1981 TRANSPORTATION PROGRAM

for NORTH CENTRAL TEXAS

The preparation of this report was financed in part through a grant for technical studies from the Urban Mass Transportation Administration, the Federal Highway Administration, and the Federal Aviation Administration.

September 1980
North Central Texas Council of Governments

Executive Summary

The 1981 Transportation Program for North Central Texas, together with the Transportation Improvement Program, is the major expression of the transportation planning process in the Dallas-Fort Worth metropolitan area. Prepared by the North Central Texas Council of Governments, the document is directed and approved by the Regional Transportation Council, which functions as the recognized policy group for transportation planning for the region. Technical support for the preparation of the document is provided by the Regional Planning Office of the State Department of Highways and Public Transportation, local transit and paratransit operators, airport operators, and local governments.

This document provides information which allows the U. S. Department of Transportation to continue certification of the North Central Texas transportation planning process and to accept the Transportation Improvement Program--Chapter X--as a basis for programming capital and operating funds for highway, transit, and airport projects. Under other federal requirements, this document demonstrates the conduct of planning activities with consideration for the social, environmental, and economic context of the transportation system. Among these concerns for the public benefit are air quality, energy conservation, and regard for the involvement of private enterprise and the general public in the planning process.

While prepared to satisfy certain federal requirements, this document serves another important purpose, by describing the existing transportation system and setting forth the intended course of future developments. The annual production of the document also allows detailed scrutiny of the planning process itself by the local elected officials who serve the area as the transportation policy makers. In the North Central Texas Region, the structure for policy direction of the planning process maintains a close relationship between the policy makers and the transportation planners. This relationship makes possible more rapid implementation of planned projects and more useful plans and studies.

More specifically, the 1981 Transportation Program addresses the following: (1) physical and socioeconomic characteristics of the region, (2) performance and trends of the highway, public transportation, and airport systems; (3) status of the long-range transportation plan; (4) transportation-related air quality and energy planning efforts; (5) planning efforts for the elderly and handicapped; and (6) community involvement in the planning process. Finally the Transportation Improvement Program identifies, prioritizes, and describes specific recommended short- and long-range projects and costs for highway, transit, and airport transportation improvements.

Table of Contents

TABLE OF CONTENTS (cont.)

TABLE OF CONTENTS (cont.)

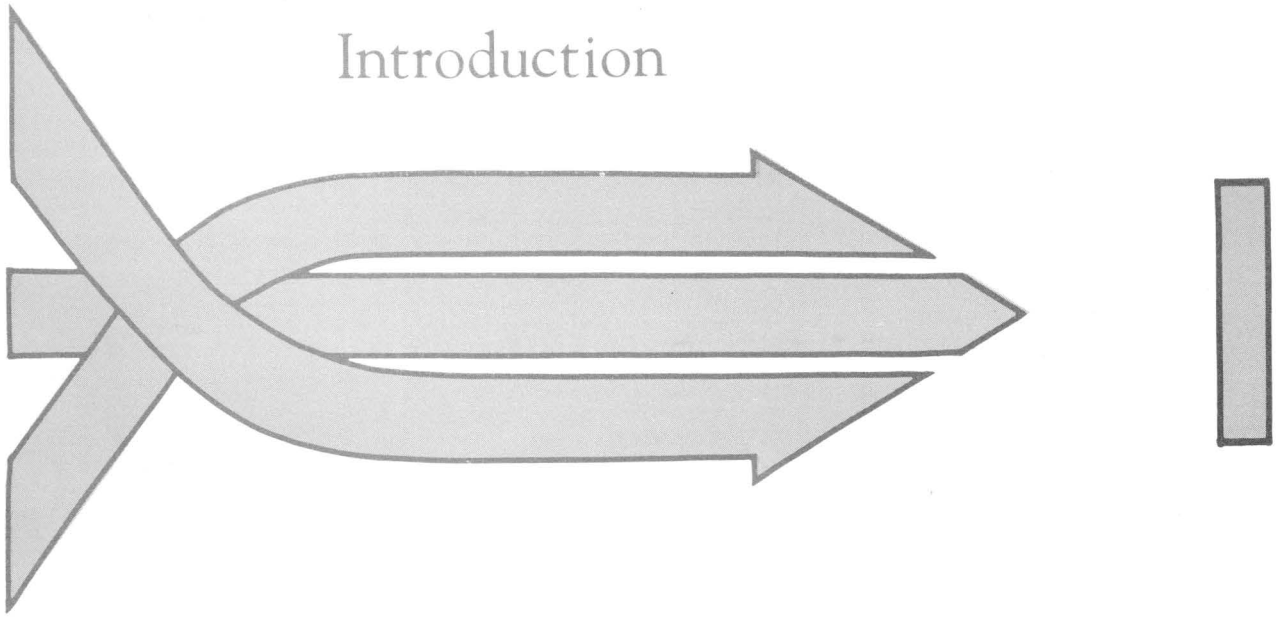
List of Figures

LIST OF FIGURES (continued)

List of Tables

LIST OF TABLES (continued)

Introduction



I. Introduction

This document represents the sixth in a series of transportation programs which address the dynamic transportation concerns of the North Central Texas Region. As in the past, this document is a compendium of long-range planning objectives. Additionally, the program identifies those specific transportation project priorities over the next five-year period.

The annual transportation program is the major expression of the total transportation planning process in the urbanized area. It is developed cooperatively by the individual entities responsible for all aspects of the program. Local, state, and federal governments, operators of public transportation services, airport operators, and areawide policy groups all articulate the comprehensive approach to solving transportation problems. The exercise of preparing the annual program is beneficial to all entities involved, as it requires that time be reserved to document the great amount of work throughout each year dedicated to the bettering of the transportation system. It also presents an opportunity to verbalize the logical sequence of events that take place during the planning of individual projects.

This 1981 Transportation Program for the North Central Texas was prepared by the North Central Texas Council of Governments, as the Metropolitan Planning Organization (MPO) staff under the direction of the Regional Transportation Council, which is the policy group for the MPO. Cooperating in the preparation of the document were the Regional Planning Office of the State Department of Highways and Public Transportation; Dallas and Tarrant Counties; the Cities of Dallas, Fort Worth, Arlington, Garland, Grand Prairie, Irving, Lewisville, Mesquite, Plano, and Richardson; Dallas Transit System and CITRAN of Fort Worth; SURTRAN; Dallas/Fort Worth Airport Board; and local airport operators.

The 1981 Transportation Program includes a review of the following: (1) the 1990 Total Transportation Plan, as approved by the Regional Transportation Policy Advisory Committee and its Steering Committee in November 1974, and reaffirmed in 1975, 1976, 1977, 1978, and 1979; (2) a Transportation System Management element to provide coordination of those modal elements of a total urban transportation system through operating, regulatory, and service policies so as to achieve maximum efficiency and productivity for the system as a whole; and (3) a Transportation Improvement Program listing those projects for all modes considered to be improvements, by priority of implementation, most necessary to meet the urban transportation demands in the most efficient manner. This document also provides the needed information which should allow the U. S. Department of Transportation to continue certification of the North Central Texas transportation planning process as a "3-C" (comprehensive, cooperative, and coordinated) effort consistent

with CFR 450, and to accept the Transportation Improvement Program as a basis for programming capital and operating funds for highway, transit, and airport projects for North Central Texas.

THE 1981 TRANSPORTATION PROGRAM

As the 1981 Transportation Program is being prepared and reviewed, the North Central Texas Region continues to become more involved in the comprehensive coordination of multimodal transportation projects. The 1979-80 planning year saw continued involvement in railroad, air quality, and energy planning. Such participation in federal planning programs by the Federal Railroad Administration, the Department of Energy, and the Environmental Protection Agency is a recent addition to the activities of the regional planning community. In the past, efforts have concentrated the coordination of the highway, transit, and air transportation modes through planning efforts partially funded by the Federal Highway Administration, Urban Mass Transportation Administration, and Federal Aviation Administration. Multimodal transportation planning has now taken on an expanded meaning -- including nearly all transportation-related activities.

This new involvement has not been introduced as a matter of choice in some cases. The Clean Air Act Amendments of 1977, which became Public Law 95-95 in August 1977, prescribe certain local planning efforts to meet federal requirements as outlined in the law. The bottom line in meeting these new air quality requirements is the fact that construction-related highway funding, from the Federal Highway Administration, would be jeopardized if they are not met. Desiring to be involved in a positive way in determining local strategies for meeting the air quality criteria, the Regional Transportation Council asked that the regional Environmental Protection Agency Administrator and the Governor of the State of Texas confirm that group as the local lead agency for air quality planning in the Dallas-Fort Worth area. The Governor made this designation July 24, 1978, naming the North Central Texas Council of Governments as the planning staff. Every effort is being made to effectively integrate air quality concerns into the total transportation planning process.

Energy contingencies and conservation have been topics of importance to the Regional Transportation Council for several years. The Council directed an energy contingency plan for the Dallas-Fort Worth metropolitan area in 1975. Since the completion of the plan in 1977, the Council has continued this interest by working with local communities to make them aware of the possible consequences of any future interruption in energy supplies. Thus, when the opportunity to incorporate federal Department of Energy monies into the regional planning program was offered, it was a natural addition to the scope of work. Not only is the field related to transportation planning, but it also interrelates with on-going air quality planning.

Under the Railroad Revitalization and Reform Act of 1976, planning monies were made available through the Texas Railroad Commission. A planning program submitted at the request of the Railroad Commission by the North Central Texas Council of Governments included those urban railroad planning

activities deemed most important by local governments. These planning funds allowed multimodal planning accomplished in the region to include railroad considerations for Fiscal Years 1979 and 1980. Under the direction of a Railroad Technical Task Force representing local governments, railroads, and relevant state agencies, a preliminary assessment of safety-related issues was made for the Intensive Study Area. It is possible additional funding will be available to continue development of this coordinated approach to alleviating some of the problems associated with railroad operations within area communities.

The Thoroughfare Planning System, an effort underway for the past four years, has now reached the stage enabling it to become an integral planning tool for local transportation planners. It facilitates the consideration of the recently added responsibilities in air quality and energy, while also supporting the primary objectives of analyzing proposed thoroughfare improvements. The Thoroughfare Planning System has been expanded to include transit considerations, thus becoming the Transportation Planning System. This Planning System consists of the Multimodal Analysis Process, Thoroughfare Inventory, and Thoroughfare and Transit Information System. Through the inventory, an updated record is kept of the existing and planned thoroughfares (and transit lines) in the region. The information system relates the inventory to the analysis process, which consists of a battery of computer programs enabling the transportation planner to evaluate proposed projects. The tool is available for use by any local governmental entity wishing to take advantage of its benefits.

The 1981 Transportation Program contains the following basic elements of the transportation plan:

Long-Range Element

On November 15, 1974, as mentioned above, the Regional Transportation Policy Advisory Committee, at the recommendation of its Steering Committee, approved and adopted the Total Transportation Plan for the North Central Texas Region for 1990. The plan was reaffirmed on November 18, 1975, November 23, 1976, August 18, 1977, August 1, 1978, and August 7, 1979, as part of the 1976, 1977, 1978, 1979, and 1980 Transportation Programs, respectively. Reevaluated and reviewed as part of the preparation of this transportation program, this plan initially --

- Provided for the long-range transportation needs of the Intensive Study Area after evaluation of the social, economic, environmental, political, and energy impacts of alternative transportation systems
- Was developed in accordance with the long-range goals and objectives adopted by the Steering Committee of the Regional Transportation Policy Advisory Committee
- Identified new transportation improvements by location and identification of modal elements to be implemented by 1990

Work will be underway on the development of an updated long-range plan as part of the 1980-81 Unified Planning Work Program. The effort will include a complete reevaluation of the long-range plan which will give local elected officials an opportunity to update the plan to realistically meet their needs. The first of the subarea studies in the region was initiated under the 1979-80 UPWP. Each of the nine subareas in the region will eventually be studied before completion of the next long-range plan.

Transportation System Management Element

The Transportation System Management (TSM) element is another part of the 1981 Transportation Program. The objective of the TSM element is to provide the coordination among operating agencies through operating, regulatory, and service policy so as to achieve maximum efficiency and productivity for the transportation system. The TSM in the 1981 Transportation Program reflects the planning underway in the Dallas-Fort Worth area. The selection of areawide TSM candidate actions has been completed. Additional TSM actions will be evaluated for implementation in each of the subarea studies. These efforts are being coordinated with both capital alternatives analysis and transportation air quality planning.

Special Efforts for the Elderly and the Handicapped

The 1981 Transportation Program includes a section that addresses the planning and implementation of special projects for the transportation of the elderly and the handicapped. Following the adoption of the regional plan, Transportation Options for the Elderly and the Handicapped in 1976, the local communities have gone far toward implementation of several of the recommendations in the plan. These efforts are documented to describe the specific programs addressing the needs of this target group.

Transportation Improvement Program

The Transportation Improvement Program for the Intensive Study Area was developed to provide the list of transportation projects for immediate implementation in accordance with the 1990 Total Transportation Plan. This Transportation Improvement Program attempts to accomplish the following:

- Identify transportation improvement projects recommended and approved by the Regional Transportation Council in accordance with the 1990 Total Transportation Plan
- Indicate the project priorities cooperatively assigned by the Regional Transportation Council in cooperation with local governments, state agencies, and operators of public transit
- Include estimates of total costs by grant category for the program period

THE TRANSPORTATION PLANNING PROCESS

The transportation planning process for North Central Texas is articulated in the Prospectus for Transportation Planning in the North Central Texas Region and 1980-81 Unified Planning Work Program. Annual planning activities are delineated in the Unified Planning Work Program, which attempts to coordinate the planning activities of all local governments, state agencies, and regional planning groups. This document, the 1981 Transportation Program, is also considered to be the annual report on transportation planning activities in North Central Texas, and additional information on 1979-80 planning accomplishments in this regard is included in Appendix 2 - Summary of Transportation Planning Activities.

THE DECISION MAKERS

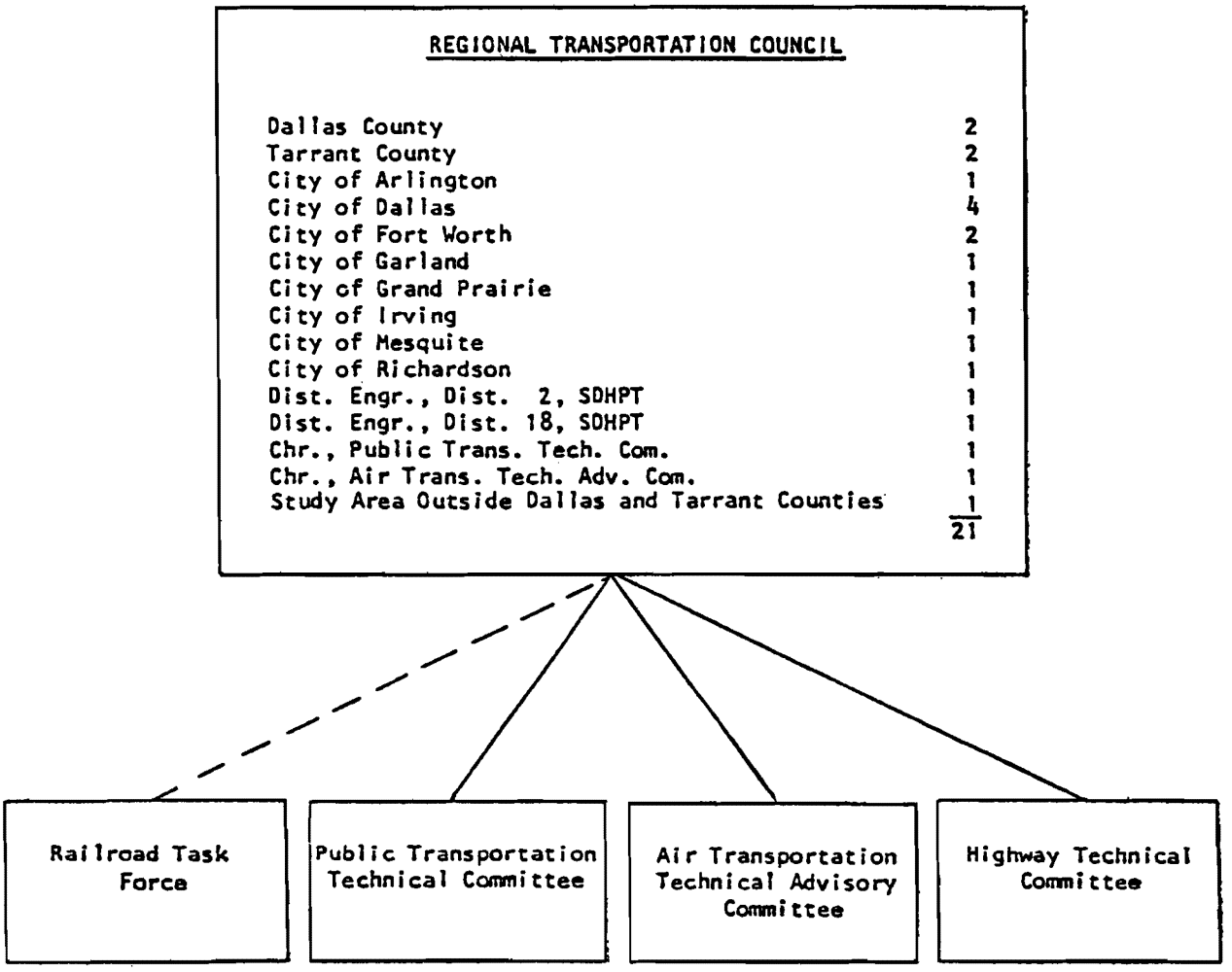
Multimodal transportation planning and its proper implementation require a single policy direction for all modes of travel. That single policy direction in the North Central Texas area is provided by a committee structure jointly developed by the State Department of Highways and Public Transportation and the area local governments for the coordination among all government agencies. This organizational structure consisted of a Regional Transportation Policy Advisory Committee of elected officials and its Steering Committee from 1974 to 1978, and Technical Committees for the various modes of travel.

On April 11, 1978, this structure was modified by a change in the Bylaws and Operating Procedures of the Regional Transportation Policy Advisory Committee and its Steering Committee. The effect of these changes was the abolition of the 154-member Regional Transportation Policy Advisory Committee and a vote of confidence in the smaller 20-member Steering Committee. The Steering Committee became the Regional Transportation Council, with minimal changes in the actual structure of the organization. (See Figure 1-1 for a graphic presentation of this structure.)

The changes in the policy structure perhaps strengthened the already valid approach to transportation planning in the region, as they emphasize the day-to-day policy-making body now known as the Regional Transportation Council. Already a dynamic element of the organizational structure, the Regional Transportation Council maintains a close relationship between local elected officials and planners which facilitates more rapid implementation of planned projects and more meaningful and useful plans and studies. Its membership is primarily that of the major elected officials from throughout the urbanized are -- the cities of Arlington, Mesquite, Garland, Grand Prairie, Irving, Richardson, Dallas, and Fort Worth, as well as Tarrant and Dallas Counties; the city managers of Fort Worth and Dallas; the chairpersons of the Public Transportation Technical Committee and the Air Transportation Technical Advisory Committee; and the district engineers from Districts 2 and 18 of the State Department of Highways and Public Transportation.

FIGURE 1-1

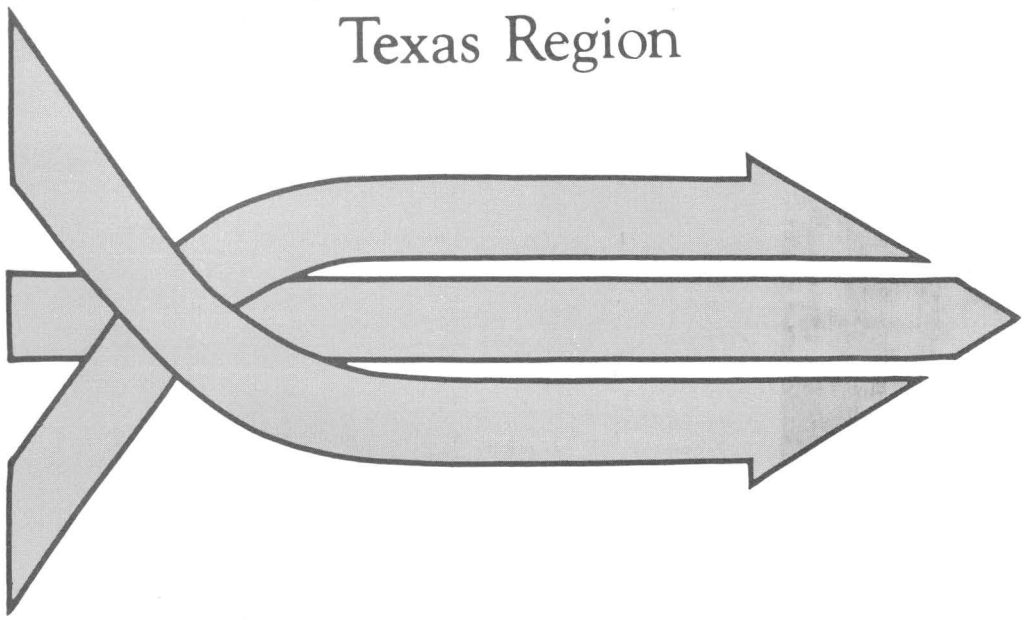
ORGANIZATIONAL STRUCTURE



The Council also maintains the communication lines among the local communities, local planning departments, and the regional planners.

The Regional Transportation Council is charged with safeguarding not only the interests of the members represented, but also the regional interests of the North Central Texas area. Recent efforts on the part of the Council led to the passage of legislation to permit consideration of a regional transportation authority in the Dallas-Fort Worth area. A referendum has been called for August 9, 1980, for public vote on the proposed service plan for the authority.

The North Central Texas Region



II

II. The North Central Texas Region

The North Central Texas Region is defined as that 16-county area for which the North Central Texas Council of Governments is responsible for comprehensive planning (shown in Figure II-1). This area consists of the Counties of Collin, Dallas, Denton, Ellis, Erath, Hood, Hunt, Johnson, Kaufman, Navarro, Palo Pinto, Parker, Rockwall, Somervell, Tarrant, and Wise. The region is 12,627 square miles in area, with a population of approximately 3.2 million (1980). The region was designated as the North Central Texas State Planning Region by Executive Order of the Governor of Texas August 28, 1973. The counties which make up the Dallas-Fort Worth Standard Metropolitan Statistical Area (SMSA) are also shown in Figure II-1.

The area for which regional multimodal transportation planning is performed is termed the Intensive Study Area (ISA). This is defined as that area expected to be fully urbanized by 1990. The ISA consists of the Counties of Dallas and Tarrant plus portions of seven surrounding counties (Figure II-1) and is the largest metropolitan area in the State of Texas. It is 2,600 square miles in area and contains a population of approximately 2.7 million (1980).

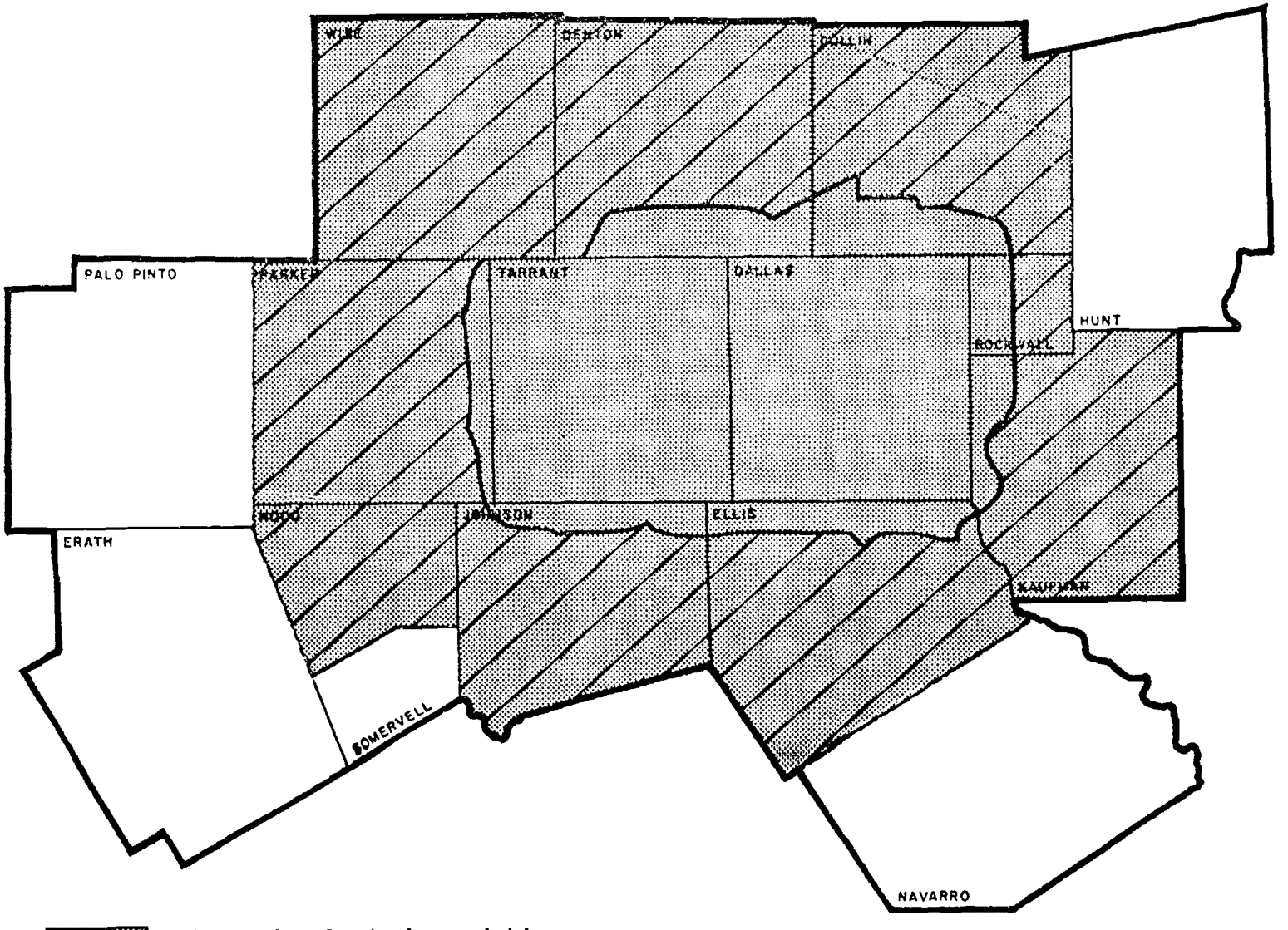
The ISA offers a great diversity of urban center sizes, from one of the largest cities in the United States to numerous smaller cities. Dallas (1980 population estimate of 914,000) is the largest city in the area. Fort Worth (400,000) represents a medium-sized city, while other cities of considerable size include Arlington (176,000), Garland (144,000), Grand Prairie (72,000), Irving (117,000), Mesquite (72,000), Plano (75,000), and Richardson (78,000).

SOCIOECONOMIC CHANGES AND TRANSPORTATION PLANNING

Knowledge of the socioeconomic status and trends within the area is vital to the transportation planning process. There is a definite link between growth and change in the region and the transportation system.

The socioeconomic characteristics of the area influence the transportation needs, on one hand, while on the other changes in the transportation system can have considerable impact on these characteristics. Rapid population growth, for example, implies the need for new roads and other expanded transportation system elements in these areas. Meanwhile, the construction of new roads or the introduction of public transportation into an area can significantly influence the socioeconomic development of that area.

As another example, increases in the cost of living, and of the cost of transportation in particular, can be important factors in determining travel patterns. And, changes in land use and housing construction can be major determinants of the characteristics of the transportation system.



Intensive Study Area within Dallas-Fort Worth SMSA

Remainder of Dallas-Fort Worth SMSA

16-COUNTY NORTH CENTRAL TEXAS STATE PLANNING REGION

FIGURE II-1

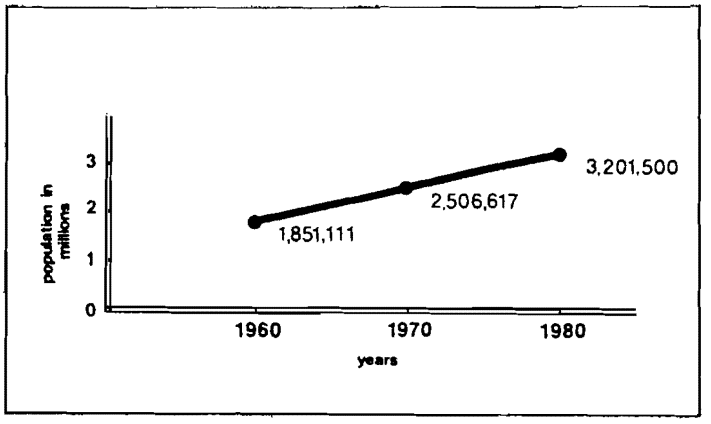
Impacts such as these are addressed by the analysis and evaluation of a wide range of capital investment and management alternatives for solving the area's current and anticipated transportation problems. The following chapter examines the socioeconomic characteristics of the region which are relevant to this transportation planning process.

POPULATION

By January 1, 1980, the 16 counties of the North Central Texas Region contained 3,201,500 persons, according to North Central Texas Council of Governments estimates. This represents a growth of nearly 695,000 from the 1970 Census figure of 2,506,617, as seen in Figure II-2.

FIGURE II-2

NORTH CENTRAL TEXAS
REGIONAL POPULATION TREND



The numerical increases experienced by the metropolitan areas of the region (Dallas and Tarrant Counties) continue to be quite large. However, the largest relative growth during the 1970s occurred outside the core area. The 14 counties surrounding Dallas and Tarrant Counties increased their proportion of the region's total population from 18.5 percent in 1970 to 21.9 percent in 1980. Other than Dallas and Tarrant Counties, the largest numerical increases were recorded by Collin and Denton Counties, which gained more than 70,000 each between 1970 and 1980 (see Table II-1).

At the city level, the greatest population growth has occurred in the larger suburban communities. The rural areas and small towns surrounding the metropolitan core show substantial gains, as well. The central cities of Dallas and Fort Worth now have a combined population equal to only 41.1 percent of the region, compared to 49 percent in 1970 and 56 percent in 1960. The largest numerical increases were recorded by the cities of Arlington, Dallas,

TABLE II-1

1980 CURRENT POPULATION ESTIMATES FOR THE NORTH CENTRAL TEXAS REGION (COUNTIES, CITIES OVER 2,000, AND SMSAs)

COUNTIES Cities over 2,000 Remainder of County (Cities under 2,000 plus rural)	1960 Population	1970 Population	Estimated Jan. 1, 1980 Population	Numerical Change		Percent Change		Annual Growth Rate (Percent per Year)	
				1960-1970	1970-1980	1960-1970	1970-1980	1960-1970	1970-1980
COLLIN COUNTY*	41,247	66,920	144,150	25,673	77,230	62.2	115.4	5.0	8.2
Allen	659	1,940	7,650	1,281	5,710	194.4	294.3	11.4	15.1
Farmersville	2,021	2,311	2,450	290	139	14.4	6.0	1.4	.6
Frisco	1,184	1,845	2,900	661	1,055	55.8	57.2	4.5	4.7
*McKinney	13,763	15,193	15,200	1,430	7	10.4	.1	1.0	.1
Plano	3,695	17,872	74,900	14,177	57,028	383.7	319.1	17.1	15.8
Princeton	594	1,105	2,000	511	895	86.0	81.0	6.6	6.3
Wylie	1,804	2,675	2,950	871	275	48.3	10.3	4.0	1.0
Remainder of County (includes 6050 from Richardson and 550 from Dallas)	18,121	23,979	36,100	5,858	12,121	32.3	50.5	2.9	4.3
DALLAS COUNTY*	951,527	1,327,695	1,596,850	376,168	269,155	39.5	20.3	3.4	1.9
Addison	308	595	8,750	287	8,155	93.2	1370.6	6.8	31.7
Balch Springs	6,821	10,464	13,650	3,643	3,186	53.4	30.4	4.4	2.8
Carrollton ('80 est. incl. 15,800 in Denton Co.)	4,242	13,855	44,200	9,613	30,345	226.6	219.0	12.6	12.6
Cedar Hill ('80 est. inc. 50 in Ellis Co.)	1,848	2,610	6,650	762	4,040	41.2	154.8	3.5	10.1
Cockrell Hill	3,104	3,515	3,200	411	-315	13.2	-9.0	1.3	-1.0
Coppell	666	1,728	3,500	1,062	1,772	159.5	102.5	10.0	7.5
Dallas ('80 est. incl. 600 in Collin & Denton County)	679,684	844,401	914,100	164,717	69,699	24.2	8.3	2.2	.8
DeSoto	1,969	6,617	14,950	4,648	8,333	236.1	125.9	12.9	8.7
Duncanville	3,774	14,105	28,700	10,331	14,595	273.7	103.5	14.1	7.6
Farmers Branch	13,441	27,492	28,650	14,051	1,158	104.5	4.2	7.4	.4
Garland	38,501	81,437	144,100	42,936	62,663	111.5	76.9	7.8	6.0
Grand Prairie ('80 est. incl. 5550 in Tarrant Co.	30,386	50,904	71,800	20,518	20,896	67.5	41.1	5.3	3.6
Highland Park	10,411	10,133	9,150	-278	-983	-2.7	-9.7	-0.3	-1.0
Hutchins	1,100	1,755	2,550	655	795	59.5	45.3	4.8	3.9
Irving	45,985	97,260	117,700	51,275	20,440	111.5	21.0	7.8	2.0
Lancaster	7,501	10,522	14,800	3,021	4,278	40.3	40.7	3.4	3.6
Mesquite	27,526	55,131	71,950	27,605	16,819	100.3	30.5	7.2	2.8
Richardson ('80 est. incl. 6050 in Collin Co.)	16,810	48,582	78,050	31,772	29,468	189.0	60.7	11.2	5.0
Rowlett ('80 est. incl. 1450 in Rockwall Co.)	1,015	2,243	6,600	1,228	4,357	121.0	194.3	8.3	11.7
Seagoville	3,745	4,390	6,750	645	2,360	17.2	53.8	1.6	4.5
University Park	23,202	23,498	22,250	296	-1,248	1.3	-5.3	0.1	-.6
Wilmer	1,785	1,922	2,200	137	278	7.7	14.5	0.7	1.4
Remainder of County (includes 50 from Combine)	25,176	15,881	12,100	-9,295	-3,781	-36.9	-23.8	-4.5	-2.8
DENTON COUNTY*	47,432	75,633	150,650	28,201	75,017	59.5	99.2	4.8	7.3
The Colony	—	—	10,800	—	—	—	—	—	—
Denton	26,844	39,874	53,300	13,030	13,426	48.5	33.7	4.0	3.0
Flower Mound	750	1,685	4,550	935	2,865	124.7	170.0	8.4	10.7
Highland Village	—	516	2,500	—	1,984	—	384.5	—	17.6
Lake Dallas	400	1,431	2,700	1,031	1,269	257.7	88.7	13.6	6.7
Lewisville	3,956	9,264	24,850	5,308	15,586	134.2	168.2	8.9	10.7
Pilot Point	1,254	1,663	2,150	409	487	32.6	29.3	2.9	2.7
Sanger	1,190	1,603	2,350	413	747	34.7	46.6	3.0	4.0
Remainder of County (includes 15800 from Carrollton, 50 from Dallas and 50 from Westlake and Southlake)	13,038	19,597	47,450	6,559	27,853	50.3	142.1	4.3	9.5
ELLIS COUNTY	43,395	46,638	59,000	3,243	12,362	7.5	26.5	0.7	2.4
Ennis	9,347	11,046	—	1,699	—	18.2	—	1.7	—
Ferris	1,807	2,180	2,200	373	20	20.6	.9	1.9	.1
Midlothian	1,521	2,322	3,100	801	778	52.7	33.5	4.3	3.0
Waxahachie	12,749	13,452	14,500	703	1,048	5.5	7.8	0.5	.8
Remainder of County (includes 50 from Cedar Hill)	17,971	17,663	27,250	-308	9,587	-1.7	54.3	-0.2	4.5
ERATH COUNTY	16,236	18,141	24,150	1,905	6,009	11.7	33.1	1.1	3.0
Dublin	2,443	2,810	2,900	367	90	15.0	3.2	1.4	.3
Stephenville	7,359	9,277	11,900	1,918	2,623	26.1	28.3	2.3	2.6
Remainder of County	6,434	6,054	9,350	-380	3,296	-5.9	54.4	-0.6	4.6
HOOD COUNTY	5,443	6,368	18,250	925	11,882	17.0	186.6	1.6	11.4
Granbury	2,227	2,473	3,850	246	1,377	11.1	55.7	1.1	4.6
Remainder of County	3,216	3,895	14,400	679	10,505	21.1	269.7	1.9	14.4
HUNT COUNTY	39,399	47,949	54,950	8,549	7,002	21.7	14.6	2.0	1.4
Commerce	5,789	9,534	9,300	3,745	-234	64.7	-2.5	5.1	-.3
Greenville	19,087	22,043	24,500	2,956	2,457	15.5	11.1	1.5	1.1
Remainder of County	14,523	16,371	21,150	1,848	4,779	12.7	29.2	1.4	2.7
JOHNSON COUNTY*	34,720	45,769	61,700	11,049	15,931	31.8	34.8	2.8	3.1
Alvarado	1,907	2,129	2,400	222	271	11.6	12.7	1.1	1.2
Burleson ('80 est. incl. 1150 in Tarrant Co.)	2,345	7,713	12,000	5,368	4,287	228.9	55.6	12.6	4.6
Cleburne	15,381	16,015	18,250	634	2,235	4.1	14.0	0.4	1.3
Keene	1,532	2,440	3,300	908	860	59.3	35.2	4.6	3.1
Remainder of County	13,555	17,818	26,900	4,263	9,082	31.4	51.0	2.4	4.3

*The county total includes any portion of cities located within the county boundary — city totals reflect the total population within incorporated limits.

TABLE II-1 (Cont.)

COUNTIES Cities over 2,000 Remainder of County (Cities under 2,000 plus rural)	1960 Population	1970 Population	Estimated Jan. 1, 1980 Population	Numerical Change		Percent Change		Annual Growth Rate (Percent per Year)	
				1960-1970	1970-1980	1960-1970	1970-1980	1960-1970	1970-1980
KAUFMAN COUNTY	29,931	32,392	39,300	2,461	6,908	8.2	21.3	0.8	2.0
Forney	1,544	1,745	2,400	201	655	13.0	37.5	1.2	3.3
Kaufman	3,087	4,012	4,400	925	388	30.0	9.7	2.7	1.0
Terrell	13,803	14,182	13,100	379	-1,082	2.7	-7.6	0.3	-.8
Remainder of County (includes less 50 from Combine)	11,497	12,453	19,400	965	6,947	8.3	55.8	0.8	4.7
NAVARRO COUNTY	34,423	31,150	35,800	-3,273	4,650	-9.5	14.9	-1.0	1.4
Corsicana	20,344	19,972	22,300	-372	2,328	-1.8	11.7	-0.2	1.1
Remainder of County	14,079	11,178	13,500	-2,901	2,322	-20.6	20.8	-2.3	2.0
PALO PINTO COUNTY*	20,516	28,962	27,000	8,446	-1,962	41.2	-6.8	3.5	-.7
Mineral Wells ('80 est. incl. 100 in Parker Co.)	11,053	18,411	14,800	7,358	-3,611	66.6	-19.6	5.2	-2.2
Remainder of County	9,463	11,709	12,300	2,246	591	23.7	5.0	2.2	.5
PARKER COUNTY*	22,880	33,888	39,550	11,008	5,662	48.1	16.7	4.0	1.6
Weatherford	9,759	11,750	13,400	1,991	1,650	20.4	14.0	1.9	1.4
Remainder of County (includes 100 from Mineral Wells, 800 from Azle, and 100 from Brier)	13,121	22,138	26,150	9,017	4,012	68.7	18.1	5.4	1.7
ROCKWALL COUNTY*	5,878	7,046	14,900	1,168	7,854	19.9	111.5	1.8	8.0
Rockwall	2,166	3,121	7,150	955	4,029	44.1	129.1	3.7	8.9
Remainder of County (includes 1450 from Rowlett)	3,712	3,925	7,750	213	3,825	5.7	97.5	0.6	7.2
SOMERVELL COUNTY	2,577	2,793	4,650	216	1,857	8.4	66.9	0.8	5.4
Glen Rose	1,422	1,554	2,000	132	446	9.28	28.7	0.9	2.6
Remainder of County	1,155	1,239	2,650	84	1,411	7.27	113.9	0.7	8.1
TARRANT COUNTY*	538,495	715,587	903,350	177,092	187,763	32.9	26.2	2.9	2.4
Arlington	44,775	90,032	176,450	45,257	86,418	101.1	96.0	7.2	7.1
Azle ('80 est. Incl. 800 from Parker Co.)	2,969	4,493	6,300	1,524	1,807	51.3	40.2	4.2	3.5
Bedford	2,706	10,049	24,350	7,343	14,301	271.4	142.3	14.0	9.5
Benbrook	3,254	8,169	14,600	4,915	6,431	151.0	78.7	9.6	6.1
Blue Mound	1,253	1,283	2,200	30	917	2.4	71.5	0.2	5.7
Colleyville	1,491	3,368	5,900	1,877	2,532	125.9	75.2	8.5	5.9
Crowley	583	2,662	6,250	2,079	3,588	356.6	134.8	16.4	9.1
Edgecliff Village	339	1,143	2,700	804	1,557	237.2	136.2	12.9	9.2
Euless	4,263	19,316	28,500	15,053	9,184	353.1	47.5	16.3	4.1
Everman	1,076	4,570	5,600	3,494	1,030	324.7	22.5	15.6	2.1
Forest Hill	3,221	8,236	11,300	5,015	3,064	155.7	37.2	9.8	3.3
Fort Worth	356,268	393,476	400,900	37,208	7,424	10.4	1.9	1.0	.2
Grapevine	2,821	7,023	12,450	4,202	5,427	149.0	77.3	9.6	6.0
Haltom City	23,133	28,127	30,150	4,994	2,023	21.6	7.2	2.0	.7
Hurst	10,165	27,215	37,650	17,050	10,435	167.7	38.3	10.4	3.4
Keller	827	1,474	3,600	647	2,126	78.2	144.2	6.0	9.6
Kennedale	1,521	3,076	2,800	1,555	-276	102.2	-9.0	7.3	-1.0
Lake Worth	3,833	4,958	4,550	1,125	-408	29.4	-8.2	2.6	-.9
Mansfield	1,375	3,658	8,300	2,283	4,642	166.0	127.0	10.3	8.8
North Richland Hills	8,662	16,514	32,650	7,852	16,136	90.6	97.7	6.7	7.2
Pantego	238	1,812	2,700	1,574	888	661.3	49.0	22.5	4.2
Richland Hills	7,804	8,865	9,100	1,061	235	13.6	2.7	1.3	.3
River Oaks	8,444	8,193	7,150	-251	-1,043	-3.0	-12.7	-0.3	-1.4
Saginaw	1,001	2,382	5,700	1,381	3,318	138.0	139.3	9.1	9.4
Sansom Park	4,175	4,771	4,200	596	-571	14.3	-12.0	1.3	-1.3
Southlake	1,023	2,031	2,750	1,008	719	98.5	35.4	7.1	3.2
Watauga	—	3,778	9,700	—	5,922	—	156.8	—	10.2
Westworth Village	3,321	4,578	3,900	1,257	-678	37.9	-14.8	3.3	-1.6
White Settlement	11,513	13,449	14,150	1,936	701	16.8	5.2	1.6	.5
Remainder of County (includes 5550 from Grand Prairie, 1150 from Burleson and less 100 from Briar and 50 from Westlake and Southlake)	26,546	27,560	27,600	1,014	40	3.8	.1	0.4	.1
WISE COUNTY	17,012	19,687	27,250	2,675	7,563	15.7	38.4	1.5	3.4
Bridgeport	3,218	3,614	3,800	396	186	12.3	5.1	1.2	.5
Decatur	3,562	3,240	3,750	-323	510	-9.1	15.7	-1.0	1.5
Remainder of County	10,231	12,833	19,700	2,602	6,867	25.4	53.5	2.3	4.5
NCTCOG REGION	1,851,111	2,506,617	3,201,500	655,506	694,883	35.4	27.7	3.1	2.5
FORMER DALLAS SMSA (Collin, Dallas, Denton, Ellis, Kaufman, Rockwall Counties)	1,119,410	1,556,324	2,004,850	436,914	448,526	39.0	28.8	3.4	2.6
FORMER FORT WORTH SMSA (Johnson, Tarrant Counties)	573,215	761,356	965,050	188,141	203,694	32.8	26.8	2.9	2.5
DALLAS-FORT WORTH SMSA (Collin, Dallas, Denton, Ellis, Hood, Johnson, Kaufman, Parker, Rockwall, Tarrant, Wise Counties)	1,737,960	2,377,623	3,054,950	639,663	677,327	36.8	28.5	3.2	2.6
	Effective April 27, 1973, the Bureau of the Census established the 11-county Dallas-Fort Worth SMSA, by combining the Dallas and Fort Worth SMSA's and including three other counties.								

