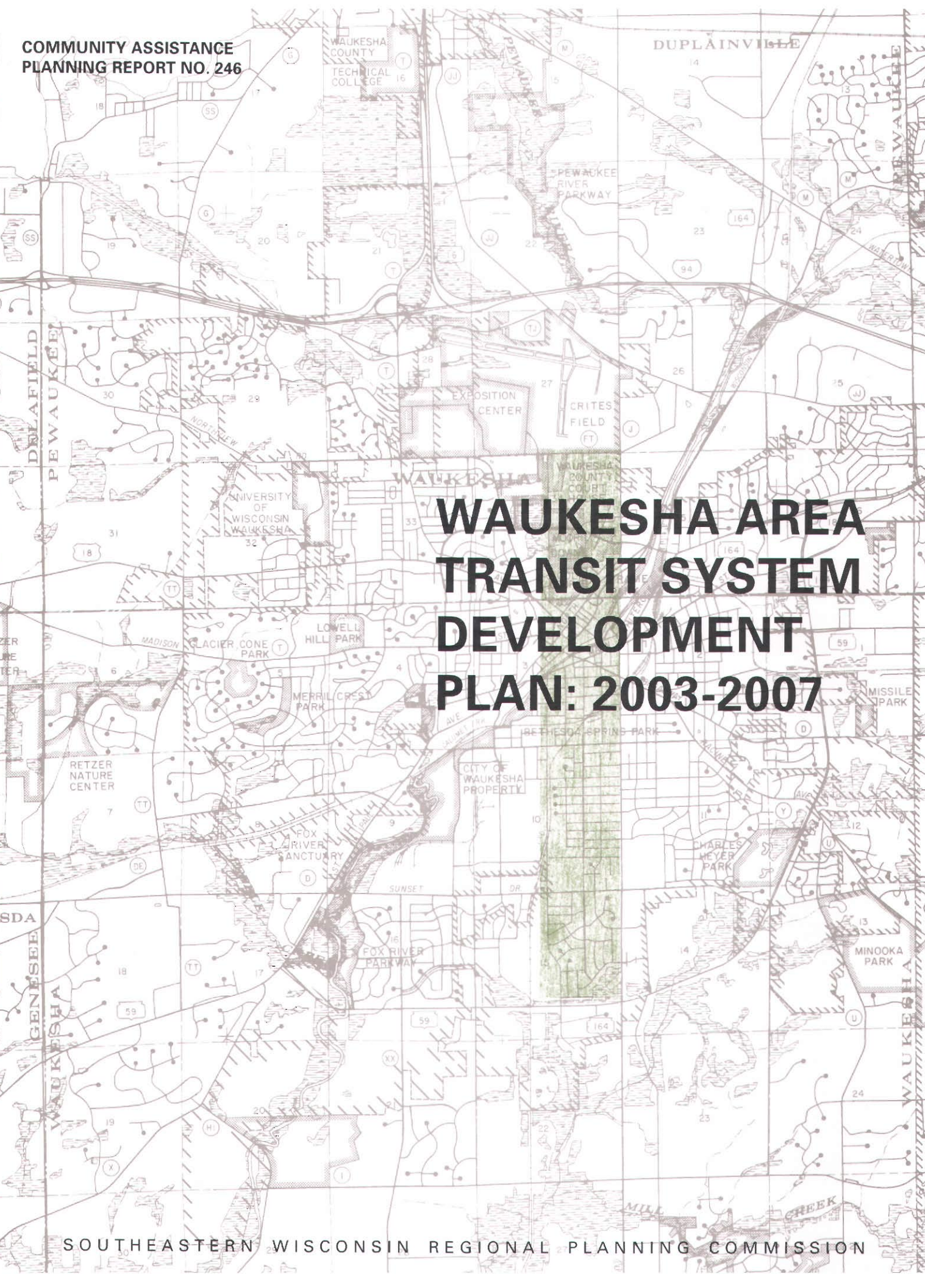
COMMUNITY ASSISTANCE
PLANNING REPORT NO. 246



WAUKESHA AREA TRANSIT SYSTEM DEVELOPMENT PLAN: 2003-2007

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

CITY OF WAUKESHA OFFICIALS

Carol J. Lombardi, Mayor

COMMON COUNCIL

Ralph Lapp, President
Charles K. Betker
Kathleen Cummings
Mary Finman
Jeff Fowle
Joan Francoeur
James Hilden
Joseph A. Hoelkinger
Steve Johnson
Joseph C. La Porte
Charles Lichtie
Larry Nelson
James L. Ripplinger
Emanuele J. Vitale
Carrol Waldenberger

TRANSIT COMMISSION BOARD

Richard C. Zirbel, PE, Chairman
J.D. Webb, Vice-Chairman
Charles K. Betker
James Hilden
Gretchen Messer

CITY ADMINISTRATOR

James Payne

DEPARTMENT OF PUBLIC WORKS

Paul A. Feller, PE,
Director of Public Works

Robert C. Johnson, Transit Director,
Waukesha Metro Transit

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

KENOSHA COUNTY

Leon T. Dreger
Thomas J. Gorlinski
Sheila M. Siegler

RACINE COUNTY

Richard A. Hansen,
Secretary
Jean M. Jacobson,
James E. Moyer

MILWAUKEE COUNTY

Daniel J. Diliberti
William R. Drew,
Vice Chairman
Linda J. Seemeyer

WALWORTH COUNTY

Anthony F. Balestrieri
Gregory L. Holden
Allen L. Morrison

OZAUKEE COUNTY

Robert A. Brooks
Thomas H. Buestrin,
Chairman
Gus W. Wirth, Jr.

WASHINGTON COUNTY

Kenneth F. Miller
Daniel S. Schmidt

WAUKESHA COUNTY

Duane H. Bluemke,
Treasurer
Kenneth C. Herro
Paul G. Vrakas

CITY OF WAUKESHA COMMISSION PLANNING ADVISORY PANEL

Robert C. Johnson, Chairman ..... Transit Director, Waukesha Metro Transit

David C. Vickman ..... Program and Planning Analyst, Bureau of Transit and Local Roads, Wisconsin Department of Transportation

Steven P. Crandell ..... Director of Community Development, City of Waukesha

Paul A. Feller, PE ..... Director of Public Works, City of Waukesha

Donna L. Brown ..... Systems Planning Manager, District 2, Wisconsin Department of Transportation

Wayne R. Holling ..... Citizen representing Metrolift Users

Patti Wallner ..... Executive Director, Waukesha County Chamber of Commerce

James L. Ripplinger ..... Alderman, City of Waukesha Common Council

David S. Schmidt ..... Superintendent, Waukesha Public Schools

J.D. Webb ..... Member, Waukesha Transit Commission

Fred J. Wasick ..... Union Steward, Amalgamated Transit Union, Local 998

COMMUNITY ASSISTANCE PLANNING REPORT
NUMBER 246

WAUKESHA AREA TRANSIT SYSTEM DEVELOPMENT PLAN: 2003-2007

Prepared by the

Southeastern Wisconsin Regional Planning Commission
P.O. Box 1607
W239 N1812 Rockwood Drive
Waukesha, Wisconsin 53187-1607

October 2003

Inside Region $10.00
Outside Region $20.00

(This page intentionally left blank)

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF TABLES

Chapter VI

LIST OF FIGURES

LIST OF MAPS

Chapter I

INTRODUCTION

At the request of the City of Waukesha, the Regional Planning Commission has prepared this new short-range transit system development plan for the City and its environs. The last short-range plan prepared by the Commission for the City covered the period from 1988 through 1992. The new plan was needed in order for the transit system to respond to changes in residential, industrial, and commercial development occurring in the Waukesha area. The plan was also needed to identify actions to assure continued coordination between the City of Waukesha Metro Transit System and connecting bus services operated by Waukesha County, as well as to respond to recent changes in State and Federal funding programs.

The Waukesha area transit planning study was carried out within the context of the continuing regional transportation planning program. It was begun following the completion and adoption by the Commission of a regional transportation system plan with a design year 2020.[1] That plan includes a public transit element recommending significant improvement and expansion of transit service in the Region over a 22-year period. Specific recommendations pertaining to the Waukesha area included: improved and expanded rapid transit connections to Milwaukee and through Milwaukee to the other urban centers of Southeastern Wisconsin; improved express transit service between the City of Waukesha and eastern Waukesha and central Milwaukee Counties; and an improved and expanded local bus system for the greater Waukesha area, providing more frequent service and extending service to developing areas. More specifically, the regional plan recommends:

- The provision of rapid transit service[2] between the City of Waukesha and environs and the Milwaukee Central Business District (CBD). The plan envisions that new or restructured rapid transit service would be provided over the area freeway system and major surface arterials by up to four bus routes, including two routes originating in the City of Waukesha and three other routes originating in the City of Oconomowoc and the Village of Sussex. The routes would operate principally over STH 164, STH 59, and IH 94 with stops at six public transit stations in the greater Waukesha area and at two public transit stations in western Milwaukee County, as well as in the Milwaukee CBD. Bi-directional service would be provided during weekday peak periods on all routes at headways of 20 to 30 minutes, and during off-peak periods on one route between the Waukesha and Milwaukee CBDs at headways of 30 to 60 minutes. Connections in the Milwaukee CBD and in western Milwaukee County would be available via express and local service to locations within Milwaukee County and via other rapid services to all urban centers in Southeastern Wisconsin. Connections would also be available in Waukesha County via local service to major employment centers.

- The provision of express bus service[3] connecting the City of Waukesha with the Blue Mound Road corridor, the Milwaukee CBD, and the University of Wisconsin-Milwaukee. The proposed express route would operate principally over Moreland Boulevard, Blue Mound Road, Wisconsin Avenue, Prospect and Farwell Avenues, and Downer Avenue, with service provided over the Waukesha County segments at headways of 15 minutes during weekday peak travel periods and 30 to 60 minutes during off-peak periods. The route would connect with other local and express routes to serve individuals traveling to major trip generators in Milwaukee County and eastern Waukesha County.

---

[1] *See SEWRPC Planning Report No. 46,* A Transportation System Plan for the Southeastern Wisconsin Region: 2020, *December 1997.*

[2] *Rapid transit service provides fast and convenient transportation for long trips in heavily traveled corridors and between major activity centers and high density residential concentrations, and is characterized by relatively high operating speeds and widely spaced stops located one-half mile or more apart. Such service can be provided by buses operating in mixed traffic on freeways or over exclusive grade-separated busways; by light rail operating over exclusive, though not grade-separated, rights-of-way; and by commuter rail and "heavy" rail operating over exclusive, grade-separated rights-of-way.*

[3] *Express transit serves trips of moderate length and is characterized by operating speeds that are somewhat slower than for rapid transit and stops that are located one-quarter mile or less apart at intersecting transit routes, intersecting arterial streets, and major traffic generators. Such service can be provided by bus or light rail operating in mixed traffic on shared-rights-of-way.*

- The improvement and expansion of local bus service[4] provided by the existing Waukesha Metro Transit System. Service would be extended to existing and proposed residential areas on the developing fringe of the City of Waukesha and in the Village of Pewaukee, as well as to industrial and commercial development on the south side of the City and in the Town of Pewaukee.

This City of Waukesha transit system development plan was designed to consider, and refine and detail, an initial stage of implementation of the adopted regional plan. The plan is short-range in nature, covering the period 2003 through 2007, and is based on a thorough evaluation of the performance of the existing transit system operated by the City of Waukesha; analyses of the travel habits, patterns, and needs of the residents of the City and environs; analysis of the transportation needs of existing land use patterns and major land use developments which have been proposed or are occurring within the Waukesha area; and a careful evaluation of alternative courses of action for providing the needed transit services. The plan also identifies the financial commitment and actions necessary by the various levels and units of government concerned to implement the plan. Concurrent with the preparation of the new City plan, the Commission prepared a new transit system development plan for the Waukesha County transit system. The recommendations of the two plans were coordinated by the Commission with respect to jurisdictional responsibilities, routes and service areas, service schedules and fares, and funding.

STUDY PURPOSE

This transit system development plan was intended to serve the following purposes:

1. To evaluate the effectiveness of the existing route structure and schedules, along with the financial performance, of the current City transit system.

2. To identify, evaluate, and recommend potential transit service improvements which would:

   a. Address the recent changes in urban development which have occurred in the Waukesha area;

   b. Provide for coordination with other public transit services, in particular those operated by the Waukesha County transit system;

   c. Represent the initial implementation stage of the transit recommendations for the Waukesha area contained in the Commission's adopted design year 2020 regional transportation system plan.

3. To prepare a planning document that would serve as a guide for the transit system and City officials with regard to implementing service changes, as well as in monitoring service operation and performance.

4. To develop a plan that will ensure adequate financing of existing and planned transit services through available Federal and State transit funding programs, thereby minimizing City funding requirements.

SCOPE OF WORK

The scope of work for preparing the new transit system development plan involved eight specific steps as follows:

1. Study organization, including the appointment by the City of an advisory panel to guide the study effort;

2. The formulation of appropriate transit service development objectives and supporting performance standards;

3. The collation and collection of the socioeconomic, land use, and travel habit and pattern data pertinent to the evaluation of the existing and proposed transit services;

4. The analysis of the operation of the existing transit system, including the identification of any potential deficiencies in that system;

5. The design of alternative transit service changes which could address the problems and deficiencies that were identified;

6. The evaluation of the proposed alternative transit service changes;

[4] *Local transit service is characterized by a high degree of accessibility and low operating speeds. Such service is provided over arterial and collector streets by bus, trolley, or light rail vehicles operating on a fixed schedule with, frequent stops located two to three blocks apart over the entire route, as well as by shared-ride taxicab operating on a demand responsive basis.*

7. The selection and documentation of a recommended plan; and

8. The identification of the actions which must be taken by the City of Waukesha to implement the recommended transit service in an orderly and timely manner.

