13 Pioneer Boulevard	490.60	34.10	5.03	4	4	14.7	14.4	490.60	34.10	100.0	100.0
C-14 Rosecrans Avenue	1,007.00	63.39	9.27	5	6	14.6	15.9	420.93	26.50	41.8	41.8
C-15 Firestone-Norwalk (54)	2,566.10	201.90	34.85	15	15	17.3	12.7	387.48	30.49	15.1	15.1
C-16 Alondra Boulevard	286.00	24.78	9.50	2	2	38.3	11.5	286.00	24.78	100.0	100.0
RTD No. 77 (revised)	513.70	46.44	11.60	3	3	25.0	11.1	0	0	0	0
TOTAL	18,512.00	1,286.15	229.48	112	118	17.8	14.0	7,372.18	525.06	39.8	40.7
DIFFERENCE	+2,602.95	+324.58	+6.81	+13	+9	-5.4	-3.0	+2,713.44	+280.60	+10.5	+15.3
RECOMMENDED POSSIBLE ADDITIONS TO PROPOSED SYSTEM											
RTD No. 55 Line (Revised)	+777.60	+47.14	+7.35	+3	+3	15.6	23.3	+279.93	+16.97	36.0	36.0
C-1 Operating at Devel. Level A	-213.60	-20.44	-8.96	+4	+4	17.9	19.5	-59.16	-5.68	27.7	27.7
C-6 Operating at Devel. Level A	+336.07	+13.28	-0.53	+1	+1	7.0	14.7	+19.28	+1.28	31.9	31.9
CUMULATIVE TOTAL	19,412.07	1,326.13	227.34	120	126	17.1	14.1	7,612.23	537.65	39.2	40.5
Increased Service (Devel. Level A) for C-2, C-4, C-9, C-11 and C-16	+3,105.80	+237.08	+38.91	+16	+16	76.4	12.9	+2,502.92	+203.10	80.6	85.7
Increased Coverage - Implementation of B-3 and B-4 (from Devel. Level B)	+701.10	+59.22	+11.30	+9	+9	15.0	11.8	+403.13	+34.05	57.5	57.5
CUMULATIVE TOTAL	23,218.97	1,622.43	277.55	145	151	17.1	14.0	10,518.28	774.80	45.3	47.8

IMPLEMENTATION...

- RTD should replace its current service within the Mid-Cities area with the 16 proposed new lines, except for current RTD lines 34, 55 and 77 which should be modified.
- The 16 new lines should be operated initially at the Base Level Service except for Lines C-1 and C-6 which should be operated at Developmental Level A.
- If resources permit and the initial implementation shows a favorable patronage and public response, service on Lines C-2, C-4, C-9, C-11 and C-16 should also be upgraded to Developmental Level A.
- Boarding and alighting checks should be made before the change is made and again within 3 and 6 months after the proposed system was introduced. This information should be used to modify routes and schedules of the proposed system.
- Developmental Level B should be implemented only after the Base Level Service has been in operation and the need for additional coverage can be documented. Lines B-3 and B-4 are the leading candidates.
- Changes in the demography, land use and development of the area should be monitored yearly. This information should be used to modify the existing service or to expand it.
- RTD should take the initiative to implement the proposed improvements of the interconnections between its Mid-Cities area service and that of the Long Beach Public Transportation Company. The proposed exchange of route miles would not affect subsidy income of either operator.
- The plan for the recommended system could be implemented within 90 days after its adoption.