*The county total includes any portion of cities located within the county boundary — city totals reflect the total population within incorporated limits.

and Garland, which gained more than 60,000 each between 1970 and 1980, while Plano gained more than 57,000 persons. The cities of Carrollton and Richardson gained approximately 30,000 each. Several other cities, including Bedford, Denton, Duncanville, Grand Prairie, Irving, Lewisville, Mesquite, and North Richland Hills, gained more than 10,000 each.

Table II-1 chronicles the growth in population by city, county, and region. This illustrates that while there are some no-growth and slow-growth areas, the region as a whole is still experiencing a steady, above-national-average increase in population.

HOUSING

The trend of new housing construction and stock for the NCTCOG 16-county region, as well as the Dallas-Fort Worth SMSA, is illustrated in Table II-2 for the period of April 1970 to January 1979. For this period, the average yearly increase in housing construction for the NCTCOG region was 5 percent, amounting to a total addition of 271,255 new units. Of this increase, single-family units were 149,050 or 55 percent, multifamily units were 117,036 or 43 percent, and mobile homes were 5,169 or 1.9 percent. The Dallas-Fort Worth SMSA showed similar trends, with the total increase in housing units from 1970 to 1979 being 266,853. That increase comprised 55 percent single-family, 43 percent multifamily, and 2 percent mobile homes.

However, on a year-to-year basis, the activity of the region's housing industry is subject to changes in the national economy. These local fluctuations are evidenced by the following housing market composition graph (Figure II-3) and building permit bar chart (Figure II-4).

With the recession of the early 1970s, new supply of housing fell off in response both to decreased demand and to higher interest rates for loans. After bottoming out in 1975, the regional housing industry began to regain pre-recession levels of construction. The 1970 decade's highest annual level of activity occurred in 1978 with a total 47,655 new residential building permits issued. Among the factors contributing to the increase were a large regional in-migration of new residents, entrance of the "baby boom" cohorts into the housing market, and inflationary expectations about housing prices.

Today, residential construction activity is experiencing a mild decline which is expected to continue through 1981. Urban building permits had already begun to diminish in late 1979 in the face of record high mortgage rates and inflated costs.

Despite the current slowdown, the long-run trend in new housing is likely to continue upward in the North Central Texas Region. A persistent trend of net migration into the region since 1960 is anticipated to continue during the 1980s. Unutilized industrial capacity and the availability of land attract new businesses to the region. Additionally, housing experts predict

TABLE II-2

REGIONAL HOUSING, 1970-1979
(CITIES OVER 2,000)

REGION OR SMSA (Type of Housing)	Year-Round Housing Units as of April 1, 1970		BUILDING PERMITS 1970-78 (Completions if reported) (Annexed units included) Cities over 2000 only									Demolished Units & Moveouts 1970-78	Other Adjustments	Cities over 2000 Estimated Housing Units as of Jan. 1, 1979
	Total	Cities over 2000	1970	1971	1972	1973	1974	1975	1976	1977	1978			
NCTCOG Region [1]														
Single Family	635,364	566,218	14,032	21,106	22,421	17,050	12,624	12,699	17,351	23,149	26,438	-16,947	-873	715,268
Multi-Family	206,929	205,044	21,220	20,709	12,512	11,194	10,928	7,875	7,750	9,585	20,791	-5,452	-76	322,080
Mobile Home	17,683	10,316	1,026	1,163	942	871	888	736	220	242	426	-1,674	329	15,485
Total	859,976	781,578	36,278	42,978	35,875	29,115	24,440	21,310	25,321	32,976	47,655	-24,073	-620	1,052,833
Former Dallas SMSA [2]														
Single Family	372,319	345,501	9,651	14,519	15,537	11,861	9,308	8,412	11,199	14,108	16,216	-9,346	-1,764	444,350
Multi-Family	148,278	148,188	16,371	16,121	9,975	8,588	7,322	6,225	4,376	6,138	14,132	-5,310	286	231,610
Mobile Home	8,255	5,086	807	569	604	749	563	354	91	88	212	-589	-131	8,150
Total	528,852	498,775	26,829	31,209	26,116	21,198	17,193	14,991	15,666	20,334	30,560	-15,245	-1,609	684,110
Former Fort Worth SMSA [3]														
Single Family	201,303	188,692	3,879	6,015	6,521	4,872	3,059	3,967	5,770	8,445	9,634	-5,712	64	235,881
Multi-Family	50,910	50,231	4,422	4,411	2,010	2,334	3,386	1,446	2,789	2,752	6,320	-118	-333	80,452
Mobile Home	5,597	3,820	175	543	287	298	293	266	86	61	98	-394	299	5,876
Total	257,810	242,743	8,476	10,969	8,818	7,504	6,738	5,679	8,645	11,258	16,052	-6,224	30	322,209
Dallas-Fort Worth SMSA [4]														
Single Family	592,287	541,098	13,609	20,681	22,120	16,774	12,417	12,446	17,054	22,784	26,019	-15,159	-1,713	688,536
Multi-Family	200,352	199,365	20,802	20,546	12,021	10,988	10,752	7,693	7,281	8,972	20,576	-5,428	-91	313,483
Mobile Home	15,418	9,135	984	1,121	901	1,058	863	673	180	187	350	-983	168	14,432
Total	808,057	749,598	35,395	42,348	35,042	28,820	24,032	20,812	24,515	31,943	46,945	-21,570	-1,636	1,016,451

[1] NCTCOG Region includes the following 16 counties: Collin, Dallas, Denton, Ellis, Erath, Hood, Hunt, Johnson, Kaufman, Navarro, Palo Pinto, Parker, Rockwall, Somervell, Tarrant, Wise

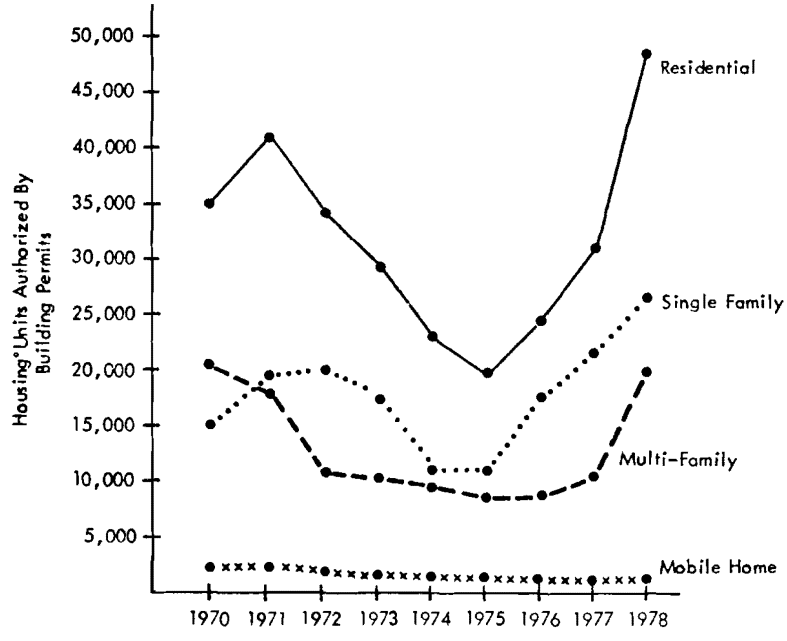
[2] FORMER DALLAS SMSA includes the following 6 counties: Collin, Dallas, Dentan, Ellis, Kaufman, Rockwall

[3] FORMER FORT WORTH SMSA includes the following 2 counties: Johnson, Tarrant

[4] DALLAS-FORT WORTH SMSA includes the following 11 counties: Collin, Dallas, Denton, Ellis, Hood, Johnson, Kaufman, Parker, Rockwall, Tarrant, Wise

FIGURE II-3

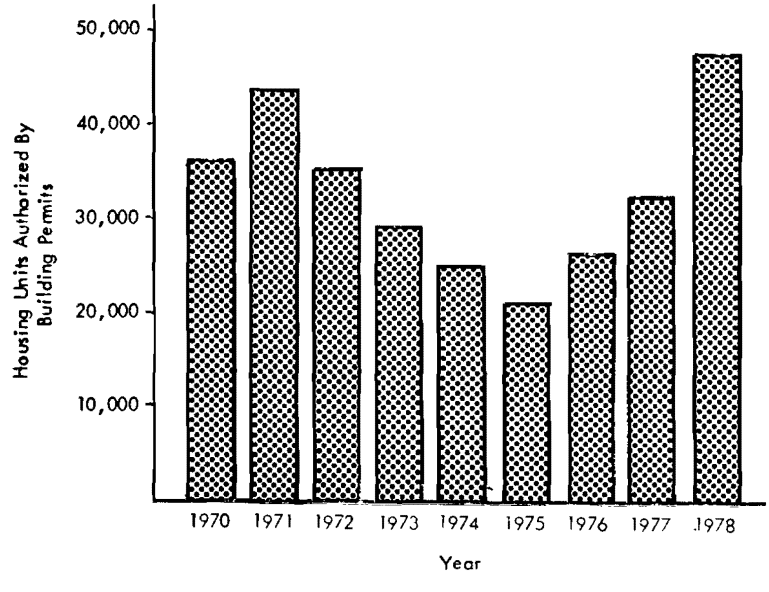
CHANGES IN HOUSING MARKET COMPOSITION



that, nationally, an increase in new family formations will create a higher demand for housing in the 1980s than was experienced in the 1970s. This phenomenon will also certainly occur in the region.

FIGURE II-4

BUILDING PERMITS, 1970-1978



LAND USE

During the last few years, NCTCOG has developed a comprehensive land use data file by small areas (Traffic Survey Zones) for the Intensive Study Area, to support transportation planning as well as other functional area planning. The land use data is monitored through an aerial photography project, which is updated every odd-numbered year. A breakdown of Intensive Study Area land use is shown in Table II-3.

TABLE II-3

INTENSIVE STUDY AREA LAND USE
1977 MEASURED ACRES

Type of Use	Acres	Percent of ISA
Residential		
Single Family	176,901	10.73
Multi-Family	10,901	0.66
Mobile Home	3,787	0.23
Group Quarters	582	0.03
Residential Total	192,171	11.65
Commercial	27,384	1.66
Public & Institutional	17,719	1.07
Industrial	15,080	0.91
Transportation, Communications Utilities	19,846	1.20
Roadway	92,469	5.61
Parks & Open Space	50,024	3.03
Developed	414,693	25.14
Vacant	1,234,558	74.86

As indicated in Table II-3, much land remains vacant in the Intensive Study Area. According to this data, 11.6 percent of the ISA land is used for all residential purposes, while 1.7 percent is used for commercial purposes and 0.91 percent is industrial land use.

Based on the land use monitoring process, the change in land use between 1975 and 1977 is slight when compared to the overall land area of the

region. In contrast, the Intensive Study Area has experienced some land use change, primarily additions to residential, roadway, and commercial uses.

ECONOMICS

Relative Price Changes: Trend

Historically, the regional inflation rate has followed the national inflation rate as measured by the annual percentage increase in the Consumer Price Index for the period 1964-1979. During this period, the average annual inflation rate was 5.9 percent for both the region and the nation. However, as Figure II-5 and Table II-4 illustrate, the annual increase in the regional cost of living compared with 1967 prices was greater than the national increase in the early and late 1970s, while during the inflationary years of 1972-1978 the regional cost of living increase was below that for the nation.

In the years since 1976, energy has become a major concern. Increases in energy components of the CPI indicate that, barring technological change, consumer households will be spending a greater percentage of their total income on energy consumption.

Among the many energy commodities, gasoline has demonstrated the sharpest price increase. From February 1979 to February 1980, prices for both regular and unleaded gasoline increased by 74.1 percent (Figure II-6). By January 1980, the price of gasoline had surpassed $1 per gallon.

Prices: Current Status

For the thirteenth consecutive quarter, the "all items" measure of the Consumer Price Index rose more sharply in the SMSA than in the United States. During the fourth quarter of 1979, the all-items measure was 230.7 in the SMSA, compared with 227.7 in the United States. This index value means that a sampling of goods and services that cost $100 in the SMSA in 1967 now costs $230.70 (see Figure II-7). Thus, SMSA prices have more than doubled since 1967. Overall price increases from the first quarter of 1979 to the first quarter of 1980 were 14.3 percent in the SMSA and 12.8 percent nationally.

The two major components responsible for the more rapid SMSA price increases in early 1980 were transportation and housing price changes. While housing prices rose 21.2 percent above year-ago levels in the SMSA compared to 16.3 percent nationally, transportation prices were up 26.2 percent in the SMSA compared to 22.5 percent nationally. Private transportation costs, which include the prices of new and used cars, gasoline, maintenance and repairs, and other transportation services and commodities, increased by 26.2 percent in the region. Public transportation costs, which include bus, subway, taxi, and airline fares, increased by 25.0 percent.

FIGURE II-5

CONSUMER PRICE INDEX (1967=100): ALL ITEMS
1964-1979

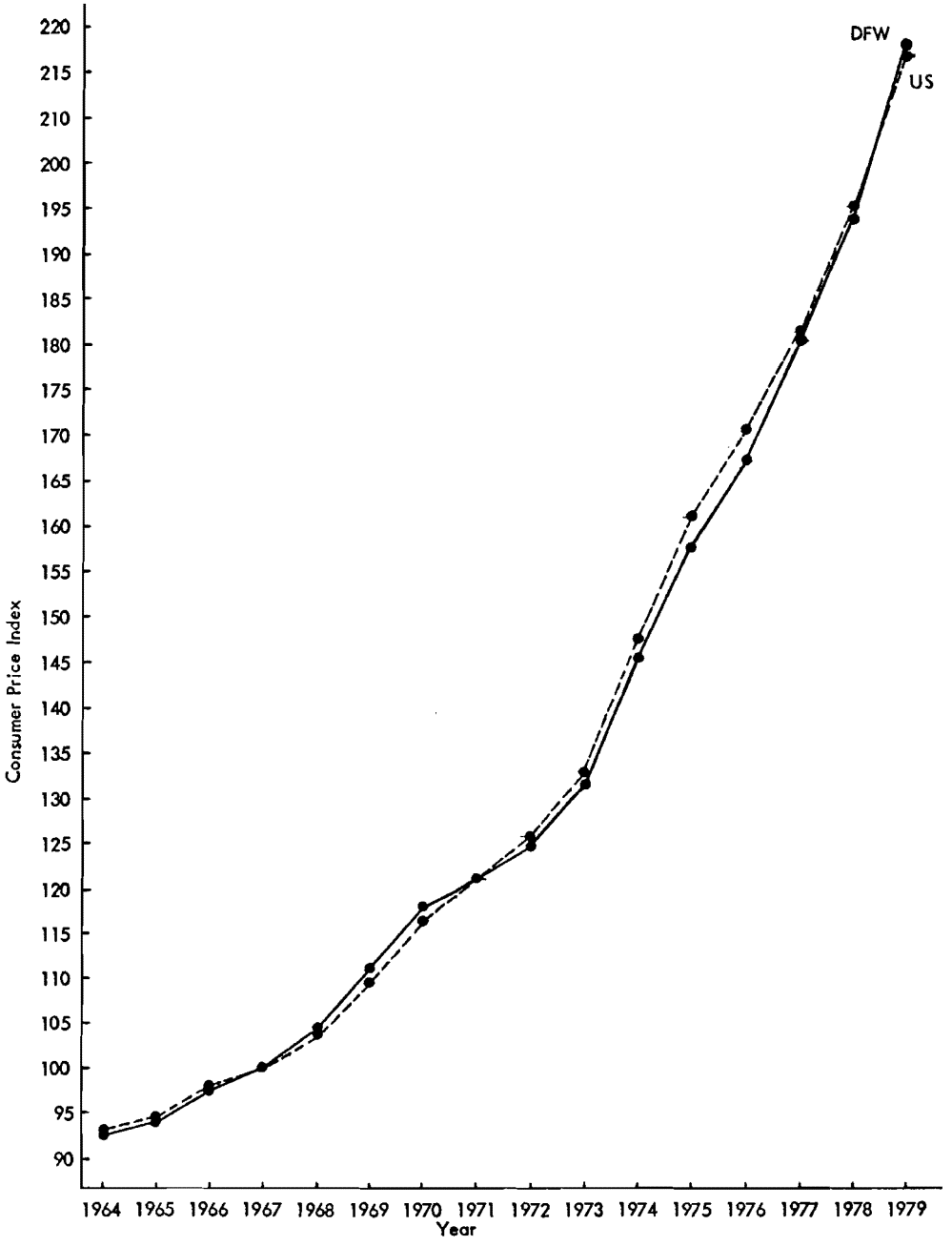


TABLE II-4

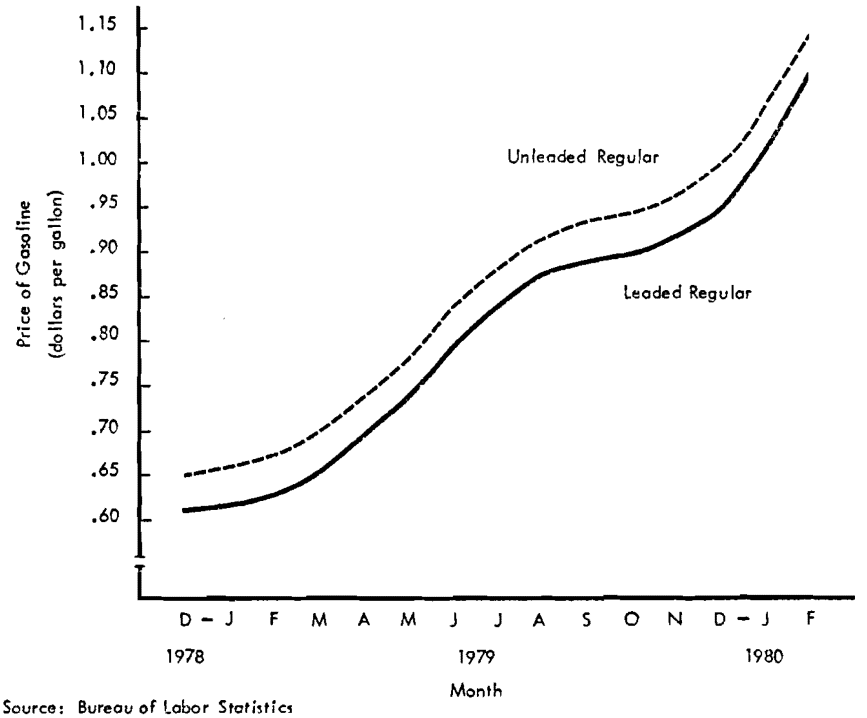
CONSUMER PRICE INDEX (1967=100)
ALL ITEMS, 1964-1979

Year	Dallas-Fort Worth SMSA	United States SMSA
1964	92.6	92.9
1965	93.8	94.5
1966	97.1	97.2
1967	100.0	100.0
1968	104.5	104.2
1969	111.3	109.8
1970	117.8	116.3
1971	121.3	121.3
1972	124.9	125.3
1973	132.0	133.1
1974	145.3	147.7
1975	158.2	161.2
1976	167.7	170.5
1977	180.2	181.5
1978	194.0	195.2
1979	218.4	217.5

Source: Bureau of Labor Statistics, U.S. Department of Labor.

FIGURE II-6

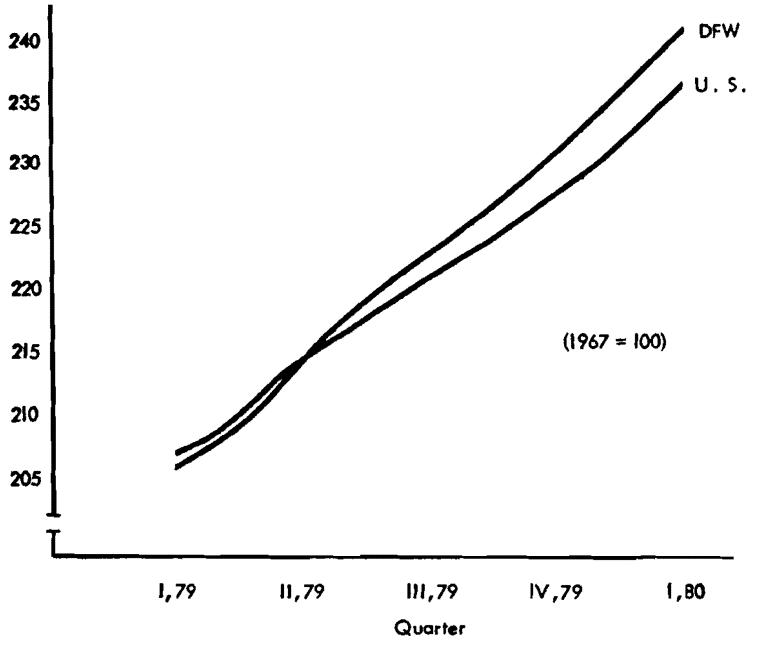
DALLAS-FORT WORTH-SMSA RETAIL GASOLINE PRICE INCREASES
DECEMBER 1978 TO FEBRUARY 1980



Source: Bureau of Labor Statistics

FIGURE II-7

CONSUMER PRICE INDEX: ALL ITEMS
1979-1980



Income

Overall, the major measures of income and prices suggest that the Dallas-Fort Worth SMSA has experienced extremely strong growth since the early 1960s (see Table II-5 and Figure II-8).

Still, the combined effects of income gains and price changes have left consumers with significantly greater purchasing power than the national averages. Since the cost of living index in the Dallas-Fort Worth SMSA has equalled the national average over the long run, a comparison of the Dallas-Fort Worth SMSA to the nation suggests that per capita income has been increasing somewhat more rapidly in the Dallas-Fort Worth SMSA.

FIGURE II-8

PER CAPITA PERSONAL INCOME
(CURRENT DOLLARS, 1967 DOLLARS)
1959, 1962, 1965-1977

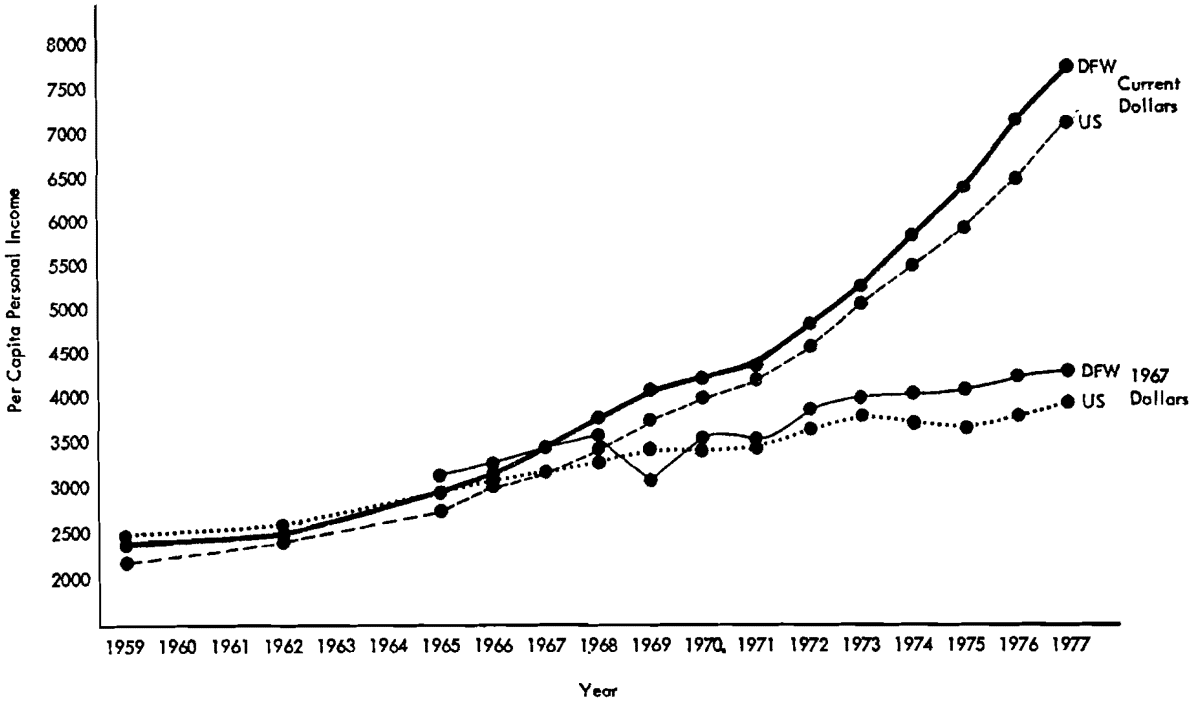


TABLE II-5

PER CAPITA PERSONAL INCOME
(CURRENT DOLLARS, 1967 DOLLARS)
1959, 1962, 1965-1977

Year	CURRENT DOLLARS			1967 DOLLARS		
	Dallas-Fort Worth SMSA	Houston SMSA	United States	Dallas-Fort Worth SMSA	Houston SMSA	United States
1959	2348	2395	2149	----	2709	2462
1962	2493	2562	2363	----	2903	2603
1965	2913	2865	2764	3106	3022	2925
1966	3174	3056	2976	3269	3134	3062
1967	3436	3305	3153	3436	3305	3153
1968	3748	3597	3414	3587	3449	3276
1969	4053	3860	3733	3042	3477	3400
1970	4199	4136	3966	3565	3541	3410
1971	4320	4334	4195	3561	3585	3458
1972	4788	4690	4557	3833	3746	3621
1973	5227	5127	5023	3960	3875	3774
1974	5813	6038	5449	4001	4085	3689
1975	6369	6826	5861	4026	4140	3636
1976	7096	7617	6441	4231	4345	3778
1977	7704	8247	7051	4275	4336	3885

Employment

The continuing growth in total employment of the Dallas-Fort Worth SMSA (see Table II-6) is a major factor in the region's economic vitality. The "baby boom" of the 1950s and 1960s is reaching maturity and entering the labor force. Simultaneously, businesses are increasingly aware of the amenities offered by the Sunbelt states, especially Texas, in considering relocations. The move to this area of the American Airlines corporate office illustrates this contention.

Further support for the idea of Texas' and the Dallas-Fort Worth SMSA's above-average attractiveness may be found by comparing the Dallas-Fort Worth SMSA's employment index to that of the nation. Since 1960, the Dallas-Fort Worth SMSA has shown an average increase in 1970 terms of about 4 percent per year while the nation as a whole showed an increase of about 2 percent per year until 1972, when the national increase dropped to 1.7 percent (see Table II-7 and Figure II-9).

TABLE II-6

TOTAL EMPLOYMENT, 1960-1979

Year	Dallas-Fort Worth SMSA
1960	678,300
1961	694,900
1962	728,980
1963	739,300
1964	758,900
1965	795,700
1966	838,000
1967	879,600
1968	941,600
1969	991,400
1970	997,600
1971	986,800
1972	1,034,600
1973	1,103,500
1974	1,147,600
1975	1,140,000
1976	1,198,000
1977	1,258,900
1978	1,326,400
1979	1,421,300

Source: Texas Employment Commission. Bureau of the Census, U.S. Department of Commerce.

TABLE II-7

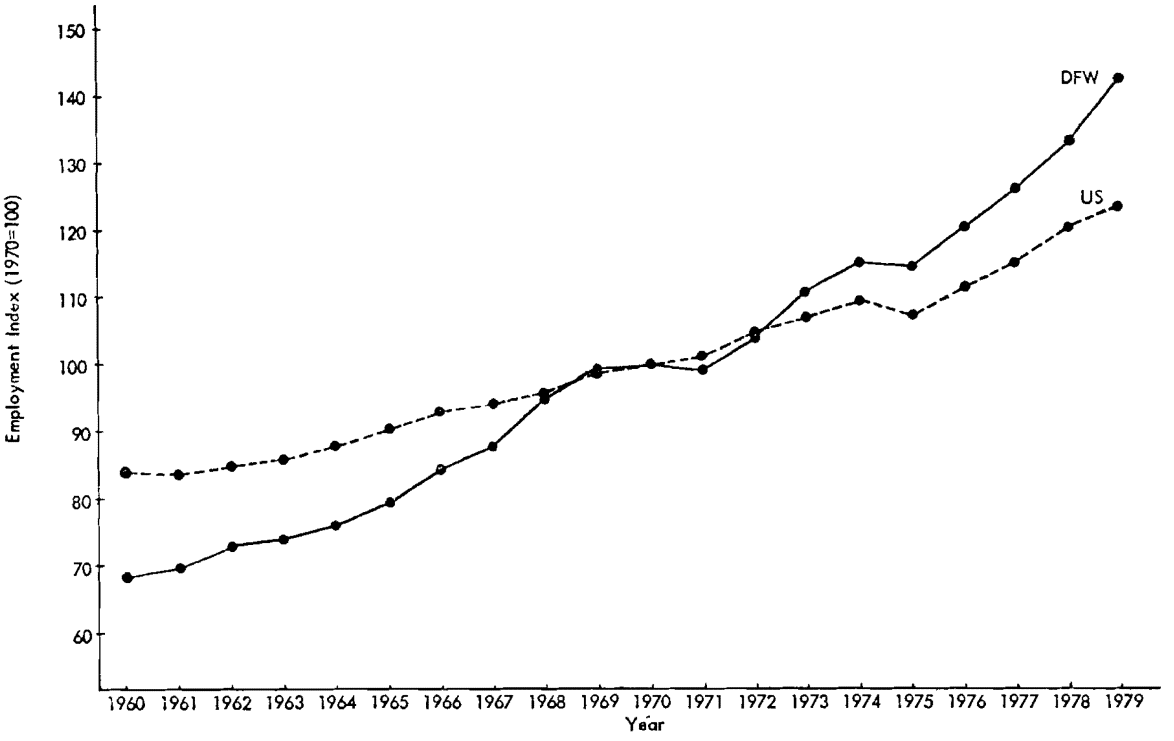
EMPLOYMENT INDEX (1970=100)
1960-1979

Year	Dallas-Fort Worth SMSA	United States
1960	68.0	83.7
1961	69.7	83.6
1962	73.1	84.8
1963	74.1	86.2
1964	76.1	88.1
1965	79.8	90.4
1966	84.0	92.7
1967	88.2	94.6
1968	94.4	96.6
1969	99.4	99.1
1970	100.0	100.0
1971	98.9	100.6
1972	103.7	103.9
1973	110.6	107.4
1974	115.0	109.3
1975	114.3	107.8
1976	120.1	111.3
1977	126.2	115.2
1978	133.0	120.1
1979	142.5	123.4

Source: Texas Employment Commission.
Bureau of the Census, U.S. Department of Commerce.

FIGURE II-9

EMPLOYMENT INDEX (1970=100)
1960-1979



Unemployment in the Dallas-Fort Worth SMSA was also significantly lower than the national average. The low for Dallas-Fort Worth between 1960 and 1976 was 1.9 percent in 1968, and the high was 5.3 percent in 1975. In contrast, the low for the nation over the same period occurred in 1969 at 3.5 percent, and the high was in 1975, with 8.5 percent of the nation's labor force out of work (see Figure II-10).

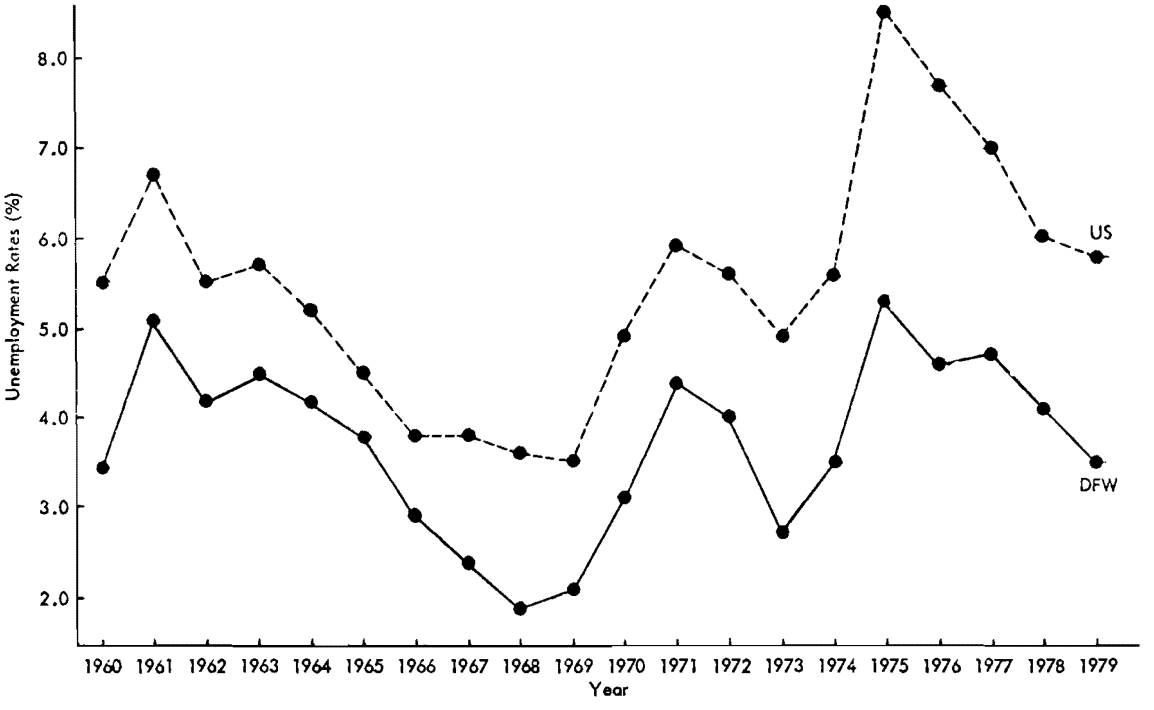
Employment: Current Status

For the fourth quarter 1979, employment gains in the SMSA were much sharper than the corresponding national increases, while the number of unemployed and the unemployment rate dropped more rapidly in the SMSA than the national rates.

During the one-year period from the fourth quarter 1978, total employment in the SMSA increased by 6.8 percent from 1,360,800 to 1,460,100 workers. This may be compared with the 2.1 percent total employment increase in the

FIGURE II-10

UNEMPLOYMENT RATES
1960-1979



United States (see Figure II-11). Most major industrial sectors grew more rapidly in the SMSA than in the United States, which again demonstrates the strongly diversified economic base of the SMSA.

Unemployment

During the fourth quarter 1979, the unemployment rate averaged 3.3 percent in the SMSA. This rate was well below the national average of 5.9 percent. Moreover, the SMSA rate was well below the year-ago level of 3.7 percent (see Figure II-12). The number of unemployed also dropped sharply in the SMSA. Unemployed workers declined by 4.5 percent in the SMSA compared to the 3.4 percent increase in the United States (see Table II-8).

FIGURE II-11

EMPLOYMENT INDEX
1978-1979

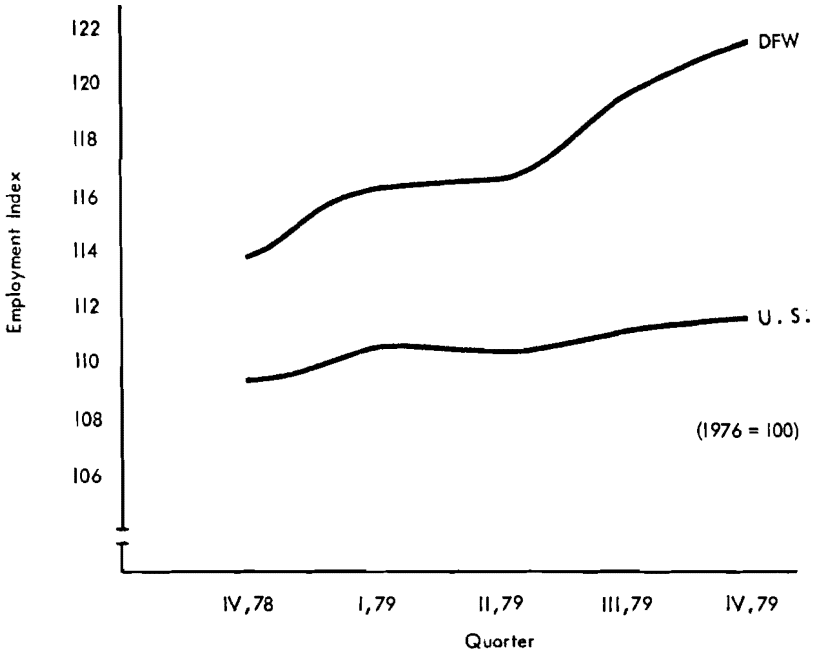


FIGURE II-12

UNEMPLOYMENT RATE
1978-1979

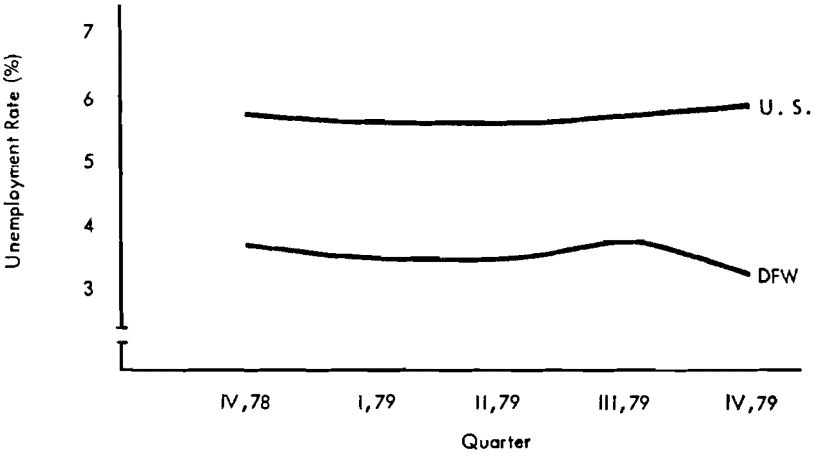


TABLE II-8

REGIONAL ECONOMIC INDICATORS
FOURTH QUARTER 1979

REGIONAL ECONOMIC INDICATORS[1]	Month			Preceding Month		Same Month One Year Ago		
	Oct	Nov	Dec	10-11	11-12	10-10	11-11	12-12
Employment[3]								
Civil Labor Force (Thousands)	1504.7	1502.9	1521.1	- 0.1	1.2	6.9	6.3	7.1
Employment	1458.5	1453.0	1468.8	- 0.4	1.1	7.5	6.7	7.4
Construction	77.1	75.8	79.4	- 1.7	4.7	26.4	24.9	30.6
Transportation	59.8	59.9	61.5	0.2	2.7	6.6	7.0	8.8
Wholesale Trade	124.4	124.8	128.0	0.3	2.6	11.8	11.2	13.5
Retail Trade	245.2	250.1	264.9	2.0	5.9	10.7	11.4	13.7
Manufacturing	305.2	306.6	314.8	0.5	2.7	6.8	6.8	9.0
Electrical Machinery	53.1	53.4	59.0	0.6	10.5	10.2	10.1	20.6
Transportation Equipment	52.5	52.9	51.3	0.8	- 3.0	13.1	13.0	8.0
Services	244.0	242.4	243.6	- 0.7	0.5	10.8	10.5	10.6
Finance, Insurance, & Real Estate	101.1	101.2	103.8	0.1	2.6	6.3	6.1	8.4
Government	177.1	177.6	177.0	0.3	- 0.3	7.1	7.1	7.1
Unemployment	46.2	49.9	52.2	8.0	4.6	- 6.7	- 6.0	- 0.8
Unemployment Rate	3.1	3.3	3.4	6.5	3.0	-11.4	-13.2	- 8.1
Labor Turnover Rates, Manufacturing (Per 100 Employees)								
Accession Rates	5.8	4.4	3.2	-24.1	-18.2	- 3.3	-17.0	-11.1
Separation Rates	5.0	4.4	3.1	-12.0	-29.5	- 4.0	- 4.3	- 2.6
Wages and Prices								
Average Weekly Earnings, Manufacturing[3]	252.76	258.96	267.74	2.5	3.4	10.8	9.8	12.6
Electrical Machinery	268.45	275.99	301.97	2.8	9.4	13.6	13.5	23.4
Transportation Equipment	352.60	362.20	369.79	2.7	2.1	14.9	9.0	12.4
Consumer Price Index, All Items (1967=100)[2]	228.0	- -	233.3	- -	2.3	13.9	- -	16.0
Food	237.2	- -	241.0	- -	1.6	10.4	- -	11.2
Housing	241.3	- -	248.0	- -	2.8	17.3	- -	20.8
Gas and Electricity	298.3	- -	285.4	- -	- 4.3	10.4	- -	21.1
Transportation	227.4	- -	234.6	- -	3.2	17.3	- -	19.7
Public	227.8	- -	234.8	- -	3.1	17.3	- -	19.6
Private	213.0	- -	226.8	- -	6.5	15.7	- -	24.9
Medical Care	229.7	- -	234.3	- -	2.0	7.0	- -	6.7
General Indicators								
Urban Building Permits, Number[4]	2043	1465	1177	-28.3	-19.7	21.7	- 0.4	-11.4
Dollar Valuations ($ Thousands)[4]	153115	102362	65415	-33.1	-36.1	32.7	3.1	- 8.1
Department Store Sales ($ Thousands)[5]	129424	162117	237846	25.3	46.7	23.4	28.5	- -
Average Weekly Hours, Manufacturing[3]	40.9	41.5	41.9	1.5	1.0	1.0	1.0	1.5
Electrical Machinery	41.3	41.3	43.2	0.0	4.6	4.6	2.0	7.7
Transportation Equipment	41.0	42.2	43.2	2.9	2.4	0.7	1.0	2.9

[1] Unless otherwise noted, the data are for the eleven county Dallas-Fort Worth Standard Metropolitan Statistical Area (SMSA), which includes Collin, Dallas, Denton, Ellis, Hood, Johnson, Kaufman, Parker, Rockwall, Tarrant and Wise.