STUDY AREA

The study area considered in this report consisted of the City of Waukesha and its environs, including the City and Village of Pewaukee and portions of the Towns of Brookfield and Waukesha (see Map 1). The study area included the area currently served by the City bus routes and other adjacent areas for which route extensions could be considered during the development of a new plan.

STUDY ORGANIZATION

The preparation of this transit system development plan was a joint effort by the staffs of the City of Waukesha and of the Southeastern Wisconsin Regional Planning Commission. Additional staff assistance was obtained from certain other agencies concerned with transit development in the Waukesha area, including the Wisconsin Department of Transportation.

To provide guidance to the technical staffs in the preparation of this plan, and to involve concerned and affected public officials and citizen leaders more directly and actively in the development of transit service policies and improvement proposals, the City of Waukesha acted to create a City of Waukesha Transit Commission Planning Advisory Panel. The full membership of the Panel is listed on the inside front cover of this report.

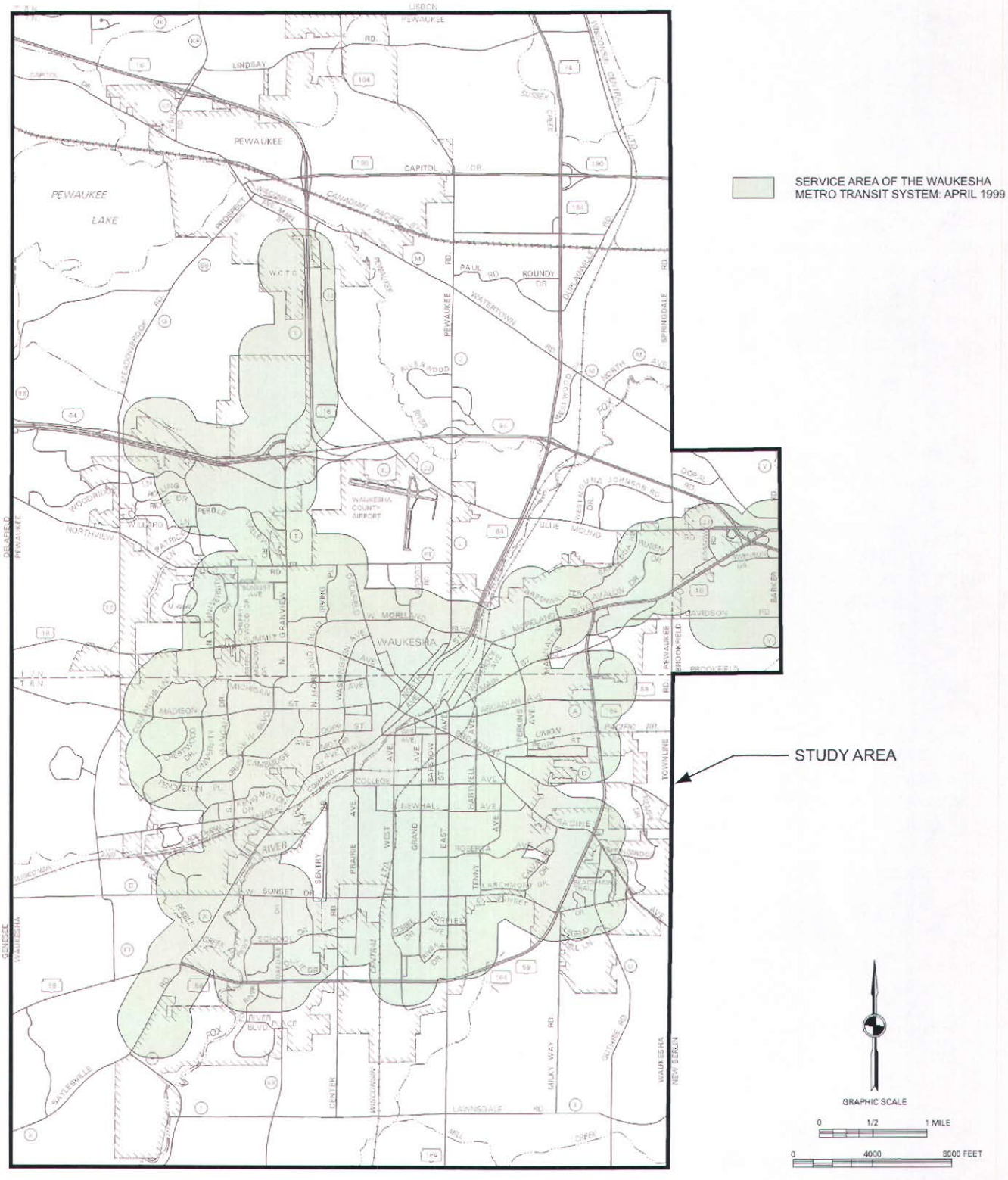
SCHEME OF PRESENTATION

After this introductory chapter, seven chapters present the findings of the major inventories and analyses conducted under the planning effort, and describe the plan recommendations. The specific chapters consist of:

- Chapter II, "Land Use and Travel Patterns," which describes the land use, demographic, and economic characteristics of, and the travel habits and patterns in, the study area;
- Chapter III, "Existing Public Transit System," which describes the public transit system serving the City of Waukesha and environs, along with other major transit services presently available within the study area;
- Chapter IV, "Public Transit Service Objectives and Standards," which sets forth a set of transit service objectives and supporting performance standards and design criteria;
- Chapter V, "Evaluation of the Existing Transit System," which describes how well the existing transit services meet the objectives and standards, thereby identifying service-related problems and deficiencies;
- Chapter VI, "Alternative and Recommended Transit Service Improvements to Serve Waukesha Area Travel," which identifies, describes, and evaluates the alternative local transit service improvements for the study area;
- Chapter VII, "Recommended Transit Service Improvements," which sets forth a detailed description of the transit service improvements recommended by the Advisory Panel; and
- Chapter VIII, "Summary and Conclusions," which provides a brief overview of the significant findings and recommendations of the study.

Map 1

STUDY AREA FOR THE WAUKESHA AREA TRANSIT SYSTEM DEVELOPMENT PLAN



Source: City of Waukesha Metro Transit System and SEWRPC.

Chapter II

LAND USE AND TRAVEL PATTERNS

INTRODUCTION

In order to evaluate the existing transit services in the study area and to identify the potential need for improvements in transit service, it is necessary to consider those factors which affect, or are affected by, the provision of transit service. These factors include the extent of urban development in the study area; the size, distribution, and characteristics of the resident population; and employment. The travel habits and patterns associated with the population, employment, and land use distribution within the study area must also be considered. This chapter presents the results of an inventory of these important factors.

POPULATION AND EMPLOYMENT

General Population Characteristics

The resident population levels within study area from 1960 through 1998 are set forth in Table 1. Map 2 shows the distribution of the resident population of the study area in 1990. Table 2 indicates the historic changes in the number of households in the study area over the period from 1960 to 1998. The following observations relevant to transit service may be made on the basis of an examination of this information:

- Between 1960 and 1998, the resident population of the study area increased by about 116 percent. The largest absolute increase over this period occurred in the City of Waukesha, which experienced a population increase of about 31,400 persons, or about 107 percent. Significant population growth has also occurred in the other communities in the study area, which have all experienced larger population increases on a relative basis over this period than the City, in particular during the 1990s. While about 30 percent of the 38,100 new residents of the study area between 1960 and 1990 resided outside the City, about 55 percent of the 11,900 new residents since 1990 have resided outside the City, largely in the Pewaukee and Brookfield areas.

- In 1998, about 62,200 persons resided within the City of Waukesha, representing about 67 percent of the total study area population. The highest population concentrations in the study area are located in the City, principally in its central portions. The population in the remainder of the study area is more widely dispersed.

- The number of households in the study area increased by about 194 percent from 1960 to 1998, much faster than the resident population increase. The average household size within the study area, consequently, decreased from about 3.6 persons per household in 1960 to about 2.6 persons per household in 1998. These trends mirrored those for Waukesha County and the Region as a whole.

Transit-Dependent Population Characteristics

Certain segments of the population may be expected to have a greater dependence on, and make more extensive use of, public transit than the population as a whole because they have more limited access to the automobile as a mode of travel. Five such "transit-dependent" population groups were identified for this study: 1) school-age children (ages 10 through 18),[1] elderly individuals (60 years old and older), 3) persons in low-income households, 4) households with no vehicle available, and 5) disabled individuals. Information about these transit-dependent groups in the study area was obtained from U.S. Census data. Table 3 sets forth the historic levels of these groups within the study area from 1960 to 1990. To facilitate identification of population concentrations by subarea, the 1990 Census data for these groups were examined by Census block groups within the study area, as set forth in Table 4. The block groups within the study area displaying concentrations above the study area averages for at least three of the five transit-dependent groups were identified as potential priority areas for the provision of transit service and are shown on Map 3. The information in these tables and on this map lead to the following conclusions:

---

[1] *For the purpose of this study, children in the 10- through 18-year age group were considered as potentially transit-dependent, principally for social and recreational trips. Those in the upper end of this age range could also be transit-dependent for work trips. Transit-dependence for trips between homes and schools was considered to be significant for this study only for trips made by students residing between one and two miles from school, who are not eligible for the student transportation provided by the Waukesha School District.*

Table 1

RESIDENT POPULATION IN THE STUDY AREA: 1960-1998

Civil Division	Total Population									
	1960		1970		1980		1990		1998[a]	
	Number	Percent of Study Area	Number	Percent of Study Area	Number	Percent of Study Area	Number	Percent of Study Area	Number	Percent of Study Area
City of Waukesha	30,004	69.8	40,258	70.3	50,365	68.8	56,894	70.1	62,200	66.9
Town of Waukesha[b]	3,540	8.2	3,832	6.7	6,668	9.1	7,109	8.8	7,760	8.3
City of Pewaukee[c]	5,797	13.5	7,551	13.2	8,922	12.2	9,339	11.5	12,250	13.2
Village of Pewaukee	2,484	5.8	3,271	5.7	4,637	6.4	5,287	6.5	7,110	7.6
Town of Brookfield[b]	1,177	2.7	2,329	4.1	2,580	3.5	2,502	3.1	3,690	4.0
Total	43,002	100.0	57,241	100.0	73,172	100.0	81,131	100.0	93,010	100.0

Civil Division	Change in Population									
	1960-1970		1970-1980		1980-1990		1990-1998		1960-1998	
	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent
City of Waukesha	10,254	34.2	10,107	25.1	6,529	13.0	5,306	9.3	32,196	107.3
Town of Waukesha[b]	292	8.3	2,836	74.0	441	6.6	651	9.2	4,220	119.0
City of Pewaukee[c]	1,754	30.3	1,371	18.2	417	4.7	2,911	31.7	6,453	111.2
Village of Pewaukee	787	31.7	1,366	41.8	650	14.0	1,823	34.5	4,626	186.2
Town of Brookfield[b]	1,152	97.9	251	10.8	-78	-3.0	1,188	47.5	2,513	113.5
Total	14,239	33.1	15,931	27.8	7,959	10.9	11,879	14.6	50,008	116.3

[a] *Estimated.*

[b] *Includes only the portion of the Town in the study area.*

[c] *Prior to incorporation in 1999, the City of Pewaukee existed as the Town of Pewaukee.*

Source: U.S. Bureau of the Census, Wisconsin Department of Administration, and SEWRPC.

- Since 1960, elderly population has increased significantly, both in terms of absolute numbers and in terms of its proportion of the total study area population. Both the school-age population and zero auto households have increased somewhat in absolute numbers, but have declined in their relative share of the total population. The number of persons residing in low-income households has remained stable in absolute numbers but has also declined on a relative basis. A similar trend analysis of the disabled population could not be developed because data for the disabled population comparable to that collected in the 1990 Census was not collected in any previous census.

- The largest transit-dependent population groups in the study area in 1990 were elderly and school-age persons, with each population constituting about 9 percent of the total study area population. Households with no vehicle available and persons in low-income households represented about 5 and 4 percent, respectively, of the study area residents or households. A significantly smaller segment of the study area population had a disability limiting their mobility.[2]

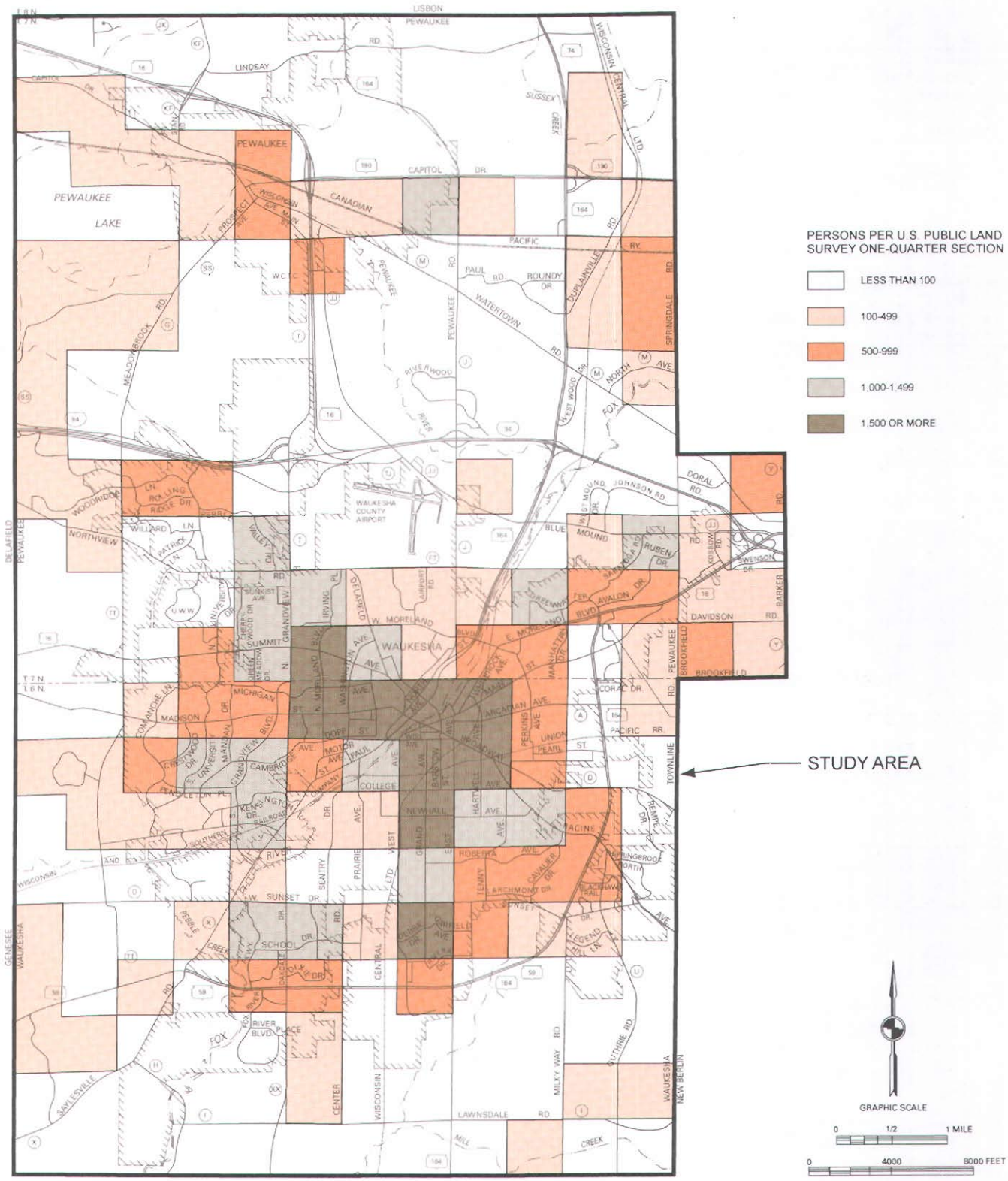
- The highest residential concentrations of transit-dependent persons in 1990, both in terms of absolute numbers and percent of the total population, were found within the central portions of the City of Waukesha. This is reflected in the potential priority areas for transit service identified on Map 3.

A source of information in addition to 1990 U.S. Census data that was used to identify low-income persons was the caseload files for the Wisconsin Works (W-2) welfare reform program and Food Stamp Employment Training (FSET) program maintained by the Wisconsin Department of Workforce Development. The distribution of W-2 and FSET cases in the study area in February

[2] *The Census data do not reflect ambulatory disabled persons whose physical or mental impairment does not prevent them from traveling independently without the assistance of others.*

Map 2

RESIDENT POPULATION DISTRIBUTION IN THE STUDY AREA: 1990



Source: SEWRPC.

Table 2

TOTAL HOUSEHOLDS IN THE STUDY AREA: 1960-1998

Civil Division	Total Households									
	1960		1970		1980		1990		1998[a]	
	Number	Percent of Study Area	Number	Percent of Study Area	Number	Percent of Study Area	Number	Percent of Study Area	Number	Percent of Study Area
City of Waukesha	8,572	71.8	11,748	72.9	17,644	71.5	21,217	71.9	24,300	69.1
Town of Waukesha[b]	933	7.8	1,043	6.4	2,016	8.2	2,329	7.9	2,570	7.3
City of Pewaukee[c]	1,444	12.1	1,871	11.6	2,557	10.4	3,075	10.5	4,080	11.6
Village of Pewaukee	695	5.8	898	5.6	1,723	7.0	2,072	7.0	2,990	8.5
Town of Brookfield[b]	296	2.5	566	3.5	727	2.9	804	2.7	1,210	3.5
Total	11,940	100.0	16,126	100.0	24,667	100.0	29,497	100.0	35,150	100.0

Civil Division	Change in Households									
	1960-1970		1970-1980		1980-1990		1990-1998		1960-1998	
	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent
City of Waukesha	3,176	37.1	5,896	50.2	3,573	20.3	3,083	10.5	15,728	183.5
Town of Waukesha[b]	110	11.8	973	93.3	313	15.5	241	10.3	1,637	175.5
City of Pewaukee[c]	427	29.6	686	36.7	518	20.3	1,005	32.7	2,636	182.5
Village of Pewaukee	203	29.2	825	91.9	349	20.3	918	44.3	2,295	330.2
Town of Brookfield[b]	270	91.2	161	28.4	77	10.6	406	50.0	914	308.8
Total	4,186	35.1	8,541	53.0	4,830	19.6	5,653	19.2	23,210	194.4

[a] *Estimated.*

[b] *Includes only the portion of the Town in the study area.*

[c] *Prior to incorporation in 1999, the City of Pewaukee existed as the Town of Pewaukee.*

Source: U.S. Bureau of the Census and SEWRPC.

Table 3

HISTORIC LEVELS OF TRANSIT-DEPENDENT POPULATIONS IN THE STUDY AREA: 1960-1990

Year	Population		Total Households	Transit-Dependent Population Groups[a]									
				School-Age Children (Ages 10 through 18)		Elderly Persons Ages 60 and Older)		Persons in Low-Income Households[b]		Disabled Persons[c]		Households with No Vehicle Available	
	Total	Ages 16 and Over		Number	Percent of Total Population	Number	Percent of Total Population	Number	Percent of Total Population	Number	Percent of Population Ages 16 and Over	Number	Percent of Total Households
1960	43,002	24,287	11,940	4,740	11.0	3,497	8.1	N/A	N/A	N/A	N/A	1,182	9.9
1970	57,241	38,615	16,126	7,410	12.9	4,425	7.7	3,448	6.0	N/A	N/A	1,293	8.0
1980	73,172	55,071	24,667	7,694	10.5	5,649	7.7	2,503	3.4	N/A	N/A	1,343	5.4
1990	81,131	61,780	29,497	6,898	8.5	7,514	9.3	3,359	4.1	1,503	2.4	1,586	5.4

Change in Total Population: 1960-1990		Change in Households: 1960-1990		Change in Transit-Dependent Population Groups: 1960-1990									
				School-Age Children (Ages 10 through 18)		Elderly Persons (Ages 60 and Older)		Persons in Low-Income Households[d]		Disabled Persons		Households with No Vehicle Available	
Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
38,129	88.7	17,557	147.0	2,158	45.5	4,017	114.9	-89	-2.6	N/A	N/A	404	34.2

NOTE: N/A indicates comparable data not available for all years.

[a] *All figures are based on Census information derived from sample data.*

[b] *Represents persons residing in households with a total family income below Federal poverty thresholds.*

[c] *Includes persons age 16 and over with a health condition lasting six or more months which made it difficult to travel alone outside the home.*

[d] *Changes listed are for the period 1970 to 1990.*

Source: U.S. Bureau of the Census and SEWRPC.

Table 4

TRANSIT-DEPENDENT POPULATIONS IN THE STUDY AREA BY BLOCK GROUP: 1990

Census Tract	Block Group	Population		Total Households	Transit-Dependent Population Groups[a]									
					School-Age Children (ages 10 through 18)		Elderly Persons (ages 60 and older)		Persons in Low-Income Households[b]		Disabled Persons[c]		Households with No Vehicle Available	
		Total	Ages 16 and Older		Number	Percent of Block Group Population	Number	Percent of Block Group Population	Number	Percent of Block Group Population	Number	Percent of Block Group Population Ages 16 and Older	Number	Percent of Block Group Households
2008.01	1	2,468	1,635	736	401	16.2	181	7.3	14	0.6	21	1.3	--	--
2012	7	1,042	735	292	159	15.3	50	4.8	16	1.5	9	1.2	--	--
2013	3	29	29	10	--	--	4	13.8	--	--	--	--	--	--
2016	3	406	319	129	79	19.5	39	9.6	--	--	--	--	--	--
2021	1	1,093	800	358	117	10.7	45	4.1	26	2.4	9	1.1	--	--
	5	843	673	362	46	5.5	103	12.2	28	3.3	8	1.2	--	--
	6	951	777	292	132	13.9	139	14.6	14	1.5	30	3.9	7	2.4
	7	2,419	1,639	715	498	20.6	179	7.4	56	2.3	12	0.7	6	0.8
	9	553	462	208	110	19.9	85	15.4	31	5.6	--	--	25	12.0
2022	1	968	855	518	40	4.1	136	14.0	149	15.4	23	2.7	45	8.7
	2	1,065	800	424	91	8.5	148	13.9	66	6.2	23	2.9	12	2.8
	5	2,076	1,602	780	261	12.6	292	14.1	31	1.5	50	3.1	128	16.4
	6	1,215	825	364	191	15.7	114	9.4	--	--	8	1.0	14	3.8
	7	1,688	1,061	487	372	22.0	79	4.7	43	2.5	--	--	--	--
	8	1,624	1,139	469	279	17.2	167	10.3	65	4.0	22	1.9	--	--
	9	1,002	826	406	69	6.9	345	34.4	63	6.3	83	10.0	112	27.6
2023.01	1	974	700	354	213	21.9	124	12.7	20	2.1	28	4.0	32	9.0
	2	1,590	1,173	448	249	15.7	132	8.3	52	3.3	16	1.4	3	0.7
	3	1,293	996	438	153	11.8	100	7.7	--	--	20	2.0	11	2.5
2023.02	1	1,674	1,322	452	236	14.1	148	8.8	78	4.7	14	1.1	22	4.9
	2	725	588	266	70	9.7	166	22.9	9	1.2	9	1.5	--	--
	5	995	639	418	114	11.5	57	5.7	231	23.2	37	5.8	72	17.2
	6	745	582	384	37	5.0	83	11.1	84	11.3	27	4.6	46	12.0
	7	1,158	846	452	106	9.2	138	11.9	268	23.1	18	2.1	35	7.7
	8	484	326	200	48	9.9	42	8.7	103	21.3	10	3.1	24	12.0
	9	1,084	747	333	122	11.3	83	7.7	32	3.0	16	2.1	8	2.4
2024	2	1,408	1,018	494	261	18.5	158	11.2	34	2.4	28	2.8	--	--
	3	671	553	256	49	7.3	174	25.9	15	2.2	--	--	--	--
	4	1,454	1,106	502	203	14.0	317	21.8	51	3.5	17	1.5	14	2.8
	5	1,434	1,062	446	208	14.5	67	4.7	13	0.9	9	0.8	17	3.8
2025	3	791	572	312	102	12.9	104	13.1	30	3.8	15	2.6	6	1.9
	4	832	602	289	110	13.2	120	14.4	16	1.9	12	2.0	19	6.6
	5	1,005	735	335	137	13.6	137	13.6	35	3.5	12	1.6	26	7.8
	6	758	579	286	76	10.0	125	16.5	98	12.9	17	2.9	11	3.8
	7	816	668	435	79	9.7	235	28.8	14	1.7	16	2.4	39	9.0
2026	1	1,235	1,090	443	109	8.8	281	22.8	167	13.5	39	3.6	123	27.8
	2	774	658	188	108	14.0	71	9.2	77	9.9	6	0.9	38	20.2
	3	644	534	355	40	6.2	115	17.9	28	4.3	12	2.2	39	11.0
	4	820	549	307	133	16.2	59	7.2	11	1.3	--	--	7	2.3
2027	1	659	602	225	36	5.5	163	24.7	126	19.1	52	8.6	86	38.2
	2	642	559	384	21	3.3	103	16.0	129	20.1	23	4.1	77	20.1
2028	1	1,190	962	383	177	14.9	282	23.7	105	8.8	16	1.7	11	2.9
	3	630	425	319	65	10.3	113	17.9	141	22.4	23	5.4	109	34.2
	4	678	529	247	49	7.2	91	13.4	108	15.9	19	3.6	33	13.4
	5	1,107	781	385	131	11.8	187	16.9	113	10.2	48	6.1	56	14.5
2029	2	905	683	346	71	7.8	113	12.5	17	1.9	--	--	--	--
	4	840	602	262	178	21.2	105	12.5	--	--	26	4.3	--	--
	5	1,462	1,046	488	220	15.0	93	6.4	46	3.1	56	5.4	--	--
	6	1,062	876	364	174	16.4	102	9.6	27	2.5	--	--	9	2.5
	7	978	863	501	55	5.6	68	7.0	142	14.5	--	--	13	2.6
	8	637	588	325	--	--	26	4.1	27	4.2	21	3.6	37	11.4
	9	669	556	258	60	9.0	191	28.6	--	--	32	5.8	10	3.9
2030	1	824	647	355	62	7.5	45	5.5	31	3.8	24	3.7	28	7.9
	9	1,329	1,053	562	117	8.8	253	19.0	79	5.9	60	5.7	81	14.4
2031.01	1	1,305	1,104	610	71	5.4	131	10.0	44	3.4	67	6.1	31	5.1
	2	1,135	717	309	184	16.2	52	4.6	--	--	35	4.9	--	--
	3	730	539	227	189	25.9	47	6.4	4	0.5	--	--	--	--
	4	1,066	779	327	211	19.8	84	7.9	--	--	7	0.9	--	--
2031.02	1	785	608	270	109	13.9	141	18.0	6	0.8	--	--	9	3.3
	2	825	609	378	115	13.9	77	9.3	120	14.5	5	0.8	14	3.7
	3	716	571	287	98	13.7	35	4.9	6	0.8	5	0.9	--	--
	6	208	204	75	6	2.9	42	20.2	8	3.8	8	3.9	--	--
	7	1,542	1,216	482	231	15.0	350	22.7	8	0.5	8	0.7	--	--
	8	1,386	1,019	447	141	10.2	148	10.7	--	--	42	4.1	11	2.5
2031.03	1	1,420	1,111	466	225	15.8	203	14.3	32	2.3	25	2.3	6	1.3
	2	655	534	256	39	6.0	163	24.9	8	1.2	12	2.2	14	5.5
	3	674	547	310	42	6.2	211	31.3	37	5.5	45	8.2	31	10.0
	4	1,161	908	539	108	9.3	181	15.6	65	5.6	14	1.5	18	3.3
	5	1,058	783	424	129	12.2	162	15.3	37	3.5	19	2.4	16	3.8