[2] Source: Bureau of Labor Statistics. Month-to-month changes under the "11-12" column reflect changes from October to December for price data.

[3] Source: Texas Employment Commission.

[4] Source: Federal Reserve Bank of Dallas

[5] Source: Monthly Retail Trade.

Manufacturing

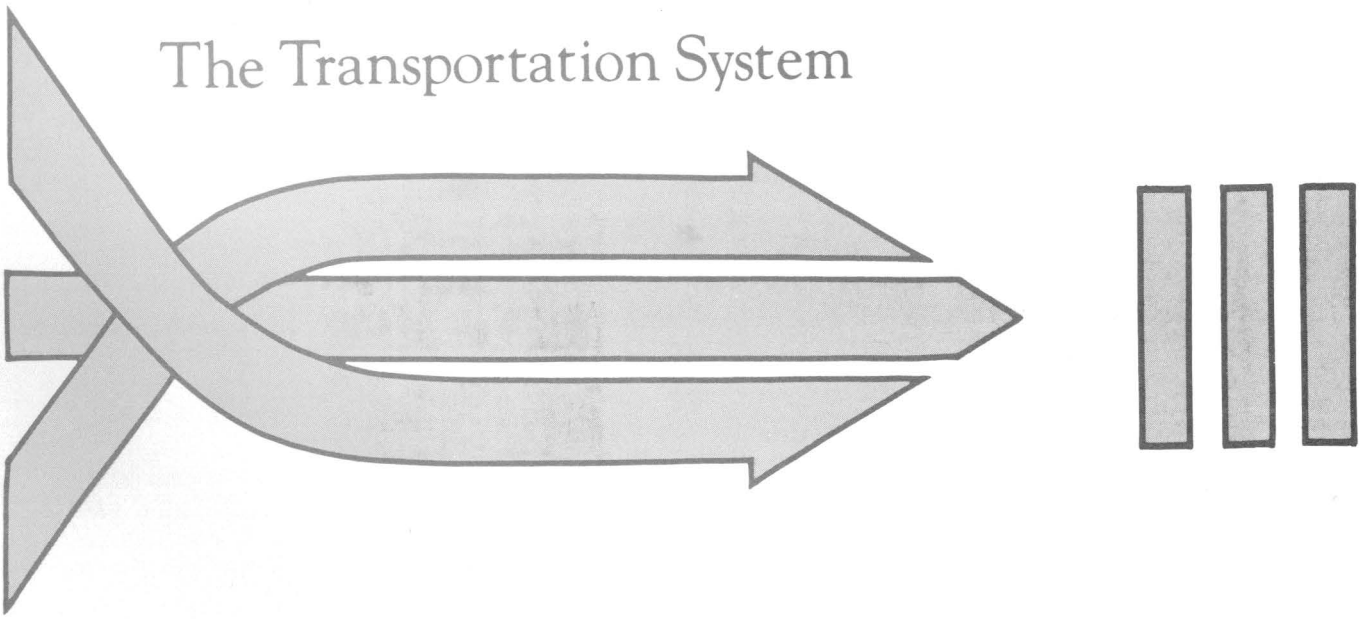
Manufacturing employment also rose very sharply in the SMSA. SMSA employment jumped 7.5 percent, compared to a 1.4 percent national gain. The 11.4 percent gain in transportation equipment employment, which includes workers with aerospace manufacturers, was significant in the overall gain in manufacturing employment.

Construction, Wages, and Hours

From the fourth quarter 1978 to the fourth quarter 1979, the number of urban building permits increased 3.3 percent in the SMSA, and the value of these permits increased 9.2 percent.

Average weekly earnings in manufacturing increased 11.1 percent above year-ago levels. This increase was clearly the result of a sharp increase in average hourly earnings, since average weekly hours increased by only 1.2 percent, as Table II-8 illustrates.

The Transportation System



III. The Transportation System

An element common to both transportation planning and transportation management is the monitoring of system performance. Transportation system performance is the collection, evaluation, and feedback -- into management and planning processes -- of data which describe how the transportation system is operating.

The challenge of performance monitoring is to structure the process so that the system characteristics reported aid both planners and managers in defining problem areas. This is important because once the problem can be defined, alternative solutions can be formulated and evaluated.

The purpose of this section is to report the transportation system's performance over the past year and make comparisons with the last several years' measures. The elements of the transportation system for which these performance measures are presented are as follows:

- Highway System
- Public Transportation System
- Airport System

HIGHWAY SYSTEM PERFORMANCE

Information is presented from three agencies having responsibilities for reporting performance of the regional highway network. These agencies are the State Department of Highways and Public Transportation, through the Regional Planning Office, Division of Transportation Planning; the Texas Department of Public Safety; and the Texas Turnpike Authority.

State Department of Highways and Public Transportation

The State Department of Highways and Public Transportation, Regional Planning Office, has directed its performance investigations in three areas: auto occupancy studies, traffic count studies, and vehicle miles of travel. Each was reported in the 1980 Transportation Program.

Auto Occupancy

In an attempt to monitor the level of ridesharing for the daily work trip in this region, the Regional Planning Office of the SDHPT compiled the seventh annual vehicle occupancy study in the summer of 1979. The occupancy rates were determined for the 7-9 a.m. period only. The average auto occupancy in

this region in 1979 was found to be over 1.27. This reflects the fact that more than 39 percent of the persons in the morning rush are in 2+ carpools (two or more persons per auto).

A yearly comparison of the average occupancies for Dallas County, Tarrant County, and the entire Intensive Study Area is presented in Table III-1. Figure III-1 illustrates the trends over the past seven years of average occupancies outside the Dallas and Fort Worth central business districts (CBDs). As shown in this figure, average auto occupancies, which had decreased from 1974 post-oil-embargo levels, turned upward with the emergence of a second major gasoline shortage.

Note should be made of the timing of the SDHPT occupancy counts relative to the course of fuel availability. During the four weeks just prior to the appearance of long gas lines in mid-June, an occupancy survey was made in Tarrant County. The Dallas County survey began in mid-July, following the introduction of odd-even rationing in the area. A decision to resurvey the Tarrant County stations resulted in a second count from August 16 to September 11, a period in which the improving availability of gasoline made possible the lifting of purchase restrictions by Labor Day weekend.

Vehicles entering the Fort Worth and Dallas central business districts were also surveyed to determine the average auto occupancy to these areas. Occupancy rates for both CBDs rose above those of summer 1978, from 1.32 to 1.38 persons per auto in Dallas, and in Fort Worth from 1.22 to 1.24 in the initial count and to 1.26 in the recount three months later.

Traffic Counts

Traffic counts are one of the key indicators to the traffic engineer of the operations of the thoroughfare and highway system. When compared to capacity, they constitute a measure of the level of service provided by system facilities. To the transportation planner, traffic volumes are a statistic used to calibrate models and to calculate various traffic constants for use in the models.

The State Department of Highways and Public Transportation maintains a permanent set of 15 automatic traffic recorders within the Intensive Study Area (ISA) for the purpose of monitoring traffic volume trends. The locations of these permanent recorders are shown in Figure III-2. An eight-year history of the annual average daily traffic at each station is presented in Table III-2. The annual average daily traffic (ADT) volumes are slightly lower than average weekday volumes, since ADT also includes Saturday and Sunday, typically days of lighter traffic. Figure III-3 illustrates the ADT volume trends at selected stations.

TABLE III-1

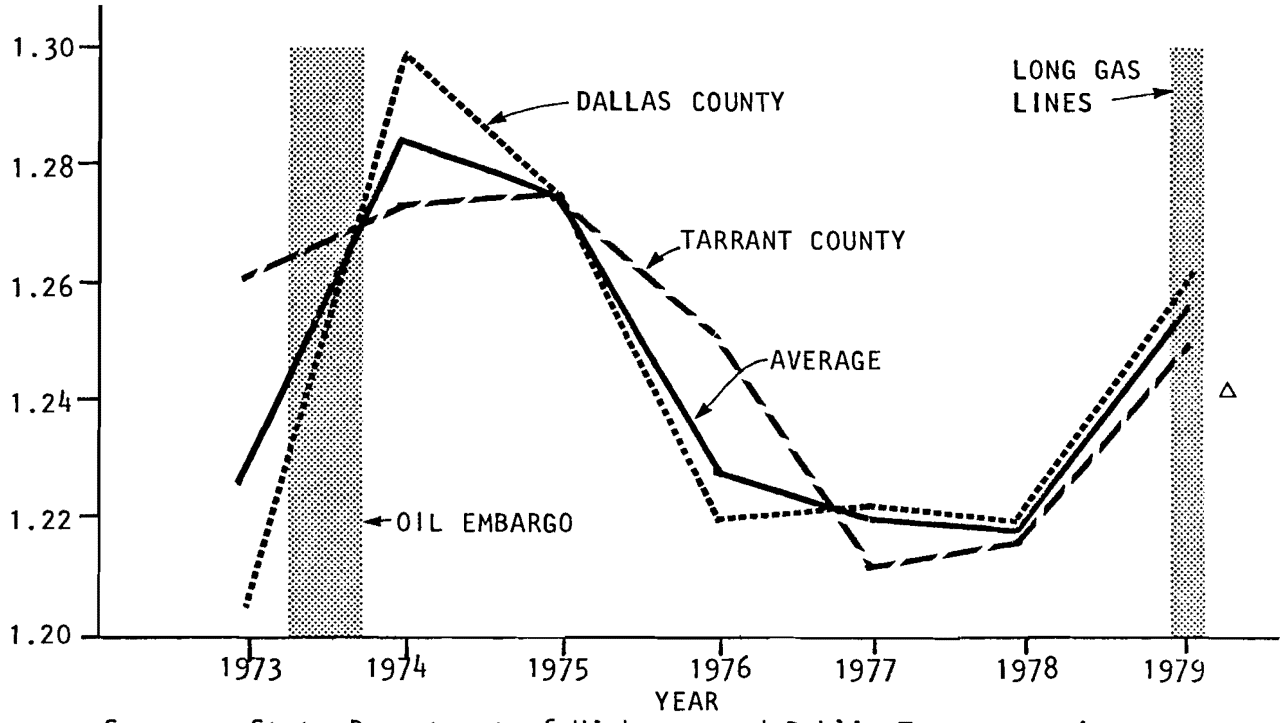
AUTO OCCUPANCY COMPARISONS
(EXCLUDING CENTRAL BUSINESS DISTRICTS)

	1973	1974	1975	1976	1977	1978	1979
Dallas County	1.23	1.30	1.29	1.23	1.23	1.22	1.28
Tarrant County	1.26	1.27	1.28	1.26	1.23	1.22	1.25*
ISA	1.24	1.29	1.29	1.24	1.23	1.22	1.27

* Second count

FIGURE III-1

AUTO OCCUPANCY
1973 - 1979
(EXCLUDING CENTRAL BUSINESS DISTRICTS)



Source: State Department of Highways and Public Transportation

Source: State Department of Highways and Public Transportation

Δ Tarrant County Second Count

FIGURE III-2

PERMANENT RECORDER STATIONS

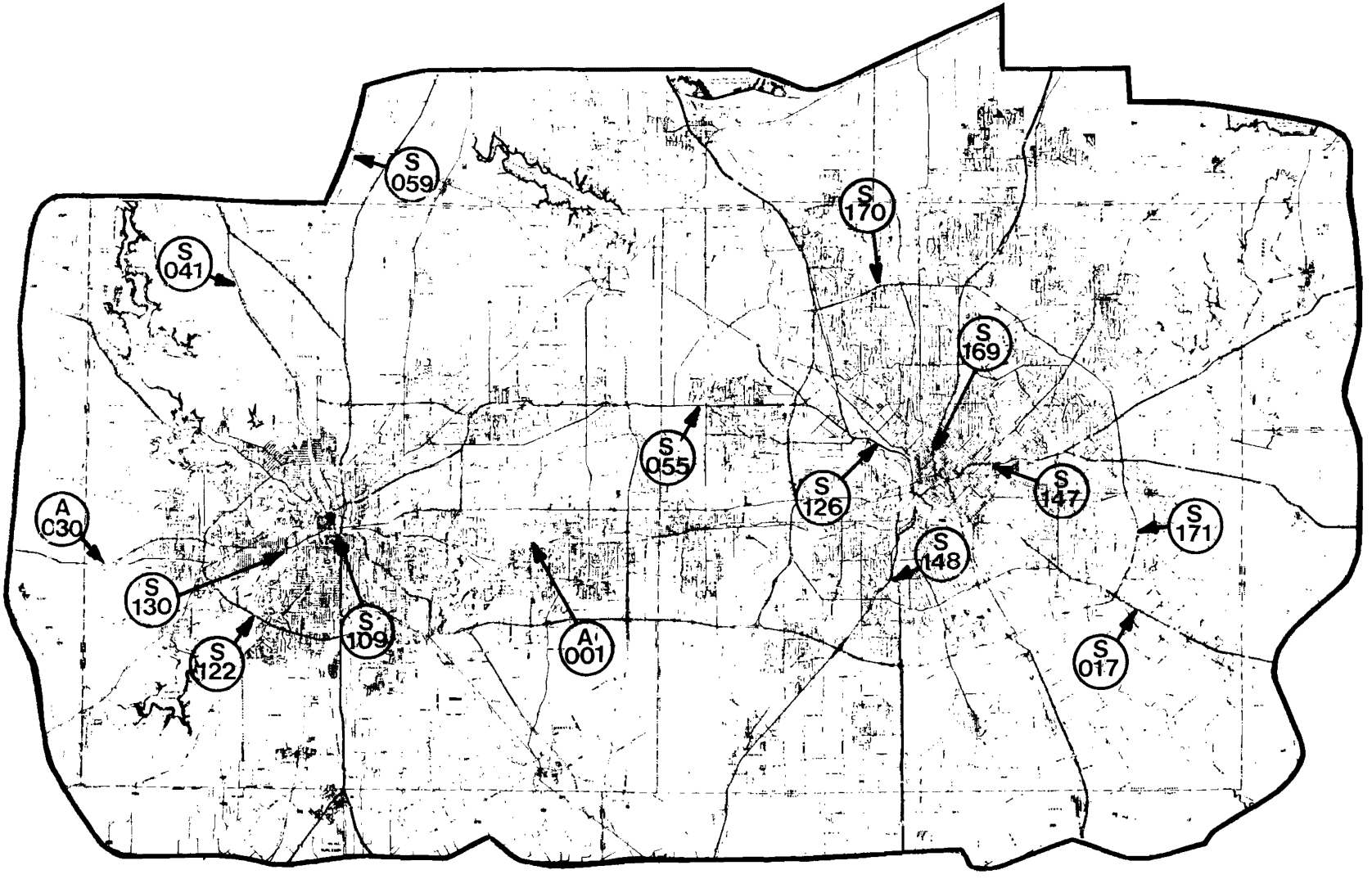


TABLE III-2

ANNUAL AVERAGE DAILY TRAFFIC
1972-1979

Station	Location	1972	1973	1974	1975	1976	1977	1978	1979**
A001	U.S. 80, 3.0 Miles West of FM 157, Arlington	23,509	23,289	23,027	23,639	24,322	25,221	22,922	21,915
A030	I.H. 20, 5.7 Miles West of S.H. 183, Ft. Worth	19,954	(21,250)	(19,850)	20,597	21,340	22,989	24,678	25,059
S041	Loop 496, 8.9 Miles South of S.H. 114, Ft. Worth	2,765	2,821	2,576	2,661	2,598	2,687	3,011	3,251
S109	I.H. 35W, 0.5 Miles South of I.H. 30, Ft. Worth	75,167	75,766	74,692	76,370	76,657	79,368	80,598	80,711
S122	I.H. 20, 4.6 Miles West of I.H. 35W, Ft. Worth	20,483	21,153	20,113	22,961	24,497	26,141	26,087++	27,477
S130	I.H. 30, 2.0 Miles East of U.S. 80, Fort Worth	68,834	69,802	67,988	66,070	70,565	77,966	76,421	75,088
S017	U.S. 175, 4.8 Miles S.E. of Loop 12, Dallas	21,142	22,863	22,196	23,250	24,448	26,659	28,623	29,569
S055	S.H. 183, 0.4 Miles West of S.H. 356, Dallas	(44,650)	50,011	60,526	63,286	65,379	70,330	68,284	69,732
S059	FM 156, 0.1 Miles South of S.H. 114, Denton Co.	630	660	664	662	694	715	715	742
S126	I.H. 35E, 1.6 Miles SE of S.H. 356, Dallas	112,280	115,604	112,228	113,007	115,694	120,092	119,367	117,047
S147	I.H. 30, on S.H. 78 Overpass, Dallas	93,835	94,108	93,644	94,766	96,188	99,329	101,854	102,722
S148	I.H. 35E, 0.3 Miles North of U.S. 67, Dallas	85,231	90,654	89,374	94,404	95,872	99,731	101,066	102,393
S169	U.S. 75, 1.5 Miles North of I.H. 30, Dallas	68,935	74,227	78,539	83,256	88,855	93,117+	95,330	95,278
S170	I.H. 635, 3.5 Miles East of I.H. 35E, Dallas	85,688	95,903	98,569	104,089	110,771	122,282	128,545	135,091
S171	I.H. 635, 2.5 Miles North of U.S. 175, Dallas	20,012	23,946	24,660	28,324	33,241	36,895	39,049	38,687

*Operation interrupted by highway construction

**Preliminary

+Average for 10 months only due to construction

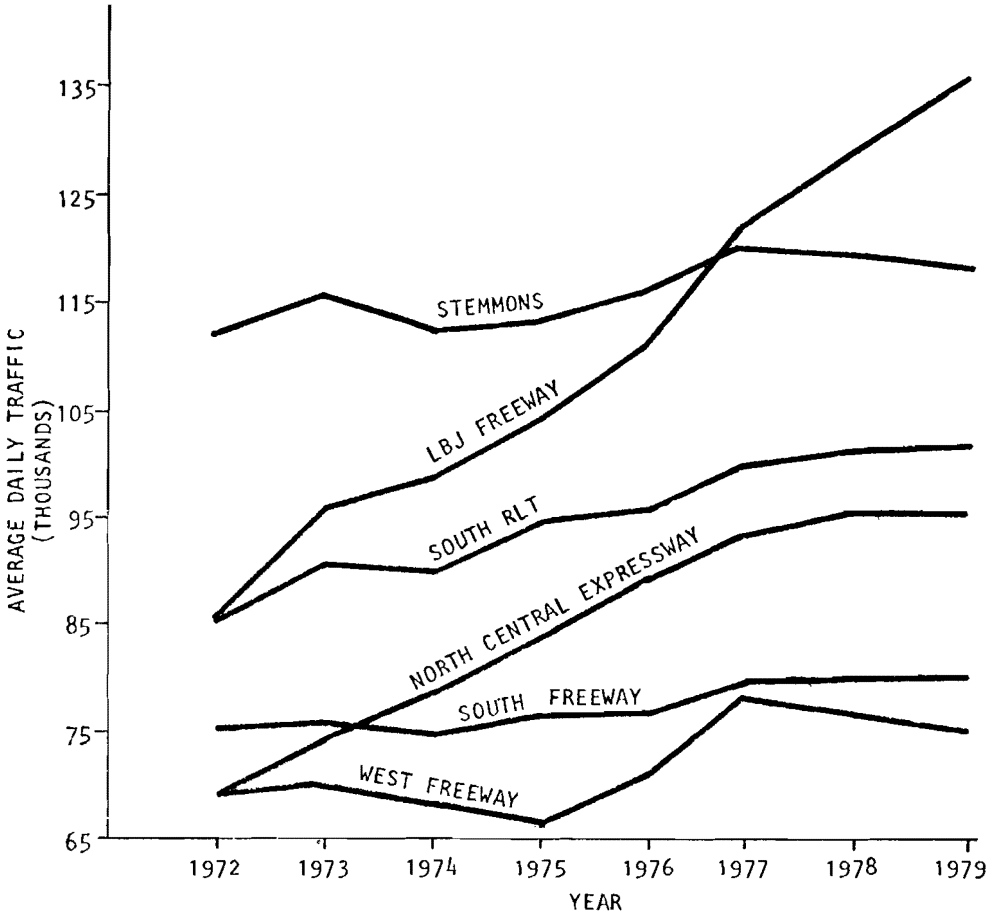
++Average for 3 months only due to construction

(xxx)From one-time counts

Sources: State Department of Highways and Public Transportation and 1978 Annual Report, Permanent Automatic Traffic Recorders, State Department of Highways and Public Transportation.

FIGURE III-3

ANNUAL AVERAGE DAILY TRAFFIC TRENDS AT SELECTED STATIONS
1972 - 1979



Source: State Department of Highways and Public Transportation

Vehicle Miles Traveled

As discussed earlier, the Dallas-Fort Worth area is one of the fastest growing regions in the United States. It is also highly dependent on the automobile for transportation. As a result, there has been a steady increase in the number of vehicle miles traveled over the last several years. This has caused the existing freeways to become heavily used and, in some cases, overcapacitated. The number of vehicle miles traveled (VMT) in 1977 and 1979 is given in Table III-3. These estimates were computed with statistical sampling procedures developed by NCTCOG under a special research grant from the Federal Highway Administration. Local governments assisted by taking the

TABLE III-3

AVERAGE DAILY VEHICLE MILES OF TRAVEL
1977, 1979

Area	1977	1979
Dallas County	33,200,000	36,650,000
Tarrant County	16,200,000	17,368,000
Rest of ISA	3,500,000	3,962,000
Total ISA	52,900,000	57,980,000

Source: North Central Texas Council of Governments estimates

traffic counts to support the estimates. VMT estimation is an annual activity of NCTCOG. In previous years vehicle registration data has also been reported; however, the SDHPT no longer provides this information.

Texas Department of Public Safety

The frequency of motor vehicle accidents is another indicator of highway system performance. The occurrence of motor vehicle accidents can provide some insight to how well drivers are coping with the highway conditions. It is not appropriate in all cases, however, to attribute accidents to highway conditions, since driver behavior is so critical to both the causation and prevention of motor vehicle accidents.

The information presented in this section represents the accident situation for the calendar year 1979 for the municipalities reporting their statistics. These data were taken from summaries provided by the Texas Department of Public Safety in cooperation with local governments. Table III-4 lists those municipalities included in the summaries. The total population of those included for Dallas County represents approximately 90 percent of the county population as of January 1, 1980. The municipalities included for Tarrant County represent approximately 80 percent of the county population.[1]

The number of accidents in 1979 in the municipalities reporting in Dallas County totaled 59,428 and resulted in 22,940 injured persons and 280 fatalities. In Tarrant County, there were 28,208 total accidents in 1979 with 9,284 injured persons and 168 fatalities. Figure III-4 shows the trends in injuries and fatalities in Dallas and Tarrant Counties from 1975 through 1979. No comparisons can be made for total accidents over these years, owing to changes in the reporting laws.

---

[1] North Central Texas Council of Governments, "Current Population Estimates, 1980" (Arlington, Texas, January 1980).

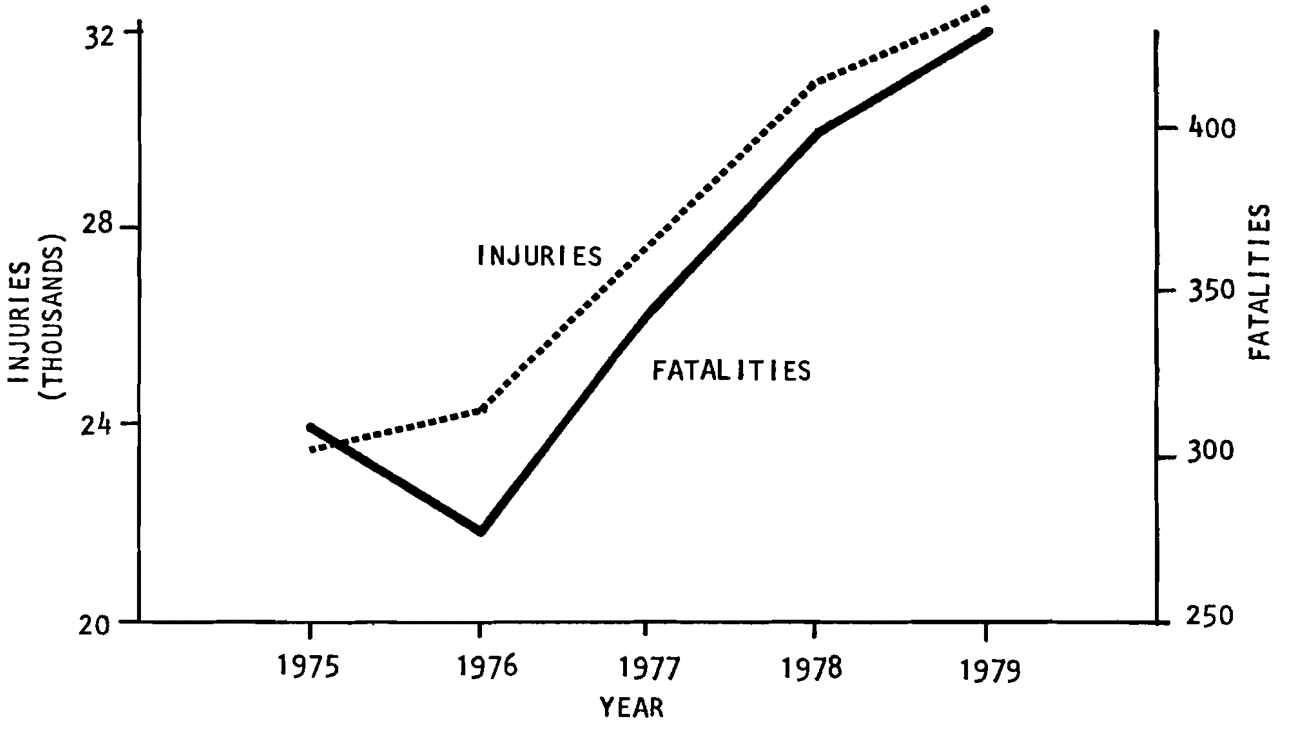
TABLE III-4

MUNICIPALITIES REPORTING ACCIDENT STATISTICS

Dallas County	Tarrant County
Carrollton	Arlington
Dallas	Euless
Farmers Branch	Fort Worth
Garland	Haltom City
Grand Prairie	Hurst
Irving	North Richland Hills
Mesquite	
Richardson	

FIGURE III-4

ANNUAL INJURIES AND FATALITIES DALLAS AND TARRANT COUNTIES 1975 - 1979

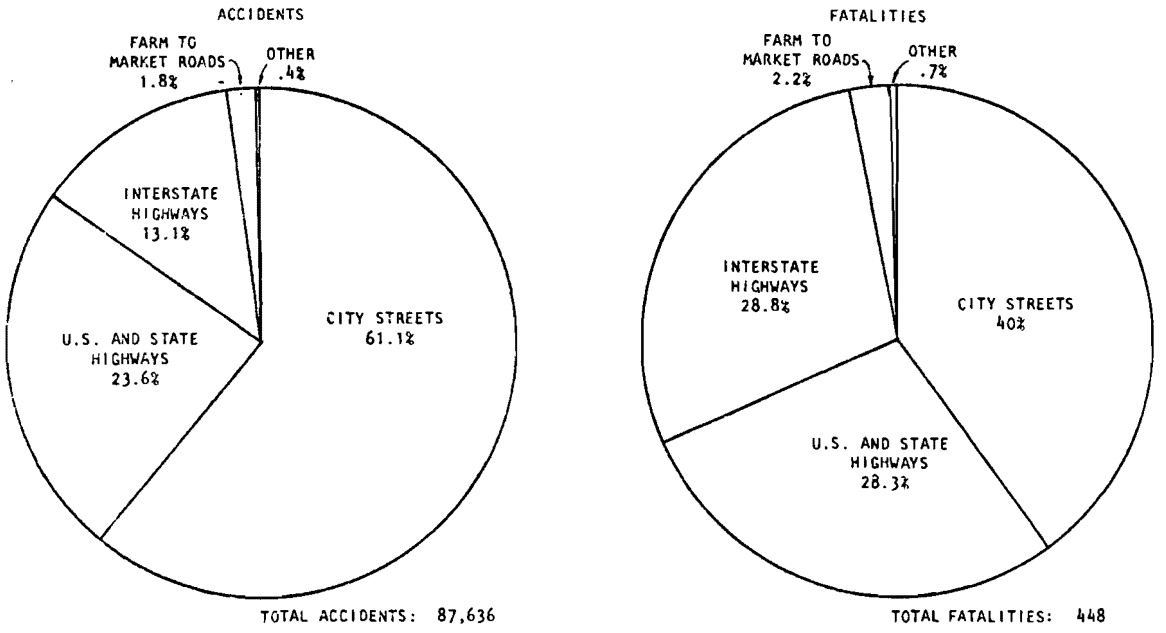


Source: Texas Department of Public Safety

The accidents and fatalities that occurred in this area during 1979 have been grouped according to road type. Figure III-5 illustrates the road types on which these accidents occurred.

FIGURE III-5

TOTAL ACCIDENTS AND FATALITIES BY ROAD TYPE
DALLAS AND TARRANT COUNTIES
1979



Source: Texas Department of Public Safety

Texas Turnpike Authority

The Texas Turnpike Authority, an agency of the State of Texas established in 1953, currently operates two toll facilities in the Intensive Study Area. They are the Dallas North Tollway and the Mountain Creek Lake Bridge. The first toll facility built and operated by the Authority, the Dallas-Fort Worth Turnpike, was transferred to the State Department of Highways and Public Transportation on December 31, 1977.

Dallas North Tollway

The Dallas North Tollway, the second project to be built by the Authority, marked its 11th full year of operation in 1979. It is a ten-mile, four-to-

six-lane urban expressway linking the central downtown business district of Dallas with the north central section of the city. The tollway is used primarily by commuters, with 99.5 percent of the traffic being passenger vehicles.

The Tollway's traffic volume and toll revenue increased substantially in 1979. At year-end, 26,534,742 revenue vehicle trips were recorded, an average of 72,698 per day, as compared to 24,167,532 revenue vehicle trips in 1978, an average of 66,212 per day.

Tollway revenue was $6,147,185, as compared to $5,615,923 in 1978, an average of $15,386 per day.

Mountain Creek Lake Bridge

The Mountain Creek Lake Bridge is the third project built by the Authority. The 1.4-mile, two-lane bridge is located in southwestern Dallas County and was opened April 30, 1979. It extends from the intersection of State Highway Spur 303 and Southeast 14th Street in Grand Prairie, on the west side of the lake, across to the intersection of State Highway Spur 303 (Kiest Boulevard) and Florina Drive in Dallas, on the lake's east side.

During its first eight months of operation, the toll bridge served 716,399 vehicle trips. Toll revenue during this period totaled $283,279.

PUBLIC TRANSPORTATION SYSTEM PERFORMANCE

The transit system performance in the Dallas-Fort Worth area is monitored and reported by the various transit providers in this region. These providers include the Dallas Transit System, CITRAN of Fort Worth, SURTRAN, Texas Motor Coaches, AIRTRANS, intercity bus companies, and taxicab companies.

Dallas Transit System

The Dallas Transit System has provided statistics that can be grouped into three general categories: availability of service, demand for service, and revenues and expenses. Information is presented for 1979 and comparisons are made with the last several years.

Availability of Service

DTS provides bus service to Dallas along the routes shown in Figure III-6. In addition to these local bus routes, they provide service to six park-and-ride lots, three of which are on a contractual basis. Total route miles for the system in 1979 were 543.7, the same as in 1978. The number of scheduled miles increased from 12,611,253 in 1978 to 13,624,937 in 1979, an 8.0 percent jump. Scheduled bus hours in 1979 were 958,272, which represents a 5.8 percent increase over the 905,820 scheduled hours in 1978.

During the spring of 1980, the Dallas Transit System increased its fleet to 527 with the addition of 70 advance-design Flxible 870 buses. These new coaches offer improved rider comfort features and are equipped with a "kneeling" feature to improve accessibility. Of these 527 coaches, 401 are 51-passenger coaches, 120 are 47-passenger coaches, 5 are 19-passenger coaches and 1 holds 21 passengers.

Demand for Service

In 1979 the Dallas Transit System carried 27,709,800 revenue passengers, an increase of 9.7 percent over the 25,265,000 passengers in 1978. This increase in ridership is likely due in part to the gasoline shortages experienced in the summer of 1979. Ridership at the height of the shortage caused overcrowding on most routes, and although demand did decline after the shortage, annual ridership has remained substantially higher than in 1978.[2] The passengers per mile rate has increased in the last year: 2.00 in 1978 and 2.03 in 1979. Figure III-7 illustrates the ridership trends on the Dallas Transit System from 1973 through 1979.

Revenues and Expenses

Operating expenses for the Dallas Transit System have continued to rise during the past year. In 1979 the operating cost was $23,266,017, an increase of 17.1 percent over 1978. The cost per scheduled mile rose from $1.57 in 1978 to $1.71 in 1979.

The operating revenue in 1979 increased at a higher rate of 19.3 percent. The annual operating revenue for 1979 was $15,173,685. The revenue per scheduled mile jumped from $1.01 in 1978 to $1.11 in 1979.

The operating ratio, defined as the operating revenue divided by the operating expense, has also risen, from .64 in 1978 to .65 in 1979. Figure III-8 illustrates the trends in revenues and expenses for the years 1973 through 1979.

CITRAN of Fort Worth

A summary of system characteristics was provided by CITRAN and is presented below. As was the case for the Dallas Transit System, the information is grouped into availability of service, demand for service, and revenues and expenses.

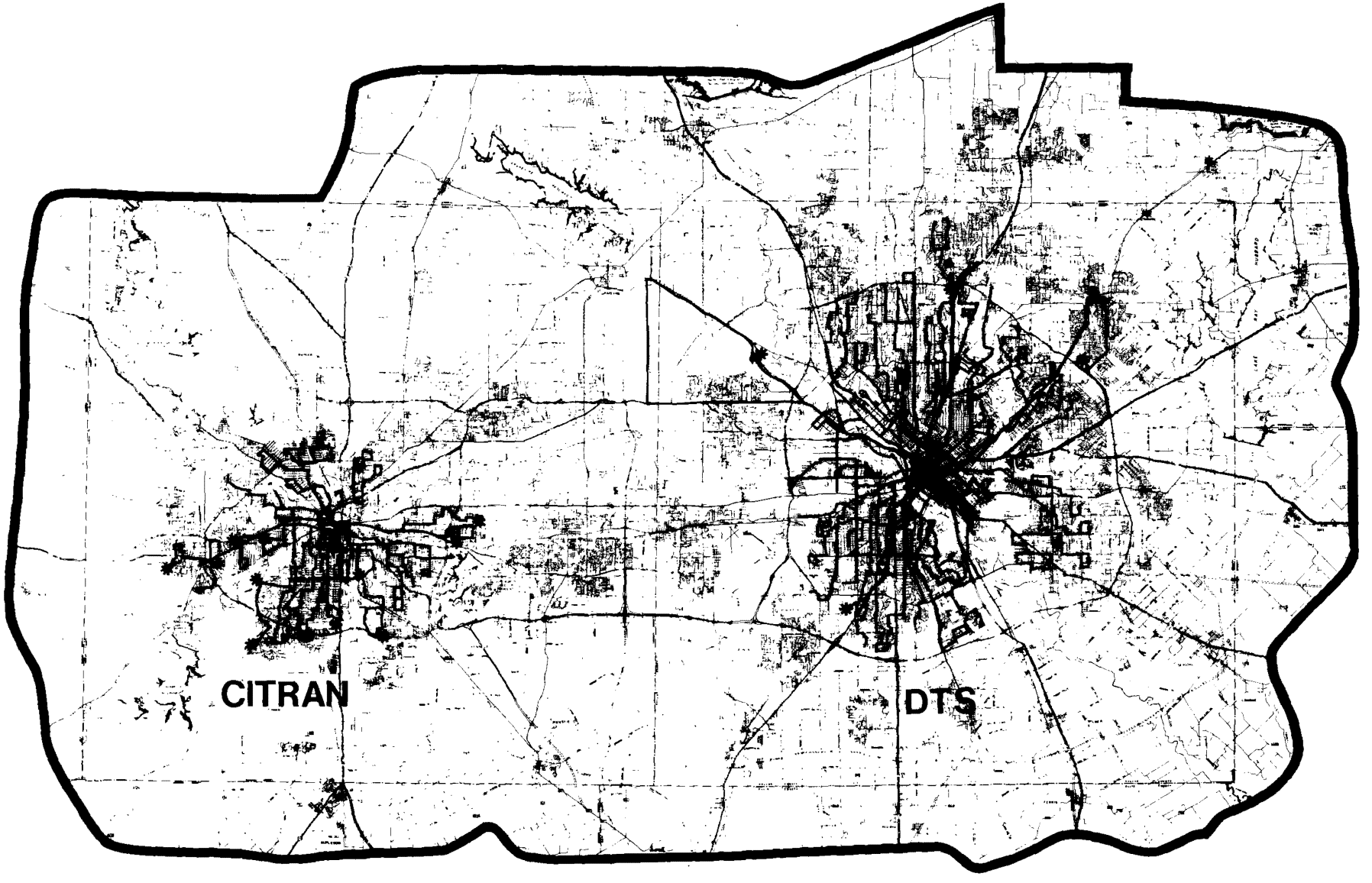
Availability of Service

The bus routes operated by CITRAN are shown in Figure III-6 presented earlier. There are 14 park-and-ride lots that have been established along these routes. The total number of one-way route miles in 1979 was 151.2.

---

[2] Dallas Transit System, "Trends in Systemwide Ridership," January 1980.

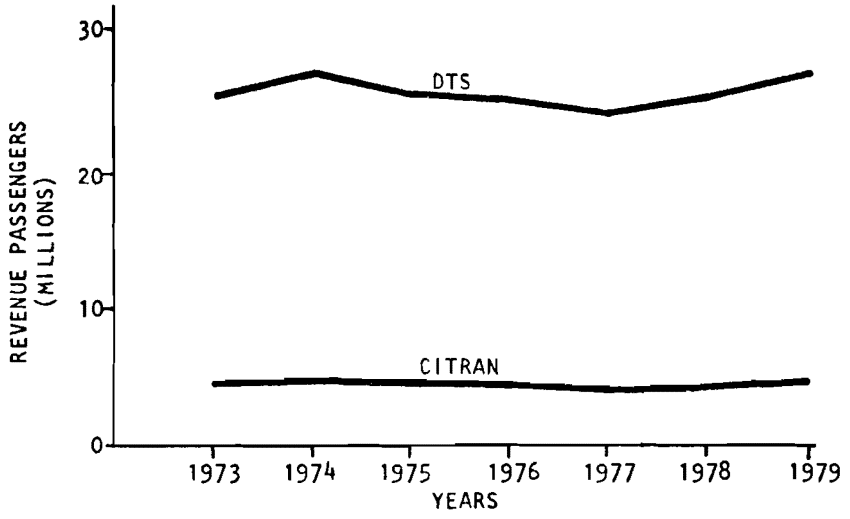
FIGURE III-6
LOCAL BUS ROUTES - DTS AND CITRAN



✱ Park-and-Ride Lot

FIGURE III-7

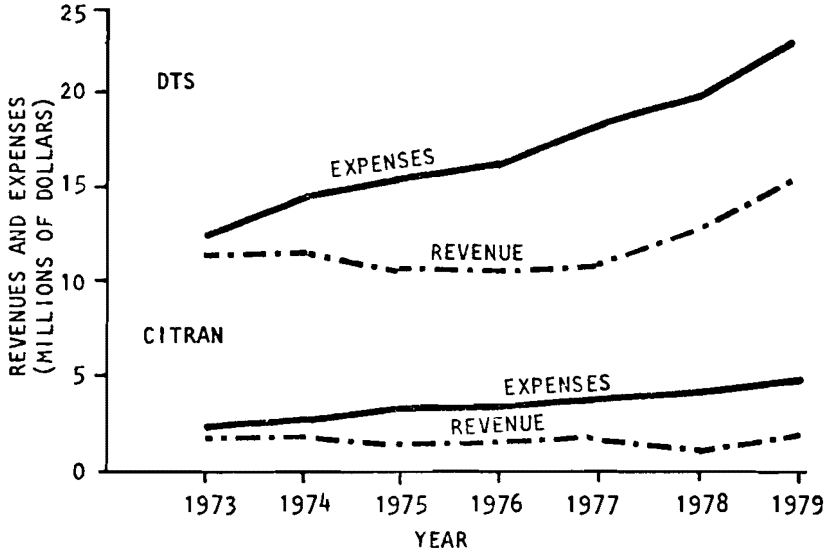
ANNUAL RIDERSHIP - DTS AND CITRAN
1972 - 1979



Sources: DTS and CITRAN

FIGURE III-8

OPERATING REVENUES AND EXPENSES
DTS AND CITRAN
1973 - 1979



Sources: DTS and CITRAN

The scheduled bus miles for CITRAN in 1979 was 2,952,831, a decrease of 1.5 percent over the 2,996,990 scheduled miles in 1978. Scheduled bus hours in 1979 totaled 233,873, an increase of less than one percent over 1978.