Table 4 (continued)

Census Tracts	Block Groups	Population		Total Households	Transit-Dependent Population Groups[a]									
					School-Age Children (ages 10 through 18)		Elderly Persons (ages 60 and older)		Persons in Low-Income Households[b]		Disabled Persons[c]		Households with No Vehicle Available	
		Total	Ages 16 and Older		Number	Percent of Block Group Population	Number	Percent of Block Group Population	Number	Percent of Block Group Population	Number	Percent of Block Group Population Ages 16 and Older	Number	Percent of Block Group Households
2032	2	398	313	168	56	14.1	64	16.1	30	7.5	5	1.6	--	--
	4	1,364	1,034	496	92	6.7	202	14.8	33	2.4	31	3.0	--	--
2033.01	1	727	640	243	96	13.2	61	8.4	6	0.8	--	--	--	--
	2	451	319	170	86	19.1	41	9.1	--	--	--	--	--	--
	7	1,379	1,054	507	156	11.3	230	16.7	90	6.5	25	2.4	15	3.0
2033.02	4	1,295	1,116	441	128	9.9	309	23.9	65	5.0	17	1.5	14	3.2
	5	1,232	976	441	159	12.9	187	15.2	--	--	23	2.4	6	1.4
	6	845	664	280	100	11.8	152	18.0	--	--	--	--	--	--
	8	1,892	1,498	851	118	6.2	125	6.6	96	5.1	29	1.9	13	1.5
2038.01	1	464	323	146	53	11.4	17	3.7	--	--	5	1.5	--	--
Total	--	81,131	61,780	29,497	10,166	12.5	10,492	12.9	3,854	4.8	1,503	2.4	1,689	5.7

[a] *All figures are based on Census information derived from sample data.*

[b] *Represents persons residing in households with a total 1989 family income below Federal poverty thresholds.*

[c] *Includes persons age 16 and over with a health condition lasting six or more months which made it difficult to travel alone outside the home.*

Source: U.S. Bureau of the Census and SEWRPC.

1999, as shown on Map 4, reveals that the majority of cases were located in the central portions of the City of Waukesha. There was a total of only about 50 W-2 and FSET cases in the study area.

Employment Characteristics

Employment trends in the study area from 1970 through 1990 are set forth in Table 5. The distribution of jobs in the study area in 1990 by U.S. Public Land Survey is shown on Map 5. To supplement the Commission's 1990 quarter-section employment data, individual employers with 50 or more employees at one worksite in 1998 were identified and their locations plotted on Map 6. The following observations can be drawn from this table and these maps:

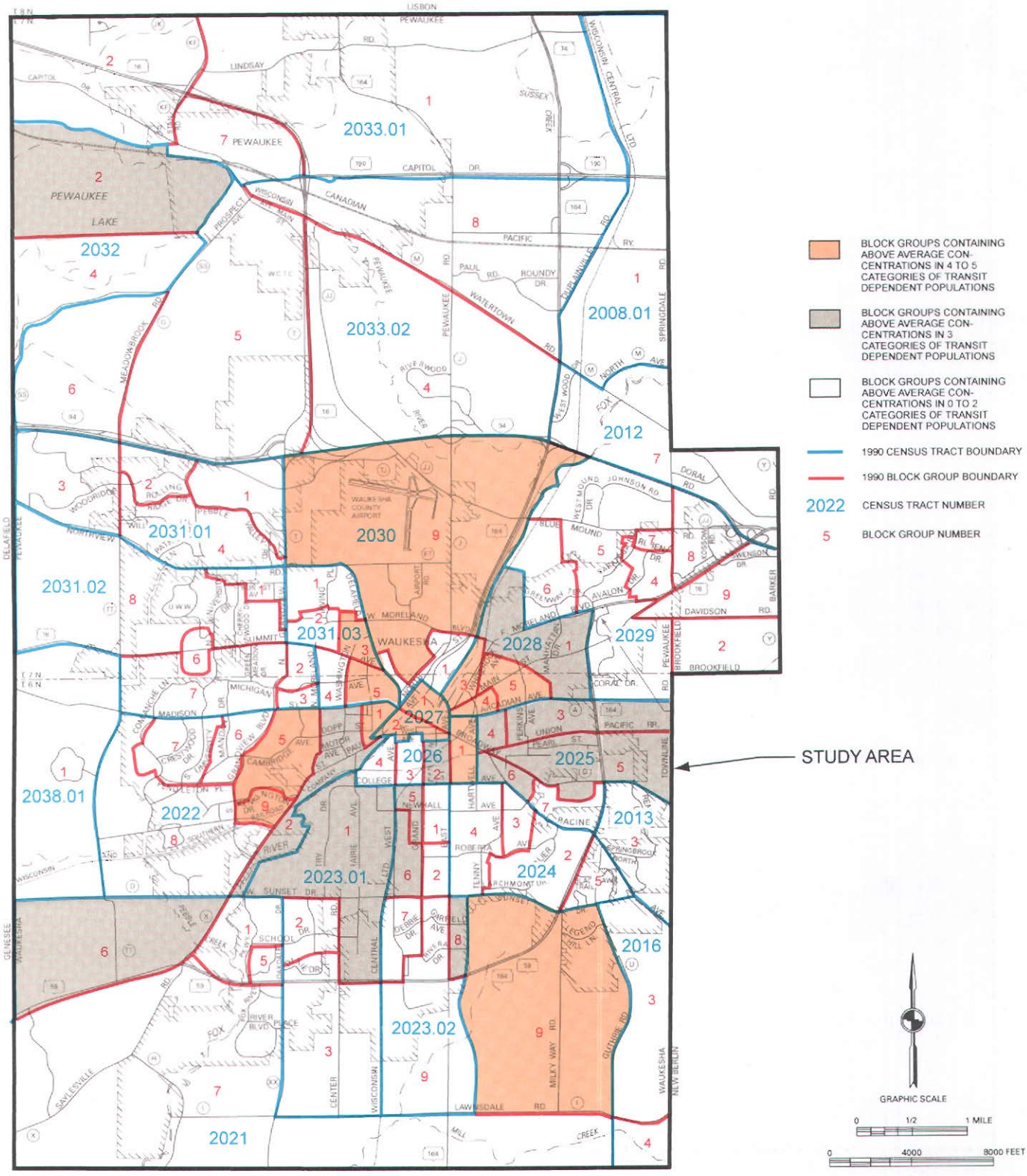
- The total number of jobs in the study doubled between 1970 and 1990, increasing from about 29,500 jobs to about 59,300 jobs. The increase in jobs over this period was relatively steady as employment grew by about 13,100 jobs, or about 45 percent, from 1970 to 1980, and by about 16,700 jobs, or about 39 percent, from 1980 to 1990. The increases experienced in the Waukesha area were a part of the overall increase in jobs experienced by Waukesha County which saw its total employment levels increase by about 137 percent between 1970 and 1990.

- The increases in study area employment have varied significantly by municipality. From 1970 to 1980, about 12,400, or about 94 percent, of the 13,100 new jobs in the study area were located in the City of Waukesha and Village of Pewaukee. This changed over the next ten years as about 10,300, or about 62 percent, of the 16,700 new jobs in the study area between 1980 and 1990 were located in the City of Pewaukee and Town of Brookfield. The 6,000 new jobs in the City of Waukesha and Village of Pewaukee were still significant over this period, however, representing about 35 percent of all new jobs in the study area.

- At present, the highest employment concentrations in the study area are found in areas of retail, office, and industrial development in the City of Waukesha in and around the Waukesha central business district (CBD), immediately to the north of the Waukesha CBD along STH 164, on the southwest side of the City along Prairie Avenue, on the east side along Lincoln Avenue, and on the northeast side along E. Moreland Boulevard. Other significant concentrations are located in the City of Pewaukee near the intersection of IH 94 and CTH J, along STH 164 between IH 94 and Capitol Drive, and north of Blue Mound Road along Eastmound Drive and Johnson Road; and in the Town of Brookfield immediately to the south and northwest of Goerke's Corners.

Map 3

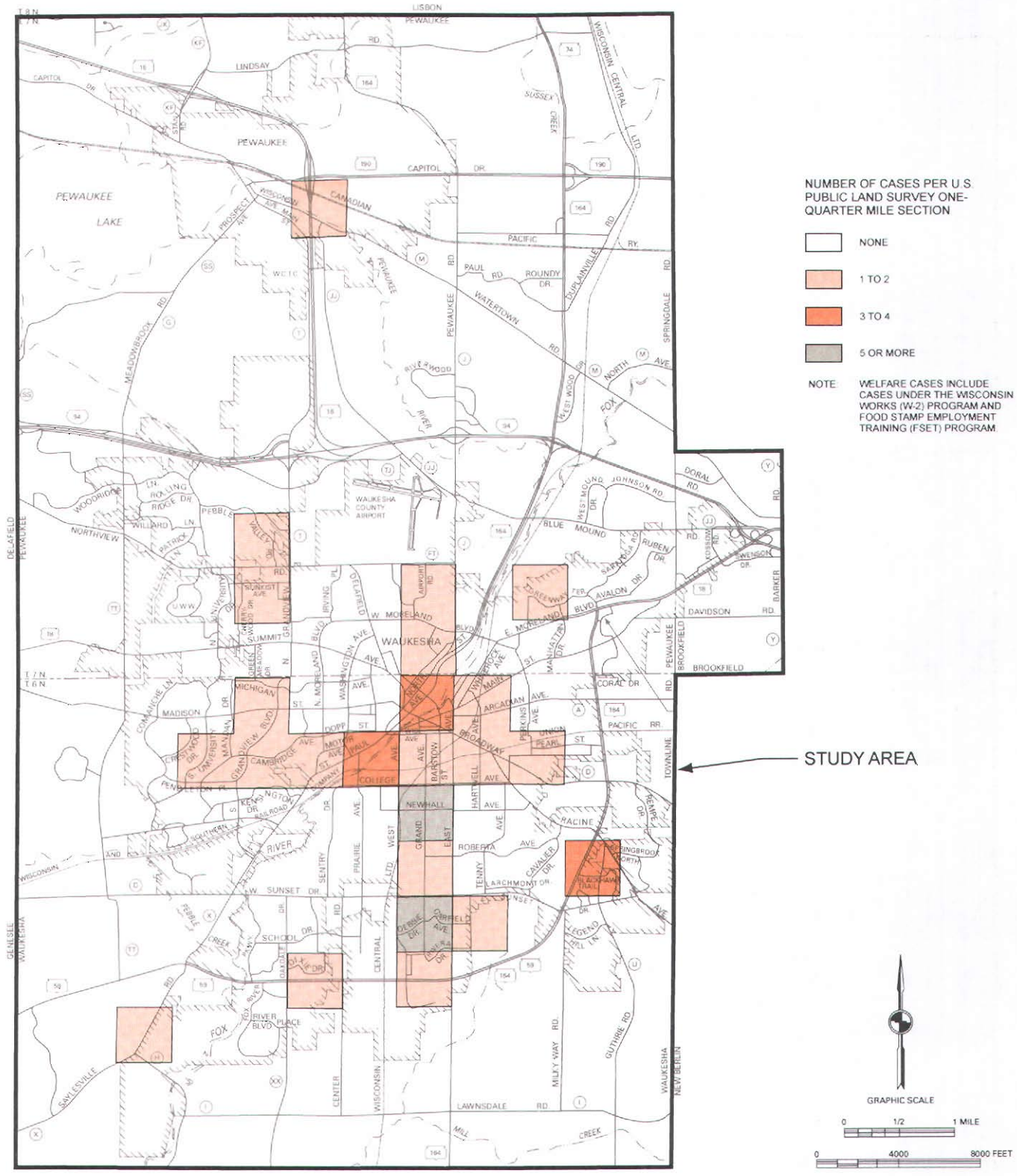
RESIDENTIAL CONCENTRATIONS OF TRANSIT-DEPENDENT POPULATIONS IN THE STUDY AREA: 1990



Source: SEWRPC.

Map 4

DISTRIBUTION OF WELFARE CASES IN THE STUDY AREA: FEBRUARY 1999



Source: SEWRPC.