During 1979, CITRAN maintained its fleet size at 106 vehicles. Of these, 86 are 45-passenger coaches while 20 hold 51 passengers.

Demand for Service

The number of revenue passengers carried by CITRAN in 1979 was 4,312,538. This represents an increase of 2.7 percent over the 1978 ridership figure of 4,198,817. The number of passengers per scheduled mile on CITRAN in 1979 was 1.46, an increase over the 1978 passengers per mile rate of 1.40. Figure III-7, discussed in the Dallas Transit System section, presents the annual ridership on CITRAN from 1973 through 1979.

Revenues and Expenses

Like DTS, the operating costs for CITRAN have risen during the last year. In 1979, the operating expenses totaled $4,658,400, an increase of 16.4 percent over the $4,000,592 spent in 1978. The cost per scheduled mile has also risen, from $1.33 in 1978 to $1.58 in 1979.

The operating revenue increased during this time period by 32.5 percent, from $1,376,580 in 1978 to $1,824,300 in 1979. As a result, the revenue per scheduled mile jumped from $0.46 in 1978 to $0.62 in 1979.

The operating ratio for CITRAN in 1979 was .39, an increase from the 1978 operating ratio of .34. The operating revenue and expenses for CITRAN during the past seven years are shown in Figure III-8 in the preceding section.

SURTRAN

The Dallas-Fort Worth SURTRAN System operates under a contract established between the cities of Dallas and Fort Worth, and the Dallas Transit System. The purpose of SURTRAN is to provide ground transportation service between the D/FW Regional Airport and selected points in Dallas and Tarrant Counties. Information has been provided by SURTRAN for 1979 and is presented below.

Availability of Service

SURTRAN operates five different routes at 30 to 45 minute headways. In 1979 their express buses served Arlington, downtown Fort Worth, downtown Dallas, mid-Dallas, and along North Central Expressway in Dallas. Service to the Hurst, Euless, Bedford area was started through a park-and-ride lot at North East Mall in Hurst. The lot is served by SURTRAN buses on the Fort Worth route.

In 1979, SURTRAN had 3,838,730 scheduled miles, an increase of 4.3 percent over the 1978 mileage. Scheduled bus hours also increased by 4.3 percent from 137,297 in 1978 to 143,268 in 1979.

Since 1973, SURTRAN has continued to utilize 45 GMC Coaches. Thirty-five of these coaches have a 30-seat capacity while the remaining 10 have 39 seats.

Demand for Service

During 1979 SURTRAN carried 932,515 revenue passengers, an increase of 7.6 percent over the 866,650 passengers carried in 1978. The passengers per scheduled mile in 1979 was .24, the same as in 1978. Figure III-9 illustrates the annual ridership on SURTRAN for the last five years.

FIGURE III-9

ANNUAL RIDERSHIP - SURTRAN

Revenues and Expenses

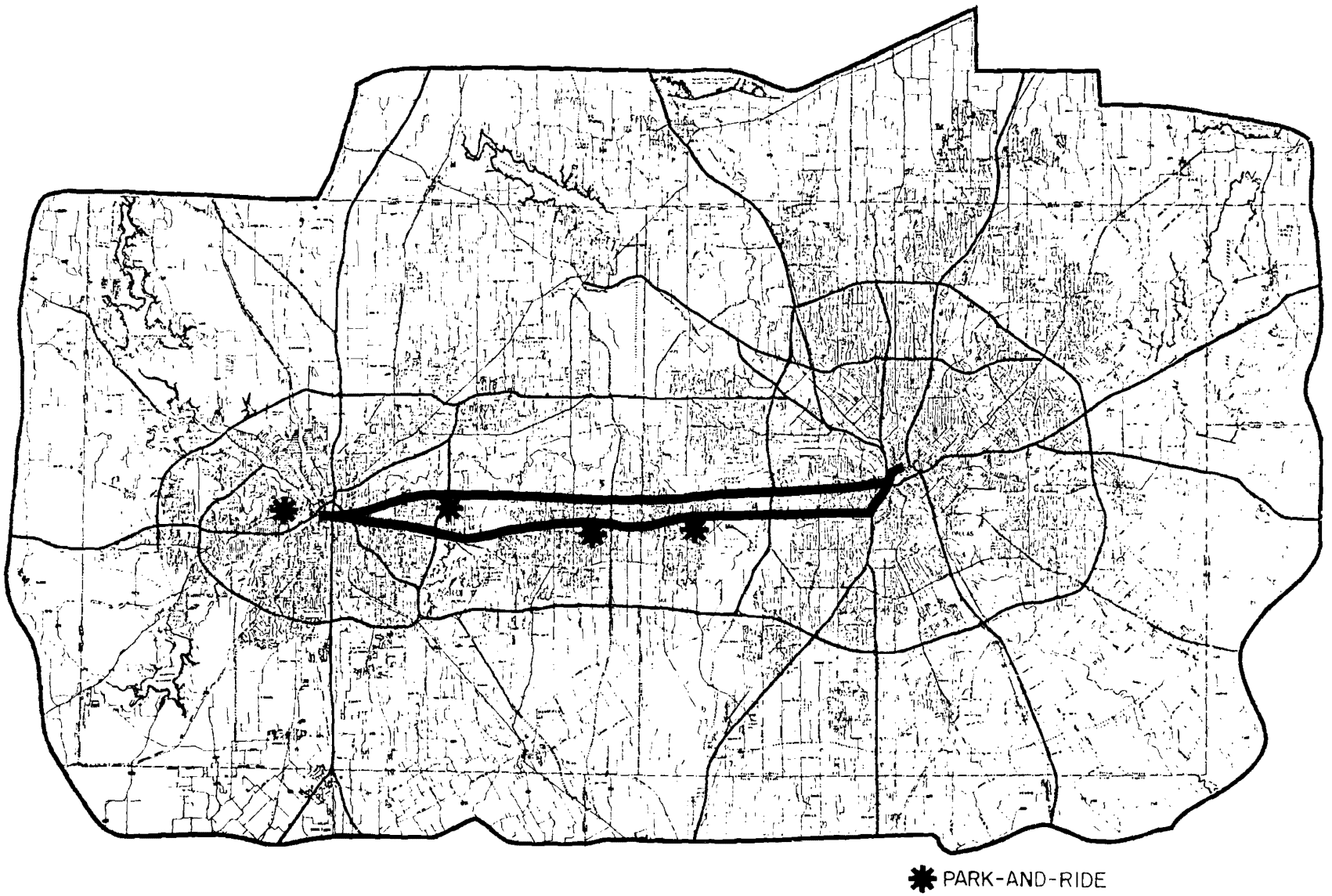
The total operating expenses for SURTRAN in 1979 were $4,158,540, an increase of 16.6 percent over the 1978 expenses of $3,568,030. The cost per scheduled mile rose from $0.97 in 1978 to $1.08 in 1979.

The operating revenue for 1979 was $3,947,352 which represents a 14.7 percent increase over the 1978 revenue of $3,440,000. The revenue per scheduled mile also increased from $0.93 in 1978 to $1.03 in 1979.

The SURTRAN operating ratio (revenue divided by cost) declined slightly from .96 in 1978 to .95 in 1979. Thus, the cost per scheduled mile surpassed the revenue per scheduled mile in 1979.

FIGURE III-10

TEXAS MOTOR COACHES



Texas Motor Coaches

Texas Motor Coaches (TMC), based in Grand Prairie, is a private intercity bus company that provides commuter service between Dallas and Fort Worth. By informal agreement, TMC does not compete with the city-operated transit services in Dallas and Fort Worth.

Availability of Service

Texas Motor Coaches provides service over 83 miles of routes between Dallas and Fort Worth. TMC buses offer local service through Dallas, Grand Prairie, Arlington, and Fort Worth on U.S. Highway 80 and express service via I.H. 30 between Dallas and Fort Worth. Park-and-ride lots served by TMC are located at the Will Rogers Coliseum and the Brentwood Church of Christ in Fort Worth, the TMC terminal in Arlington, and the TMC terminal in Grand Prairie. These routes and lots are shown in Figure III-10. The total number of scheduled miles for TMC buses in 1979 was 733,716, a 2.8 percent increase over 1978. The number of scheduled hours for TMC buses in 1979 was approximately 49,000. Texas Motor Coaches has a fleet of 34 coaches which range in capacity from 39 seats to 53 seats.

Demand for Service

The number of revenue passengers (excluding charter services) carried by TMC during 1979 was approximately 475,000. This is an increase of 35.5 percent from the 350,551 passengers carried in 1978. The number of passengers per scheduled mile in 1979 was .65.

Revenues and Expenses

The total operating cost for TMC in 1979 was $1,643,449. The total operating revenue in 1979 was $1,449,243. The operating ratio for TMC in 1979 therefore, was .88. The nonoperating revenues and expenses were omitted from these figures.

AIRTRANS

AIRTRANS is an automated guideway system at the Dallas-Fort Worth Regional Airport designed to transport people and materials throughout the airport.[3] It began in early 1974 and is operated by the airport.

---

[3] U.S. Department of Transportation, "Assessment of Operational Automated Guideway Systems - AIRTRANS (Phase I)," Urban Mass Transportation Administration, September 1976.

Availability of Service

AIRTRANS operates on 13.5 miles of electrified guideway that serve two remote parking lots, the airport terminals, a hotel, and airport service buildings. Overall, 53 stations are served by AIRTRANS. There are five routes for airport passengers, four for airport employees, and ten for various airport services. Service is provided 24 hours a day, seven days a week. In 1979, AIRTRANS provided 3,358,200 train miles.

AIRTRANS has 68 vehicles, 52 passenger vehicles, and 16 utility vehicles. The passenger vehicles have seating capacity for 16 people, standing capacity for another 24 people, and luggage space.

Demand for Service

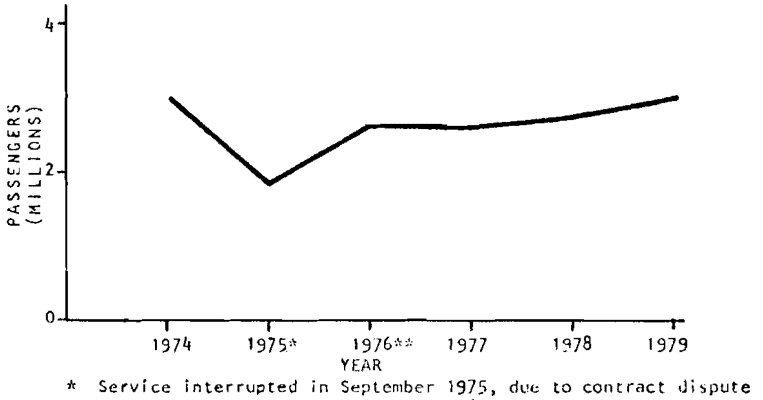
AIRTRANS carried 6,926,710 total passengers in 1979, an increase of 10.1 percent over the 6,293,237 passengers carried in 1978. Of these passengers in 1979, 3,718,774 or 54 percent were airport employees. Thus, 3,207,936 passengers not employed by the airport were transported in 1979, which represents a 16.1 percent increase over the 2,762,226 nonemployee passengers carried in 1978. Figure III-11 presents the annual ridership by nonemployees on AIRTRANS since its inception.

Revenues and Expenses

Operating expenses, plus bond retirement and interest payments, totaled $8,469,099 for AIRTRANS in 1979, an increase of 10.6 percent over the $7,653,964 in 1978. The operating revenue for 1979 was $1,821,160, an increase over 1978 revenue of 19.0 percent. The operating ratio for AIRTRANS in 1979 was approximately .22.

FIGURE III-11

AIRTRANS RIDERSHIP, 1974-1979



* Service interrupted in September 1975, due to contract dispute
** Service reinstituted in January 1976

Summary of Local Transit Systems

A summary of the local transit system performance measures are presented in Table III-5. In addition to the measures discussed in the preceding sections, the average trip length and the amount of fuel used in 1979 are given. Summary information is not included for the intercity bus companies (other than TMC) or taxicab companies.

Private Intercity Carriers

Besides these transit providers that limit their operations to the Dallas-Fort Worth area, there are private intercity bus companies that serve this area. These include Central Texas Lines, Greyhound Lines, and Trailways.[4]

Availability of Service

The routes served by these three bus companies are shown in Figure III-12. The number of route miles for all three companies totals approximately 620 miles within the Intensive Study Area.

Of the three, Trailways provides the most service to this area with about 1,631,280 scheduled miles annually. Greyhound is second with 496,400 scheduled miles, and Central Texas Bus has 95,995 scheduled miles per year.

Taxicab Companies

Taxicabs are the only form of public transportation in many cities in the Dallas-Fort Worth area. However, because of the diverse and privately owned nature of most taxicab operations, little statistical information on local taxi companies has heretofore been collected on a regional level.

In an attempt to provide these basic data, the North Central Texas Council of Governments with the cooperation of local cities and taxicab companies has collected summary statistics for this region.

Availability of Service

There are, as of December 1979, ten taxicab firms in the Dallas-Fort Worth area, with a total fleet of 886 vehicles. Most of these companies serve a city or combination of cities, while one, SURTRAN taxi, serves only the Dallas/Fort Worth Regional Airport. During 1978 an agreement was reached that allows taxicabs from other companies to pick up passengers at the airport as well. Table III-6 lists the companies in this area, the cities in which each operates, and the number of taxicabs for each firm. Figure III-13 is a map of these service areas. The fares charged by these companies are shown in Table III-7.

TABLE III-5

SUMMARY OF LOCAL TRANSIT PERFORMANCE
1979

	DTS	CITRAN	SURTRAN	TMC	AIRTRANS
Route Miles	543.7	151.2	N/A	83	13.5
Scheduled Miles	13,624,937	2,952,831	3,838,730	733,716	3,358,200
Scheduled Hours	958,272	233,873	143,268	49,000[a]	N/A
Revenue Passengers	27,709,800	4,312,538	932,515	475,000[a]	6,926,710[b]
Fleet Size	457	106	45	34	68
Gallons of Diesel Fuel	3,955,762	878,881	759,996	128,000[a]	210,033[c]
Operating Revenue	15,173,685	1,824,300	3,947,352	1,449,243	1,821,160
Operating Cost	23,266,017	4,658,400	4,158,540	1,643,449	8,469,099[d]

[a] Estimated

[b] 54 percent of these were airport employees

[c] AIRTRANS used approximately 8.6 million KWH to operate. This was converted to equivalent gallons of diesel fuel for comparison.

[d] Includes bond retirement and interest payments

FIGURE III-12

PRIVATE INTERCITY BUS ROUTES

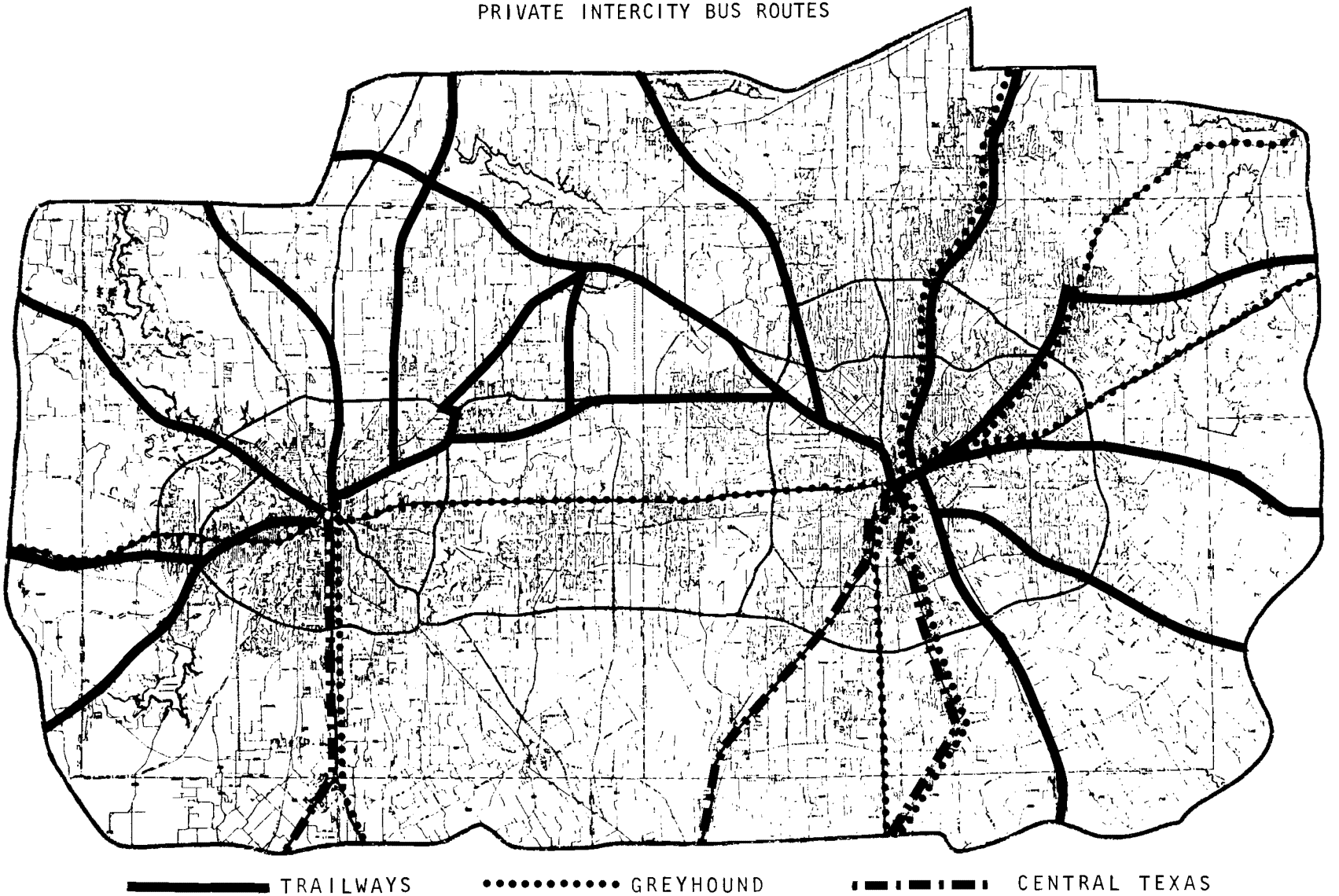


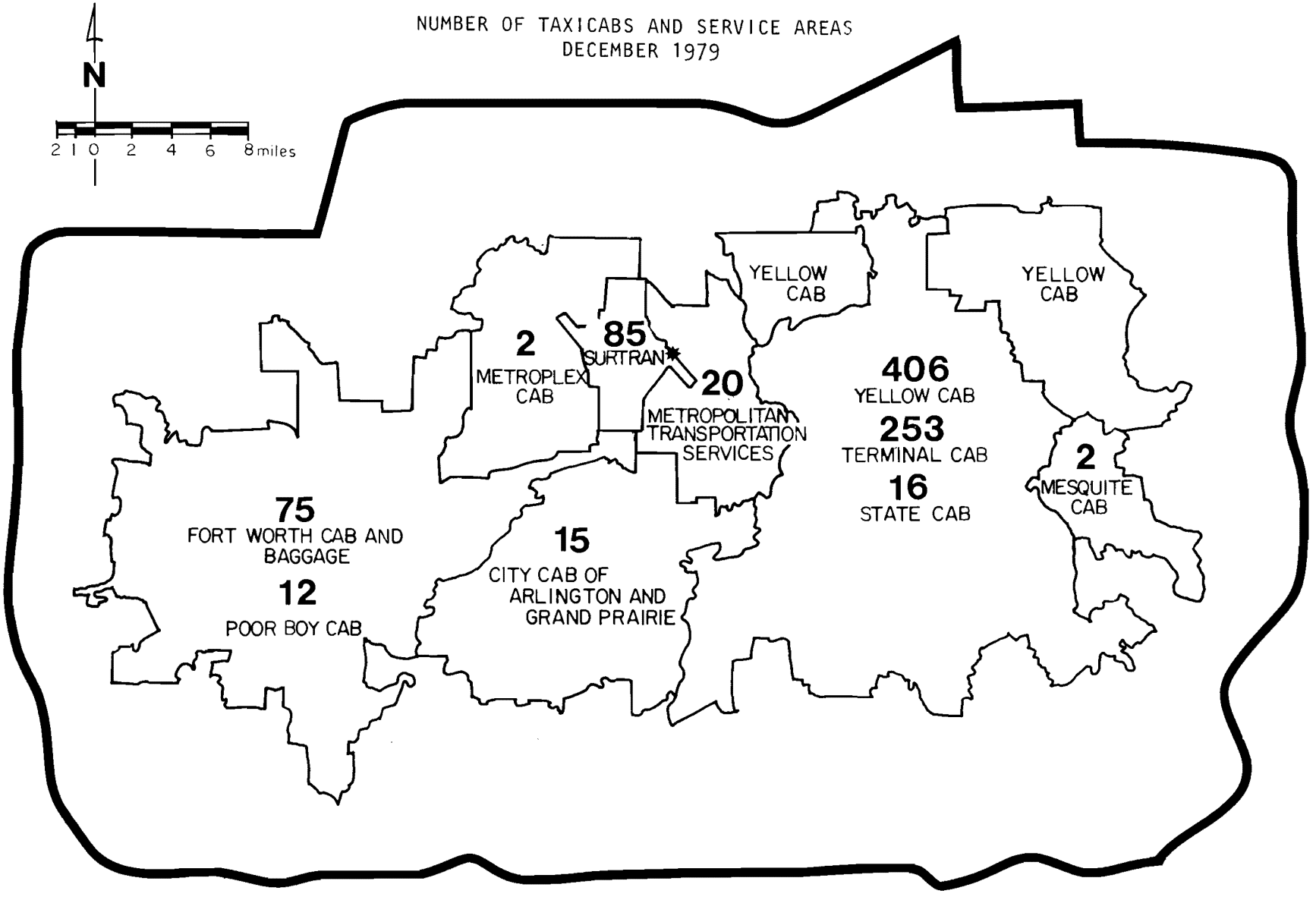
TABLE III-6

DALLAS-FORT WORTH AREA TAXICAB FIRMS - 1979

Company	Number of Taxicabs	Cities Served
City Cab of Arlington	15	Arlington, Grand Prairie
Fort Worth Cab and Baggage Company	75	Benbrook, Forest Hill, Fort Worth, Haltom City, North Richland Hills, Richland Hills, River Oaks, Sansom Park Village. White Settlement
Mesquite Cab Company	2	Mesquite
Metroplex Cab Company	2	Hurst, Euless, Bedford, Grapevine
Metropolitan Transportation Services	20	Irving
Poor Boy Cab Company	12	Fort Worth
State Cab Company	16	Dallas
SURTRAN Taxi, Inc.	85	D/FW Airport
Terminal Cab Company	253	Dallas, D/FW Airport
Yellow Cab Company of Dallas	406	Carrollton, Dallas, D/FW Airport, Farmers Branch, Garland, Highland Park, Richardson, Texas Stadium in Irving, University Park
Total	886	

FIGURE III-13

NUMBER OF TAXICABS AND SERVICE AREAS
DECEMBER 1979



* D/FW Airport is also served by Terminal Cab and Yellow Cab.

TABLE III-7

TAXICAB RATES
DECEMBER 1979

Company	Flag Drop		Subsequent Charge Per Mile	Hourly Wait Charge	Additional Person	Fare 1 Person 5 Miles
	Charge	Fraction of mile				
City Cab of Arlington and Grand Prairie	$1.00	1/5	$ .80	$9.00	$.25	$4.84
Fort Worth Cab and Baggage	1.30	1/6	.80	8.00	.50[a]	5.17
Mesquite Cab	.75	1/7	.70	9.00	.25	4.15
Metroplex Cab	.90	1/3	1.00	0	.50[b]	5.57
Metropolitan Transportation Services	1.30	1/6	.70	8.00	.50	4.68
Poor Boy Cab	1.30	1/6	.80	8.00	.50[a]	5.17
State Cab	1.30	1/6	.70	8.00	.50[c]	4.68
SURTRAN Taxi	1.90	1	.70	8.00	.50	4.70
Terminal Cab	1.30	1/6	.70	8.00	.50[c]	4.68
Yellow Cab of Dallas	1.30	1/6	.70	8.00	.50[c]	4.68

[a]Children under 12 are free

[b]After the second person

[c]$1/additional person between 9 p.m. and 8 a.m. with a $3 per trip maximum.

Source: Local taxicab companies

Taxicab System Performance

Comparisons of various performance measures were made among Dallas-based taxicab companies, Fort Worth-based companies, and those companies in this area but not from Dallas or Fort Worth. Table III-8 presents the statistics for these three groups of taxicab companies for 1979.

These statistics reveal some basic information about the taxicab industry in this area. The number of passengers per trip is higher in Dallas than elsewhere in the area. Both total miles per trip and paid miles per trip on Fort

TABLE III-8

OPERATING STATISTICS FOR DALLAS-FORT WORTH AREA TAXICABS
1979

Statistic	Dallas	Fort Worth	Other
Passengers per trip	1.35	1.30	1.30
Passengers per paid mile	.20	.31	.12
Paid miles per total miles	.48	.41	.42
Total miles per trip	14.40	10.20	19.90
Paid miles per trip	6.90	4.20	10.80

Source: Telephone conversations with local taxicab companies, June 1980.

Worth are shorter than in the rest of the region. The number of paid miles per total miles in higher in Dallas. This figure indicates that over half the travel of area taxicabs is without passengers. Cruising for passengers is prohibited in many areas; thus, the additional mileage likely comes from "deadheading."

Recent Trends

Data for 1979 is not available from every taxicab company in the Dallas-Fort Worth area, and so exact comparison with past years' performances are not possible. Reliable information from the major companies in the area is available, however; thus, some observations can be made. It should be noted that in 1976, the last year data were available for all companies in this area, more than 80 percent of the taxicab business was served by these major companies.

The total number of miles operated by these companies decreased by 14.2 percent in 1979. The number of passengers decreased by a much larger proportion of 31.9 percent. The paid miles per trip, however, increased in 1979 to 7.1 miles, from the 6.8 miles in 1978.

AIRPORT SYSTEM PERFORMANCE

The proposed airport system for North Central Texas is intended to satisfy both air carrier and general aviation demand through 1990. This system, as documented in the North Central Texas Airport System Plan Technical Report, July 1976, relies primarily on 25 existing and 8 proposed publicly owned airports to serve that demand. The City of McKinney has completed construction of one of the airports proposed in that plan, while the new Lancaster Municipal Airport has also joined the list of publicly owned airports.

All airports which are served by Federal Aviation Administration (FAA) air traffic control towers maintain reports of air traffic activity which assist in system planning and master planning efforts. These include monthly reports of air carrier, military, air taxi (including commuter airlines), and general aviation operations. Airports with scheduled air carrier service also report monthly passenger enplanements as well as cargo and mail tonnage moved by air transport.

As compared to FAA tower-operated facilities, nontower airports prepare only estimates of the air traffic activity. FAA, through a program of periodic on-site inspections, produces updated estimates of operations, based aircraft, and other items for the towered and major nontowered airports. For all other facilities, including more than 100 privately owned, private-use airports, this information is gathered through a voluntary survey program. The results of the inspection and survey programs are used to prepare an Airport Master Record (FAA Form 5010-1) for each airport.

Table III-9 presents the Calendar 1978 and 1979 air traffic activity for Dallas/Fort Worth Airport and Love Field, the airports with scheduled air carrier service. Growth rates of enplanements were substantial at both airports. In 1979, Love Field's share of total regional passenger enplanements was some 12.2 percent, up from 10.7 percent in 1978. In particular, Southwest Airlines, the only air carrier currently at Love Field, saw an increase of 32.8 percent in passenger enplanements, while commuter airlines at Love Field saw a 26.3 percent increase in enplanements.

With respect to aircraft movements, or operations, Dallas/Fort Worth Airport saw a 9.0 percent increase in overall operations; Dallas Love Field saw a 5.8 percent increase in overall operations, with a 0.2 percent rise in general aviation activity. Of interest is that while total air carrier enplanements at Dallas/Fort Worth Airport (to include international airlines) increased by nearly 14 percent, air carrier aircraft movements increased by less than 6 percent. This suggests an increase in load factors, or the percent of seats occupied on any one flight. In contrast, D/FW commuter airline movements exceeded 1978 activity by 23.6 percent as enplanements increased by nearly 20 percent. At Love Field, Southwest Airlines operations rose 37 percent, with the number of enplaned passengers increasing almost 33 percent. On the other hand, commuter airline enplanements were up 26 percent, while aircraft movements gained 13 percent. In summary, it can be said that air passenger travel demand is continuing to experience strong growth in the region.

TABLE III-9

AIR CARRIER ACTIVITY SUMMARY
CALENDAR YEARS 1978 AND 1979
(DALLAS/FORT WORTH AIRPORT AND LOVE FIELD)

	Dallas/Fort Worth Airport			Love Field			Both Airports
Activity Measure	1978	1979	Percent Change	1978	1979	Percent Change	1979
Enplaned Passengers							
(Air Carriers)	9,575,431	10,891,637	13.7	1,166,409	1,549,382	32.8	12,441,019
(International Airlines)	78,861	93,752	25.2	-	-	-	93,752
(Commuter Airlines)	274,416	326,884	19.8	17,304	21,852	26.3	350,736
Total Enplaned Passengers	9,928,708	11,319,273	14.0	1,183,713	1,571,234	+32.7	12,890,507
Air Cargo (Tons)							
(All Carriers)	98,806.5	101,660.6	02.9	-	-	-	101,660.6
Air Mail (Tons)							
(All Carriers)	42,321.2	42,905.7	1.4	-	-	-	42,905.7
Aircraft Movements							
(Air Carriers)	317,949	336,594	5.9	36,519	50,037	37.0	386,631
(Commuter Airlines)	67,122	82,642	23.6	26,462	29,934	13.0	112,576
(Military)	697	714	02.4	1,375	1,346	-20.2	2,060
(General Aviation)	22,641	24,813	10.0	227,004	227,504	0.2	252,417
Total Aircraft Movements	408,409	445,163	9.0	291,360	308,791	5.8	753,954

- Indicates zero

Source: This table was compiled from monthly activity summaries made available through the cooperation of the City of Dallas Aviation Director's office (Love Field) and the Dallas/Fort Worth Regional Airport Board, Operations Department and Communications Department.

Table III-10 presents trends in general aviation activity at several selected airfields in the 19-County area and includes most of the 25 "system" airports and several major privately owned, public-use airports. Again, it is noted that data for nontowered airports are estimated and are subject to large degrees of error.

TABLE III-10

TRENDS IN GENERAL AVIATION BASED AIRCRAFT AND OPERATIONS AT SELECTED NORTH CENTRAL TEXAS AIRPORTS CALENDAR YEARS 1978 AND 1979

Airport	Based Aircraft 1978	Based Aircraft 1979	Based Aircraft Percent Change	Annual General Aviation Operations 1978	Annual General Aviation Operations 1979	Annual General Aviation Operations Percent Change	Type of Operations (1979 Data) Percent Itinerant	Type of Operations (1979 Data) Percent Local	Peak Month Operations
I. Tower-Controlled Airports (Operations Reported by FAA)									
1. Meacham Field	297	274	- 7.7	338,115	405,877	20.0	43.5	56.5	42,150
2. Love Field	575	640	11.3	227,004	227,504	0.2	90.7	9.3	22,800
3. Addison Airport	571	703	23.1	214,558	157,628	-26.5	87.7	12.3	21,556
4. Redbird Airport	194	149	-23.2	159,389	179,514	12.6	37.3	62.7	20,000
5. Dallas/Fort Worth	0	0	0.0	22,641	25,202	11.3	99.8	0.2	2,349
Subtotal	1,637	1,766	7.9	961,707	995,725	3.5	61.6	38.4	
II. Nontower Airports (Operations Estimated)									
1. Arlington	157	165	5.1	88,000	93,000	5.7	51.6	48.4	11,000
2. Bonham (Jones Field)	25	28	12.0	5,300	14,000	164.1	40.0	60.0	1,400
3. Bridgeport*	17	17	0.0	8,500	NA	---	40.0	60.0	NA
4. Caddo Mills	10	10	0.0	52,000	52,000	0.0	23.1	76.9	6,800
5. Cleburne	58	62	6.9	NA	38,600	---	46.6	53.4	6,600
6. Corsicana	25	32	28.0	16,000	16,000	0.0	37.5	62.5	1,600
7. Denton	89	96	7.9	115,000	115,000	0.0	34.8	65.2	12,000
8. Ennis	25	22	-12.0	NA	16,000	---	62.5	37.5	1,000
9. Gainesville	23	35	52.2	20,000	20,000	0.0	55.0	45.0	2,000
10. Granbury*	11	11	0.0	6,300	NA	---	44.4	55.6	NA
11. Grand Prairie	160	158	- 1.3	150,000	150,000	0.0	36.0	64.0	15,000
12. Greenville (Majors Field)	27	27	0.0	29,000	29,000	0.0	69.0	31.0	3,000
13. Lancaster*	115	117	1.7	57,500	NA	---	25.5	74.5	NA
14. McKinney	---	5	---	---	2,500	---	40.0	60.0	250
15. Mesquite (Private)	175	175	0.0	88,000	88,000	0.0	39.8	60.2	9,000
16. Mineral Wells	56	64	10.7	39,000	43,000	9.3	41.9	58.1	4,300
17. Rockwall	57	73	28.1	27,500	51,100	85.8	30.0	70.0	5,110
18. Sherman-Denison (Grayson County)	65	73	12.3	39,000	32,500	-16.7	40.0	60.0	3,250
19. Stephenville (Clark Field)	18	22	22.2	18,000	22,000	22.2	40.0	60.0	2,200
20. Terrell	27	35	48.1	23,000	17,500	-23.9	40.0	60.0	1,750
Subtotal	1,140	1,227	7.6	++	++	++			
Total (I and II)	2,777	2,993	7.8						

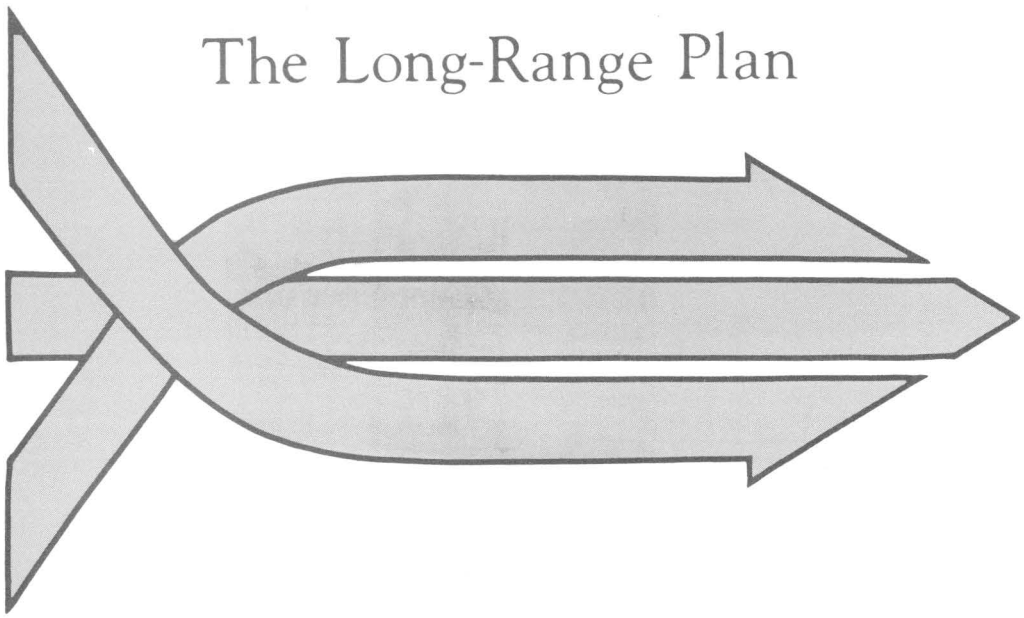
* Based aircraft and percent itinerant and local operations figures as reported for 1978

++These totals are not presented because the level of accuracy of operations estimates (from FAA Form 5010-1) is not comparable to actual data from FAA towered installations.

As discussed previously, Dallas Love Field saw a 0.2 percent increase in general aviation activity. Local operations at Love Field, as a percent of total operations, saw a decrease from 14.4 percent in 1978 to 9.3 percent in 1979. Addison Airport experienced a drop of 26.5 percent in general aviation operations, with the percent of local operations declining from 39 percent in 1978 to 12 percent in 1979. At Meacham Field and Redbird Airport, the ratio of itinerant to local operations moved by less than 2 percent from 1978 toward more local operations, while general aviation activities increased 20 percent and 12.6 percent, respectively.

With respect to the nontowered facilities, there was a 7.6 percent increase in total based aircraft reported. However, two airports saw a decrease in based aircraft, Ennis Muncipal and Grand Prairie Municipal. There were increases and decreases in total operations at different airports as well.

The Long-Range Plan



IV

IV. The Long-Range Plan

In November 1974, the Regional Transportation Policy Advisory Committee (RTPAC) adopted the first multimodal transportation plan to be developed for the North Central Texas Region, the Total Transportation Plan for the North Central Texas Region for 1990. This plan, which was developed as a result of nine months of intensive evaluation of highway, public transportation, and airport system alternatives and was reaffirmed by the RTPAC in November 1975, November 1976, August 1977, August 1978, and August 1979, is graphically depicted in Figures IV-1a and IV-1b.

The Highway Element of the 1990 Plan calls for 701 miles of freeway within the Intensive Study Area, an addition of 248 miles over the 453 miles which exist today.[1] Of this 701 total miles, 93 miles are existing freeways slated to be improved, 55 miles are highways which will be upgraded to freeway standards, and 198 miles consist of totally new location freeways. With the promulgation of the State Department of Highways and Public Transportation's "Twenty Year Plan" in July 1976, 142 of the 248 additional freeway miles called for in the 1990 Plan currently do not have an agency designated as responsible for implementation.

Public transportation improvements outlined in the 1990 Plan would build upon the two publicly owned bus systems which provide transit service in the Dallas-Fort Worth Metropolitan Area. Dallas Transit System, which was acquired by the City of Dallas in 1964, provides service within the City of Dallas, as well as park-and-ride service on a contractual basis to the City of Garland and Las Colinas, Inc., in the City of Irving. The smaller cities of University Park, Highland Park, and Cockrell Hill are also included in the DTS service area because these cities are bounded on all sides by the City of Dallas. City Transit Service of Fort Worth (CITRAN) was acquired by the City of Fort Worth in 1972 and serves residents within that city. Plans for expansion and improvement of the existing public transportation system, as outlined in the Total Transportation Plan for the North Central Texas Region for 1990, include 103 miles of additional exclusive guideway transit as well as areawide bus service. Voters in the City of Dallas approved a $4.9 million bond issue in June 1978 for the construction of the Dallas North Central Transitway, and a major study of alternatives in that subarea is currently underway.

---

[1] Figures supplied by the Regional Planning Office, State Department of Highways and Public Transportation, Grand Prairie, Texas, June 1980. Estimates of existing freeway miles include the Dallas North Tollway, which is approximately nine miles in length.

The North Central Texas Region's air transportation facilities complement and enhance the extensive surface transportation facilities outlined above. Within the Intensive Study Area are located nine major publicly owned airports, including one major air carrier facility, Dallas/Fort Worth Regional Airport; 17 open-to-the-public privately owned airports; 27 private, restricted-use airports; and two major military airfields. More than 3,000 private and business aircraft were based in the Intensive Study Area in 1979. The number of based aircraft is expected to increase to 5,800 by 1990.[2] In order to accommodate these based aircraft and the more than four million annual operations expected in 1990 in the Intensive Study Area, a recommended system of 16 public airports has been included in the 1990 Total Transportation Plan. These include existing public airports and proposed additional or replacement facilities.

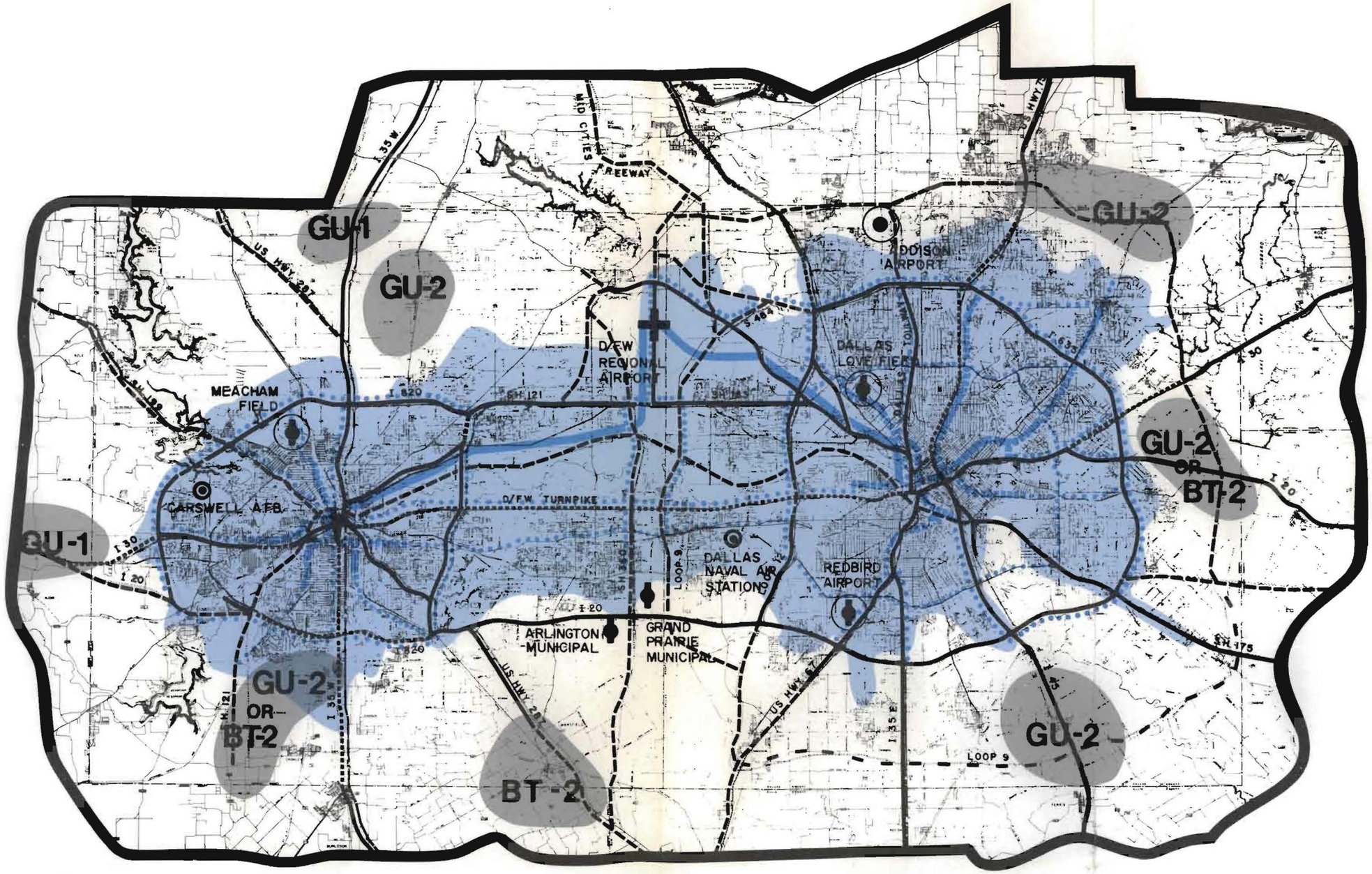
The Airport System Plan recommendations also cover the entire 19-county area within State Planning Region 4 and the Texoma Region (SPR 9). See Figure IV-1b. Although most general aviation facilities in this area are adequate in terms of expected 1990 demand, needs for new airports have been identified. A proposed airport at Possum Kingdom Lake in Palo Pinto County was added to the Airport System Plan in April 1980. The City of McKinney, in Collin County, has completed construction of a new utility airport, which is now open. The City of Fort Worth, as the result of an airport site-selection study conducted through the North Central Texas Council of Governments, is proceeding with the development of a new general aviation airport in south Tarrant County. The Cities of Garland, Murphy, Plano, Richardson, Rowlett, Sachse, and Wylie held public meetings in September 1980 on a site-selection report for a proposed airport to serve the northeast Dallas/south Collin County area. The City of Mesquite has initiated action to acquire Phil Hudson Airport for development as a public general aviation airport. The Airport System Plan also recommends improvements at the 16 other National Airport System Plan airports in the balance of the 19-county region.

GOALS AND OBJECTIVES

Goals and objectives adopted by the Steering Committee of the Regional Transportation Policy Advisory Committee as the first step in the development of the long-range transportation planning effort provided guidelines in the evaluation of alternative transportation system concepts. While these goals must remain flexible in order to respond to the changing needs of this dynamic region, the basic goals and objectives utilized in the transportation planning process have remained in force since originally developed in 1974. Review and evaluation of the 10 goals and 33 objectives, which are included in Appendix 1 and summarized in Table IV-1, were accomplished by the Steering Committee in 1975, 1976, 1977, 1978, and 1979 and reaffirmed as a part

---

[2]North Central Texas Council of Governments, Transportation Department, North Central Texas Airport System Plan (Arlington, Texas, July 1976), p. 43, Table III-1.



LEGEND

FREEWAYS

- —— EXISTING — NO IMPROVEMENT
- ..... EXISTING — TO BE IMPROVED
- ---- NEW CONSTRUCTION
- – – RIGHT OF WAY AND STAGED CONSTRUCTION

TRANSIT

- RAIL RAPID TRANSIT
- BUS AND CARPOOL ON TRANSITWAY
- BUS IN MIXED FLOW
- TRANSIT SERVICE AREA

EXISTING AIRPORTS

- + AIR CARRIER AIRPORT
- ⊕ GENERAL AVIATION TRANSPORT AIRPORT
- ⊙ GENERAL AVIATION TRANSPORT AIRPORT (PRIVATELY OWNED)
- ♦ GENERAL AVIATION UTILITY AIRPORT
- ⊙ MILITARY AIRPORT

NEW AIRPORT LOCATION

GU — GENERAL UTILITY
BT — BASIC TRANSPORT
1 — SINGLE RUNWAY
2 — DUAL RUNWAY

RECOMMENDED 1990 TOTAL TRANSPORTATION PLAN *

* THE HIGHWAY PROJECTS SHOWN REFLECT ALTERNATIVE NO 6 AS MODIFIED AND TESTED BY THE TEXAS HIGHWAY DEPARTMENT, SUBSEQUENT TO TESTING AND EVALUATION OF ALTERNATIVE NO. 6 BY THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS. NON-FREEWAY IMPROVEMENTS ARE NOT SHOWN.

FIGURE IV-1a

LEGEND

EXISTING AIRPORTS

- AIR CARRIER AIRPORTS
- PUBLICLY OWNED GENERAL AVIATION AIRPORT
- PUBLICLY OWNED GENERAL AVIATION AIRPORT - PROVISIONAL

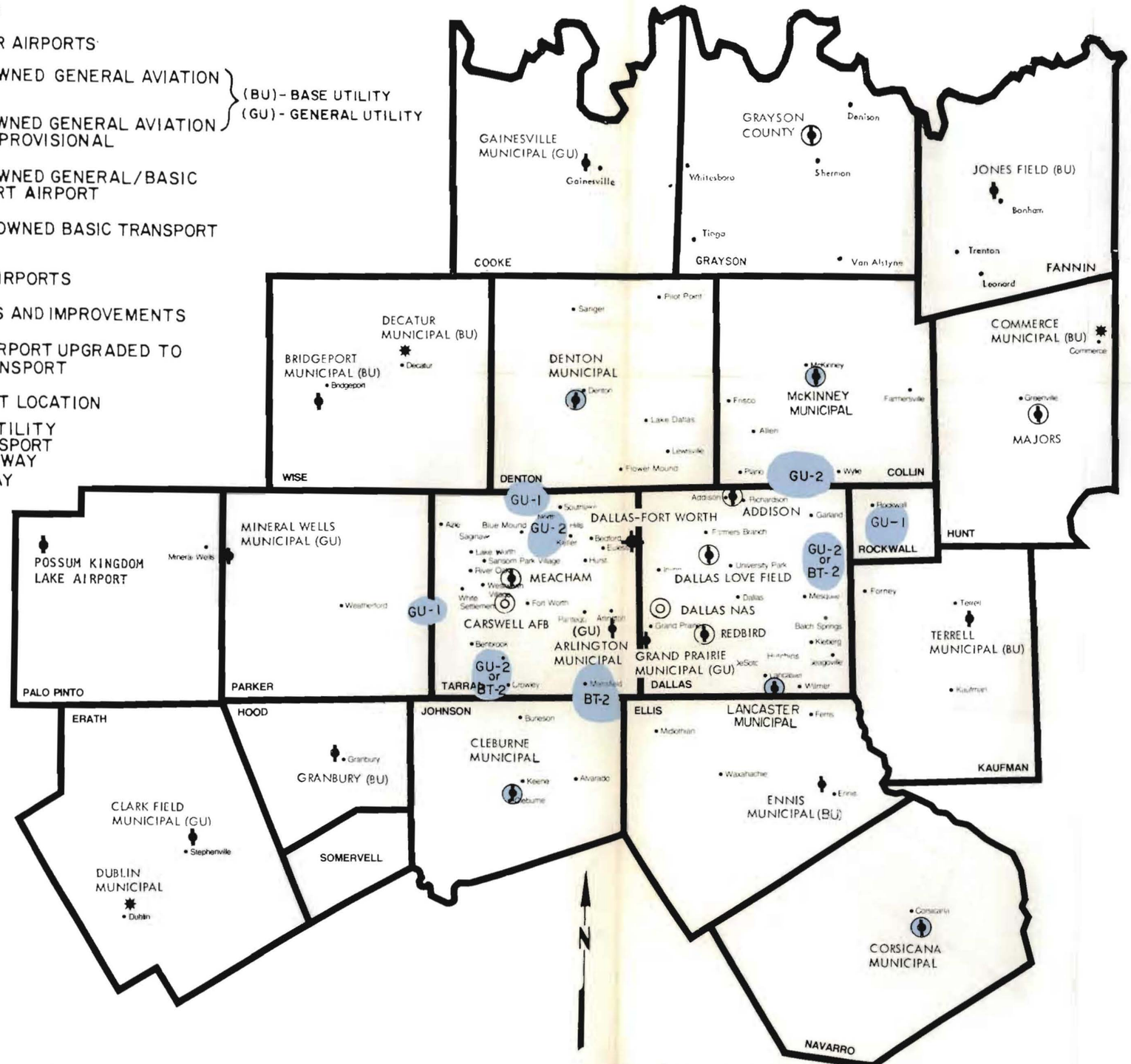
(BU) - BASE UTILITY
(GU) - GENERAL UTILITY

- PUBLICLY OWNED GENERAL/BASIC TRANSPORT AIRPORT
- PRIVATELY OWNED BASIC TRANSPORT AIRPORT
- MILITARY AIRPORTS

PROPOSED AIRPORTS AND IMPROVEMENTS

- EXISTING AIRPORT UPGRADED TO BASIC TRANSPORT
- NEW AIRPORT LOCATION

GU - GENERAL UTILITY
BT - BASIC TRANSPORT
1 - SINGLE RUNWAY
2 - DUAL RUNWAY



RECOMMENDED AIRPORT ELEMENT OF THE 1990 TOTAL TRANSPORTATION PLAN

FIGURE IV - 1b

TABLE IV-1

TRANSPORTATION GOALS

	Transportation System Goals
Goal I:	To provide a regional transportation system that will be operated efficiently and economically and will minimize costs consistent with available financial resources and implementation capacity
Goal II:	To provide a regional transportation system plan that will be sufficiently flexible to be staged and adapted to changing conditions and provide acceptable performance characteristics
Goal III:	To provide a regional transportation system with maximum level of service consistent with other goals
	Transportation Impact Goals
Goal IV:	To provide a transportation system that will strengthen the economic base of the region
Goal V:	To provide a balance and coordination between land use and transportation system development
Goal VI:	To provide a regional transportation system that will reinforce existing land uses
	Natural Resources and Environment
Goal VII:	To locate and design the regional transportation system to minimize any harmful effects it may have on the surrounding ecology and physical environment and, where possible, stimulate improvement of the environment
Goal VIII:	To provide a regional transportation system which will minimize the use of and dependence on scarce natural resources
	Social and Quality-of-Life
Goal IX:	To plan and develop a transportation system that will provide all people with equitable access to a wide range of social and economic opportunities
Goal X:	To provide a transportation system that will encourage a stronger sense of community and minimize disruption

of the 1976, 1977, 1978, 1979, and 1980 Transportation Programs. Although extensive modification is anticipated prior to the major update and refinement of the Total Transportation Plan scheduled to occur in the 1979-1984 time frame, the Regional Transportation Council will continue to rely on the existing goals during the coming year.

REVISIONS TO THE 1990 TOTAL TRANSPORTATION PLAN

While the basic guidelines for development and implementation of long-range transportation plans remain unchanged, local governments in the region have responded to the more definitive, changing needs of the region by revising on an annual basis certain elements of the 1990 Total Transportation Plan originally adopted in 1974. Minor revisions developed by local government professional staff personnel serving on the Highway Technical Committee, the Public Transportation Technical Committee, and the Air Transportation Technical Advisory Committee were recommended to the Steering Committee for consideration. The Steering Committee subsequently adopted the minor recommendations and reaffirmed the 1990 Total Transportation Plan on October 21, 1975. The 1990 Total Transportation Plan was again reaffirmed, including the minor revisions approved previously, on November 23, 1976.

In February 1976, the local governments initiated a comprehensive review of the Thoroughfare System included in the Highway Element of the 1990 Total Transportation Plan. The purpose of this review was to coordinate individual local government thoroughfare plans, including design standards, pavement standards, and cost estimating procedures. The freeway system included in the 1990 Total Transportation Plan purposely was not reviewed as a part of this effort and, therefore, remained unchanged during this planning effort. The consultant team of Carter & Burgess/Pinnell-Anderson-Wilshire/Marvin Springer and Associates held several review sessions with local cities, counties, the State Department of Highways and Public Transportation, and the North Central Texas Council of Governments representatives to identify problems, analyze alternatives, and select recommended solutions. The resulting Thoroughfare Plan was mapped in 1977 at the 1" = 1 mile and 1" = 800' scales for use by the local governments. A copy of the 1" = 5 mile reduction of the Thoroughfare Plan which was included in the 1978 Transportation Program is not shown herein, as it is in the process of being updated by the local governments.

In May 1978, a major revision to the airport element of the 1990 Total Transportation Plan was initiated. The purpose of the revision was to correct deficiencies in the general aviation airport section of the plan and to amend the plan to reflect revised federal airport standards. At the completion of the draft revision, the update will be finalized by the Air Transportation Technical Advisory Committee and will then be presented to the Regional Transportation Council for its consideration.

FUTURE PLAN REVISIONS

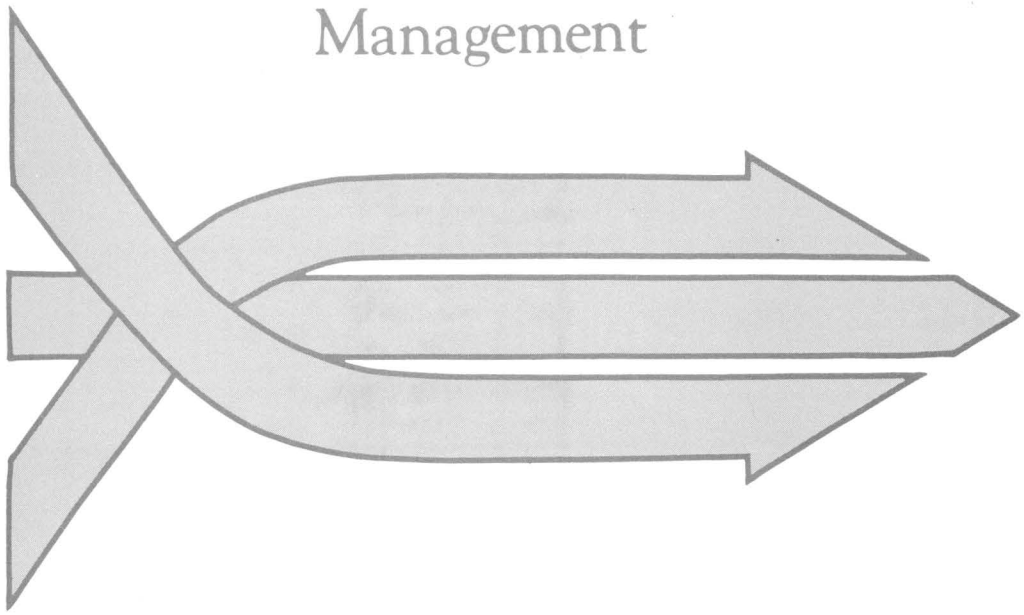
Although there is general recognition that financial limitations will not permit the complete accomplishment of the 1990 Total Transportation Plan by 1990 and, further, that energy, air quality, and urban form concerns justify reassessment of the 1990 Total Transportation Plan, no major plan revisions are recommended at this time. It is anticipated that the development of major revisions will be done as a part of an orderly analytical process during 1979-1984 and will result in the preparation by the Regional Transportation Council of the 2000 Total Transportation Plan.

The first major step in the development of the Year 2000 Plan is the review of transportation system management actions (see Chapter V), with particular emphasis on the potential impacts of such "interjurisdictional" actions as park-and-ride service and such "regional multimodal" actions as staggered work hours, expanded transit service, or increased parking costs in the downtown areas. The potential impacts on each community and the region as a whole of these actions will be measured in terms of cost, economic growth, traveler mobility, emissions reduction, and energy conservation potential. These areawide policy decisions to be made by the Regional Transportation Council will provide a crucial input to the subarea planning studies (discussed below). Concurrent with the areawide transportation system management action analysis and subsequent policy decisions by the Regional Transportation Council, each local government will be encouraged to evaluate levels of transportation system management actions which have more localized impacts.

The next major step in the process is the detailed subarea studies. Each subarea study is conducted in two phases. First is the analysis of the beneficial impacts of implementing, by 1982 and 1987, a wide range of transportation system management actions. Having exhausted the payoff from low-cost and management improvements, the problems that remain will be addressed through major capital investments, such as a freeway and/or transitway. This investigation of major capital projects is the second phase of the subarea study. Major decision points for the affected local governments and the Regional Transportation Council will occur after each portion of the analysis.

Upon completion of the subarea studies described and policy/programming decisions by local governments and the Regional Transportation Council, the third major step in the transportation planning process will be initiated. In this step, the results of the individual subarea studies will be integrated for study of the total regional transportation system. It is likely that the resulting intermediate-term plan will be analyzed for its adequacy to function in the year 2000. Transportation system management and capital improvements will be proposed and evaluated in conjunction with the policy decisions for the Year 2000 Total Transportation Plan.

Transportation System Management



V

V. Transportation System Management

This chapter of the 1981 Transportation Program represents the sixth documentation of work which satisfies the joint UMTA and FHWA regulations for transportation system management (TSM). The previous five responses have included a list of TSM projects and studies, a description of the current TSM planning process, and a description of the future TSM planning process in the Dallas-Fort Worth area. The TSM planning process now includes a Multimodal Transportation Information System and Analysis Process, and an Analytical Approach for the Evaluation of TSM Alternatives. The following paragraphs will place transportation system management within the perspective of the total planning system in the Dallas-Fort Worth Intensive Study Area and will demonstrate the progress made toward the development of the analytical process and tools which will enable meaningful transportation system management planning.

In describing transportation system management, the U.S. Department of Transportation regulations state that "Automobiles, public transit, taxis, pedestrians, and bicycles should be considered as elements of one single urban transportation system. The objective of urban transportation system management is to coordinate these individual elements through operating, regulatory, and service policies so as to achieve maximum efficiency and productivity for the system as a whole."[1] In order to achieve this objective, the regulations further state that the transportation system management element shall:[2]

> (1) Provide for the short-range transportation needs of the urbanized area by making efficient use of the existing transportation resources and providing for the movement of people in an efficient manner, and
>
> (2) Identify traffic engineering, public transportation, regulatory, pricing, management, operational, and other improvements to the existing urban transportation system not including new transportation facilities or major changes in existing facilities.

---

[1] Department of Transportation, Federal Highway Administration, and Urban Mass Transportation Administration, "Transportation Improvement Program," Federal Register 40, no. 181 (17 September 1975), 42979.

[2] Ibid., 42978.

THE SIGNIFICANCE OF TSM

To understand the significance of the TSM rules and regulations, one can look at the limitations under which the transportation system manager has been operating. An exemplary case is the traffic engineer; however, the same basic limitations apply to the transit operator and, in general, to all of those disciplines on the urban transportation scene which deal with operational improvements.

First, the traffic engineer has generally been limited to operational improvements, strategies, and actions within his jurisdiction or his area of responsibility. In most cases, there have been more than enough problems in traffic operations to demand his full attention and he has been neither asked nor directed to look at low-cost alternatives which extend beyond his immediate responsibilities. Such actions as staggered work hours, flexible work hours, peak-hour commuter tolls, and reserved lanes on freeways are areawide in scope and have not been considered within the purview of the traffic engineer.

Secondly, the traffic engineer has been limited by politics. Operational improvements in transportation require political decisions which have to be made in the here and now. They are not decisions which can be made under one administration and implemented under another. Many decisions to implement TSM strategies are tough politically. Ironically, it is often easier to commit millions of dollars to some long-range solution which can be conceived by only a few. Decisions to implement ramp metering, to establish car-free zones, or to restrict downtown truck delivery, are all major political decisions and, usually, the traffic engineer has been restricted in gaining approval to implement these strategies.

Thirdly, the traffic engineer has been limited by a lack of technical justification to sell these tougher TSM actions. In areawide programs, he has had neither the resources nor the technology to develop the facts and figures for an effective and persuasive argument. As a result, these areawide strategies were neither considered nor promoted.

Lastly, the traffic engineer has been limited by a lack of funds. While the Federal Urban Traffic Operations Program to Increase Capacity and Safety (TOPICS) and the Urban Systems Program provide some funds, the traffic engineer has found it difficult to obtain funding support for large-scale, yet relatively low-cost, strategies. Funds were not available to expend on costly coordination of areawide TSM actions.

Under these limitations, the traffic engineer or transit operator has diligently pursued and implemented those operational strategies which he could. The Federal requirements, however, for TSM planning and strategies bring a new significance to operational improvements.

The Department of Transportation's call for Transportation System Management directs the attention of the fragmented transportation community toward a common objective. The significance of TSM planning under the guidelines is

that the transportation manager no longer speaks to only those improvements over which he has control, but participates in a larger endeavor with system managers from other modes and jurisdictions in accomplishing actions which are areawide in scope. Thus, the requirements for TSM planning on an area-wide basis attempt to apply individual TSM actions on a metropolitan and multi-modal scale.

INSTITUTIONAL STRUCTURE

The previous discussion indicates two very basic requirements for the successful accomplishment of the objectives set forth in the transportation system management regulations. One of these ingredients is an appropriate institutional structure. This structure should ensure the involvement of all actors in the TSM picture. More important than the simple participation of all transportation system managers is the cooperation and the coordination of TSM action programs which consider ultimately the movement of people and goods as opposed to vehicles.

Given the dual personality of transportation system management -- on the one hand, a set of strategies and actions which have been employed for years at the local level, and, on the other hand, a new requirement of the urban transportation planning process -- it is not surprising that transportation system management planning involves two basic institutional structures. One is the structure which is ultimately responsible for the operation of a particular component of the transportation system. It includes local city and county governments, private transportation system operators, and the State Department of Highways and Public Transportation. The other is that structure created by the long-range transportation planning process. It consists of the Regional Transportation Council and the North Central Texas Council of Governments serving as the Regional Transportation Council staff; and the technical committees for public transportation, highways, and air transportation. Within this decision-making structure, the Regional Transportation Council and its staff respectively compose the designated Metropolitan Planning Organization policy group and staff for the Dallas-Fort Worth area.

Integration of these two distinct decision structures is accomplished by the organization of the regional committee structure, which comprises members of the local government and system operator structures. The Regional Transportation Council consists primarily of local elected officials. The technical committees consist primarily of local staff members.

As discussed previously, the nature of many transportation system management actions is such that the project decisions are made in the local framework before entering the regional planning procedure. Throughout the local process, the primary concern of the TSM planner is generally local and modal, as opposed to regional and multimodal. The technical committees each review the projects submitted by local governments, the State Department of Highways and Public Transportation, and other public and private transportation operating agencies. The list of projects approved by the technical committees is then reviewed by the Regional Transportation Council. It is the function, then, of the regional planning committee structure to provide the

reasons and the means for considering regional effects of TSM strategies and interactions between different modal strategies.

It is the responsibility of the regional planning structure and specifically of the MPO to assume a complementary role to that of the local transportation system management process. The responsibilities assumed by the Metropolitan Planning Organization are the following:

- Develop a set of TSM goals and objectives
- Provide an information resource of TSM strategies, planning techniques, local program statistics, etc., for use by transportation system operators and planners
- Provide a forum for operators to discuss the interactions and system effects of TSM projects
- Provide credible procedures and tools for conducting TSM planning in a regional context which considers the interactive effects of projects and allows priorities to be assigned to within-mode and intermodal projects
- Determine TSM program priorities which are consistent with the long-range plan and its goals and objectives and TSM goals and objectives
- Obtain the agreement of the implementing agencies that is necessary to designate the program as the TSM element of the areawide planning process

ANALYTICAL APPROACH

The second basic requirement for accomplishing the objectives of transportation system management regulations is an analytical approach for the evaluation of TSM alternatives. There are several reasons why a structured analytical process is required, as follows:

- To provide a common basis for discussion of TSM strategies by the many participants in transportation system management
- To provide the transportation system manager with the needed technical justifications for TSM projects
- To ensure consideration of all consequences of the TSM actions
- To allow the MPO to provide continued development of the process and the analytical tools
- To provide a large list of candidate actions for transportation system managers to explore and to encourage the grouping of actions into a coordinated strategy to address key operational problems

To be effective within the institutional framework, the analytical approach must have three basic characteristics:

1. The TSM program must develop system performance criteria for the total and complete transportation system to indentify system weaknesses, as well as deficiencies at specific locations. This will require some new thinking on overall system performance and will require a close monitoring of all elements of the transportation system. The system performance framework must be related closely to the specific operational objectives of the modal components of the transportation system.

2. An effective TSM program must bring long-range planning and short-range planning closer together for evaluation of areawide actions. The technology must be capable of analyzing actions within the context of the regional system. This will make the process more sensitive to the relationship between TSM actions, short-range implementation, and the long-range plan. This will enable planners to explicitly define this important link.

3. The TSM program must accommodate TSM actions at five different levels:
   a. Actions within the area of responsibility of the traffic engineer or transit operator which can be implemented immediately at little or no cost. These include bus route changes, bus stop location, signal timing, etc. These actions are often cheap and simple enough to be suitable to real-life testing rather than simulation. (Level 1)

   b. Actions within the area of responsibility of the traffic engineer or transit operator but which require budget approval and justification. Examples are channelization projects, shuttle transit service, and improved transit marketing. (Level 2)

   c. Actions within the jurisdiction of a single municipality which must be coordinated among the traffic engineer, the transit operator, the taxicab owner, etc. Examples would be flexible paratransit services and bus preemption to traffic signals. (Level 3)

   d. Actions areawide in scope but which are low-cost and which involve many jurisdictions and disciplines. Such actions would include staggered work hours and peak-hour commuter tolls. (Level 4)

   e. Actions areawide in scope which require joint funding and programming, such as exclusive bus lanes and exclusive bus ramps to freeways. (Level 5)

It will be noted that each of the five different levels of TSM actions must be handled in a different manner and with a different approach. Only the first two can be handled independently by the individual traffic engineer or transit operator. The other three levels require evaluation technology which neither the traffic engineer nor the transit operator currently has available to him. It is actions at these three levels which give significant meaning to the TSM requirements and which must be developed through the "teamwork" approach.

TSM HANDBOOK

The North Central Texas Council of Governments, with assistance from several local cities, developed an evaluative framework for identifying, analyzing, and evaluating transportation system management alternatives. The result of this project is a document of three volumes. The document, entitled Handbook for Transportation System Management Planning: An Analytical Approach to the Development and Evaluation of Transit-Related TSM Projects and Alternatives was completed in March 1978 for review. Volume I of the series contains a delineation of the TSM planning process as well as a classification of a scheme which is useful in the selection of TSM actions. Volume 2 presents an analytical sequence for the analysis of TSM action impacts. This sequence utilizes (1) the assessment of performance measures, (2) preliminary design and cost estimates, (3) selection of analytical procedures, (4) impact calculations, and (5) result assessment. The key to this volume is the presentation of specific analytical procedures and detailed analytical methodologies for impact calculations. Volume 3 completes the set of planning manuals by presenting information on automated techniques that would be called for when evaluating complex multi-modal action combinations.

The three-volume set of planning manuals emphasizes TSM actions and action impact evaluation in the transit field. Because nonguideway transit provides the most fertile ground for TSM improvements, the material focuses on bus transit. However, with the existing analysis capabilities offered through the Transportation Planning System, and particularly the Transportation Analysis Process, TSM actions are evaluated multimodally.

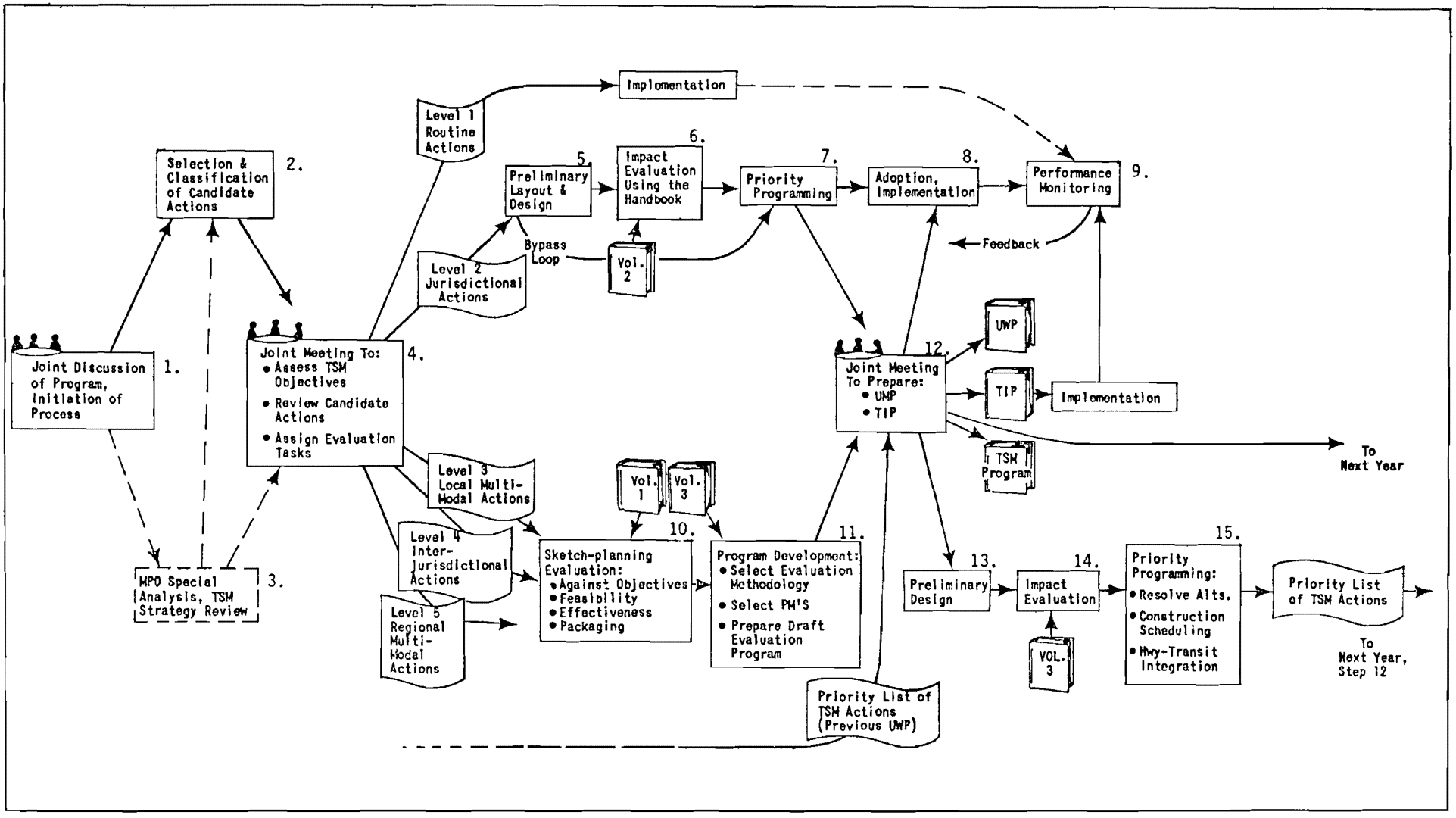
The formalized series of steps in which to fit the analytical methodologies is provided as a means to organize the material included in this series of documents. Figure V-1 is taken from Volume 1 of the series. It depicts a concept of the TSM process that will be utilized and refined in the future. This definition of the TSM planning process is intended to be pragmatic and improve the understanding of the analytical procedures and how and when they can be utilized.

The process presented in Figure V-1 features an allocation step where participants in the process assign candidate TSM actions to the agency with the best capability to carry out the next step in the process, whether that is immediate implementation or some level of evaluation. This allocation is based on action complexity and scale. Actions requiring computer-based evaluation are shown in the diagram flowing to the MPO staff for analysis of impact. The less complex actions are shown assigned to the local agencies for non-automated handling.

Step 1 in the diagram is where the participating agencies jointly decide on the scope and scale of the next year's TSM program. Steps 2 and 3 show the traffic engineers and transit operators selecting and classifying candidate TSM actions and the MPO staff supporting that step with any needed system performance analyses and strategy review. Sources of candidate actions for the next year's program would be carry-over projects from the last year, agency experience during the current year, and the results of any diagnostic processes operated by the agency or the MPO staff.

FIGURE V-1

THE NORTH CENTRAL TEXAS TSM PLANNING PROCESS



Next comes the meeting of the transportation system operators who review (in Step 4) TSM objectives, the candidate actions, and action classification; and make assignments for the completion of the TSM planning process. Routine actions would be implemented directly by system operators without evaluation. Jurisdictional actions, affecting one mode and under the control of a single agency, are evaluated and prioritized (Steps 5, 6, and 7), included in improvement programs (Steps 8 and 12), implemented, and monitored (Step 9) to ensure that performance meets objectives.

The three levels of more complicated and interjurisdictional actions (assigned to the MPO) are tested for problem-solving potential using sketch planning techniques (Step 10). Those actions that appear to be the most cost-effective would be carried forward for further analysis. A detailed evaluation program is laid out in Step 11 and becomes part of the MPO's annual Unified Work Program in Step 12. Actual evaluation and priority analysis is done in Steps 13, 14, and 15, producing input to the following year's Transportation Improvement Program (TIP).

Timing for the overall series of steps will vary by agency. The steps in the process carried out by the local agencies (the upper branch of the figure) would be generally accomplished by June when the coming year's budget would be approved with the jurisdictional TSM actions included. Impact analysis by the MPO, Steps 13-15, would require the balance of the year to accomplish, May - December.

Development of the TSM Handbook

The first step in the development of the TSM Handbook was a series of interviews to review existing TSM programs and to identify analytical tools currently in use. Then a working draft of the handbook (Volume 2) was written drawing on local and national experience and on a variety of reports and technical papers. The work draft of Volume 2 was subjected to a testing program which produced substantial improvements in the organization, content, and sequence of the material. A hypothetical data set was prepared for transit and a nontransit area and used to test the mechanics of each step. Field tests were conducted in the offices of the publicly-owned transit operations, DTS and CITRAN; three cities; and at NCTCOG using real data and actual problem situations. The study then re-focused on national experiences to draw forth techniques and methodologies particularly suited to computer-based, multi-modal, regional-level analysis. Automated procedures for simulation, demand and assignment, data management, environmental analysis, strategic planning, and support of routine operations were collected and reviewed. Based on their degree of development and suitability for TSM planning, a battery of automated techniques was selected as the basis for Volume 3.

TRANSPORTATION SYSTEM MANAGEMENT IMPLEMENTATION

The concept of efficient transportation system management has been widely accepted and applied by the transportation policy groups, planners, and system operators in the Dallas-Fort Worth area. Studies are being conducted

and projects are being implemented in each of the four categories of TSM actions. This is indicated by the TSM project summary provided in Table V-1. TSM studies and implementation of TSM projects are accomplished through cooperation of both public and private agencies. Staff involvement is drawn from a number of professional disciplines including planning, traffic engineering, transit operations, and management. Chambers of Commerce, CBD Associations, and citizen groups also play an important role.

A primary source of TSM activity is the 1979-80 Unified Planning Work Program. TSM planning studies that were identified include a study of regional park-and-ride/preferential treatments, and an examination of areawide TSM/air quality actions. These studies plus others are described in subsequent chapters of the 1981 Transportation Program. The TSM process at NCTCOG has been fully integrated with ongoing energy and air quality programs.

The 1979-80 Unified Planning Work Program also provided for a series of TSM implementation studies. A summary is given below:

Dallas Transit System Market Survey Update

The purpose of this study is to replicate the market surveying that was conducted in 1977 and discern any attitude changes. The study will involve a review of the previous questionnaire and the development of a new survey document. An appropriate sample of area citizens will be selected in order to yield data that represent the entire community. In-house surveys will be conducted and the data will be tabulated to provide DTS with information for refining their transit service marketing strategies. This study is being performed by a consultant with assistance from the Dallas Transit System.

CITRAN Market Research Study

The purpose of this study is to measure the effectiveness of CITRAN's marketing strategy. The current awareness of CITRAN services by the public will be addressed through a survey, and an evaluation of the effectiveness of CITRAN's current marketing strategy will be performed. The evaluation will use the initial survey as a basis for correcting any misconceptions in the current strategy. Additional surveys will be conducted monthly for a year to define new marketing needs. This effort is being performed by a consultant with assistance from CITRAN.

Dallas Transit System Information Operators Training Program Study

Dallas Transit operates a telephone information staff that answers questions from the public concerning schedules and routes. The purpose of this study is to develop a structured training program for newly hired telephone information operators, a refresher course for veteran operators, and recommended measures to prepare information operators to assume responsibilities of lead operators and instructors. The study will also involve an in-depth review of day-to-day operations in the telephone information center. The review will quantify the number of incoming calls, the number of calls per operator, the number of abandoned calls, and the average length of calls. The response capabilities of the present workshift assignments will be evaluated and changes

TABLE V-1

DALLAS-FORT WORTH AREA ACTIVE TSM PROJECT SUMMARY

I. Actions to Ensure the Efficient Use of Existing Road Space

A. Traffic Operations Improvements

- Urban System Programs
- Dallas Computer Traffic Control System
- Fort Worth Traffic Control and Management System
- Garland Computer Traffic Control System
- Dallas Freeway Corridor Study
- Fort Worth Freeway Corridor Study
- State Department of Highways and Public Transportation Traffic Safety and Engineering Program
- Fort Worth One-Way Street and Channelization Projects
- Arlington FHWA Demonstration Grant for Computer Controlled Traffic Signal System

B. Preferential Treatment for Transit and High Occupancy Vehicles

- Freeway Bus Priority Lanes in Dallas
- Reserved Bus Lanes on Major Thoroughfares in Dallas
- Freeway Bus-Only Entry Ramps in Dallas
- Reserved Bus Lanes in Dallas CBD
- Exclusive Bus Lanes in Fort Worth CBD
- Bus/Carpool Priority System on Major Thoroughfares in Fort Worth
- West Corridor Fixed Guideway System - Fort Worth

C. Pedestrian and Bicycles

- Dallas Bikeway Plan
- Fort Worth Bikeway Plan
- Fort Worth Bikeway Implementation Program
- Fort Worth Bikeway Demonstration Project
- Dallas Central Business District Pedestrian Facilities
- Fort Worth Pedestrian/Transitway - Central Business District
- Fort Worth Pedestrian Facilities (outlying areas)
- City of Arlington Bikeway Development Program
- Plano Bikeway Program

D. Management and Control of Parking

- Fort Worth Parking Meter Program
- Fort Worth High Occupancy Vehicle Parking Facilities

II. Actions to Reduce Vehicle Use in Congested Areas

A. Dallas Urban Corridor Trip Diversion

B. Areawide TSM/Air Quality Study

C. Dallas and Fort Worth Comprehensive Ridesharing Program

D. Fort Worth Goods Movement Study

E. Comprehensive Community Energy Management Program - Fort Worth

F. Dallas Goods Distribution Study

G. Fort Worth CBD Free-Transit Zone

III. Actions to Improve Transit Service

A. Park-and-Ride Facilities

- Dallas
- Fort Worth
- Irving
- Garland
- Carrollton
- Plano
- Arlington
- Grand Prairie

B. Regional Park-and-Ride Study

C. Improved Transportation Service in Dallas CBD

D. Improved Transportation Service in Fort Worth CBD

E. Dallas Bus Replacement Program

F. Fort Worth Bus Replacement Program

G. Fort Worth Provision of Shelters and Other Passenger Amenities

H. Fort Worth CBD Customer Center

I. Dallas Provision of Shelters and Other Passenger Amenities

J. Dallas Internal Circulation Service Improvements

K. Fort Worth Multi-modal Transportation Center

L. Dallas Customer Assistance Center

M. Revised Fare Structure Including Bearer Monthly Pass - Dallas

N. Employer Discount Pass Program - Dallas

O. Addition of New Bus Routes - Dallas

P. Roadway Bottleneck Removal to Enhance Bus Operations - Dallas and Fort Worth

Q. Special Shuttle Services - Fort Worth

IV. Actions to Increase Transit Management Efficiency

A. Dallas Service Inventory and Maintenance System

B. Dallas Professional Development Training Program

C. Dallas Surveillance and Communications Technology

D. Dallas Transit System Marketing

E. Dallas Transit System Fare Policy Study

F. Fort Worth RUCUS Implementation

G. Fort Worth Commuter Information System (CIS) Implementation

H. Fort Worth Transfer Issuing Devices

I. Fort Worth Fare Collection and Counting Equipment

J. Fort Worth Fare Policy Annual Review

K. Fort Worth Two-Way Radios for Buses

L. Fort Worth Management Information Systems

M. Fort Worth Marketing

- Market Research Study
- Telephone Information Service
- Senior Citizen/Handicapped Person Reduced Fares
- Commuter Card 15
- Park and Go
- Charter Services
- Subscription Service
- User Group Presentations
- Public Information and Promotional Aids

N. Dallas Management Information System

will be recommended to better accommodate the number of incoming calls. This study is being performed by a consultant with assistance form the Dallas Transit System.

Dallas Transit System Bus Operations Improvement Study

The purpose of this study is to review a list of bus system bottlenecks determined as part of a July 1979 regional park-and-ride /preferential treatment study and devise solutions to a selected group of these bottlenecks (between 10 and 15 projects). Solutions might involve transit or traffic operational changes, signalization, preferential treatment or roadway reconstruction. The study will produce a recommended plan of action with cost estimates and implementation staging. A consultant team is performing the work with assistance from the Dallas Transit System, the City of Dallas, and NCTCOG staff.

TRANSPORTATION SYSTEM MANAGEMENT IN THE TIP

The relationship between TSM, long-range, and short-range planning is culminated in the Transportation Improvement Program. Previous paragraphs have shown that TSM transcends the TIP. However, many TSM projects are in the TIP, and TSM projects often affect the priorities and staging schedules of non-TSM projects. The Annual Element of the 1981 Transportation Improvement Program, with projects totalling $410,200,000 (ground transportation only), contains $24,200,000 in projects which are specifically TSM. Table V-2 classifies the TSM project expenditures from the Highway, Local Thoroughfare, and Transit Elements by the four major TSM action categories. Also shown is the TSM project amount as a percentage of each element. Listings in the Highway and Transit Elements of the TIP which may be considered TSM projects are noted by the initials "TSM".

The funding totals understate the investment in Dallas-Fort Worth TSM projects. For example, many TSM actions are contained in new construction or safety and betterment projects and cannot be segregated. Also, continuous left turn lanes are often provided as part of a 'resurfacing' project. In addition, important traffic-control-type TSM functions are provided by police departments and the funding is contained within the total city operating budget. Finally, many projects are implemented with private funds or through special grants. The nature of TSM as described above makes it practically impossible to identify the total expenditure in this vital transportation planning and programming area.