Table 5

TOTAL EMPLOYMENT IN THE STUDY AREA: 1970-1990

Civil Division	Employment					
	1970		1980		1990	
	Number	Percent of Study Area	Number	Percent of Study Area	Number	Percent of Study Area
City of Waukesha	21,875	74.2	32,384	76.1	37,290	62.9
Town of Waukesha[a]	1,312	4.5	1,180	2.8	1,567	2.6
City of Pewaukee[b]	4,943	16.8	5,105	12.0	12,408	20.9
Village of Pewaukee	897	3.0	2,742	6.4	3,843	6.5
Town of Brookfield[a]	438	1.5	1,163	2.7	4,188	7.1
Total	29,465	100.0	42,574	100.0	59,296	100.0

Civil Division	Change in Employment					
	1970-1980		1980-1990		1970-1990	
	Absolute	Percent	Absolute	Percent	Absolute	Percent
City of Waukesha	10,509	48.0	4,906	15.1	15,415	70.5
Town of Waukesha[a]	-132	-10.1	387	32.8	255	19.4
City of Pewaukee[b]	162	3.3	7,303	143.1	7,465	151.0
Village of Pewaukee	1,845	205.7	1,101	40.2	2,946	328.4
Town of Brookfield[a]	725	165.5	3,025	260.1	3,750	856.2
Total	13,109	44.5	16,722	39.3	29,831	101.2

[a] *Includes only the portion of the Town in the study area.*

[b] *Prior to incorporation in 1999, the City of Pewaukee existed as the Town of Pewaukee.*

Source: U. S. Bureau of Economic Analysis and SEWRPC.

EXISTING LAND USE

Historic Growth

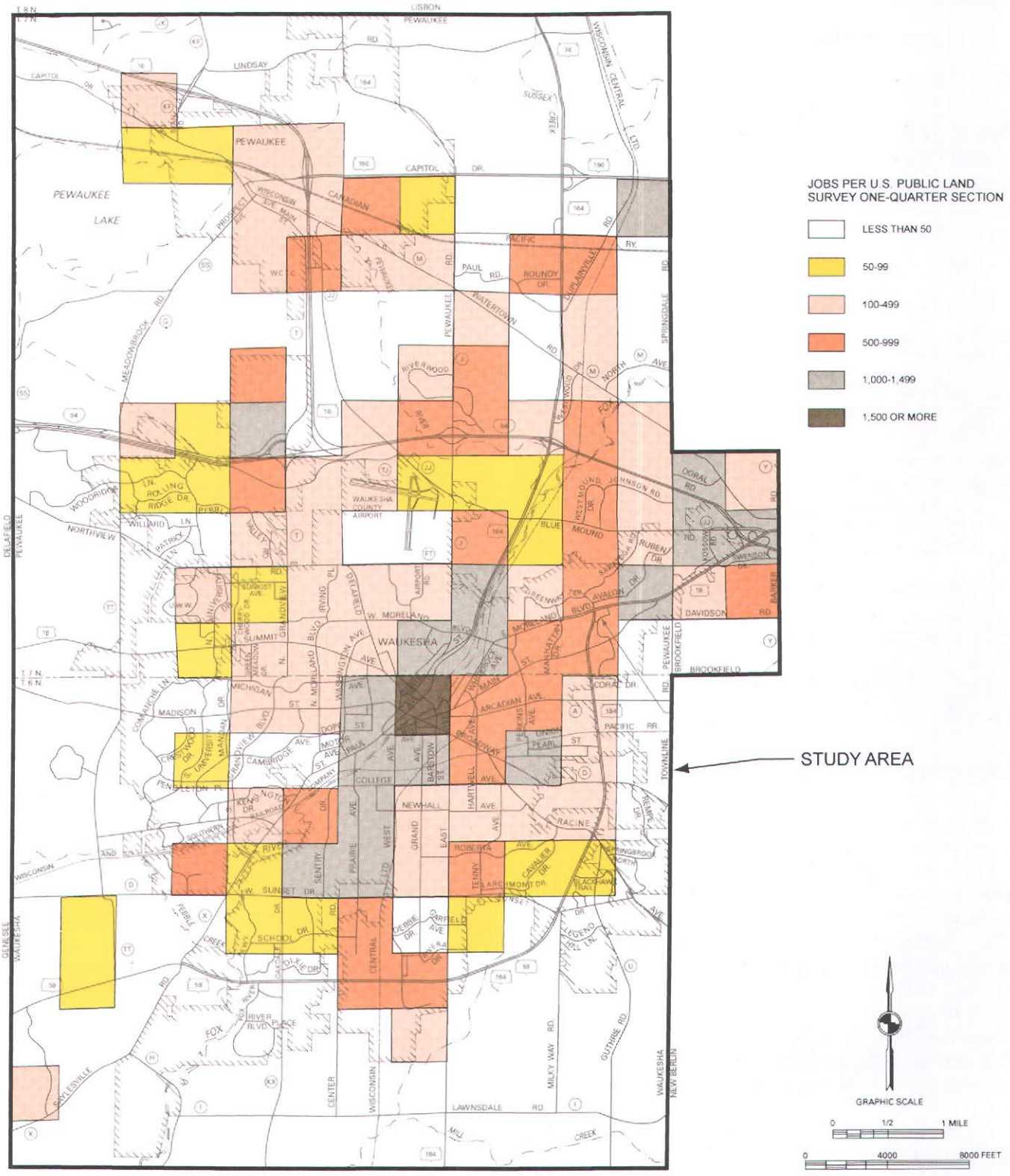
Using aerial photographs, the Regional Planning Commission has assembled information that documents the historic growth and the pattern of urban development of the Southeastern Wisconsin Region. The historic increase in the developed urban land area of the Waukesha study area is quantitatively summarized in Table 6.

In 1900, development within the study area was virtually nonexistent outside the center of the City of Waukesha. Between 1901 and 1950, most of the urban development continued to grow outward from the City center, although the pattern was not as concentric as in previous years, and significant development began to occur along the shoreline of Pewaukee Lake. The pace of urban growth accelerated after 1950 and peaked between 1960 and 1970, when urban land uses grew at an average annual average rate of almost 0.9 square mile per year, after which the rate of growth slowed to between 0.5 and 0.6 square mile per year. About one-half of the land in the study area is currently in fully developed urban land uses, compared with about 16 percent in 1963. The rapid urbanization within the study area has been marked by a diffusion of both commercial and residential development throughout the area, which has changed the characteristics of the Waukesha central business district (CBD) from a regional shopping center to an employment and community shopping center, and a high density residential area. The extent of urban development in the study area in 1995 is shown on Map 7.

Residential development is the predominant type of land use within the developed urban portion of the study area. It is a widely accepted tenet in the transit industry that conventional fixed-route local bus service is typically most cost-efficient when serving areas with residential densities of five dwelling units per acre or higher. As shown on Map 8, areas with the highest

Map 5

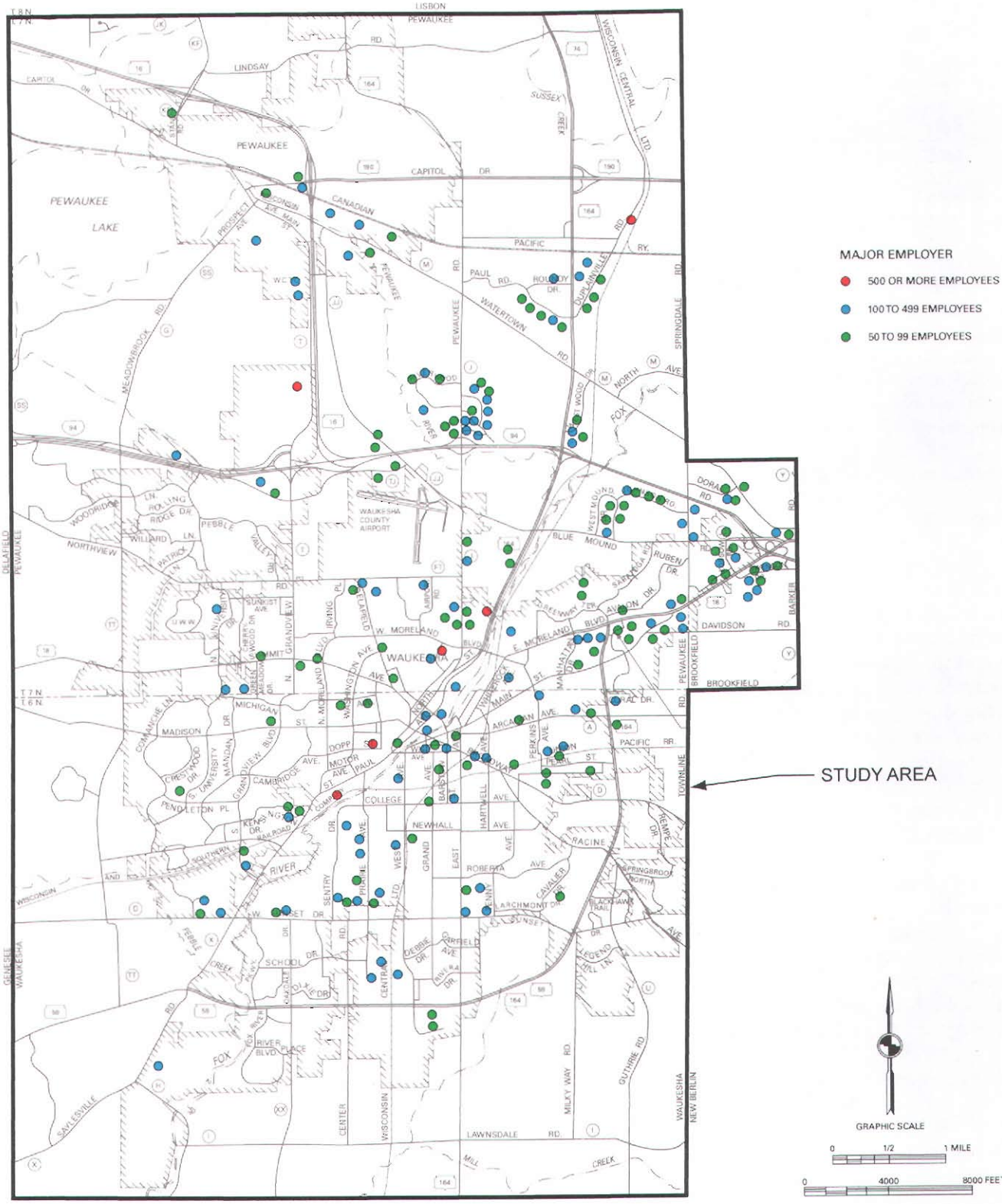
EMPLOYMENT DISTRIBUTION IN THE STUDY AREA: 1990



Source: SEWRPC.

Map 6

LOCATIONS OF EMPLOYERS WITH 50 OR MORE EMPLOYEES IN THE STUDY AREA: 1998



Source: SEWRPC.

Table 6

HISTORIC URBAN GROWTH IN THE STUDY AREA: 1900-1995

Year	Study Area Urban Development[a]				
	Total Area in Square Miles	Change from Previous Time Date		Average Annual Change in Square Miles from Previous Date	Percent of Total Area[b]
		Square Miles	Percent		
1900	1.28	--	--	--	2.0
1950	4.09	2.81	219.5	0.06	6.5
1963	9.78	5.69	139.1	0.44	15.6
1970	13.52	3.74	38.2	0.53	21.6
1980	22.23	8.71	64.4	0.87	35.4
1990	28.04	5.81	26.1	0.58	44.7
1995	30.52	2.48	8.8	0.50	48.7

[a] *Urban development as defined for the purposes of this analysis includes those areas of the Region in which houses or other buildings have been constructed in relatively compact groups, thereby indicating a concentration of residential, commercial, industrial, governmental, or institutional land uses. The continuity of such development was considered interrupted if a quarter-mile area or more of nonurban type land uses such as agriculture, woodlands, or wetlands prevailed in which the above conditions were generally absent.*

[b] *The total land area of the study area is 62.73 square miles.*

Source: SEWRPC.

densities in 1990 were located in the central portion of the City of Waukesha. Other scattered areas, which met the threshold, existed on the fringes of the City of Waukesha and in small areas in the Village of Pewaukee, often as the result of multi-family residential housing development in these areas. Residential densities are only one factor affecting the efficiency of transit service. Areas with low residential densities but with high employment densities, significant commercial development, or major trip generators can also support efficient local fixed-route bus services.

Major Potential Transit Trip Generators

The need to serve the local travel demand generated by major potential transit trip generators must also be considered in any transit service planning effort. Two basic categories of potential transit trip generators were identified for this study: transit-dependent population trip generators and major land-use trip generators.

Transit-Dependent Population Trip Generators

Specific locations of facilities used by, or serving, the elderly, the disabled, and the low-income transit-dependent population groups were identified within the study area for the year 1998 and are listed in Tables 7, 8, and 9, respectively. The nature of the population using the types of facilities identified in this category could be expected to generate significant transit usage. The locations of these transit-dependent population trip generators in the study area are shown on Map 9.

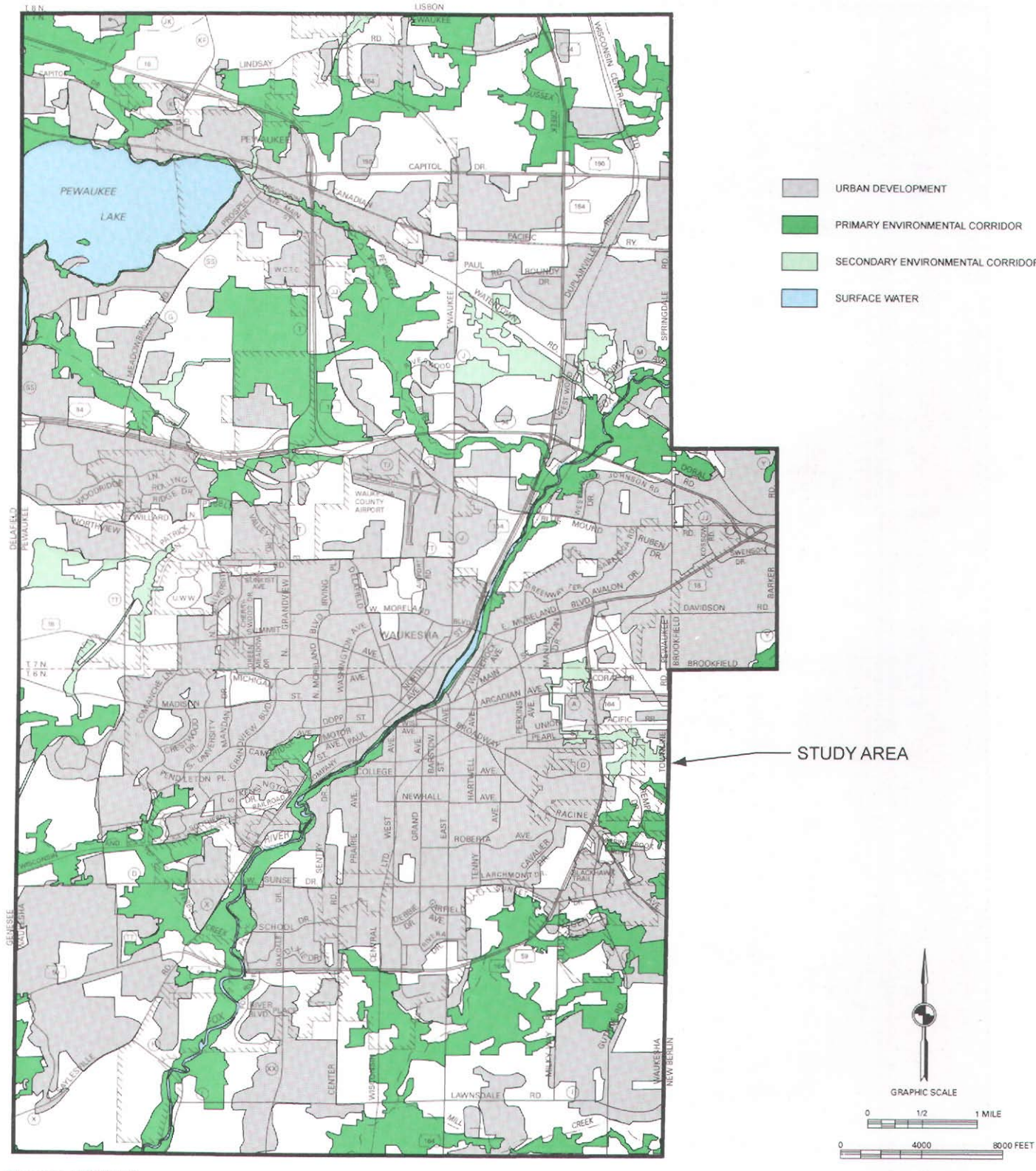
Major Land Use Trip Generators

Certain land uses or concentrations of such land uses attracting a large number of person trips also have the potential to attract a relatively large number of transit trips. The types of land uses which were identified as major potential transit trip generators within the study area for public transit planning purposes included the following: 1) major shopping centers, 2) educational institutions, 3) community and special medical centers, 4) governmental and public institutional centers, and 5) major employers. The specific trip generators identified within the study area in 1998 in each type of land use are presented in Tables 10 through 14 and their locations shown on Map 10.

At the request of the City of Waukesha, the Commission prepared a land use plan for the year 2010 for the City and immediate environs that was adopted by the City in 1993. The recommended 2010 land use plan, shown on Map 11, identifies proposed general locations for major trip generators such as those discussed above, along with the proposed extent of residential development, in the study area. The plan was recently amended to reflect an expansion of the planned areas of low and medium density residential land use on the northwest and south-

Map 7

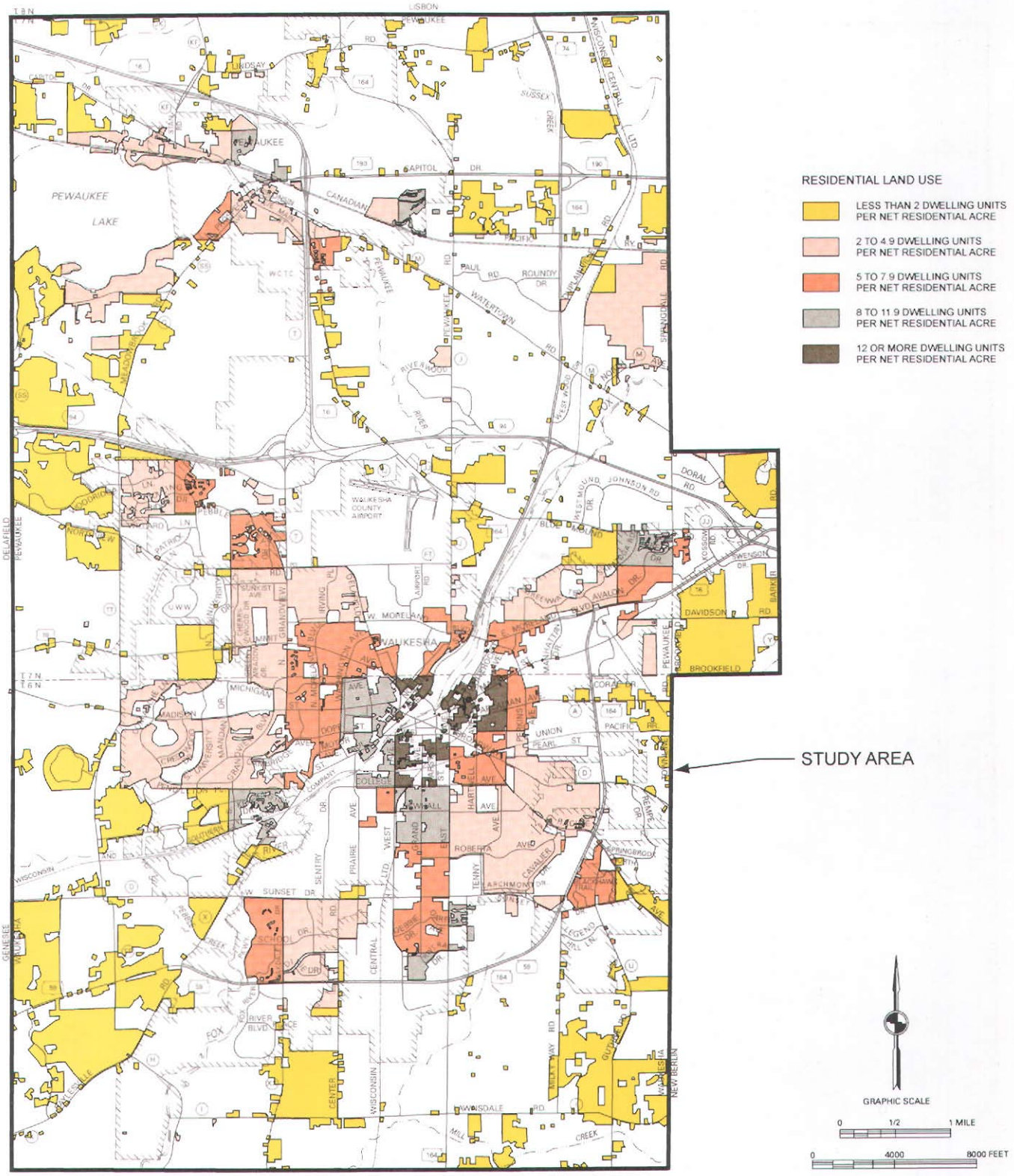
EXTENT OF URBAN DEVELOPMENT IN THE STUDY AREA: 1995



Source: SEWRPC.

Map 8

RESIDENTIAL LAND USE DENSITY IN THE STUDY AREA: 1990



Source: SEWRPC.

Table 7

FACILITIES FOR THE ELDERLY IN THE STUDY AREA: 1998

Number on Map 9	Facility	Address[a]
	Residential Care and Day Care Facilities	
1	The Caring Place[b,c]	810 N. East Avenue
2	Linden Grove Health Care Center	425 N. University Drive
3	River Hills West Health Care Center	321 Riverside Drive, Village of Pewaukee
4	Virginia Health & Rehabilitation Center	1451 Cleveland Avenue
5	Waukesha County Adult Day Care	W226 N555A Eastmound Drive, City of Pewaukee
6	Westmoreland Health Center	1810 Kensington Drive
	Retirement Housing	
7	Avalon Manor	222 Park Place
8	Brookfield Highlands Senior Apartments	20825 Davidson Road
9	East Terrace Apartment Complex[d]	801 N. East Avenue
10	LaCasa Village Apartments[b,d]	1431 Big Bend Road
11	Linden Heights	427 N. University Drive
12	Marion House	401 S. Prairie Avenue
13	Oak Hill Terrace Retirement Community	1805 Kensington Drive
14	Oak Hill Village Retirement Community	1800 Kensington Drive
15	Saratoga Heights[b]	120 Corrina Boulevard
16	Senior House	825 Pleasant Street
17	Summit Woods	2501 Summit Avenue
18	Sunnyridge Home	1302 Sunnyridge Road
19	Willow Park Apartments[b,d]	1001 Delafield Street
	Referral Facilities	
20	Waukesha County Department of Aging	1320 Pewaukee Road
	Senior Centers	
21	C.F. Schuetze Building	1120 Baxter Street
22	Waukesha Salvation Army	445 Madison Street

[a] *Except where noted, all addresses refer to the City of Waukesha.*

[b] *Facility also serves as a congregate meal site.*

[c] *This facility is also a referral facility.*

[d] *This facility also provides housing for the disabled.*

Source: Interfaith, Inc. Older Adult Program; Wisconsin Housing and Economic Development Authority; Waukesha County Department of Aging; and SEWRPC.

west sides of the City of Waukesha into areas which had originally been proposed for agricultural or open land uses.

TRAVEL HABITS AND PATTERNS

Information on the quantity and characteristics of travel in the study area and between the study area and other areas was based on the findings of a regional household travel survey and a survey of Waukesha Metro Transit System users conducted by the Regional Planning Commission. The Commission's household home interview survey was conducted in the autumn of 1991 and was based on a sample of about 17,500 households, or about 2.6 percent, of the total number of households in the Region. That survey was part of a comprehensive inventory of travel, which also included a truck and taxi survey, an external cordon survey, and a household personal opinion survey. Inventories of travel using similar surveys were also conducted by the Commission in 1963 and 1972. The Commission's on-board bus surveys of users of the City's transit system were conducted April 29 and 30, and May 2, 1998. The surveys entailed distributing a prepaid, preaddressed, mail-back survey questionnaire to all passengers. About 700, or about 35 percent, of the approximately 2,000 weekday revenue passengers, and about 300, or about 27 percent, of the approximately 1,100 Saturday revenue passengers, returned the ques-

Table 8

FACILITIES FOR THE DISABLED IN THE STUDY AREA: 1998

Number on Map 9	Facility[a]	Address[b]
	Housing Facility[c]	
1	Century House	1130 Northview Road
	Creative Community Living Services Facilities	
2	Bethesda Court	327 Bethesda Court
3	Kilps Drive	2011-2013 Kilps Drive
4	Welsh Court	2704-2706 Welsh Court
5	Genesis House	1002 Motor Avenue
	Homes for Independent Living Facilities	
6	Jordan House	2165 Laura Lane
7	Lakeview House	504 Wisconsin Avenue, Village of Pewaukee
8	Pewaukee House	303 Oakton Avenue, Village of Pewaukee
9	Hillside Village Apartments	1606 Swartz Drive
10	House of Hope	325 Sentinel Drive
11	Lawrence Center	3011 Saylesville Road
12	Nelson House	520 N. Grand Avenue
13	Wolf Road Group Home	1816 Wolf Road
	Rehabilitation, Training, and Employment Facilities	
14	Curative Rehabilitation Center	149 Wisconsin Avenue
15	Waukesha County Mental Health Center	1501 Airport Road
16	Wisconsin Department of Health and Human Services, Division of Vocational Rehabilitation	141 N.W. Barstow Street
17	Goodwill Industries Vocational Employment Training & Placement Program	336 Wisconsin Avenue
18	Waukesha Center	100 E. Broadway
19	Waukesha Memorial Hospital[d]	725 American Avenue
20	Waukesha Training Center, Inc.	300 S. Prairie Avenue
21	Waukesha County Workforce Development Center	892 Main Street, Village of Pewaukee
	Referral Facilities	
22	Association for the Rights of Citizens with Handicaps	420 Frederick Street
23	Interfaith Care Giving Network	225 S. Hartwell Avenue
24	Waukesha County Health and Human Services Center	500 Riverview Avenue

[a]Includes facilities providing services to individuals with physical or cognitive disabilities, mental health or emotional disorders, and alcohol or drug dependencies.

[b]Except where noted, all addresses refer to the City of Waukesha.

[c]The following housing facilities for the elderly shown in Table 7 and low income facilities shown in Table 9 are also facilities for the disabled: East Terrace Apartment Complex, LaCasa Village Apartments, Monterey and Hillcrest Apartments, Westwood Heights, and Willow Park Apartments.

[d]Facility is also a referral facility.