SUMMARY

The objective of Transportation System Management is to instill a philosophy of transportation system operations and planning which will lead to maximum efficiency in the movement of people and goods. For this to occur, system operators, planners, and policy makers must function within an institutional structure which allows them to address local and regional needs. It is felt that the dual system in which local governments and operators compose the Metropolitan Planning Organization is an efficient institutional arrangement

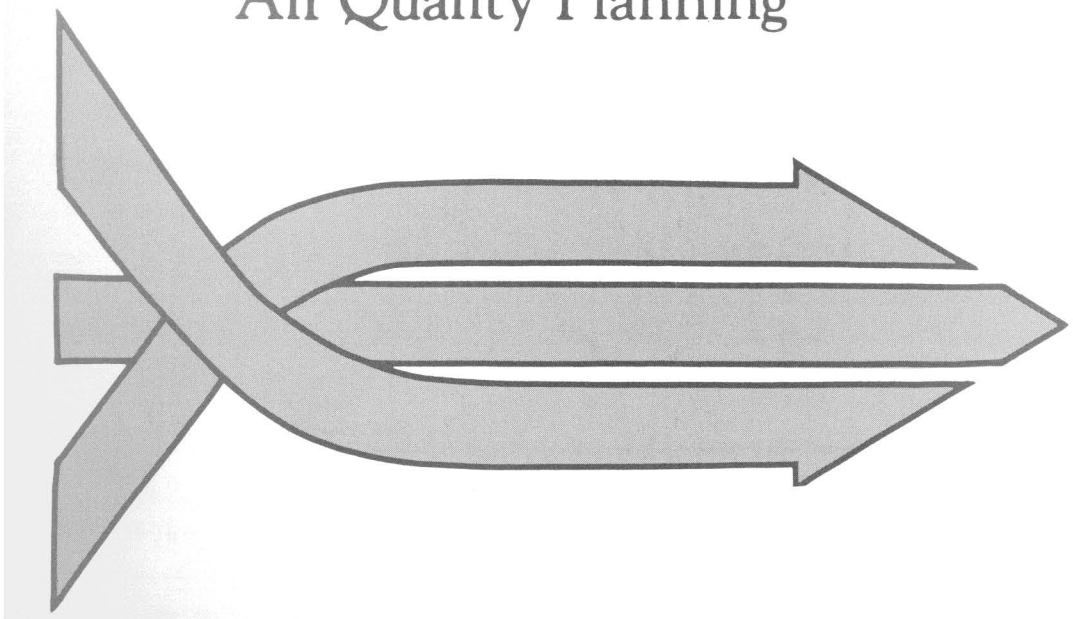
TABLE V-2

COST SUMMARY OF TRANSPORTATION SYSTEM MANAGEMENT PROJECTS
IN THE 1981 TIP ANNUAL ELEMENT

	State Highway Element	Local Thoroughfare Element	Transit Element	Total
I. Actions to Ensure the Efficient Use of Existing Road Space	$ 12,085,000	$ 494,000	$ 840,000	$ 13,419,000
II. Actions to Reduce Vehicle Use in Congested Areas	$ 250,000	$ 97,000	-	$ 347,000
III. Actions to Improve Transit Service	$ 2,307,000	-	$ 7,715,500	$ 10,022,500
IV. Actions to Increase Transit Management Efficiency	-	-	$ 398,000	$ 398,000
TSM Total	$ 14,642,000	$ 591,000	$ 8,953,500	$ 24,186,500
Annual Element Total	$232,173,000	$140,495,000	$37,551,500	$410,219,500
Percent of Total Program	6.3%	0.4%	23.8%	5.9%

for TSM. The need for sound, analytical techniques which operators and planners can use to justify the use of TSM strategies has prompted the development of a Handbook for Transportation System Management Planning and the multimodal transportation analysis process and information system. This combination of an effective institutional structure and sound analytical justification will enable the transportation system operators and planners in the Dallas-Fort Worth area to continue screening and selecting actions to address short-term transportation needs, energy contingency and conservation issues, air quality concerns, and support for major capital investment alternatives analysis.

Transportation-Related Air Quality Planning



VI

VI. Transportation-Related Air Quality Planning

Maintaining clean air has been a major concern in the Dallas-Fort Worth area for a number of years. At the municipal level, city air pollution control functions were established in the mid- to late 1960s in both Dallas and Fort Worth. The federal Clean Air Act Amendments of 1970 established national ambient air quality standards for certain pollutants to protect the public health. The pollutants include particulates, sulfur dioxide, carbon monoxide, ozone, hydrocarbons, and nitrogen dioxide. Through the combined efforts of local governments, the Texas Air Control Board (TACB), and the U. S. Environmental Protection Agency (EPA), only two pollutants -- particulates and ozone -- currently exceed air quality standards in the Dallas-Fort Worth area.

In concert with local governments, the Regional Transportation Council has maintained an active role in the transportation aspects of the ozone air quality problem. At the national level, transportation (also termed mobile sources) accounts for 50 percent of all air pollution. More notable, however, is that nationally 80 percent of all carbon monoxide emissions, 70 percent of all hydrocarbon emissions, and 50 percent of all oxides of nitrogen emissions come from transportation sources. Ozone is formed through a chemical reaction with hydrocarbons in the presence of sunlight. Representative ozone levels recorded at Dallas-Fort Worth area monitoring stations are given in Figure VI-1. Figure VI-2 shows the general location of the stations.

BACKGROUND

At the direction of the Regional Transportation Council, the Transportation Planning Process for North Central Texas has been developed to permit concurrent consideration of Transportation System Management, energy contingencies, capital alternatives analysis, short-range planning, and long-range planning. The process allows for the development of a series of management and capital alternatives which will build from existing commitments to alternatives in the short range and long range which can be evaluated as part of the comprehensive planning process. As developed by NCTCOG, the Transportation Planning Process fully integrates the unique planning requirements of the Federal Highway Administration, the Urban Mass Transportation Administration, the Federal Aviation Administration, the Department of Energy, and local governments in a total effort of planning, programming, and implementation.

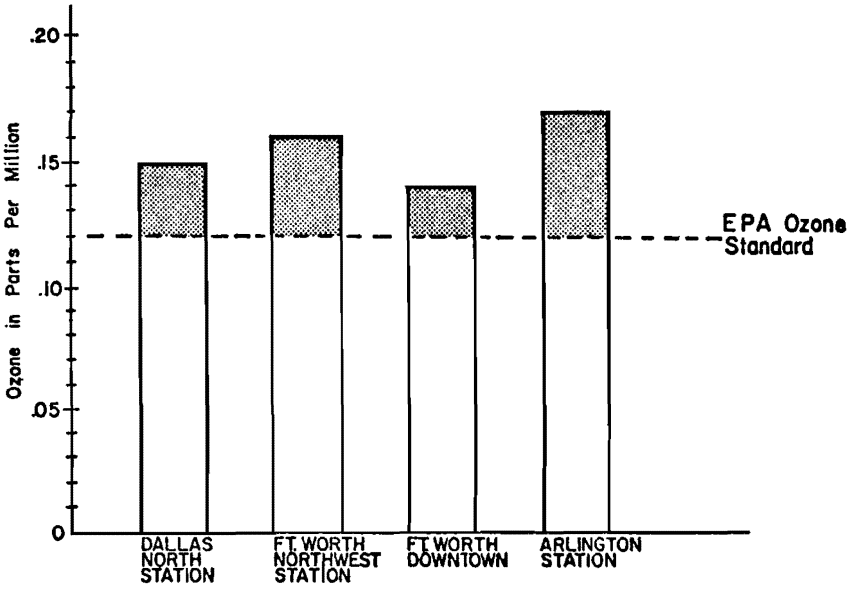
Since the passage of the federal Clean Air Act Amendments of 1977,[1] the Regional Transportation Council also directed that transportation-air quality

---

[1] Clean Air Act Amendments of 1977, U.S. Code, vol. 42, secs. 7401 et seq. (1977).

FIGURE VI-1

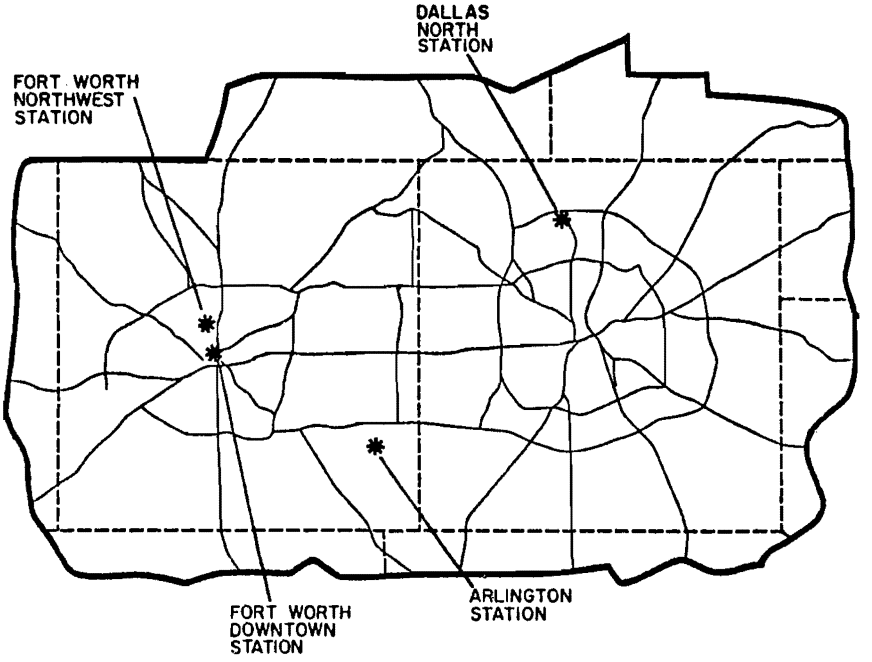
1979 SECOND HIGH OZONE VALUES*



* Texas Air Control Board

FIGURE VI-2

OZONE MONITORING STATIONS



concerns be incorporated into the process. Section 110 of the Act requires the State of Texas, acting through the Texas Air Control Board, to submit an implementation plan prepared in cooperation with local governments and designed to assure attainment and maintenance of the national ambient air quality standards in designated nonattainment areas by 1982. Section 174 of the Act delineates the "planning procedures" for accomplishing the planning called for in Section 110 of the Act. Section 174 specifically requires that the Governor designate an organization of local elected officials to prepare the plan. By letter dated July 24, 1978, Governor Dolph Briscoe notified Mr. Douglas Costle, Administrator of the U. S. Environmental Protection Agency, that he had designated the North Central Texas Council of Governments, acting as the Metropolitan Planning Organization at the formal request of the Regional Transportation Council, to prepare the plans for Dallas and Tarrant Counties for submittal to and consideration by the Texas Air Control Board. The plan will provide for implementation of those transportation control measures which are determined reasonable and which will assist efforts to attain the national ambient air quality standards for ozone by 1982.

The 1979 State Implementation Plan,[2] which has been conditionally approved by the U. S. Environmental Protection Agency, indicates that both Dallas and Tarrant Counties will be attainment areas for ozone in 1982. Because of the marginal nature of the attainment status and the potential for federal funding sanctions if standards are violated in areas where plans have not been developed, the Regional Transportation Council has expressed the desire to be prepared for any contingency by having locally approved transportation strategies ready for implementation should they be required.

ONGOING ACTIVITIES

A number of key activities either have been accomplished or are continuing in the transportation-related air quality area. They include the preparation of regional emissions estimates, development of analysis techniques to examine various multimodal transportation actions for their potential benefits, the application of developed techniques at the regional and subarea levels, and the design of a community involvement mechanism to provide citizen input and interaction among elected officials, agency staff and the general public.

Emissions Estimates

The emissions estimates are a necessary ingredient in defining the magnitude of the air quality problem. To that end, estimates of hydrocarbon emissions for the Dallas-Fort Worth area for calendar years 1977, 1982, and 1987 have

---

[2] Texas Air Control Board, Texas State Implementation Plan Revisions (Austin, Texas, March 30, 1979).

been prepared. These estimates are summarized in Table VI-1. Complete documentation is available for distribution.[3] The emissions estimates reflect the composition of the motor vehicle fleet and area growth in travel and development. Such estimates are used to measure percent changes resulting from alternative transportation measures being considered for implementation. Year 2000 estimates are currently being prepared.

TABLE VI-1

DALLAS-FORT WORTH EMISSIONS ESTIMATES

	Hydrocarbon Emissions - Tons		
Geographic Area	1977	1982	1987
Dallas County	90,865	64,830	45,430
Tarrant County	44,325	31,640	22,160
Rest of ISA	9,720	6,895	4,840
Regional Total	144,910	103,365	72,430

Analysis Methodology Development

Existing analysis methods at NCTCOG have been enhanced to allow for the calculation of emissions using the most current emission factors available from the U. S. Environmental Protection Agency. Sophisticated "sketch planning" methods have been developed to allow quick examination of "regional multimodal" and "interjurisdictional" Transportation System Management actions on an areawide basis.

Existing forecasting techniques for detailed subarea planning have been enhanced to include sensitivity to transit management actions and transit capital alternatives. Enhancement to existing transportation inventories and information systems to include transit are near completion and will soon be available to all local governments.

---

[3] North Central Texas Council of Governments, Estimation and Description of Procedures for 1977, 1982, and 1987 Vehicle Miles Travelled, Hydrocarbon Emissions, and Fuel Consumption for Dallas-Fort Worth Area Mobile Sources (Arlington, Texas, November 1979).

Areawide Transportation System Management/Air Quality Analysis

An extensive examination of two dozen transportation control measures has been conducted on a regional basis. Air quality, fuel consumption, travel demand, and cost impacts were summarized for each action. A series of packages of actions were analyzed for combined or synergistic effects. Actions were categorized as either discouraging drive-alone travel, encouraging shared-ride travel, or encouraging transit travel. Final recommendations were endorsed by the Regional Transportation Council in December 1979 as actions to implement if in 1982 the region is in violation of ozone standards. A summary report is available for distribution.[4]

Subarea Transportation System Management/Air Quality Examination

An ongoing activity in support of transportation-air quality planning is the examination of additional transportation control measures at the subarea level. Such measures include traffic signalization improvements, existing thoroughfare improvements, new thoroughfares, improvements to existing transit routes, and new transit routes, plus any "local multimodal" action of special interest to local governments in improving neighborhood transportation services. Work is underway to evaluate near-term transportation-air quality impacts of packages of the above actions for the Dallas North Central subarea and will eventually be performed in other subareas as studies progress.

Community Involvement

A detailed mechanism for incorporating citizen input and providing interaction between elected officials, agency staff, and the general public has been developed and endorsed by local governments and the Regional Transportation Council. This activity is described in more detail in Chapter IX of this document.

SUMMARY

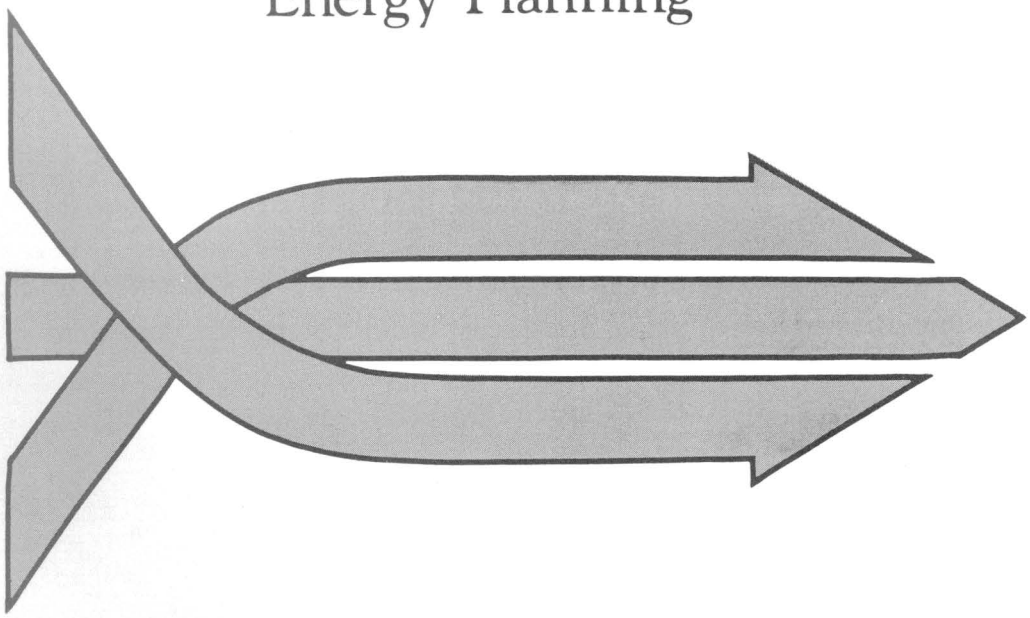
The above work activities have benefited from excellent cooperation of the local governments, the State Department of Highways and Public Transportation, and the Texas Air Control Board, as well as funding from the U. S. Environmental Protection Agency. Although the activities have an air-quality emphasis, they have been specifically designed to support the total transportation planning process and are fully integrated with it. Air quality planning is

---

[4] North Central Texas Council of Governments, A Summary of the Areawide Transportation System Management/Air Quality Study (Arlington, Texas, November 1979).

not a series of stand-alone activities. Over the next program year, even more will be known about air-quality benefits of transportation measures, at the request of the Regional Transportation Council, including the potential for a vehicle inspection maintenance (I/M) program. The North Central Texas Council of Governments is committed to meeting its obligations as lead planning agency for transportation air quality planning so that, if necessary, inputs to the 1982 Texas State Implementation Plan can be prepared in a comprehensive manner consistent with ongoing transportation planning, programming, and implementation processes of local governments.

Transportation-Related Energy Planning



VII

VII. Transportation-Related Energy Planning

The operation of the region's transportation system is highly dependent on energy, especially that produced by petroleum. This is shown by the fact that:

- Approximately 96 percent of all transportation energy for propulsion is supplied by petroleum products;[1] and
- Transportation consumes over 50 percent of all petroleum used in the nation.[2]

Because of this strong reliance on oil, the transportation system is highly sensitive to the availability and price of this energy source. These factors must, therefore, carefully be considered in any transportation planning effort.

HISTORY OF ENERGY PLANNING OF NCTCOG

Like many other urban areas, the North Central Texas Region became aware of the need for energy-related planning as a result of fuel shortages from the Arab oil embargo of 1973-74. Energy thus became a major element in the regional transportation palnning process.

The first major regional transportation study to consider energy consumption was the 1990 long-range transportation plan prepared in 1974.[3] This study estimated daily transportation energy consumption for five alternatives (Figure VII-1). The most significant finding of this effort is that there is little difference in the energy consumed under each transportation alternative. The alternative which consumed the least amount of energy, the All Highway Alternative, would consume only 2.3 percent less energy than the Do Nothing Alternative, the largest user.

---

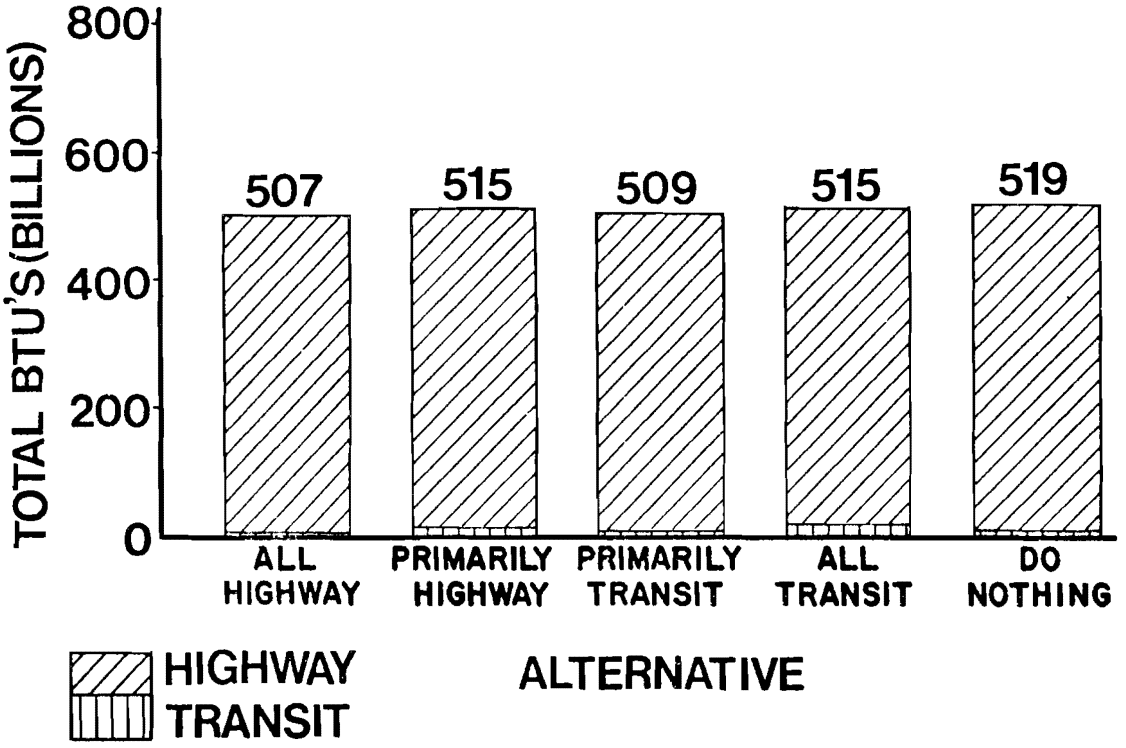
[1] Walter Dupree and John Corsentino, United States Energy Through the Year 2000, revised (Washington, D. C.: U. S. Department of Interior, December 1975), p. 56.

[2] Stanford Research Institute, Patterns of Energy Consumption in the United States, prepared for the Office of Science and Technology (Washington, D. C.: Executive Office of the President, January 1972), p. 26.

[3] North Central Texas Council of Governments, Transportation Department, The Total Transportation Plan for the North Central Texas Region for 1990 (Arlington, Texas, November 1974).

FIGURE VII-1

DAILY TRANSPORTATION ENERGY CONSUMPTION, 1990



Energy Contingency Plans

Recognizing that another oil embargo or similar petroleum shortfall could adversely affect the North Central Texas Region, the Steering Committee of the Regional Transportation Policy Advisory Committee (now the Regional Transportation Council) on March 18, 1975, directed the NCTCOG to develop a program by which the mobility of the citizens of the region would be maintained in the event of energy contingencies. As the initial step in the development of this plan, an overview[4] of the energy situation with regard to transportation was presented to the Steering Committee. This study examined the national petroleum supply and demand patterns and the impacts of oil price increases and shortages in the region. Impacts on local government costs, retail sales, employment, cost of living, transportation changes, and public opinion and attitude were also studied.

---

[4] North Central Texas Council of Governments, Transportation Department, Mobility and Limited Energy: Exploring Short-Range Possibilities (Arlington, Texas, April 1975).

Following the examination of the existing energy situation, work on the energy contingency plan was begun. This plan, which was documented in the report A Metropolitan Transportation Plan for National Energy Contingencies,[5] was completed in August 1977 and approved by the Steering Committee in September 1977.

The development of the contingency plan involved considerable background research on world petroleum supply and demand projections, possible federal allocation and rationing policies, and the impact of the 1973-74 Arab oil embargo on local and national transportation. From an examination of these factors, the impact of another oil shortage was visualized and the transportation-related problems it would cause were identified. These problem areas were:

1. Managing fuel supplies to continue public transportation operations

2. Contending with mass transit ridership increases

3. Providing transportation alternatives in suburban areas

4. Reducing inequities and uncertainties associated with the contingencies

Solutions to these problems were then examined and a set of recommendations was developed. These were:

1. Modify state and federal fuel contingency regulations to provide priority fuel allocations to public transportation providers

2. Maintain the present metropolitan carpool programs

3. Expand or develop fuel storage reserves

4. Designate a local energy coordinator in counties and major cities

5. Encourage flexible work hour programs

6. Develop plans to increase transit system bus availability during contingencies

7. Modify the Texas state law to permit the use of school buses for the general public under emergency conditions

---

[5] North Central Texas Council of Governments, Transportation Department, A Metropolitan Transportation Plan for National Energy Contingencies, (Arlington, Texas, August 1977).

8. Investigate the impact of an energy shortage on taxicabs and their possible role in local mobility during an emergency

9. Develop a regional park-and-ride and exclusive bus lane plan

10. Draft contingency agreements to be used between local governments, transit operators, and taxicab operators for mutual assistance

11. Begin intergovernmental dialogue regarding possible energy contingencies and local solutions

Several of these recommendations have been or are being implemented. Efforts were made by the Steering Committee to modify state and federal fuel contingency regulations to provide priority fuel supplies to public transportation providers; support for the Dallas and Fort Worth carpool programs was expressed; local transit operators undertook to expand their fuel storage facilities; local energy coordinators were developed by local cities and counties; a successful effort was made to modify state law to permit the use of school buses for general transportation purposes; the role of taxicabs and school buses during a contingency situation was investigated; and a park-and-ride/preferential treatment plan was developed.

In addition to the contingency plan for the Dallas-Fort Worth urbanized area (ISA) the travel problems of long-distance commuters in the region's non-urban areas were investigated.[6] This was seen as an important effort because at least 10 percent of the work force in Dallas and Tarrant Counties commute from other counties. The report on commuting problems and suggestions to contend with gasoline shortages was sent to city and county public officials throughout the region.

Public Opinion

Input from local citizens on energy issues was obtained to provide guidance for public officials on energy policy. In 1976 the Urban Panel Project[7] polled a random sample of 2,000 households in the Dallas-Fort Worth area on varied transportation issues, including energy. In 1977, the Urban Area

---

[6] North Central Texas Council of Governments, Transportation and Energy Department, Extra-County Commuting in North Central Texas: A Preliminary Assessment of Energy Contingency Impacts (Arlington, Texas, January 1978).

[7] North Central Texas Council of Governments, Urban Panel Project - Macro-Data Analysis (Arlington, Texas, September 1976).

Citizens Survey[8] of 1,158 households in the area obtained public input on such energy-related issues as park-and-ride services, carpool usage, and the creation of a regional transit authority.

Thoroughfare Planning Simulation

The Thoroughfare Planning System (TPS) allows a relatively detailed travel simulation to be accomplished within a "window" or subarea of the metropolitan area. It also has advanced evaluation capabilities which enhance the analyst's ability to understand the interactions of various elements of a transportation system.

A case study application of TPS[9] revealed two concepts of interest in energy-related planning. First, it determined that the improvements to vehicular efficiencies which can be accomplished through the construction of controlled-access freeways are somewhat offset by the diversion of traffic onto these facilities. In other words, individual drivers may travel further in order to save time, therefore offsetting certain fuel savings. Another finding of interest was the importance of travel delay due to signalization. Since it is known that overall trip speed has a great deal to do with fuel consumption,[10] it appears that travel delays, regardless of source, are to be avoided. This seems to suggest greater utilization of grade-separated facilities.

Park-and-Ride/Preferential Treatment Study

In response to the energy contingency plan's recommendation for an examination of possible park-and-ride/preferential treatments in the Dallas-Fort Worth area, a study was initiated in early 1978. This study evaluated more than 90 possible park-and-ride/preferential treatment projects and determined that not all of these would help to reduce fuel consumption. From a cost analysis of the projects, as well as their effectiveness in meeting such other objectives as reducing hydrocarbon pollution emissions and encouraging

---

[8] North Central Texas Council of Governments, Dallas-Fort Worth Urban Area Citizens Survey 1977: Data Analysis, Technical Report Series No. 10 (Arlington, Texas, February 1978).

[9] Stephen M. Howe et al., "Subarea Diagnostic and Evaluative Procedures for Programming Short-Range Transportation Improvements," Informal Paper Series No. 14 (Arlington, Texas: North Central Texas Council of Governments, Transportation and Energy Department, October 1978).

[10] Leonard Evans and Robert Herman, "Automobile Fuel Economy on Fixed Urban Driving Schedules," Transportation Science, vol. 12, no. 2 (May 1978), pp. 137-152.

transit and carpool usage, a recommended plan of projects was developed. This plan identified more than 20 projects which could save over 3.3 million gallons of fuel in the region each year.

Community Transit Alternatives for Energy Shortages Study

In response to the contingency plan's recommendation to investigate the feasibility of various concepts for providing public transit in communities having few available resources with which to respond to energy shortages, a case study was performed in Arlington. The study,[11] supported by the Urban Mass Transportation Administration (UMTA), identified available transportation resources, investigated the institutional and legislative constraints of options, and analyzed alternative service designs.

The study concluded that, while school buses hold the most promise for an Arlington energy contingency transit service, numerous legal and institutional issues exist. Among these issues are local, state, and federal regulations and the potential organization of the Lone Star Transportation Authority. For the study, a special reporting consultant was utilized in addition to the technical consultant to document the identification and resolution of institutional issues.

Paratransit Energy Conservation and Contingency Study

This study, also resulting from contingency planning and supported by UMTA, investigated the roles of taxicabs and other paratransit forms. The study[12] analyzed paratransit concepts and implementation strategies. In addition, the study identified the impacts of increased fuel costs on local taxicab operating characteristics and alternative methods for alleviating them.

ONGOING ENERGY PROJECTS

Department of Energy Pilot Program

The North Central Texas Council of Governments has received continued support from the U. S. Department of Energy in the extension of energy considerations

---

[11]Multisystems, Inc., Case Study of Community Transit Alternatives for Energy Shortages, prepared for the North Central Texas Council of Governments (Cambridge, Massachusetts, May 1980).

[12]Ernst & Whinney, Paratransit Energy Conservation and Contingency Study, vol. I: Paratransit Concept Analysis; vol. II: Regional Energy Cost Impacts on the Taxicab Industry, prepared for North Central Texas Council of Governments (Washington, D. C., April 1980).

in ongoing transportation planning projects. This program allows DOE and NCTCOG to interact on the specific energy-related problems encountered by a transportation planning agency. The DOE program explicitly recognizes the dual technical/socio-political nature of urban transportation planning. Of particular emphasis are direct and indirect energy consumption analyses, land use energy consumption, and changes in travel demand associated with extended fuel shortages.

Regional Energy Newsletter

A newsletter is being published to communicate information useful to local governments in dealing with energy-related concerns. Funded by the U. S. Department of Energy, the newsletter features articles on energy programs undertaken by local governments, news and summaries of federal and state energy programs and funding sources, and technical data which may be helpful to local energy planners.

Transportation Energy Estimates

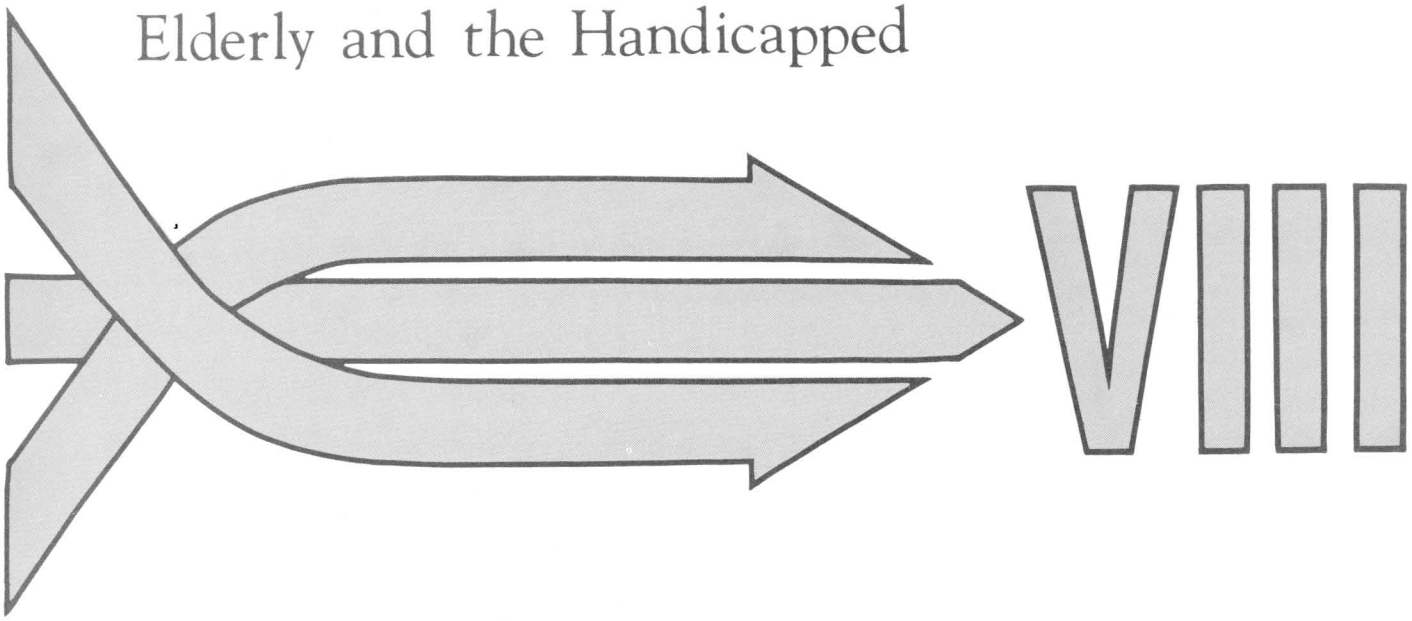
In order to monitor the energy consumption patterns of transportation in the region, estimates of transportation energy use are made. These energy estimates for 1979 are shown on Table VII-1. In the 1980 Transportation Program, a similar table for 1978 was also presented; however, changes in methodology do not allow comparisons of annual energy consumption based on the two sets of data.

TABLE VII-1

ESTIMATED DAILY TRANSPORTATION ENERGY CONSUMPTION IN THE NORTH CENTRAL TEXAS METROPOLITAN REGION 1979

Mode	Fuel Consumption in Equivalent Gallons of Gasoline/Day	Percent of Total
Single-occupant auto	1,965,000	32.9
Carpool auto	1,150,000	19.2
Rental auto	14,500	0.2
Taxi	6,200	0.1
Vanpool (formal)	450	0.0
Social services	2,000	0.1
City bus	17,500	0.3
Intercity bus	5,700	0.1
School bus	20,000	0.3
Motorcycle	19,000	0.3
Truck	1,020,000	17.0
AIRTRANS	600	0.0
Light Rail (Tandy Subway)	570	0.0
Diesel rail (passenger, freight)	35,000	0.6
General aviation	110,000	1.8
Commercial aviation (passenger, freight)	1,475,000	24.7
Pipeline	15,000	0.3
Recreation/miscellaneous	123,000	2.1
TOTAL	5,979,520	100.0

Special Efforts for the Elderly and the Handicapped



VIII. Special Efforts for the Elderly and the Handicapped

Transportation for the elderly and the handicapped has received particular attention during 1979-80. Within the year, three specialized transportation systems have been started and two more are nearing implementation. Two major planning efforts were also completed during the past year. In addition, "special efforts" for the elderly and handicapped started in recent years have continued to provide improved service to these individuals.

SPECIALIZED TRANSPORTATION SYSTEM

A regional study of transportation for the elderly and handicapped was conducted in 1976. The study, which culminated in the report Transportation Options for the Elderly and the Handicapped was approved by the Regional Transportation Council September 1976. The study identified many of the mobility problems faced by the elderly and the handicapped and recommended several actions for alleviating these problems. The study found that the provision of demand responsive, specialized transportation services were needed for the mobility impaired. Two specialized transportation services have since been implemented. Two additional services have been planned and will be in operation within the year.

CareCar - Dallas

CareCar, a demand-responsive, door-to-door service for mobility impaired individuals who have difficulty using regular Dallas Transit System buses, began in December 1978. The CareCar fleet consists of 12 small buses. Each is equipped with a wheelchair lift and has a capacity of 8 ambulatory and 2 wheelchair-bound passengers. All vehicles are radio-equipped. Another 5 vehicles are on order and scheduled for delivery by late summer 1980.

CareCar service is currently restricted to the area within Loop 12. The arrival of the five new vehicles will enable service expansion beyond Loop 12. Most trips are scheduled 24 hours in advance. A flat fare of $1.00 is charged for each one-way trip. Ridership has been increasing gradually. In March 1980, 2,300 trips were served by CareCar. A private company, Transportation Systems of Dallas, is under contract as the operator of CareCar.

MITS - Fort Worth

MITS (Mobility Impaired Transportation Service) is a paratransit service operating seven vans that provide door-to-door transportation for eligible elderly and handicapped riders. The service began operations in June 1979. The seven vehicles are equipped with wheelchair lifts, two-way radios, extended tops, and wheelchair tie-down fixtures.

Trips require a 24-hour advanced reservation with priority given to recurring trips (work, school, medical). The one way fare is $1.00 with a discount fare of $.50 for persons who qualify for a low-income exemption. A certification process to establish patron eligibility has been developed and identification cards are issued to eligible persons. Certification is based on disability, which is verified by an agency or licensed physician. Persons with a "temporary" disability are recertified every six months. At present, 15 social service agencies in the Fort Worth area have been designated as certifying agencies, and continuing contact between the certifying agencies and the MITS service is maintained to ensure smooth operation of the certification process.

The City of Fort Worth contracts with Fort Worth Cab and Baggage for the operation of MITS. Ridership on MITS in March 1980 was approximately 2,400 trips.

Mesquite Senior Citizen Transportation Program - Mesquite

In 1974 the City of Mesquite started a demand-responsive transportation service to its elderly citizens through the Parks and Recreation Department Senior Citizen Program. The city used an eleven-passenger van to take the elderly to the Senior Citizens Center and to special events. In May 1980 the city replaced the van by purchasing two 18 passenger buses. The buses are equipped with wheelchair lifts thereby allowing handicapped persons access to the service.

The transportation service is available to any Mesquite resident who wishes to take part in the Senior Citizens Program. No advanced reservation is needed. Passengers that call in the morning are picked up that same morning and transported to the senior citizens center. They are returned home in the afternoon. No fare is charged for the transportation service.

Arlington

A specialized transportation system for the elderly and the handicapped has been planned by the City of Arlington. The system is scheduled to begin in August 1980.

The system will be a demand-responsive, door-to-door van service much like CareCar and MITS. The Arlington system, unlike CareCar and MITS, will be operated by the city. The system will operate with five wheelchair lift-equipped vans. A 24-hour advanced reservation time will be required.

Garland

The City of Garland is also close to beginning a transportation service for their elderly and handicapped citizens. The city is currently awaiting approval of this grant application for vehicles by UMTA. Once approval is received, the system should be in operation within a few months.

The Garland system will also be a demand-responsive van service. The city will contract with a private transportation company for the operation of the system. A fleet of four vans will be used, one of which will be equipped with a wheelchair lift.

SECTION 504 TRANSITION PLANS

In response to the U.S. Department of Transportation Section 504 Regulation,[1] both urbanized areas were instructed to prepare a "transition plan." A transition plan is simply a document that describes how and when an area will reach the goal of accessibility for the handicapped. To reach this goal, a system, when viewed in its entirety, must be readily accessible to handicapped persons.

Program accessibility for a fixed-route bus system (e.g., DTS and CITRAN) is achieved when the system is accessible to handicapped persons who can use steps, such as blind persons, and to wheelchair users. The regulation requires that at least one-half of the peak-hour bus service must be accessible, including being equipped with a wheelchair lift. It further requires that accessible buses must be used before inaccessible buses during off-peak service. The regulation states that program accessibility must be achieved by July 1982, unless extraordinarily expensive changes are required, in which case the deadline becomes July 1989. Further, if the 1982 deadline cannot be met, an interim accessible transportation system is required which would provide transportation until full accessibility is reached.

Program accessibility for a paratransit system (e.g., CareCar and MITS) is achieved when a sufficient number of accessible vehicles are operated to provide service to handicapped persons generally equal to that available to nonhandicapped persons. This must be achieved no later than July 1982.

The transition plans include an identification of what services or programs currently do not comply with the regulation and what is required to bring the system into compliance. Priorities for implementing the needed changes are included as well as the agency or agencies responsible for implementation. The cost of the scheduled improvements and possible funding sources are also documented in the plan. Finally, a description of the citizen participation that took place during the development of the plan, along with the results of a public hearing on the plan, are provided.

Presented below are summaries of the Dallas and Fort Worth Transition Plans. These summaries briefly describe the contents of each plan and list the actions required to bring each system into conformance with the U.S. Department of Transportation Section 504 Regulation.

---

[1] U.S., Department of Transportation, "Nondiscrimination on the Basis of Handicap in Federally-Assisted Programs and Activities Receiving or Benefiting From Federal Financial Assistance," Federal Register 44, no. 106, 31 May 1979, 31441-31483.

Dallas Urbanized Area Transition Plan

The Dallas Urbanized Area Transition Plan indicates that the Dallas Transit System will achieve program accessiblity in 1984. In order to reach the compliance, DTS will do the following:

- Purchase 315 accessible buses, the number required to effectively provide accessible vehicles as one-half of the peak hour service
- Install a ramp and priority parking space at the Oak Cliff operating division
- Install an accessbile waiting area and priority parking spaces at the Pleasant Grove and Las Colinas park-and-ride facilities
- Modify several current program policies and practices so that the needs of handicapped passengers are considered.

DTS will also continue to fund the operation of CareCar, a special demand-responsive transportation service, as a means of satisfying mobility needs and the requirements for interim accessible transportation service. The CareCar fleet will be expanded according to the original plans. Service area and service hours will be expanded to be comparable with those of the fixed-route bus system. Tables VIII-1, VIII-2, and VIII-3 list the actions DTS will take to comply with the regulation.

The plan presented in this document has been developed with the input and guidance of the Community Council of Greater Dallas Monitoring Committee. The committee's membership includes handicapped individuals and representatives of agencies for the handicapped who have a working knowledge of transportation and a commitment to serve the handicapped community of Greater Dallas. The committee's input was instrumental in selecting the locally preferred option for achieving program accessibility and in establishing service standards for interim accessible transportation.

This plan was made available for public review and was mailed directly to more than 200 individuals who are known to have an interest in transportation for handicapped persons. Written comments and endorsements were requested. A public hearing was held Friday, May 23 at which time the Dallas Transit System and the Monitoring Committee received comments on this transition plan.

The plan was also presented for endorsement to the various agencies charged with implementing the projects necessary for compliance with the Section 504 Regulation. The plan was approved by the Monitoring Committee on May 23, 1980, and by the Dallas Public Transit Board on May 27, 1980. The Regional Transportation Council, serving as the Metropolitan Planning Organization policy group, approved the plan on June 3, 1980, contingent upon approval by the Dallas City Council. On June 11, 1980, the Dallas City Council adopted the plan. The Dallas Urbanized Area Transition Plan was submitted to the Urban Mass Transportaion Administration (UMTA) on June 25, 1980.