Source: Wisconsin Housing and Economic Development Authority; Waukesha County Department of Aging; and SEWRPC.

Table 9

FACILITIES FOR LOW-INCOME PERSONS IN THE STUDY AREA: 1998

Number on Map 9	Facility[a]	Address[b]
	Federally Subsidized Rental Housing	
1	Hillcrest Apartments	1804 S. Grand Avenue
2	Pine Point Apartments	156 S. Grand Avenue
3	River's Edge Apartments	100 Corrina Boulevard
4	Sunset Apartments	1512–1530 Big Bend Road
5	Westwood Heights	1705–1709 Elder Street
	Employment Training/Job Referral Facility	
6	Cooperating Congregations of Greater Waukesha	401 W. Main Street
7	La Casa de Esperanza	410 Arcadian Avenue
	Waukesha County Technical College	
8	Pewaukee Campus	800 Main Street, Village of Pewaukee
9	Waukesha Campus	327 E. Broadway
10	Waukesha County Workforce Development Center	892 Main Street, Village of Pewaukee
11	Women's Center, Inc.	726 N. East Avenue

[a]*The facilities shown above primarily have units for low income families. The following housing facilities for the elderly shown in Table 7 and facilities for the disabled shown in Table 8 are also low income facilities: East Terrace Apartment Complex, Hillside Apartments, LaCasa Village, Saratoga Heights, Senior House, and Willow Park Apartments.*

[b]*Except where noted, all addresses refer to the City of Waukesha.*

Source: Interfaith, Inc. Older Adult Programs; Wisconsin Housing and Economic Development Authority; and SEWRPC.

tionnaires. The on-board bus survey form is reproduced in Appendix A of this report.

Total Person Travel Characteristics

The distributions of person trips[3] in the study area in 1963, 1972, and 1991 are shown in Table 15 by trip purpose and by area, including internal trips, which had both trip ends within the study area; external intraregional trips, which had one trip end within the study area and the other trip end in a different area within the seven-county Southeastern Wisconsin Region; and external interregional trips, which had one trip end within the study area and the other trip end in a different area outside the Region.

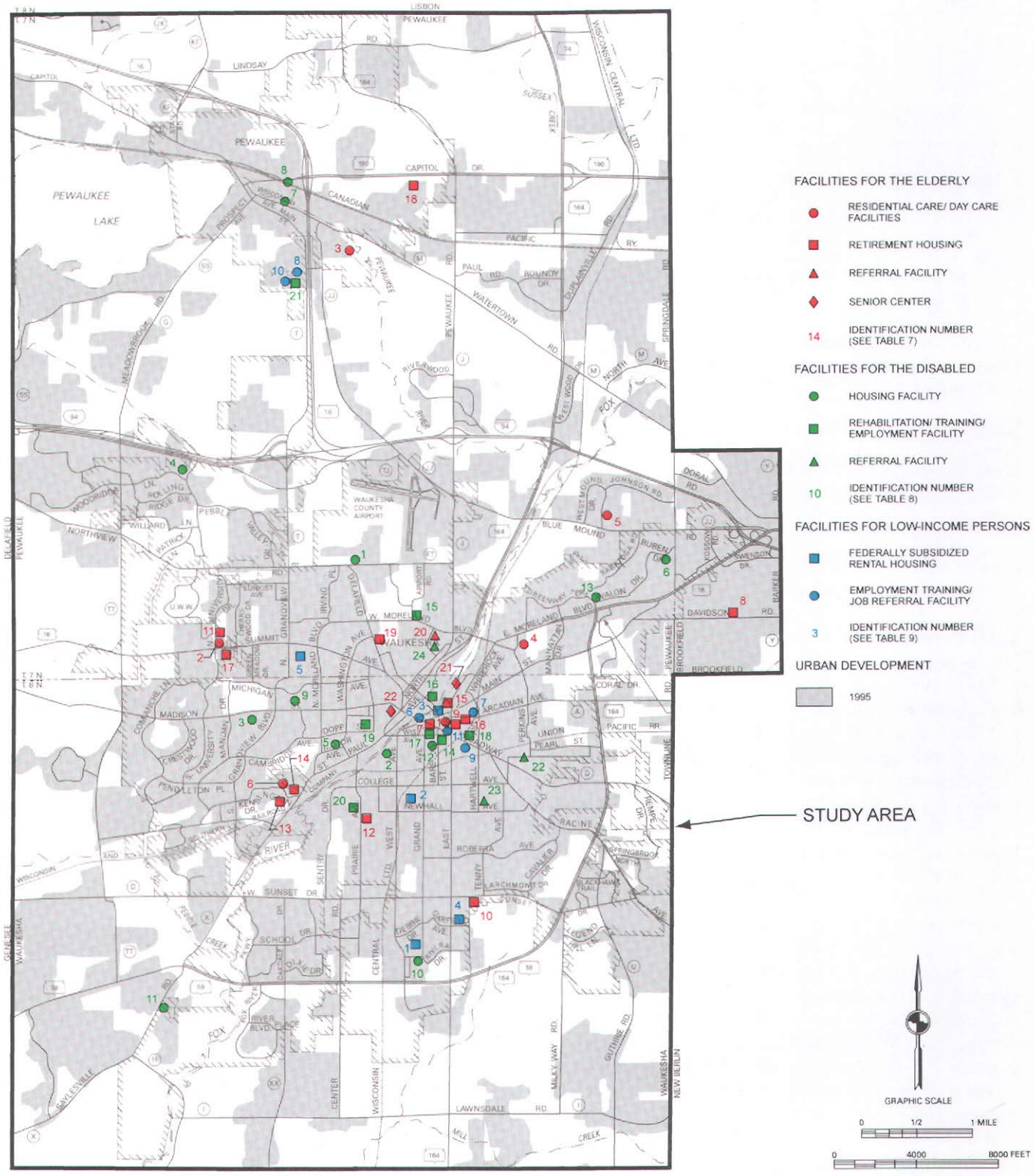
To facilitate analysis of 1991 person-travel, the study area was divided into eight internal analysis subareas. The areas outside the study area were divided into 23 external analysis areas which included 12 areas within Waukesha County, 10 areas within the Region outside the County, and one area which represented all areas outside the Region. The volume of internal trip productions and attractions[4] in 1991 is presented in Table 16. Map 12 illustrates graphically the flow of trips between the eight subareas of the study area. The volume of trip productions and attractions between the study area and the external analysis areas inside and outside the Region is presented in Tables 17 and 18. Map 13 graphically illustrates the flow of trips between the study area and the external analysis areas. Maps 12 and 13 principally show the volume of trips between place of residence and place of work, shopping, and

[3]*A person trip was defined as a one-way journey between a point of origin and a point of destination by a person five years of age or older traveling as an auto driver or as a passenger in an auto, taxi, truck, motorcycle, school bus, or other mass transit carrier. To be considered, the trip must have been at least the equivalent of one full city block in length.*

[4]*A trip is defined and presented as travel by a person from a place of trip production to a place of trip attraction. For trips with one end at home, the place of trip production is always defined as the home and the place of trip attraction is always defined as the other end of the trip which may be a place of work, shopping, personal business, social activity, recreation, or other activity. For a trip which neither begins nor ends at home, the place of trip production is the place of origin of the trip, and the place of trip attraction is defined as the place of destination of the trip.*

Map 9

MAJOR TRANSIT-DEPENDENT POPULATION TRIP GENERATORS IN THE STUDY AREA: 1998



Source: SEWRPC.

Table 10

SHOPPING AREAS IN THE STUDY AREA: 1998

Number on Map 10	Shopping Area[a]	Location[b]
	Major	
1	Blue Mound Road Corridor (excluding Westbrook Shopping Center)[c]	E. Moreland Boulevard between IH 94 and Manhattan Drive; City and Town of Brookfield and City of Waukesha
	Community	
2	Fox Run Shopping Center	At the intersection of Sunset Drive and St. Paul Avenue
3	Kmart-Pick 'N Save-Walgreen's-President's Plaza Shopping Area	On Sunset Drive between Hickory Drive and Tenny Avenue
4	Lake Country Square	At the intersection of STH 16 and Ryan Road; Village of Pewaukee
5	Market Place[d]	At the intersection of Summit Avenue (USH 18) and Meadowbrook Road (CTH TT)
6	Sam's Club	At the intersection of Springdale Road and Blue Mound Road
7	Silvernail Plaza Shopping Center	On Silvernail Road west of intersection of Grandview Boulevard
8	Wal-Mart-Osco Drug[e]	On the Les Paul Parkway (STH 164) between Coral Drive and Greenfield Avenue (STH 59)
9	Waukesha Central Business District	Area bounded by Wisconsin Avenue, East Avenue, St. Paul Avenue, and West Avenue
10	Westbrook Shopping Center	Area bounded by Moreland Boulevard, Ramona Road, Sunnyside Drive, and Springdale Road
	Neighborhood	
11	Grandview Strip Development	East of Grandview Boulevard near intersection with Summit Avenue
12	Gray Terrace Shopping Center	At the intersection of Racine Avenue and Roberta Avenue
13	Moreland Plaza Shopping Center	At the intersection of Moreland Boulevard and Delafield Street
14	PDQ/Sunset West Center	North side of Sunset Drive, between West Avenue and Grand Avenue
15	Pewaukee Central Business District	Area bounded by Clark Street, Wisconsin Avenue, and Capitol Drive, Village of Pewaukee
16	Sentry Supersaver-Ace Hardware	At the intersection of Capitol Drive and Willow Grove Drive; Village of Pewaukee
	Other	
17	Delafield Strip Development	On Delafield Street between Madison Street and Summit Avenue
18	Grand Shoppes Center on Grand Avenue Strip Development	On Grand Avenue between College Avenue and Williams Street
19	Sunset Drive Strip Development (excluding PDQ/Sunset West)	On Sunset Drive between Grand Avenue and Sentry Drive Avenue; City and Town of Waukesha

[a] *The classifications of shopping centers in this table are consistent with the classifications set forth in SEWRPC Community Assistance Planning Report No. 169,* A Land Use Plan for the City of Waukesha Planning Area: 2010, Waukesha County, Wisconsin, *September 1993.*

[b] *Except where noted, all addresses refer to the City of Waukesha.*

[c] *The major shopping area listed here represents the portion of the Blue Mound Road regional retail and office center located inside the study area. The regional center extends beyond the limits of the study area along Blue Mound Road to Moorland Road, includingthe Brookfield Square Shopping Center.*

[d] *Under development at the time of report preparation.*

[e] *Osco Drug was under development at the time of report preparation*

Source: SEWRPC

Table 11

EDUCATIONAL INSTITUTIONS IN THE STUDY AREA: 1998

Number on Map 10	Educational Institutions	Address[a]	Approximate Enrollment
	University and Technical Schools		
1	Carroll College	100 N. East Avenue	1,700
2	University of Wisconsin-Waukesha County	1500 University Drive	1,600
	Waukesha County Technical College[b]		
3	Pewaukee Campus	800 Main Street, Village of Pewaukee	27,510
4	Waukesha Campus	327 E. Broadway	4,070
	Middle and High Schools		
5	Asa Clark Middle School	472 Lake Street, Village of Pewaukee	450
6	Butler Middle School	310 N. Hine Avenue	700
7	Catholic Memorial High School	601 E. College Avenue	1,000
8	Central Middle School	400 N. Grand Avenue	660
9	Horning Middle School	2000 Wolf Road	650
10	North High School	2222 Michigan Avenue	1,320
11	Pewaukee High School	510 Lake Street, Village of Pewaukee	550
12	St. Joseph's Middle School	822 N. East Avenue	240
13	South High School	401 E. Roberta Avenue	1,360
14	Waukesha Christian Academy High School	W270 S825 Thorhorst Road	50
15	West High School	3301 Saylesville Road	1,480
	Elementary Schools		
16	Banting Elementary School	2019 Butler Drive	510
17	Bethesda Elementary School	730 S. University Drive	490
18	Blair Elementary School	301 Hyde Park Avenue	310
19	Hadfield Elementary School	733 Linden Street	370
20	Hawthorne Elementary School	1111 Maitland Drive	330
21	Heyer Elmentary School	1209 Heyer Drive	500
22	Hillcrest Elementary School	2200 Davidson Road	400
23	Horizon Elementary School	404 Lake Street, Village of Pewaukee	460
24	Lowell Elementary School	140 N. Grandview Boulevard	550
25	Meadowbrook Elementary School	3130 Rolling Ridge Drive	300
26	Mount Calvary Lutheran School	1941 Madison Street	160
27	Pleasant Hill Elementary School	175 S. Barker Road, Town of Brookfield	230
28	Prairie Elementary School	1801 Center Road	380
29	Queen of Apostles School	449 W. Wisconsin Avenue, Village of Pewaukee	140
30	Randall Elementary School	114 S. Charles Street	360
31	Rose Glen Elementary School	W273 S3845 Brookhill Drive, Town of Waukesha	620
32	St. Mary Elementary School	520 E. Newhall Avenue	350
33	St. William Elementary School	444 N. Moreland Boulevard	200
34	Saratoga Elementary School	130 Walton Avenue	300
35	Summit View Elementary School	2100 Summit Avenue	570
36	Trinity Lutheran School	1060 White Rock Avenue	240
37	Waukesha Christian Academy Elementary School	W271 S2470 Merrill Hills Road, Town of Waukesha	60
38	West Suburban Christian Academy	1721 Northview Road	150
39	White Rock Elementary School	1150 White Rock Avenue	320
40	Whittier Elementary School	1103 S. East Avenue	400

[a] *Except where noted, all addresses refer to the City of Waukesha.*

[b] *About 25,500, or about 93 percent, of the students attending the Pewaukee campus do so on a part-time basis; all students attending the Waukesha campus do so on a part-time basis.*

Source: Wisconsin Department of Public Instruction and SEWRPC.

other. These tables and maps lead to the following conclusions:

- About 400,800 person trips with origins or destinations within the study area, including both internal and external trips, were made on an average weekday in 1991 compared with about 151,200 trips in 1963. This represents an increase of about 249,600 person trips, or about 165 percent, since 1963. About 59 percent of the total increase occurred as external person travel, which increased by about 147,900 person trips, or about 254 percent, from about 58,200 trips in 1963 to about 206,100 trips in 1991. Internal person trips increased by about 101,700 trips, or about 109 percent, from about 93,000 trips in 1963 to about 194,700 trips in 1991.