TABLE VIII-1

CAPITAL PROJECTS TO BE ADDED TO THE TRANSPORTATION IMPROVEMENT PROGRAM[a]
DALLAS URBANIZED AREA

Annual Element Year	Project	Funding Sources	Total Estimated Project Cost
FY 1981	71 Accessible Buses at $169,400 each	UMTA Section 5,[b] State, local	$12,027,400
FY 1981	Ramp Construction Program	UMTA Section 5,[b] State, local	2,000
FY 1981	Information Devices for Vision and Hearing Impaired Persons	UMTA Section 5,[b] State, local	2,500
FY 1982	70 Accessible Buses at $186,340 each	UMTA Section 5,[b] State, local	13,043,800

(a) Projects for 174 accessible buses are already included in the TIP.

(b) At the current level of Section 5 funding, it is estimated that DTS will have sufficient financial resources to program these capital projects.

TABLE VIII-2

BENCHMARKS FOR ACHIEVING
PROGRAM ACCESSIBILITY
DALLAS URBANIZED AREA

Action	Date
Completion of all modifications to program policies and practices	November 1981
Implementation of first fixed-route accessible service	December 1981
Completion of modifications to fixed facilities	June 1982
Implementation of interim accessible transportation	July 1982
Expansion of accessible service to one-half of peak hour service	May 1982

TABLE VIII-3

IMPLEMENTATION RESPONSIBILITY ACTIONS
TO ACHIEVE PROGRAM ACCESSIBILITY
DALLAS URBANIZED AREA

Action	Responsible Agency
Vehicle Procurement	
• inclusion in TIP/AE	NCTCOG
• preparation of application, specifications, and contract award	DTS
Fixed-Facilities Modifications	
• Oak Cliff Division	DTS
• Pleasant Grove lot	DTS/City of Dallas
• Las Colinas lot	DTS/Las Colinas Corporation
Program Policies and Practices Modifications	
• safety procedures	DTS
• training	DTS
• traveling companions	DTS
• intermodal coordination	DTS
• agency coordination	DTS/Community Council
- service information	DTS/Community Council
- curb cuts	DTS/City of Dallas
• marketing	DTS/Community Council
• leasing and procurement	DTS
• management supervision	DTS
• maintenance and security	DTS
• labor agreements	DTS

Fort Worth Urbanized Area Transition Plan

The Fort Worth Urbanized Area Transition Plan indicates that the CITRAN system will not meet the full accessibility requirements by 1982. The existing door-to-door van service for the elderly and handicapped, Mobility Impaired Transportation Service (MTIS), will serve as the interim accessible transportation system and will continue at its current level of service until 1985. After 1985 MITS will be expanded as warranted by the demand for the service. The major actions that will bring the system into conformance with the 504 Regulation are:

- A bus replacement and expansion program that will result in 96 new lift-equipped buses to be in service by 1985.
- Provision of MITS through 1985 as the interim accessible transportation system.
- Minor alterations to the existing policies and practices of CITRAN (e.g., improved sensitivity training).

The total additional cost of the actions in the six-year term of the transition period (1980 through 1985) will be approximately $8.3 million. Almost one-half of this amount will be used to operate MITS. Table VIII-4 presents the actions neccessary for compliance with the regulation and their costs.

The plan was developed according to guidelines issued by the Urban Mass Transportation Administration (UMTA). An inventory of the public transportation system was conducted and options for meeting the program accessibility requirement were identified. These options were evaluated and a recommendation for program accessibility was made. Finally, the issues and costs were clearly identified as well as the community participation process that was followed.

The development of the Transition Plan was guided by the MITS Policy Review Committee (MITS PRC), a subcommittee of the Fort Worth Public Transportation Advisory Committee (PTAC). Members of the MITS PRC include handicapped individuals and representatives of handicapped organizations.

Public hearings were held during April 1980 to gain input on the plan. Prior to the hearings the plan was sent to over 60 residents that are either handicapped, represent handicapped organizations, or are interested in the handicapped. All commentors at the hearings voiced their approval of the recommendation.

The plan was approved by the MITS PRC on April 23, 1980, the Fort Worth PTAC on May 8, 1980 and the Fort Worth City Council on May 17, 1980. The Regional Transportation Council, serving as the Metropolitan Planning Organization policy group, adopted the plan on June 3, 1980. Upon their approval, it was submitted to UMTA on June 4, 1980.

TABLE VIII-4

ACTIONS NECESSARY FOR COMPLIANCE: FORT WORTH URBANIZED AREA

Action	Priority	Deadline	Responsible Agency	Cost[a]
Provide interim accessible transportation	I	-	City of Fort Worth	$4,041,850[b]
Install exterior lighting	I	August 1980	CITRAN	12,000
Install kneeling kits	I	August 1980	CITRAN	55,000
Cost of lifts on 29 buses	I	October 1980	CITRAN	435,000
Implement emergency procedure training	I	December 1980	CITRAN	20,000
Implement improved sensitivity training	I	December 1980	CITRAN	20,000
Implement equipment usage training	I	December 1980	CITRAN	10,000
Additional CITRAN operations/maintenance costs	I	January 1981	CITRAN	1,827,500
Expand marketing	II	July 1982	CITRAN	20,000
Cost of lifts on 12 buses	III	December 1983	CITRAN	274,000
Cost of lifts on 55 buses	III	December 1985	CITRAN	1,661,000
			TOTAL COST	$8,376,350

[a] Estimated cost of each action, includes an inflation factor of 15% per year.

[b] Cost of providing MITS for 6 years (1980-1985) as the Interim Accessible Transportation System. Includes operating costs and replacement costs of current MITS vehicles.

SPECIAL EFFORTS

Various special efforts with regard to the elderly and handicapped have been implemented in recent years. These special efforts include CareCar and MITS, which have already been discussed. Also included are the curb cut program in Fort Worth, and the additional services to the elderly and handicapped provided by DTS and CITRAN. These special efforts programs are described in this section.

Fort Worth Curb Cut Program

The City of Fort Worth began a curb cut program in 1973. It was implemented in coordination with the Fort Worth Central Business District sidewalk improvement policy to insure smoother and safer pedestrian travel for both ambulatory and nonambulatory persons.

As of May 1980, there were 305 constructed ramps in the downtown area. Approximately 226 additional ramps are planned for construction when funding becomes available. Figure VIII-1 illustrates the location of the existing and planned ramps.

Dallas Transit System

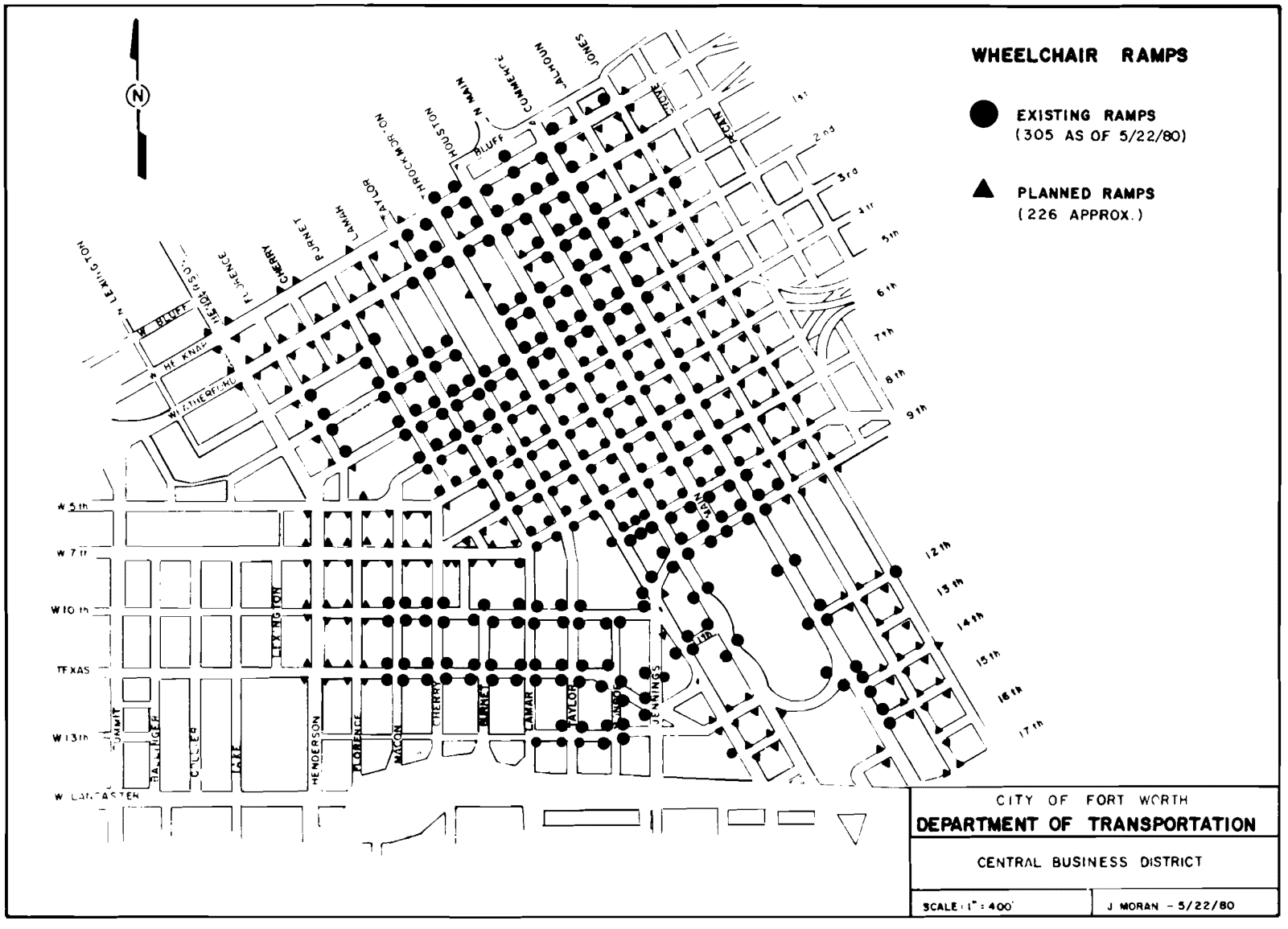
The Dallas Transit System maintains a program of reduced fares for elderly and handicapped patrons. Senior citizens and handicapped persons are charged a 15 cent fare to ride a DTS bus. Region fares, which the general public must pay, are not required from elderly and handicapped riders. A transfer costs the elderly and handicapped passenger 5 cents. A monthly commuter card is also available to the elderly and handicapped for a cost of $5. To be eligible for the reduced-fare program, a citizen must obtain a DTS identification card. Senior citizens are defined as anyone age 65 or over. To be eligible for the handicapped fare, a person must be either:

- Legally blind
- Deaf
- Profoundly hard of hearing
- Non-ambulatory (except with mechanical aids)
- Qualified for at least 80 percent disability allowance through the Veteran Administration
- Receive Social Security disability income

In 1979, senior citizens and handicapped individuals utilized the DTS reduced-fare program to make approximately 3 million trips. This represents over 10 percent of all trips on DTS in 1979.

FIGURE VIII-1

WHEELCHAIR RAMPS: CITY OF FORT WORTH



In addition to the reduced-fare program, the DTS bus fleet is equipped with various features for easier use by the elderly and handicapped. The DTS fleet consists of 521 full-size coaches.

All buses in the fleet are equipped with non-skid flooring, grab rails in the stairwell and around the front of the bus, and radio communication equipment. DTS is also beginning a program to install high-visibility "luminator" destination signs. The advanced design buses in the fleet--the 50 General Motors RTS IIs and the 70 Flxible 870s-- are also equipped with a kneeling feature and pressure-sensitive signal tapes.

DTS has also modified bus service to better accommodate the elderly and handicapped. Specially scheduled trips for handicapped individuals are operated daily to and from the Dal-Worc Center on Stemmons Freeway. These trips provide transfer connections to every system route in the downtown area. In order to make transit more accessible to Park Manor, a high-rise apartment building for senior citizens, a program for trip diversion during non-peak is in operation. During these hours, a resident of Park Manor who desires bus service telephones the DTS dispatcher with his request and the next inbound bus is diverted over a prescribed route to Park Manor. Passengers boarding outbound simply request the operator to take them to Park Manor. This diversion from the normal route is for only a block and causes virtually no impact on regular service.

CITRAN of Fort Worth

CITRAN also provides a reduced-fare program for the elderly and handicapped. The current fare structure sets the full fare on all CITRAN routes at 40 cents with no charge for transfers. The reduced-fare program allows elderly and handicapped passengers with a CITRAN identification card to ride at one-half the full fare. Identification cards are issued at a cost of $2 to any person age 65 or older, or an eligible handicapped person. To be eligible for the handicapped identification card a person must meet one of the following criteria:

- Legally blind
- Qualified for 80 percent disability allowance by the Veterans Administration or the Department of Health and Human Services
- Eligible for Social Security Disability Income payments
- Eligible for the Division of Public Health Program for kidney dialysis
- Mentally deficient or mentally handicapped
- Approved locally by appropriate agencies and accepted by the transit system as handicapped
- Confined to a wheelchair

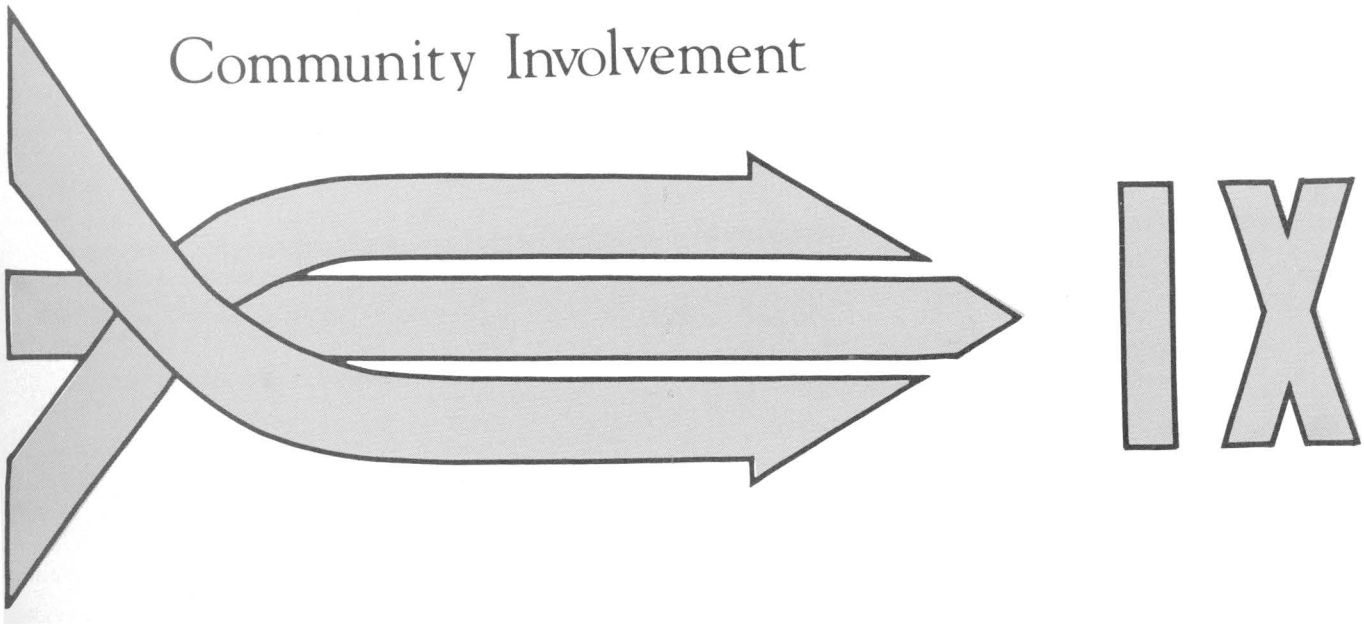
In 1979, 326,780 trips were made at the reduced elderly and handicapped fare. This constituted 7.5 percent of all trips on CITRAN for that year.

CITRAN is pursuing a set of actions designed to improve the accessibility of their bus fleet. The current CITRAN fleet has 106 buses. The front seats of all buses have been reserved for elderly and handicapped passengers. The floor in the vestibule of each bus is covered with non-skid material to maximize traction. One hundred bus kneeling kits are being installed on the newer buses to allow the bus to lower the first step and improve accessibility to some handicapped persons. CITRAN will take delivery of 29 advanced design RTS-II buses in the fall of 1980. These buses will be equipped with wheelchair lifts. It is believed these will be the first fully accessible buses in operation in Texas.

CITRAN has implemented special route deviations to serve the Lighthouse for the Blind and two Trinity Valley Mental Health and Mental Retardation Houses. These deviations transport handicapped individuals who work at these social service centers, eliminating much of the walking required to reach the regular routes. Other generators of transportation-handicapped trips serviced by regular routes include the Goodrich Center for the Deaf, Goodwill Industries, and the main office of the Trinity Valley Mental Health and Mental Retardation Center.

SUMMARY

The transportation of elderly and handicapped persons in the Dallas-Fort Worth area, including the planning, administration, and provision of these services, has comprised a significant portion of the total public transportation program during the past year. Due to existing commitments and the Section 504 regulation, an expanded level of effort can be expected in the next year.


Community Involvement
IX

IX. Community Involvement

Just as the overall transportation planning process has been modified and expanded to include alternatives analysis, transportation system management, air quality considerations and energy impacts, the citizen involvement process must also be restructured to meet the many requirements associated with these various elements of the planning process. The development of an overall public participation program to respond to such requirements represented a major work effort during the 1978-79 planning year. In the 1979-80 planning year, application of this program to specific elements was begun.

Two major factors influenced the design of the Public Participation Program for Transportation-Air Quality Planning which was completed in June 1979, one being the unique needs of local governments in the Dallas-Fort Worth Area, and the other being the many federal requirements pertaining to the transportation-air quality planning process.

Given that the Intensive Study Area recognized for transportation planning purposes includes some 87 cities, the two most urbanized counties, and portions of seven contiguous counties, a public participation program for the area requires extreme cooperation and coordination on the part of local governments. Such a program must provide methods for bringing together the local elected official, the local government staff person, and the community at large so that they can work together to achieve the desired goals and objectives of the individual entity. From a regional perspective, it must provide for a coordinated approach so that consistency in terms of timing and opportunities for input can be achieved.

From the standpoint of federal requirements, the program had to be structured in conformance with guidelines and/or rules and regulations issued by the Urban Mass Transportation Administration, the Federal Highway Administration, the Environmental Protection Agency, and the Council on Environmental Quality. While a multitude of regulations are currently on the books -- many added within the past one to two years -- the most stringent requirements have been put forth by the Environmental Protection Agency and the Urban Mass Transportation Administration. Taken together, requirements of these two agencies are designed to ensure that the public is involved in the earliest stages of the planning process and in subsequent stages throughout the process.

These requirements currently apply to the alternatives analysis process, to the development of plans which would reduce the emission of pollutants from

mobile sources, and to major urban mass transportation improvements. Proposed rules and regulations issued jointly by the Federal Highway Administration and the Urban Mass Transportation Administration would apply these same requirements to the development of highway improvements as well.

FOUR-STAGED PROGRAM

The report entitled Public Participation Program for Transportation-Air Quality Planning is designed to respond to local government needs as well as to federal requirements in gaining citizen input for the technical planning process. Set forth as a four-staged process, the public participation program builds upon existing community involvement structures and gradually expands to include other interested groups and individuals.

Stage One - Initial Involvement

The first-stage effort corresponds to the problem identification stage of the technical planning process, which represents the beginning point in the study effort. During this stage, existing community involvement structures established by local governments will be utilized to identify possible alternatives which should be considered and issues which will provide the basis for identification of evaluation criteria. Meetings will be informal and group size should range between 15 and 25 people if adequate opportunity is to be provided for open discussion. Sessions should not exceed two hours and will be scheduled at the convenience of participants. Hosting these meetings and providing documentation for input at the study area level will be local government staff personnel participating in the study effort.

Stage Two - Citizen-Initiated Meetings

Even as these initial meetings are being conducted, information on the study will be disseminated through news releases, newsletters, and other mechanisms so that adequate opportunity for the involvement of the broad, general public may be realized. The thrust of this informational effort will be to make public interest groups and interested citizens aware of the study underway and invite these groups to schedule meetings with local government staff personnel for discussion of possible alternatives and issues to be pursued in the study effort. A standard presentation will be prepared for use by local government staff in these meetings. All such meetings, which will be citizen initiated, will be scheduled at the convenience of the groups insofar as possible and input will be documented and considered in the selection of evaluation criteria and generation of alternatives. This second-stage effort is intended to occur prior to the final selection of alternatives and evaluation criteria. However, it is recognized that citizen-initiated meetings will probably take place throughout the study effort. Therefore, regardless of the point in the planning process where this input is received, the same procedures of documentation and consideration will be followed.

Stage Three - Public Meetings Scheduled

As the technical evaluation process is being completed, it becomes desirable to bring together the many segments of the community through public meetings, so that each group has the benefit of experiencing tradeoffs which must be made. These meetings, which will be scheduled by local governments, will also provide an opportunity for persons not involved previously to participate in discussions. Such meetings will feature a formal presentation of findings to date, including alternatives considered, evaluation criteria utilized, and the results of the technical analysis process. While it is possible that a recommended plan will begin to surface at this point in time, final recommendations to be presented to the policy-making body will come after the public meetings, and will include documentation of citizen input along with the other criteria used to evaluate alternatives. Local elected officials will be asked to host these meetings, with local government staff personnel available to provide the needed technical support and answer questions as appropriate. Assistance in developing presentation, providing advance publicity on meetings, and documentation of input will be provided by the North Central Texas Council of Governments as considered desirable by the individual local governments.

Stage Four - Public Hearings

A formal public hearing, when required, will be scheduled after recommendations have been developed and a plan has been tentatively adopted by the policy-making body. The draft Environmental Impact Statement will be completed prior to the public hearing and will be available for review at that time. The scheduling of the public hearing and all posted, published, and direct-mail notices as required by the State of Texas will be accomplished by the agency or entity sponsoring the proposed project. Documentation of proceedings of the public hearing will also be accomplished by the sponsoring entity with local officials participating in the hearing as chairpersons. Proceedings of the public hearing will be forwarded to the policy-making body for final consideration, and will be prepared for submission to federal agencies as appropriate in the pursuit of funding for specific projects.

APPOINTMENT OF COORDINATORS

In order to provide the needed coordination for implementation of the public participation program, it is recommended that local governments in the Dallas-Fort Worth Area appoint responsible individuals to work with regional planning staff personnel in the area of citizen participation. These individuals, hereinafter referred to as Public Involvement Coordinators, will represent the contact persons for all community involvement efforts pursued by local governmental entities and will assist technical staff personnel in scheduling meetings, identifying and communicating with active public interest groups, documenting citizen input, and providing this documentation to the appropriate technical staff personnel for input in the technical planning process.

To support the work of the Public Involvement Coordinators, the North Central Texas Council of Governments has developed an Automated Mailing System (AMS) through which information on public interest groups may be maintained and accessed as needed in the community involvement effort. During the preparation of the Public Participation Program for Transportation-Air Quality Planning, local governments were contacted for information on public interest groups in the area. This information has allowed the NCTCOG to build a file which includes known ethnic groups, environmental organizations, neighborhood and homeowner associations, local chambers of commerce, service and advocacy organizations for the elderly and the handicapped, community affairs organizations, and members of the business community. From this base, an extensive file is being developed for the use of local governments in the community involvement process. Additionally, the Automated Mailing System is utilized by the North Central Texas Council of Governments for the distribution of the transportation planning newsletter, TranScript, which provides a mechanism for disseminating information on transportation-air quality planning efforts and opportunities for involvement in the planning process.

PROGRAM APPLICATIONS

Dallas North Central Subarea Study

The Dallas North Central Subarea Study is an alternatives analysis which began in November 1979. Included in the work program is a detailed public involvement process. In early March 1980 the public was brought into the study through a series of public meetings and a press briefing. Prior to March the public agency and staff review mechanisms were established. The following discussion provides the details of how the North Central Texas Council of Governments Public Participation Program is being carried out in the Dallas North Central Subarea Study.

In keeping with the structure of the overall public participation program, the Dallas North Central Subarea Study Community Information and Involvement Program (CII) makes the greatest possible use of existing organizational structures. The CII program identifies a variety of citizen information mechanisms which will be utilized to meet the requirements of the overall public participation program.

These mechanisms include a communications committee of citizen participation experts, a North Central Subarea transportation study Citizens' Forum for very detailed citizen involvement, public meetings, citizen-initiated meetings, and formal public hearings. Public agency contact is maintained through the use of the Study Staff Task Force as well as direct public agency contact achieved in the scoping process. Additional techniques are used to maximize public information and awareness of public opinions. Among these are the use of a telephone bank, attitude surveys to define target issues and target publics, a speaker's bureau, briefings of elected officials, and contact with the media.

Perhaps the most visible mechanism for citizen information and involvement is public meetings. The focus of most meetings is the question-and-answer

discussion after the presentation of interim report information. Through this interaction, the consultant and Study Staff obtain the public's initial reaction to milestone issues. These comments will be addressed by the consultant in preparing the final interim report.

Following the publication of the final interim report, the Study Staff Task Force will convene to receive additional comments from the public. After this session, the SSTF will consider the interim report for approval. This milestone interaction process will be repeated throughout the study until all the issues have been resolved as far as practicable. The interim reports, upon approval, will form the basic building blocks upon which the environmental impact statements and final reports will be developed. Similarly, the comments expressed by the public throughout the milestone review process and responses thereto will become part of the record.

Section 504 Transition Plan Development

U.S. Department of Transportation regulations in response to Section 504 of the Rehabilitation Act of 1973 required each urbanized area to prepare a plan describing the steps by which public transportation would be made fully accessible to handicapped persons. In response to these regulations, Transition Plans were developed for the Dallas and Fort Worth Urbanized Areas. A major element of this process was the involvement of the citizens whose needs the Plans were intended to meet, as well as those organizations committed to the interests of the handicapped.

Dallas Urbanized Area

In the Dallas area, citizen involvement was initiated under the auspices of the Community Council of Greater Dallas, a United Way agency which provides information and referral services for users of specialized paratransit services. In July 1979, a Transportation Task Force was organized to review the transportation needs of the mobility impaired population and to address means of meeting those needs. The 14 members of the Task Force included elderly and handicapped individuals, Community Council board members, a member of the Dallas Public Transit Board, and other concerned citizens. Ex officio members represented the City of Dallas, the American Red Cross, the North Central Texas Council of Governments, and the Dallas Transit System.

Meetings of the Task Force were held in July, September, October, and November 1979. In the interim periods, three subcommittees also met to determine needs, consider costs and funding sources, and structure a specialized transportation network. Members of the general public were invited to participate in this process, and committee meetings were attended by individual members of the mobility impaired community.

A report on transportation services was adopted by the Task Force and approved by the Community Council Board of Directors in January 1980. The report was

distributed to a list of approximately 200 individuals and agencies throughout the community. A special meeting of the Task Force convened in February to review and respond to public comments regarding the report.

With the initial phase of citizen involvement in the planning process completed, the next step was the appointment of an ongoing Advisory Committee. While the Department of Transportation requires such a committee during the transition period to monitor public transit, the Task Force envisioned a group which, under Community Council sponsorship, would also monitor and assist in the coordination of agency-provided transportation. To assure continuity, a number of Task Force members were included in the 11-member Advisory Committee appointed by the Community Council. Six of the members are mobility impaired and represent a number of organizations of elderly or handicapped individuals; agencies serving the handicapped are also represented.

After meetings in March and April, the Advisory Committee convened on April 25, 1980, to select an option for achieving program accessibility and to establish policies for operating interim accessible service. This plan was then made available for public review and was mailed to more than 200 interested persons. Written comments and endorsements were requested. A public hearing was held on May 23, 1980, at which time the Dallas Transit System and the Advisory Committee received comments on this transition plan.

The plan was also presented for endorsement to the various agencies charged with implementing the projects necessary for compliance with the Section 504 regulation. Approval was received from the Dallas Public Transit Board, the Regional Transportation Council, and the Dallas City Council. The plan was submitted to the Urban Mass Transportation Administration (UMTA) of the Department of Transportation on June 25, 1980.

Fort Worth Urbanized Area

To assist in the development of the Transition Plan for the Fort Worth Urbanized Area, an advisory group of handicapped individuals and representatives of handicapped organizations was designated. An existing subcommittee of the Fort Worth Public Transportation Advisory Committee, the Mobility Impaired Transportation Service Policy Review Committee (MITS PRC), which had been structured according to Department of Transportation regulations, was chosen to provide guidance throughout the development process.

Among the resources used in preparing the plan were previous studies of local transportation needs which were made with the participation and review of mobility impaired persons. The Transition Plan received substantial public review in the course of its development. Through the study, the MITS PRC addressed the effort at each of its meetings. Two public hearings were held on April 11, 1980, to receive citizen input. In addition to the notice of the hearings in the local newspaper, more than 60 Fort Worth citizens who had expressed interest in elderly and handicapped transportation were mailed a copy of the plan. Written responses were also prepared to substantive concerns raised during the hearings.

The plan was approved by the MITS PRC at their April 23, 1980, meeting. Subsequent endorsements were received from the Fort Worth Public Transportation Advisory Council, the Fort Worth City Council, and the Regional Transportation Council. Transmittal of the plan to the Urban Mass Transportation Administration was made June 4, 1980.

Lone Star Transportation Authority Service Plan Development

The work in public involvement concerning the development of a service plan for a regional transportation authority was supported in a supplemental manner by the staff of the North Central Texas Council of Governments Transportation and Energy Department. Major work, however, was carried out directly by the transportation and planning staffs of the local jurisdictions in the area to be covered by the proposed Lone Star Transportation Authority.

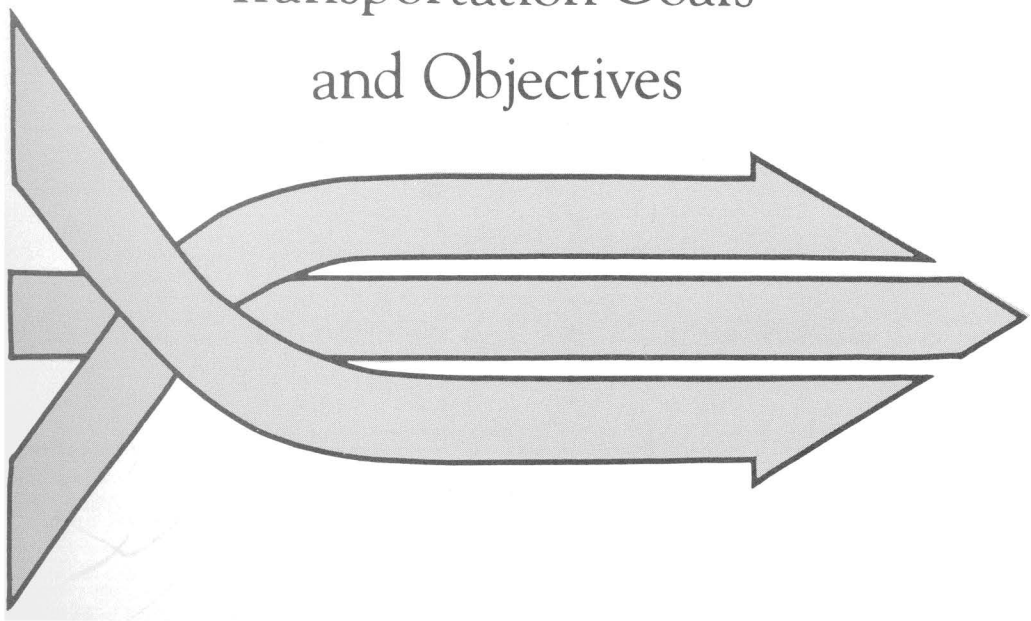
At more than 50 public meetings throughout the region, citizens were asked for comments and suggestions regarding transportation services. In addition, many groups and advisory committee members contributed to various elements of the service plan. For example, in the Western Subregion of the Authority, physicians and providers of medical transportation were among those included in the planning of the emergency medical service element.

The draft service plan which resulted was reviewed in an additional series of approximately 80 meetings. Comments tape-recorded at each day's meetings were made available at a local telephone number to Authority board members and other interested persons.

As well as gaining public input, the Authority disseminated information through a newsletter, News Update. Nine editions were published from December 21, 1979, to June 30, 1980, with the final circulation numbering approximately 5,200. A media contact program was another aspect of public information during service plan development. Members of the press and broadcast media were notified of meetings and provided with news releases.

Also supporting the progress of Authority planning was a basic information program which included mailings of materials to board members, staff persons, and others in advance of meetings. Minutes were distributed following each meeting. All public meeting law requirements were met, with posting of notices in each of the cities and counties involved.

Transportation Goals and Objectives



1

1. Transportation Goals and Objectives

TRANSPORTATION SYSTEM GOALS

GOAL I: To Provide a Regional Transportation System that Will be Operated Efficiently and Economically and Will Minimize Costs Consistent with Available Financial Resources and Implementation Capacity

Objective A: Develop a transportation system which achieves the regional goals at minimal system capital costs

Objective B: Develop a transportation system that minimizes operating and user costs consistent with service benefits

Objective C: Design a transportation system with capital and operating costs consistent with the availability of financial resources

Objective D: Maximize the use of the capacity of existing and future transportation facilities

GOAL II: To Provide a Regional Transportation System Plan that Will be Sufficiently Flexible to be Staged and Adapted to Changing Conditions and Provide Acceptable Performance Characteristics

Objective A: Develop a transportation system plan that is capable of responding or adapting to changing conditions when necessary and is capable of staged implementation

Objective B: Develop a transportation system so that it meets acceptable performance standards for user comfort and convenience

Objective C: Design the transportation system so that the safety of the user and pedestrian is maximized

GOAL III: To Provide a Regional Transportation System with Maximum Level of Service Consistent with Other Goals

Objective A: Maximize geographic coverage of system consistent with transportation service demands

Objective B: Locate and operate system so as to minimize the time spent in travel throughout the Region

TRANSPORTATION IMPACT GOALS

ECONOMICS AND LAND USE

GOAL IV: To Provide a Transportation System that will Strengthen the Economic Base of the Region

Objective A: Utilize the transportation system to strengthen the Region's position as an important distribution center

Objective B: Minimize the consumption of taxable land for transportation facilities utilizing opportunities for development of joint use of right-of-way for multimodal transportation planning

Objective C: Utilize the transportation system to open new areas in the Region for development as needed

Objective D: Avoid undesirable effects on the labor force directly influenced by transportation expenditure

GOAL V: To Provide a Balance and Coordination Between Land Use and Transportation System Development

Objective A: Plan the transportation system to complement established land use plans

Objective B: Develop the transportation system at a rate that is compatible with desired community growth as determined by the local governments

Objective C: Encourage development in those areas already equipped with sewers, roads, and other municipal services

Objective D: Plan the transportation system applying the principles of minimum right-of-way acquisition and joint use of land for related transportation purposes

GOAL VI: To Provide a Regional Transportation System that will Reinforce Existing Land Uses

Objective A: Locate the transportation system to reinforce and strengthen existing business and industrial assets

Objective B: Plan the transportation system to support the internal development of all high activity centers including central business districts

NATURAL RESOURCES AND ENVIRONMENT

GOAL VII: To Locate and Design the Regional Transportation System to Minimize Any Harmful Effects it May Have on the Surrounding and Physical Environment and, Where Possible, Stimulate Improvement of the Environment

Objective A: Assure that the form, design, and appearance of the man-made elements of the transportation system enhance the visual form and image desired for the entire Region

Objective B: Design the transportation system to minimize the noise interference of a system upon adjoining land uses as well as the user

Objective C: Design the transportation system so that it will minimize air pollution impact upon the environment and the people of the Region

Objective D: Utilize the transportation system to discourage development in those areas of the Region determined to be ecologically sensitive as determined by the local governments to be consistent with planned growth

Objective E: Minimize the destruction of historical sites due to the construction of transportation facilities

GOAL VIII: To Provide a Regional Transportation System Which Will Minimize the Use of and Dependence on Scarce Natural Resources

Objective A: Construct and operate the transportation system in order to minimize the consumption of energy due to travel in the Region

Objective B: Minimize consumption and encourage recycling of scarce raw materials in the construction of transportation facilities without compromising material specifications for good design and construction

SOCIAL AND QUALITY-OF-LIFE

GOAL IX: To Plan and Develop a Transportation System that Will Provide All People with Equitable Access to a Wide Range of Social and Economic Opportunities

Objective A: Plan and develop the transportation system to assure equitable access to employment, commercial, educational, health care, and recreational/cultural services and facilities

Objective B: Plan and develop the transportation system to enhance the mobility of all the people of the Region

GOAL X: To Provide a Transportation System that Will Encourage a Stronger Sense of Community and Minimize Disruption

Objective A: Minimize residential and employment displacement in the location of transportation facilities

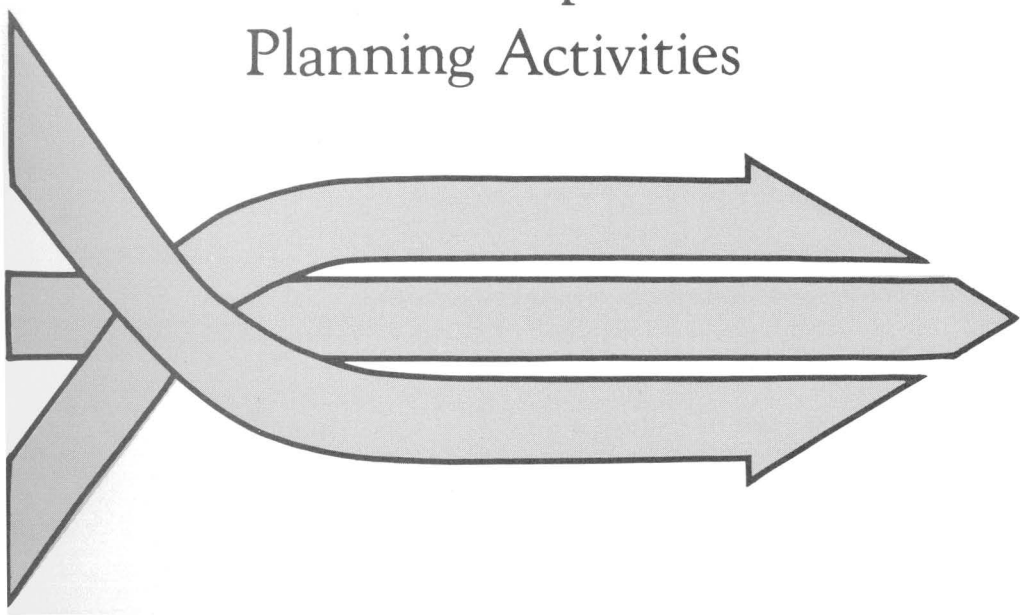
Objective B: Minimize the negative effects of transportation facilities and traffic flow on safe and easy travel within neighborhoods, particularly pedestrian travel

Objective C: Provide equal transportation opportunities to all social groups within political jurisdictions

Objective D: Discourage location of transportation facilities which encourage high-density populations when such higher density will be a detriment to the quality of life in the community

Objective E: Provide transportation facilities and service which accommodate intra-community trips to a variety of activities

Summary of 1979-80 Transportation Planning Activities



2

2. Summary of 1979-80 Transportation Planning Activities

The transportation planning process for North Central Texas is articulated in the Prospectus for Transportation Planning in the North Central Texas Region. Annual planning activities are delineated in the Unified Planning Work Program, which is intended to coordinate the planning activities of all local governments, state agencies, and regional planning groups.

Planning activities designated for accomplishment under the 1979-80 Unified Planning Work Program were designed to meet specific requirements for the conduct and products of the transportation planning process as set forth in the guidelines developed jointly by the Federal Highway Administration and the Urban Mass Transportation Administration as published in the September 17, 1975, Federal Register. Other federal regulations and guidelines were also adhered to as appropriate.

The following is a listing of transportation planning achievements which meet the planning process requirements of the joint guidelines:

- Consideration of social, environmental, and economic impacts.

  The transportation planning process includes consideration of the social, environmental, and economic impacts through various planning techniques. Such social factors as birth rate, migration, and school enrollment are considered in the estimation of population. Environmental considerations are accomplished through air quality studies, energy studies, and (by local governments) safety evaluations. Economic impacts are evaluated through several technical studies which are detailed below under the appropriate subheadings.

- Provision for public involvement.

  Public involvement is a major consideration in the transportation planning efforts in the North Central Texas Region. A newsletter, TranScript, published by the North Central Texas Council of Governments, describes efforts toward multimodal planning and implementation in the region. The Regional Planning Office of the State Department of Highways and Public Transportation distributes a quarterly newsletter, Metroplex Transportation News. An additional NCTCOG publication, Regional Energy, a newsletter for local governments, includes many citizens' groups among its subscribers. An automated mailing system to support community involvement and public information is maintained and continues to be expanded.

Assistance in the preparation of public presentations dealing with transportation planning and the long-range plan is provided to local governments by the MPO staff. Presentations are also made by MPO staff personnel. In addition to these cooperative efforts for general public involvement and information, the local government staffs receive detailed accounts of technical committee meetings and policy meetings through written minutes. Local government elected officials are, of course, kept aware of all information affecting their involvement in the decision-making process.

Public input, including that obtained from surveys, has been vital to the alternatives analysis study of the Dallas North Central Subarea and the development of the regional transportation authority service plan. Likewise, the preparation of plans to improve public transportation accessibility by mobility-impaired persons in the Dallas and Fort Worth Urbanized Areas relied on public involvement processes to determine the needs and desires of these citizens. These efforts are discussed in Chapter IX.

- Consistency with Title VI of the Civil Rights Act of 1964.

The requirements of Title VI of the Civil Rights Act of 1964 are being complied with to the maximum extent possible, and all contracts contain civil rights provisions. Requirements outlined in UMTA Circulars 1155.1, 1160.1, and 1165.1 are being met to the maximum extent possible. During 1978, the MPO plan for providing equal employment opportunities and minority business enterprise opportunities was updated.

- Coordination with air quality planning (Clean Air Act).

As a result of the Clean Air Act Amendments of 1977, the Regional Transportation Council and the MPO staff have become actively involved in air quality planning. At the request of the Council, the Governor of Texas confirmed the North Central Texas Council of Governments as the lead agency for formulating and implementing the Transportation Control Plan for the State Implementation Plan. The MPO and its staff work with the Texas Air Control Board in meeting the Clean Air Act requirements. The potential of a vehicle inspection and maintenance program for emissions control was the subject of a study which analyzed the issues and examined existing programs in other areas.

In addition to these efforts, described in Chapter IX, the overall Transportation Planning Process addresses air quality considerations in the analysis of all transportation projects. Other environmental considerations, such as energy consumption and safety, also are evaluated.

- Special efforts to plan public transportation facilities and services that can be effectively utilized by the elderly and handicapped.

  Following on the recommendations of the 1976 report, Transportation Options for the Elderly and the Handicapped, specialized transportation services for mobility-impaired persons have become increasingly available. Paratransit operations in the Cities of Dallas, Fort Worth, and Mesquite were established. Planned services within the Cities of Arlington and Garland will be implemented by fall 1980. The Urbanized Areas of Dallas and Fort Worth have submitted federally required transition plans for meeting goals for fixed-route and paratransit service accessibility to the handicapped, as defined in U.S. Department of Transportation regulations. Each of these plans was developed in a cooperative effort by the local government, the transit system, social service agencies, and mobility-impaired groups and individuals. This area of work is more fully described in Chapter VIII.

- Consideration of energy conservation.

  Energy conservation and contingency planning continued as a major activity (see Chapter VII). Among these efforts, the feasibility of utilizing public school buses during an energy shortage was examined. This community transit study analyzed several alternative school bus schemes for both energy contingency and conservation scenarios in the City of Arlington.

  Another effort considered the use of taxicabs and other paratransit vehicles in an energy shortage. The study evaluated five operating scenarios in terms of mobility maintenance, cost, and energy impact. The study also examined the effects of higher fuel costs on the local taxicab industry and suggested methods for alleviating their impacts.

  Planning which addresses indirect as well as direct energy impacts began. Direct and Indirect Energy Use Aspects of Park-and-Ride Lots, completed in 1980, represents the first NCTCOG technical report in the subject area. In addition, the auxiliary operating energy of street lighting was estimated in performance measure format (e.g., BTUs and BTUs of petroleum per vehicle and passenger mile). Work is also underway to estimate the direct and indirect energy impacts of various alternatives to be considered in the Dallas North Central Subarea Study.

- Consideration of existing private transportation services.

  An effort was made to consider private transit and paratransit transportation providers in all work projects. Local private operators are represented on the Public Transportation Technical Committee. Private operators were included in the development of the regional transportation authority service plan. A study of paratransit service operations in the region were completed. As mentioned above, the impact of rising taxicab fuel costs was also examined.

- Inclusion of technical elements for the following:

  Analysis of existing conditions.

  Performance of the existing transportation system is discussed in Chapter III of this document. As described in Chapter I, the Transportation Planning effort includes an element that allows for the inventory of the existing system and analysis of the existing conditions through the use of a Thoroughfare and Transit Information System.

  Evaluation of alternative transportation system management improvements.

  Chapter V of the 1981 Transportation Program discusses Transportation System Management planning in North Central Texas. Recent Transportation System Management efforts are described. A Transpotation System Management Handbook completed in 1978 is in use by transportation system operators and planners for the identification of appropriate TSM alternatives, the estimation of the impact of various alternatives, and the integration of various TSM alternatives into an action program.

  An areawide transportation system management study was completed. The effort evaluated transportation control strategies suggested by the Environmental Protection Agency regulations and local governments, and presented packages of TSM measures endorsed by the Regional Transportation Council for incorporation in the alternatives analysis of the Dallas North Central Subarea.

  Projection and monitoring of change in urban areas and the region.

  The Urban Growth Simulation Model (UGSM) that was used in preparation of the long-range plan in 1974 continues to be updated and refined. The model now allows for the comparison of water resource

land use alternative testing. An additional model, the Interactive Population and Employment Forecast Model (IPEF) produces regional control totals for population and employment based on various alternatives, such as the labor force participation rate, the birth rate, and the national growth rate for basic industries.

Monitoring of the region's socioeconomic characteristics continued. Work was completed on the 1977 update of the 1975 socioeconomic data base, which includes housing, employment, and land use data. Population and Employment Forecasts, which discusses the methodology of the IPEF model and the UGSM, was published as the second volume of the Economic Base Study. Work continued on Volume III, Small Area Forecasts, 1990, documenting the methodology for projecting distributions of population and employment as well as discussing further the UGSM and the Disaggregation Model.

Analysis of alternative transportation investments.

A series of detailed subarea planning studies has been initiated which will examine the projected 15-year impacts of alternative transportation system management and capital improvements. The Dallas North Central Subarea Study, an UMTA Major Mass Transportation Investment Analysis, began in 1979 and will be completed in mid-1981. In late 1980, work on the Fort Worth Southwest Subarea will begin. This study is also anticipated to be carried out under the Major Mass Transportation Investment Analysis program.

Refinement of the transportation plan through the conduct of corridor transit technology and staging studies; and subarea feasibility, location, legislative, fiscal, functional classification, and institutional studies.

During the past year, the following projects have been undertaken or accomplished, which will contribute to the refinement of the 1990 Total Transportation Plan:

-- Support of the Regional Transportation Authority Planning Committee of the Regional Transportation Council. With the passage of legislation allowing a regional transportation authority in the Dallas-Fort Worth area, the Legislative Committee of the Regional Transportation Council became the Regional Transportation Authority Planning Committee. The Committee, as well as the entire Council, fostered the development of the interim transportation authority by providing staff support and serving as a facilitating group. Among such activities, the Committee assisted in the drafting of resolutions by the four creating

entities and sponsored an orientation retreat for sub-regional board members following the establishment of the interim Lone Star Transportation Authority. The Regional Transportation Council offered staff assistance to the local governments in the technical development of a service plan for the region, which was approved by the Authority's Executive Committee on June 5, 1980. Staff assistance then continued in an "information-only" mode, with responsibility for promoting confirmation of the Authority shifting to a local citizens' group.

-- Support of the Continuous Airport System Planning Process. Included in the continuing process has been the assessment of performance of the general aviation airport system. Continued support and involvement of the Air Transportation Technical Advisory Committee has been provided by the transportation planning process. Assistance has been given to local governments and airport operators in planning and programming of airport improvements. Recent work has included site-location studies in south Tarrant County and northeast Dallas/south Collin Counties.

-- Assistance to the transit systems in the performance of studies. Several transit system studies were conducted by consultants. A bus operations improvement study for the Dallas Transit System will devise solutions to a selected group of bottlenecks and produce a recommended action plan with cost estimates and implementation staging. Another DTS study developed a structured training program for telephone information operators. Recommendations were made to enhance the response capabilities of the telephone information center. In a third study to be completed in December 1980, a 1977 DTS market survey will be updated to provide information for use in developing a new marketing strategy.

A year-long study of marketing strategy for CITRAN the transit system of Fort Worth, has been initiated. From monthly surveys, the consultant will develop a complete analysis of public awareness of CITRAN services. Also in Fort Worth, an evaluation of the rideshare matching system was completed. The study report included recommentations for improving rideshare program effectiveness.

The Transportation and Energy Department of NCTCOG assisted the Dallas Independent School District in the selection of a consultant to conduct a school bus compound site study.

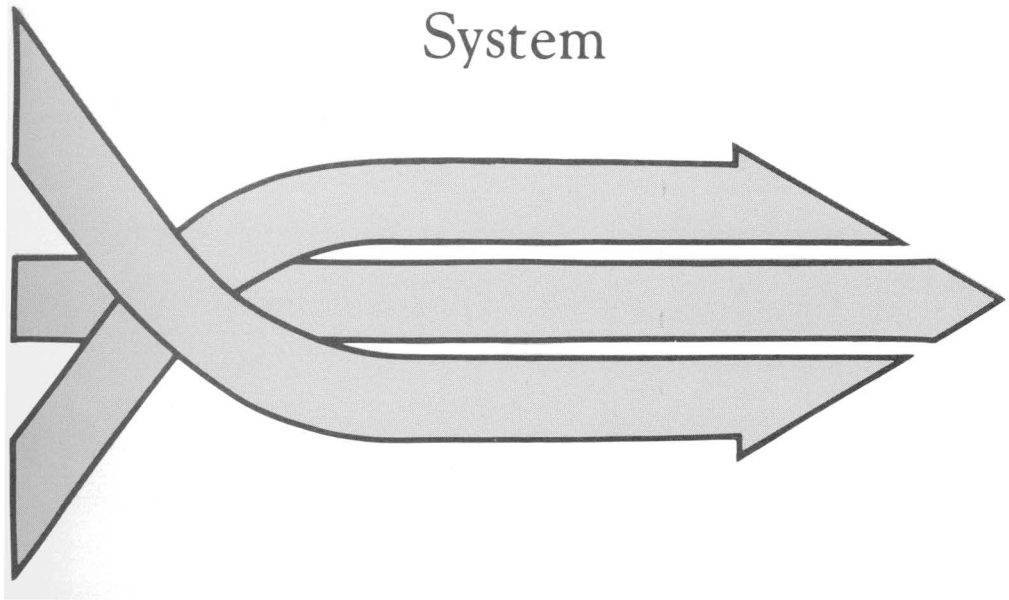
The department also provided travel data along the various school bus routes to assist the consultant and DISD in the study effort.

-- Analysis to assist local governments, technical committees, and the Regional Transportation Council. Thoroughfare planning study assistance was provided to the Cities of Garland and Carrollton, as well as to the City of Dallas on the Far North Dallas study, Fair Park Connector study, and other site-specific data requests.

The Thoroughfare Information System/Thoroughfare Analysis Process was expanded to include a Transit Information System and Multimodal Transportation Analysis Process. This enhancement was prepared to assist local governments and the ongoing transportation planning process in TSM, capital alternatives analysis, short-range, long-range, air quality, and energy planning.

-- Support of Railroad Technical Task Force. With the assistance of the Railroad Commission of Texas, a Railroad Technical Task Force was established to discuss and coordinate matters of mutual concern among railroads operating in the area and interested local governments. The Task Force guided a study to determine the nature and extent of three railroad related transportation problem areas: (1) railroad grade crossings and separations, (2) railroad speed restrictions, and (3) hazardous materials movements by railroad.

Transportation Reports System



3

3. Transportation Reports System

To provide more detailed information about work completed by the North Central Texas Council of Governments' Transportation and Energy Department, a reporting system was developed. Emphasis has been placed on full documentation of all projects. The Reports System consists of four categories of documents:

Plan Report Series. Major plans produced by the entire Transportation and Energy Department, such as the Annual Transportation Program and Unified Work Program, fall in this category. These documents reflect the integration of local governments and all staff members in their preparation.

Executive Summaries. Many major plans necessitate executive summaries for distribution to local elected officials and for community information to the general public.

Technical Report Series. All technically oriented reports that document research and analysis efforts fall in this category.

Informal Paper Series. This series includes papers and presentations made before professional organizations and boards.

Listed on the following pages are brief summaries of reports completed through the last year.

PLAN REPORT SERIES

1980 Transportation Program, by the North Central Texas Council of Governments, October 1979.

This document is a compendium of long-range planning objectives, general policy guidelines, and explicit transportation system management strategies. Additionally, the program identifies those specific transportation project priorities over the next five-year period.

A Metropolitan Transportation Plan for National Energy Contingencies, by the North Central Texas Council of Governments, August 1977, 231 pages.

This report documents the work directed by the Steering Committee of the Regional Transportation Policy Advisory Committee in planning for contingency energy situations. The report describes a program developed to maintain the mobility of workers in the region in the event of contingency situations which would restrict local fuel supplies. The problems experienced by individual auto users, public transportation providers, and cities in the area are identified and analyzed with regard to these contingencies.

Extra-County Commuting in North Central Texas: A Preliminary Assessment of Energy Contingency Impacts, by the North Central Texas Council of Governments, January 1978, 208 pages.

This report extends the analysis of the report A Metropolitan Transportation Plan for National Energy Contingencies, which concentrated on the urbanized areas of North Central Texas, to the surrounding 14 nonurban counties. It was recognized that transportation fuel shortages could seriously impact long-distance commuting into the urbanized counties from the nonurban areas of the region.

While the study does not recommend a specific approach or plan for these "extra-county" commuters, it is hoped the information and analyses presented in the report would be of use to planners and decisionmakers in the North Central Texas Region in the development of courses of action for their communities. The report describes the extra-county commuters in each of the 16 counties in the region.

Regional Park-and-Ride and Preferential Treatment Study, by the North Central Texas Council of Governments, July 1979, 73 pages.

This report summarizes the findings and recommendations of a regional park-and-ride and preferential treatment facility study for the Dallas-Fort Worth area. Included is a description of the study objectives and approach. The

recommended park-and-ride and preferential treatment facilities are presented, together with their energy, air quality, cost, and other impacts. A detailed description of each recommended project is also provided.

TECHNICAL REPORT SERIES

#1

Functional Specifications for Small Transit Vehicles for Use in Handicapped and Elderly Transportation Services, by Tom K. Ryden, Transportation Planning Engineer, September 1977, 45 pages.

The documentation of the specifications for small transit vehicles for use in handicapped and elderly services is a by-product of a study by the North Central Texas Council of Governments entitled Transportation Options for the Elderly and the Handicapped. The issue of physical barriers in transportation vehicles was explored in conjunction with an equipment review process. A Special Equipment Review Subcommittee, consisting of elderly and handicapped citizens, social service agency transportation providers, public transit officials, and private taxi company representatives was established to discuss equipment and vehicle barriers.

This document is designed to present service providers with a comprehensive set of passenger use requirements as they pertain to vantype and medium-sized public transportation vehicles. The report addresses, specifically, the barriers mobility limited persons are confronted with in small-and medium-sized transit vehicles while entering, exiting, and riding as passengers. Functional specifications are presented for such items as doorways, stepwells, lift mechanisms, portable ramps, interior space, aisle space, seat access, wheelchair securement, floor covering, and ventilation.

#2

The Impact of the 1973-1974 Oil Embargo on Transit Line Ridership: The Case of Fort Worth, Texas, by Lawrence Cooper, Transportation Geographer, September 1977, 94 Pages.

Prepared in partial fulfillment of requirements for the degree of master of arts in Urban Affairs at the University of Texas at Arlington, May 1977. This paper examines the impact of the 1973-1974 Arab oil embargo on bus ridership in Fort Worth, Texas. An analysis of ridership changes experienced along individual bus routes identifies ridership and service variables which appear to be most influential in determining these changes. Finally, ways are suggested by which the study findings could be used by transit planners in developing contingency plans for possible future transportation fuel shortages.

#3

The Use of School Buses for Public Transportation, by Lawrence C. Cooper, Transportation Geographer, October 1978, 51 pages.

This report examines the feasibility of using public school buses for non-pupil transportation purposes. Case studies involving the actual use of

#3 Cont.

school buses for nonpupil transportation in various areas of the United States are examined. Feasibility studies which consider the use of school buses for nonpupil purposes are also examined. The issues and problems involved in the nonpupil school bus use, such as state laws, insurance, and safety, are discussed. The report concludes that several legal and institutional changes are needed to encourage a more widespread nonpupil use of school buses.

#4

Small-Area Population and Employment Forecasts and Trip Generation for Subregional Planning, by John Carlson, Economic Planner, and Stephen M. Howe, Senior Transportation Planner, September 9, 1977, 43 pages.

Submitted for presentation to the 1978 Annual Meeting of the Transportation Research Board, Washington, D.C. This paper describes the joint development of methodologies for preparing small-area activity (population and employment) and trip generation forecasts, suitable for use as "building blocks" for varying aggregation schemes, and particularly for use in subregional transportation planning of the "subarea focusing" variety.

The Thoroughfare Planning System, currently undergoing extensive testing by the North Central Texas Council of Governments prior to implementation in subregional highway planning, is briefly described with emphasis upon its need for detailed yet accurate input.

The development of a comprehensive, detailed land-use data base is discussed. A disaggregation procedure which allocates growth-model forecasts to a finer zone structure is set forth as an essentially mathematical process, enhanced by explicit incorporation of input from local planners.

The concurrent development of a refined trip generation methodology, to prepare five-purpose trip productions and attractions for input to the Thoroughfare Planning System, is described. Explicit treatment of special generator data is featured.

#5

Rental Cars in the Urban Environment: A Preliminary Assessment in the Dallas-Fort Worth Metropolitan Area, by Larry Cooper, Transportation Geographer, November 1977, 29 pages.

This study, which represents part of a survey of paratransit systems in the Dallas-Fort Worth area, examines the significance and role of rental cars in the local urban transportation system. Based on information derived from a survey of all local car rental outlets, three basic car rental operation types were found: commercial rental, auto dealer, and auto leasing agencies. The survey information was used to describe the locational and operational characteristics of each car rental type.

#5 (Cont.)

Finally, the study examines the potential of rental car usage as an alternative to the privately owned automobile. Using the Dallas-Fort Worth area as an example, the applicability of such a rental car system locally is analyzed. Specific suggestions which would facilitate the establishment of this type of local rental car system are discussed.

#6

Development and Application of 1975 Land Use Data, by Thom Shelton, Planning Associate, July 1978, 164 pages.

This paper documents the process utilized in creating the 1975 land use files at the North Central Texas Council of Governments. Initial attention is given to background information such as data coverage, the classification system, and the geocode units being utilized. The actual file creation methodologies are described in detail along with an analysis of the data reliability and manner in which the data can be accessed. Finally, this paper examines the use of the data in specific projects at the North Central Texas Council of Governments such as the Transportation Program and the Water Quality Management Planning Program.

#7

Trip Distribution in Subregional Analysis, by Stephen M. Howe, Senior Transportation Planner, February 1978, 33 pages.

Presented at Session 60 of the Annual Meeting of the Transportation Research Board, January 1978. The paper describes the formulation and calibration of the ALDGRAV trip distribution model. This model is being used as an element of the Thoroughfare Analysis Process (TAP). TAP, in turn, is one module of the Thoroughfare Planning System (TPS).

TPS has been developed by the North Central Texas Council of Governments to answer present planning needs by providing tools for orderly, inexpensive, and fast response evaluation of small-and medium-scale strategies, in close cooperation with the local governments. TAP provides the analysis capabilities of the ststem.

The paper introduces the hierarchy of objectives, design requirements, and the resulting design of TPS, TAP, and the ALDGRAV trip distribution model. It then goes into a detailed description of the ALDGRAV model itself.

#8

Survey of Taxicab Operations in the Dallas-Fort Worth Area, 1976, by Susan W. Boyd, Transportation Analyst, and Mary Beard, Federal Highway Administration Intern, April 1978, 33 pages.

#8 (Cont.)

This paper is a summary of the results of the first annual taxicab company survey of operating statistics for the calendar year 1976. Analysis of the extent of service, average trip length, fares, system performance, driver arrangements, insurance, and issues and problems are included.

#9

Dallas-Fort Worth Urban Area Citizens Survey 1977: Documentation, by Betty L. McCarty, Communications Coordinator; Steve Howe, Senior Transportation Planner; and John Carlson, Director of Research and Planning Coordination, 42 pages.

This report documents the design, development, and implementation of a home-interview survey of 1,158 households in the Dallas-Fort Worth Urbanized Area. It represents the first of a two-part series of reports on this subject. The analysis of survey results is contained in Technical Report No. 10, Dallas-Fort Worth Urban Area Citizens Survey 1977: Data Analysis.

The Dallas-Fort Worth Urban Area Citizens Survey is designed to complement and enhance the community involvement efforts of local governments participating in the metropolitan area transportation planning process. The majority of the survey instrument used for this survey is concentrated in the area of transportation, and involves the collection of both technical and non-technical data about the members of the participating households and their transportation user characteristics.

#10

Dallas-Fort Worth Urban Area Citizens Survey 1977: Data Analysis, by Betty L. McCarty, et al., 115 pages.

This report presents the analysis of data collected in a home-interview survay of 1,158 households in the Dallas-Fort Worth Urbanized Area. It represents the second of a two-part series of reports on this subject. The documentation of the survey effort is contained in Technical Report No. 9, Dallas-Fort Worth Urban Area Citizens Survey 1977: Documentation.

The Dallas-Fort Worth Urban Area Citizens Survey is designed to complement and enhance the community involvement efforts of local governments participating in the metropolitan area transportation planning process. The majority of the survey instrument used for this survey is concentrated in the area of transportation, and involves the collection of both technical and non-technical data about the members of participating households and their transportation user characteristics.

#11

An Inventory of Airports in the North Central Texas and Texoma State Planning Regions, by Bruce C. Clark, Air Transportation Planner, April 1978, 112 pages.

#11 (Cont.)

This document is an inventory of the 188 reported airports within the North Central Texas and Texoma State Planning Regions. Airport data included in the inventory are the town associated with each airport, the name of the airport, the Federal Aviation Administration site number assigned to the airport (if any), the ownership class of the airport, the use classification of the airport, the number of based aircraft, a description of existing runway facilities, and the approximate airport location by latitude and longitude.

The document is an update of an inventory of airports conducted in 1973 as part of the development of the North Central Texas Airport System Plan and includes an analysis of the changes that have occurred during the five-year interim period.

#12

Private Intercity Bus Operations in North Central Texas, by N. Kent Bramlett, Transportation Planner, April 1978, 93 pages.

This document examines the private bus facilities available to the citizens of the 16 counties comprising the North Central Texas Region. The companies described offer regularly scheduled service over established routes, open to the general public; none receive any federal or state subsidies.

#13

A Summary of Existing and Proposed Park-and-Ride and Preferential Treatment Facilities in North Central Texas, by N. Kent Bramlett, Transportation Planner, October 1978, 44 pages.

The information summarized in this paper served as a data base for a planning effort regarding park-and-ride lots and preferential treatment facilities in the Dallas-Fort Worth Intensive Study Area. The characterictics of existing facilities are examined in the paper. In addition, facilities proposed in previous studies are identified, and the impacts of the region's existing park-and-ride lots and preferential treatments in terms of such measures as energy conservation, cost and time savings, air quality improvements, and other factors are summarized.

#14

Evolution and Status of Federal Aircraft/Airport Noise Control Policies, by Bruce C. Clark, Air Transportation Planner, November 1978, 30 pages.

Much of the research supporting the paper was accomplished as part of Mr. Clark's work on a thesis in partial fulfillment of a masters degree in urban and regional planning at the George Washington University. The paper examines the evolution of the aircraft/airport noise problem. It suggests that aircraft/airport noise has evoked, in part, as a function of the interaction of military and civil aircraft development trends. The paper, therefore, examines both military and civil initiatives in response to the need for

#14 (Cont.)

aircraft/airport noise control measures, including the need for compatible land use planning. Finally, the paper suggests that federal policies which, in effect, distribute the costs of reducing the impact of military aircraft/airport noise among several entities, place an inequitable burden on affected local governments and are inconsistent with federal policies concerning civil aircraft/airport noise control.

#15

A Review of the Park-and-Ride Concept and Planning Guidelines, by Douglas A. Allen, Transportation Analyst; William G. Barker, Senior Transportation Planner, Lawrence C. Cooper, Transportation Geographer, and Calvin D. Pitter, Federal Highway Administration Intern, December 1978, 44 pages.

This report summarizes the park-and-ride concept and identifies four basic types of park-and-ride operations: remote, local service, peripheral, and park-and-pool. The park-and-ride experiences in selected urban areas are provided to illustrate these definitions. The benefits of park-and-ride operations are also presented. Included among these benefits are cost savings to the user, cost effectiveness for the transit provider, reduced parking demand, and energy and air quality impacts. Finally, a procedure is provided to assist in the selection of a generalized area in which to locate a park-and-ride lot.

#16

A Review of the Preferential Treatment Concept and Planning Guidelines, by Lawrence C. Cooper, Transportation Planner, December 1978, 73 pages.

This report summarizes the concept of establishing preferential treatments for high-occupancy vehicles (buses, carpools, vanpools). The various types of preferential treatments applicable to freeways, arteria's, and along CBD streets are identified and examined. The report then identifies various planning guidelines and warrants which should be considered in planning for preferential treatments.

#17

Guidelines for the Location and Design of a Park-and-Ride Site, by Douglas A. Allen, Transportation Analyst, December 1978, 55 pages.

This report outlines and discusses the major considerations to be made when selecting a park-and-ride site and the guidelines that should be followed when developing a site design for the lot. Standards and criteria are included to assist the designer as are examples of park-and-ride lots in the Dallas-Fort Worth area.

#18

An Introduction to the North Central Texas Thoroughfare Information System, by Terry Watson, Senior Transportation Planning Engineer, and William M. Parker, Senior Computer Systems Coordinator, January 1979, 52 pages.

The paper discusses the Thoroughfare Information System (TIS) which was developed by the North Central Texas Council of Governments to meet many of the information needs of local transportation staffs with the responsibilities in transportation systems planning, project planning, and systems operation. TIS provides users with the capability to access, update, edit, and analyze datasets for thoroughfare and zonal systems. The system has many features which are of interest to transportation professionals in general and information experts in particular. These include provisions for ongoing maintenance of data, a data hierarchy, agency commitments to prespecified responsibilities, interface with travel simulation procedures, a modular structure, geographic base file features, the use of powerful and flexible proprietary statistical software, and the use of and compatibility with the Urban Transportation Planning System (UTPS).

#19

Public Participation Program for Transportation-Air Quality Planning, by Elizabeth L. N. McCarty, Communications Coordinator, June 1979, 81 pages.

This report includes a discussion of federal guidelines, rules and regulations pertaining to citizen involvement in the transportation-air quality planning process, as well as an inventory of existing programs which can be utilized to meet these requirements. A structured program designed to utilize existing mechanisms and expand opportunities for involvement is presented.

#20

Estimating the Service Area for Park-and-Ride Operations, by Douglas A. Allen, Transportation Analyst, July 1979, 32 pages.

This report examines the distance and time park-and-ride users will travel to access a lot. The shape of the service area is also described. Three types of park-and-ride lots are defined: remote, local, and peripheral. This analysis was done to assist transportation planners in determining the area from which park-and-ride patrons are likely to come. By predicting what the size and shape of these service areas will be, the planner can more accurately estimate the impacts of park-and-ride operations. Data from Dallas and Fort Worth, Texas were used for the study.

#21

Park-and-Ride and Preferential Treatment Analysis Methods, by Douglas A. Allen, Transportation Analyst, and Lawrence C. Cooper, Transportation Planner, September 1979, 59 pages.

#21 (Cont.)

This report documents the analysis methods used in a regional study of park-and-ride and preferential treatment facilities in the Dallas-Fort Worth area. Estimation procedures are presented for the four major components of the study, namely: demand, energy, air quality, and cost. Also provided are two examples, a park-and-ride lot and a preferential treatment, that illustrate how the procedures and formulae outlined in the report are to be used.

#22

A Survey of Paratransit and Related Operations in the Dallas-Fort Worth Area, by William G. Barker, Deputy Director of Transportation and Energy; Lawrence C. Cooper, Transportation Planner; Susan Wade, Senior Planner, Tarrant County (formerly Transportation Analyst, NCTCOG); and Anne Rose, Publications Editor, December 1979, 175 pages.

This report presents the results of an investigation in the Dallas-Fort Worth area of various paratransit and related services. These are defined as ground transportation operations other than the private automobile and fixed-route, fixed-schedule transit. The transportation service types discussed are car-pools, church buses, courtesy cars, day-care services, dial-a-bus service, elderly and handicapped services, emergency medical services, employee shuttle services, limousines, messenger/parcel delivery services, rental cars, school buses, subscription buses, taxicabs, and vanpools.

The purpose of the study is to provide basic information on paratransit operations which may be used in the development of transportation plans and policies. Under the transportation system management concept, paratransit is considered an element of the urban transportation system.

For each type, present operations are described and issues and problems are discussed. A taxonomy of the modes is also included.

#23

Estimating Vehicle Miles of Travel on Non-Local Streets: Methodology and Results for the Fort Worth Case Study, by Tom K. Ryden, Senior Transportation Planning Engineer, and John Hamburg, President, John Hamburg and Associates, Inc., October 1979, 45 pages.

This technical report has been prepared to document the development to date of a workable and cost-effective methodology to estimate vehicle miles of travel (VMT) on freeways, arterials, and collectors. The methodology uses stratified random sampling with a detailed machine-readable network data base. It has been designed with consideration for ongoing traffic count programs. This report supplements the procedures described in the report entitled Estimating Vehicle Miles of Travel for Local Streets: Methodology and Results for the Fort Worth Case Study.

#23 (Cont.)

This report provides a detailed discussion of alternative methodologies and describes the reasons for the selected procedures. The necessary steps to execute the procedure are outlined, along with a summary of available process results. This report serves as the final documentation on non-local street VMT procedures to be implemented in the North Central Texas Region.

#24

Estimating Vehicle Miles of Travel on Local Streets: Methodology and Results for the Fort Worth Case Study, by Tom K. Ryden, Senior Transportation Planning Engineer, and John Hamburg, President, John Hamburg and Associates, Inc., 1979, 31 pages.

This technical report has been prepared to document the development to date of a workable and cost-effective methodology to estimate local street vehicle miles of travel (VMT). The methodology employs analysis of variance techniques on available link traffic counts, with applications of analytical geometry and network graph theory for estimates of local street mileage. This report is designed to supplement the procedures described in the report entitled Estimating Vehicle Miles of Travel for Non-Local Streets: Methodology and Results for the Fort Worth Case Study.

This report provides a discussion of alternative methodologies and documents the reasons for the procedure selected. The necessary steps to execute the procedure are outlined, along with a summary of available process results. This report serves as the final documentation on local street VMT procedures to be implemented in the North Central Texas Region.

#25

Stability Tests and Enhancements in Trip Distribution for Subarea and Corridor-Level Planning, by David L. Kurth, Senior Transportation Planning Engineer, Stephen M. Howe, Ph.D., Manager of Technical Support, and Yehuda Gur, Ph.D., President, Urban Systems, Inc., September 1979, 30 pages.

This paper describes investigation of three key issues in the stability of trip distribution modelling, toward development of a more robust model to form the linch-pin of a state-of-the-art subarea planning tool, the Thoroughfare Analysis Process. The three issues addressed are (1) stability across trip purpose, (2) stability under subarea focusing, and (3) stability through time and changing development patterns. A set of base models is initially calibrated much as in conventional fixed-zone modelling. These models are then subjected to a series of stability tests, and, where necessary, model enhancements are introduced for further testing. Model refinements are introduced to attain greater stability with respect to trip purpose and subarea focusing.

#26

Proceedings of the Urban Transportation Energy Contingency Planning Seminar, Dallas-Fort Worth, ed. by Anne Rose, Publications Editor, November 1979, 96 pages.

The report summarizes the activities of a seminar July 9, 1979, in Dallas-Fort Worth, Texas, to explore responses to shortages of fuel for transportation in urban areas. Sponsors of the conference were the Urban Mass Transportation Administration, the Federal Highway Administration, the American Public Transit Association, the National Association of Regional Councils, and the North Central Texas Council of Governments. Topics included energy supply prospects and the roles of local, state, and federal governments and of transit and taxicab operators.

Transcripts of major presentations are provided, as well as resumes of workshop discussions. A summary of participants' evaluations of the conference is also presented.

#27

Motor Vehicle Fuel Consumption Estimation Procedures, by Marc P. Kaplan, Senior Transportation Engineer, Pacific Environmental Services, Inc., December 1979, 51 pages.

This report documents the methods and procedures used to estimate motor vehicle fuel consumption in the Dallas-Fort Worth area. Discussions of the Short Range Generalized Policy (SRGP) model, the Thoroughfare Analysis Process (TAP), the Express Transit Analysis (EXTRA) Model, and the Preferential Lane Treatment Analysis (PREFER) Model are presented. Also provided is a discussion of recommended model enhancements.

INFORMAL PAPER SERIES

#1

"An Approach to Metropolitan Area Transportation Planning for the Elderly and the Handicapped," by William G. Barker, Senior Transportation Planner, July 1977, 11 pages.

The paper discusses a recent transportation study for the elderly and handicapped conducted by the North Central Texas Council of Governments in cooperation with area local governments, transportation operators, social service agencies, elderly and handicapped citizens, and the State Department of Highways and Public Transportation. The study approach and findings are outlined, along with the resulting study recommendations.

#2

"Urban Taxicabs: Problems, Potential, and Planning," by William G. Barker, Senior Transportation Planner; and Mary Beard, Federal Highway Administration Intern, August 1977, 37 pages.

Because taxicabs are an important system for urban mobility, urban taxicab planning is a new consideration in the overall transportation planning program conducted by the NCTCOG Transportation Department. This paper reflects some of the thinking and research that has gone into establishing taxicab planning.

#3

"A Simulation of Commuter Rail Possibilities," by William G. Barker, Senior Transportation Planner, July 1977, 32 pages.

The paper discusses a simple model of commuter rail line supply and demand characteristics. By varying assumptions and the nature of the rail service proposed, the resulting energy cost and travel time impacts can be analyzed. In addition, the model is extremely useful in exploring fare structures and other policies. An existing rail line in the North Central Texas Region is used as a case study.

#4

"Design and Application of the Urban Panel," by Betty L. McCarty, Communications Coordinator, Transportation Department; and John F. Carlson, Technical Projects Director, Management & Planning Coordination Department, 18 pages.

The paper discusses the ongoing effort of the North Central Texas Council of Governments to receive citizen opinions and attitudes regarding transportation issues through the Urban Panel Project.

#5

"Meeting Transportation System Management (TSM) Requirements at the Local Level," by John J. Roark, Director of Transportation, July 1977, 13 pages.

The paper discusses the author's observations and thoughts as to the future of urban transportation, a definitive look at Transportation System Management and why it is different from previous operational programs, and some characteristics of an effective TSM program.

#6

"The Use of Econometric Models in the Planning Process," by John Carlson, Technical Projects Director, and Tom Holloway, Assistant Planner, August 1977, 30 pages.

The paper outlines theoretical and methodological aspects of forecasting regional population and employment. Special emphasis is placed on the econometric components of the Interactive Population and Employment Forecasting Model (IPEF) and the derivation of basic and nonbasic employment estimates. Additionally, this paper discusses the use of the Urban Growth Simulation Model, an activity allocation model, to test its sensitivity given different sewer networks.

#7

"Short-Term Transit Options for Restricted Energy Scenarios: A Case Study of Dallas Transit System, Dallas, Texas," by Lawrence C. Cooper, Transportation Geographer, May 1977, 50 pages.

The paper discusses a study of the impact of a sudden energy shortage on the Dallas Transit System. Options which may be used to contend with the major anticipated problems of insufficient fuel supplies and large bus ridership increases are suggested and examined. Finally, the paper identifies the actions which would be most applicable to the transit system in the development of an emergency contingency plan to deal with these problems.

#8

"Fuel and Transportation Outlook," by William G. Barker, Senior Transportation Planner, July 1977, 18 pages.

The paper presents a brief overview of the "energy crisis" with regard to petroleum and transportation. Alternative methods of reducing transportation energy consumption are analyzed. The paper concludes with a discussion of likely changes in transportation and transportation policy as a result of the energy situation.

#9

"Observations on Transportation System Management (TSM) and Suggested Criteria for a Workable TSM Program," by John J. Roark, Director of Transportation, November 1977, 19 pages.

The paper addresses the federal directives for Transportation System Management (TSM) and the responsibilities for TSM planning shared by the Metropolitan Planning Organizations (MPOs) and local government planning staffs. The major purpose of the paper is to attempt to propose criteria for a workable TSM program.

#10

"An Analysis of Transit and Paratransit Options for the Elderly and the Handicapped," by William G. Barker, Senior Transportation Planner; Tom K. Ryden, Transportation Planning Engineer; and Floyd T. Watson, Transportation Planning Engineer, January 1978, 29 pages.

The paper summarizes an analysis of transit and paratransit options for the elderly and handicapped undertaken as part of a larger study of transportation options for the disadvantaged group. Six mass transit options defined by service area and equipment modifications are compared with one option (minor hardware changes and existing service) found to be the most cost-effective.

In order to accommodate the severely handicapped--i.e., wheelchair-bound--four major paratransit alternatives are examined to provide lower taxicab fares: equipment subsidy, fare increase subsidy, direct subsidy, and shared-ride (productivity increase) subsidy. All of these are shown to have some merit.

The paper identifies some of the philosophical and technical issues which arise in performing such a planning study. Implementation progress is reported.

#11

"The Role of the Urban Transportation Planner in Public Policy," by John J. Roark, Director of Transportation and Energy, and William G. Barker, Senior Transportation Planner, July 1978, 17 pages.

The paper notes that urban transportation planners and analysts are beginning to question the effectiveness of their role in the public decision-making process. While it is often suggested that public decisions with regard to transportation are decided solely on politics, this paper argues that this is a misleading oversimplification. Rather, it appears that there is a definite role for policy analysis and planning studies in the public decision-making process, and it is important that professionals understand the proper fulfillment of this role in order to provide the full contribution of the professional in public policymaking.

#12

"Taxicab Ridership Survey Methodology," by Susan W. Boyd, Transportation Analyst, and William G. Barker, Senior Transportation Planner, July 1978, 29 pages.

The Transportation and Energy Department of the North Central Texas Council of Governments, in conjunction with the City of Dallas and area taxicab operators, conducted a survey of taxicab riders in the City of Dallas. This paper discusses the methodology involved in the design and administration of the survey. Insights gained through the experience with the Dallas taxicab-user survey are reported, with particular emphasis on such factors as choosing the appropriate survey method, sampling procedures, sample size, and question format. Response rates and methodological problems are also presented.

#13

"Goods Movement Considerations in Metropolitan Planning," by Gary Smith, Deputy Director of Transportation and Energy, North Central Texas Council of Governments; David Goettee, Federal Highway Administration; and Eugene Tidwell, San Bernardino Associated Governments, August 1978, 47 pages.

This paper summarizes, from the perspective of the probe group participants, reasons that urban goods movement should receive increased emphasis in urban transportation planning and decision making. Specific recommended actions to the federal government, state governments, metropolitan planning organization, local governments, and the private sector are offered.

#14

"Subarea Diagnostic and Evaluative Procedures for Programming Short-Range Transportation Improvements," by Stephen M. Howe, Senior Transportation Planner, and Tom K. Ryden, Transportation Planning Engineer, North Central Texas Council of Governments; and Don Penny, Transportation Planner, City of Arlington, October 1978, 33 pages.

This paper describes the development and case study application of a diagnostic framework for subarea-level identification of problems and delineation of improvements. The necessary level of detail is provided by the use of the Thoroughfare Planning System, a subarea focusing methodology developed at the North Central Texas Council of Governments. A framework is set forth for utilizing such a tool to develop diagnostic measures pertaining to environmental as well as mobility objectives. The diagnostic measures obtained in a case study application are described. Further, the use of these measures to formulate an improvements program within the case study setting is reviewed, with particular attention to the packaging of individual candidate projects into distinct alternatives for evaluation and selection.

#15

"Organizational Roles and Incentives in TSM," by William G. Barker, Senior Transportation Planner, September 1978, 20 pages.

This paper examines the fundamental changes in transportation planning that may have resulted from the recent establishment of the Transportation System Management (TSM) element as a portion of the urban transportation planning process. In particular, two basic changes, namely the establishment of accountability and the use of indirect controls, are identified in the paper as fundamental modifications in the planning process. The paper concludes with a description of a classification scheme for Transportation System Management actions which are being implemented in the North Central Texas Region. This scheme provides not only for the orderly distribution of responsibilities in TSM but also for a consistent rationale for the involvement of the Metropolitan Planning Organization in TSM actions.

#16

"Review of Energy-Related Transportation Planning in the North Central Texas Region," by William G. Barker, Manager of Policy and Analytical Studies, and Lawrence C. Cooper, Transportation Planner, January 1979, 60 pages.

This paper summarizes the efforts of one local agency, the North Central Texas Council of Governments, along with its member local governments and the State Department of Highways and Public Transportation, in energy-related urban transportation planning. The planning reviewed here covers the period from 1974 to the present, and deals with long-range, short-range, and policy concerns. Four major energy-related transportation studies are presented. The first is the Total Transportation Plan for the North Central Texas Region for 1990, which is the most recent (1974) long-range planning effort. Next, an energy overview, prepared in 1975 at the request of local elected officials in the region, is discussed. The third study reviewed is entitled A Metropolitan Transportation Plan for National Energy Contingencies, which was adopted in 1977. A similar contingency study dealing with long-distance commuting is the fourth major effort discussed in this paper. Besides these significant analyses, other planning studies which either have minor energy components or have only recently been initiated are also briefly summarized at the conclusion of the paper.

#17

"An Approach to Local Transportation Planning for National Energy Contingencies," by William G. Barker, Deputy Director of Transportation and Energy, and Lawrence C. Cooper, Transportation Planner, June 1979, 25 pages.

This paper summarizes the development of a transportation energy contingency plan by the North Central Texas Council of Governments as documented in the report A Metropolitan Transportation Plan for National Energy Contingencies. The impacts of the 1973-1974 oil embargo, the energy supply situation, and the federal fuel rationing and allocation programs are examined as the major

elements of the problem identification process. Four major problem areas were identified: fuel supplies for transit; transit ridership increases; mobility in the suburbs; and inequities caused by the federal fuel allocation and rationing regulations. Possible solutions for each of these were identified and analyzed. Finally, a set of recommendations was developed.

#18

"Energy Contingency Planning for Transit Systems," by William G. Barker, Deputy Director of Transportation and Energy, and Lawrence C. Cooper, Transportation Planner, June 1979, 19 pages.

Transit has in the past played an important role in maintaining mobility during emergencies, a role which will continue. Recent fuel shortages have led to nationwide interest in the development of transit contingency plans. Two basic probelms should be dealt with in those plans: (1) maintaining sufficient fuel to operate the transit system, and (2) obtaining sufficient numbers of vehicles to accommodate transit increases. Several solutions to each of these problems are outlined. It is stressed that it is the responsibility of each transit operation to be prepared to respond to both problems.

#19

"A Summary of the Areawide Transportation System Management/Air Quality Study," by Tom K. Ryden, Senior Transportation Planning Engineer, November 1979, 21 pages.

This paper summarizes the results of an anlysis of selected transportation control measures performed in the Dallas/Fort Worth area in partial fulfillment of the Clean Air Act of 1977 as amended. This study distinguishes between those actions which when implemented will have a regional impact and affect many political jurisdictions as well as many transportation modes, and those actions which impact a single political jurisdiction or a single transportation mode.

#20

"The Direction of Energy-Related Urban Transportation Planning at the North Central Texas Council of Governments," by William G. Barker, Deputy Director of Transportation and Energy, October 1979, 20 pages.

This paper contends that the metropolitan planning organization (MPO) is a key instrument in the implementation of national transportation and energy policies. As an example, a summary is presented of the experience of the North Central Texas Council of Governments, the MPO for the Dallas-Fort Worth area, in its efforts to incorporate energy considerations into the urban transportation planning process.

Four principal elements involved in this process are identified and examined: technology, planning, planning management, and external relationships. Each is analyzed with regard to past, current, and future planning efforts for the region.