- About 194,700 person trips, or 49 percent of all person trips, were made internal to, or totally

Table 12

COMMUNITY AND SPECIAL MEDICAL CENTERS IN THE STUDY AREA: 1998

Number on Map 10	Medical Center	Address[a]
	Community Medical Center[b]	
1	Waukesha Memorial Hospital	725 American Avenue
	Special Medical Centers[c]	
2	Aurora Health Center- Waukesha	W231 N1440 STH 164, City of Pewaukee
3	Medical Associates	N14 W23900 Stoneridge Drive, City of Pewaukee
4	Moreland Medical Center	1111 Delafield Street
5	St. Joseph's Medical and Dental Clinic	826 N. East Avenue
6	Seeger Medical Office Building	20611 Watertown Road, Town of Brookfield
7	Waukesha Medical Center-Pewaukee	1155 Quail Court, Village of Pewaukee
8	Waukesha Medical Center-South	STH 164 and STH 59
9	Waukesha Memorial Professional Building	721 American Avenue
10	Waukesha Family Practice Center	210 N. W. Barstow Street

[a]*Except where noted, all locations and addresses are in the City of Waukesha.*

[b]*Defined as a hospital serving persons of all ages having at least 100 beds and providing in- and out-patient facilities and laboratory and clinical services.*

[c]*Defined as all other major medical facilities and special clinics offering multispecialty medical services.*

Source: SEWRPC.

Table 13

GOVERNMENTAL AND PUBLIC INSTITUTIONAL CENTERS IN THE STUDY AREA: 1998

Number on Map 10	Institutional Center	Address[a]
	Regional and County	
1	Social Security Administration	707 N. Grand Avenue
2	State Office Building	141 N. W. Barstow Street
3	Waukesha County Courthouse and Administrative Center	515 W. Moreland Boulevard and 1320 Pewaukee Road
4	Waukesha County Office Building and Children's Center	500 and 521 Riverview Avenue
5	Waukesha County Huber Jail	N1 W25042 Northview Road
6	Waukesha County Mental Health Center	1501 Airport Road
7	Waukesha County Public Health Center	615 W. Moreland Road
8	Waukesha County Workforce Development Center	892 Main Street, Village of Pewaukee
9	Waukesha Public Library	321 Wisconsin Avenue
10	Wisconsin Department of Transportation	2000 Pewaukee Road
	Community	
	Local Government	
11	Pewaukee City Hall and Police Department	W240 N3065 Pewaukee Road, City of Pewaukee
12	Pewaukee Village Hall and Police Department	235 Hickory Street, Village of Pewaukee
13	Waukesha City Hall	201 Delafield Street
14	Pewaukee Public Library	302 Oakton Avenue, Village of Pewaukee
	U.S. Post Offices	
15	Pewaukee	140 Simmons Avenue, Village of Pewaukee
16	Waukesha	300 E. Broadway
	Other	
17	Pewaukee School District	510 Lake Street, Village of Pewaukee
18	Waukesha Police Department	1901 Delafield Street
19	Waukesha School District	222 Maple Avenue

[a]*Except where noted, all locations and addresses are in the City of Waukesha.*

Source: SEWRPC

Table 14

MAJOR EMPLOYERS IN THE STUDY AREA: 1998

Number on Map 10	Major Employer[a]	Address[b]	Approximate Employment			
			100-249	250-499	500-999	Over 1,000
	Industrial/Manufacturing					
1	Acme Machell Co., Inc.	2000 Airport Road	X	--	--	--
2	Alloy Products Corporation	1045 Perkins Avenue	X	--	--	--
3	Beatrice Cheese, Inc.	770 N. Springdale Road, City of Pewaukee	--	X	--	--
4	Cooper Power Systems	1045 Hickory Street, Village of Pewaukee	--	X	--	--
5	Cooper Power Systems	1319 Lincoln Avenue	X	--	--	--
6	Cooper Power Systems	1900 E. North Street	--	--	X	--
7	Cooper Power Systems	2300 Badger Drive	--	X	--	--
8	Criticare Systems, Inc.	20925 Crossroads Circle, Town of Brookfield	X	--	--	--
9	Dairyland Food Laboratories, Inc.	620 Progress Avenue	X	--	--	--
10	Delzer Lithograph Company	510 S. West Avenue	X	--	--	--
11	Dresser Industries, Inc.	1000 W. St. Paul Avenue	--	--	X	--
12	G E Medical Systems	3000-3114-3200 N. Grandview Boulevard	--	--	--	X
13	G E Medical Systems	N25 W23255 Paul Road, City of Pewaukee	X	--	--	--
14	General Signal Power Systems, Inc.	400 S. Prairie Avenue	--	X	--	--
15	Golden Guernsey Dairy	2101 Delafield Street	X	--	--	--
16	H & K Machine, Inc.	880 Bahcall Court, Town of Brookfield	X	--	--	--
17	Holoubek, Inc.	W238 N1800 Rockwood Drive, City of Pewaukee	X	--	--	--
18	Husco International, Inc.	W239 N218 Pewaukee Road, City of Pewaukee	X	--	--	--
19	J & L Fiber Services, Inc.	801 Progress Avenue	X	--	--	--
20	J & L Fiber Services, Inc.	809 Philip Drive	X	--	--	--
21	Kalmbach Publishing Company	21027 Crossroads Circle, Town of Brookfield	X	--	--	--
22	Navistar International Transportation Corporation	1401 Perkins Avenue	--	X	--	--
23	NCL Graphic Specialists, Inc.	N29 W22960 Marjean Lane, City of Pewaukee	X	--	--	--
24	Ortho-Kinetics, Inc.	W220 N507 Springdale Road, City of Pewaukee	X	--	--	--
25	P M Plastics Company.	627 Capitol Drive, Village of Pewaukee	X	--	--	--
26	Quad/Graphics, Inc.	W224 N3322 Duplainville Road, City of Pewaukee	--	--	X	--
27	Stark Candy Company	700 Hickory Street, Village of Pewaukee	X	--	--	--
28	Svedala Industries, Inc.	20965 Crossroads Circle, Town of Brookfield	X	--	--	--
29	TruGreen Chemlawn	N8 W22550 Johnson Road, City of Pewaukee	X	--	--	--
30	U S Filter-Castalloy Corporation	1701 Industrial Lane	X	--	--	--
31	U S Filter-Envirex, Inc.	1901 S. Prairie Avenue	--	X	--	--
32	V & L Tool, Inc.	1205 S. Grandview Boulevard	X	--	--	--
33	Ventura Foods, LLC.	500 S. Prairie Avenue	X	--	--	--
34	Waukesha Cutting Tools, Inc.	1111 Sentry Drive	X	--	--	--
35	Waukesha Foundry, Inc.	1300 Lincoln Avenue	X	--	--	--
36	Wisconsin Centrifugal, Inc.	905 E. St. Paul Avenue	--	X	--	--
	Retail/Service					
37	American TV, Appliance, and Furniture- Distribution Center	W228 N2801 Duplainville Road, City of Pewaukee	X	--	--	--
38	American TV, Appliance, and Furniture-Retail Store	W229 N1400 Westwood Drive, City of Pewaukee	X	--	--	--
39	Ameriserve Food Distribution, Inc.	W229 N1492 Westwood Drive, City of Pewaukee	--	X	--	--
40	Ameritech	N15 W24250 Riverwood Drive, City of Pewaukee	X	--	--	--
41	Ameritech	220 Wisconsin Avenue	X	--	--	--
42	Ameritech	2140 Davidson Road	--	X	--	--
43	Blue Cross & Blue Shield United of Wisconsin	N17 W24340 Riverwood Drive, City of Pewaukee	X	--	--	--
44	Boucher Chevrolet, Inc.	1421 E. Moreland Boulevard	X	--	--	--
45	Cellular One	20925 Watertown Road, Town of Brookfield	X	--	--	--
46	Country Inn	2810 Golf Road	X	--	--	--
47	Dairyland Buses, Inc. and Wisconsin Coach Lines, Inc.	1520 Arcadian Avenue	X	--	--	--
48	Dalum's Utility Equipment Company, Inc.	N4 W22610 Bluemound Road, City of Pewaukee	X	--	--	--
49	Farm & Fleet	2310 Kossow Road	X	--	--	--
50	Fleming Companies, Inc.	1200 W. Sunset Drive	--	X	--	--
51	Intelligraphics International	741 N. Grand Avenue	X	--	--	--
52	Jack Griffin Ford, Inc.	1940 E. Main Street	X	--	--	--
53	Kmart	120 E. Sunset Drive	X	--	--	--
54	Kohl's Department Stores, Inc.	2130 E. Moreland Boulevard	--	X	--	--
55	McHugh, Freeman & Associates	20700 Swenson Drive, Town of Brookfield	X	--	--	--
56	Pick 'N Save	220 E. Sunset Drive	X	--	--	--
57	Pick 'N Save	2160 Silvernail Road	X	--	--	--
58	PMI-Eisenhart, Inc.	N14 W23755 Stoneridge Drive, City of Pewaukee	X	--	--	--
59	Roundy's, Inc.	N28 W23050 Roundy Drive, City of Pewaukee	X	--	--	--
60	Ruekert & Mielke, Inc.	W239 N1812 Rockwood Drive, City of Pewaukee	X	--	--	--
61	Russ Darrow Group	2141 E. Moreland Boulevard	X	--	--	--
62	Sam's Club	600 N. Springdale Road	X	--	--	--
63	Sentry Foods	2304 W. St. Paul Avenue	X	--	--	--
64	Target	2401 Kossow Road	--	X	--	--
65	Technology Consulting Corporation	N16 W23233 Stoneridge Drive, City of Pewaukee	X	--	--	--
66	W O W Distributing Company, Inc.	W238 N1777 Rockwood Drive, City of Pewaukee	X	--	--	--
67	Wal-Mart	W226 S1500 STH 164, Town of Waukesha	X	--	--	--
68	Waukesha Wholesale Foods, Inc.	900 Gale Street	X	--	--	--
69	Wilde Pontiac Cadillac, Inc.	1603 E. Moreland Boulevard	X	--	--	--
70	Wisconsin Electric Power Company	W237 N1500 Busse Road, City of Pewaukee	X	--	--	--
71	Supersaver	1535 E. Moreland Boulevard	X	--	--	--
72	Wisconsin Electric Power Company	N15 W23700 Stoneridge Drive, City of Pewaukee	X	--	--	--
73	Wisconsin Electric Power Company	1830 S. West Avenue	X	--	--	--
74	YMCA	320 E. Broadway	X	--	--	--
75	YWCA	306 N. West Avenue	X	--	--	--

Table 14 (continued)

Number on Map 10	Major Employer[a]	Address[b]	Approximate Employment			
			100-249	250-499	500-999	Over 1,000
	Governmental and Institutional					
76	City of Waukesha Police Department	1901 Delafield Street	X	--	--	--
77	LindenGrove Healthcare Center	425 N. University Drive	X	--	--	--
78	Medical Associates Health Centers	N14 W23900 Stone Ridge Drive, City of Pewaukee	X	--	--	--
79	River Hills West Health Care Center	321 Riverside Drive, Village of Pewaukee	--	X	--	--
80	State Office Building	141 N. W. Barstow Street	--	X	--	--
81	U.S. Postal Service	300 E. Broadway	X	--	--	--
82	Waukesha County Courthouse and Administrative Center	515 W. Moreland Boulevard and 1320 Pewaukee Road	--	--	X	--
83	Waukesha County Office Building and Children's Center	500 and 521 Riverview Avenue	--	X	--	--
84	Waukesha County Workforce Development Center	892 Main Street, Village of Pewaukee	X	--	--	--
85	Waukesha Health System, Inc.	210 N. W. Barstow Street	X	--	--	--
86	Waukesha Memorial Hospital, Inc.	725 American Avenue	--	--	--	X
87	Westmoreland Health Center	1810 Kensington Drive	--	X	--	--
88	Wisconsin Department of Transportation	2000 Pewaukee Road	X	--	--	--
	Educational					
89	Carroll College	100 N. East Avenue	--	X	--	--
90	Pewaukee Public Schools Campus	510 Lake Street, Village of Pewaukee	X	--	--	--
91	University of Wisconsin Waukesha County Center	1500 University Drive	X	--	--	--
92	Waukesha County Technical College	800 Main Street, Village of Pewaukee	--	X	--	--
93	Waukesha North High School	2222 Michigan Avenue	X	--	--	--
94	Waukesha South High School	401 E. Roberta Avenue	X	--	--	--
95	Waukesha West High School	3301 Saylesville Road	X	--	--	--

[a] *Includes employers with approximately 100 or more employees at one worksite.*

[b] *All addresses are located in the City of Waukesha unless otherwise noted.*

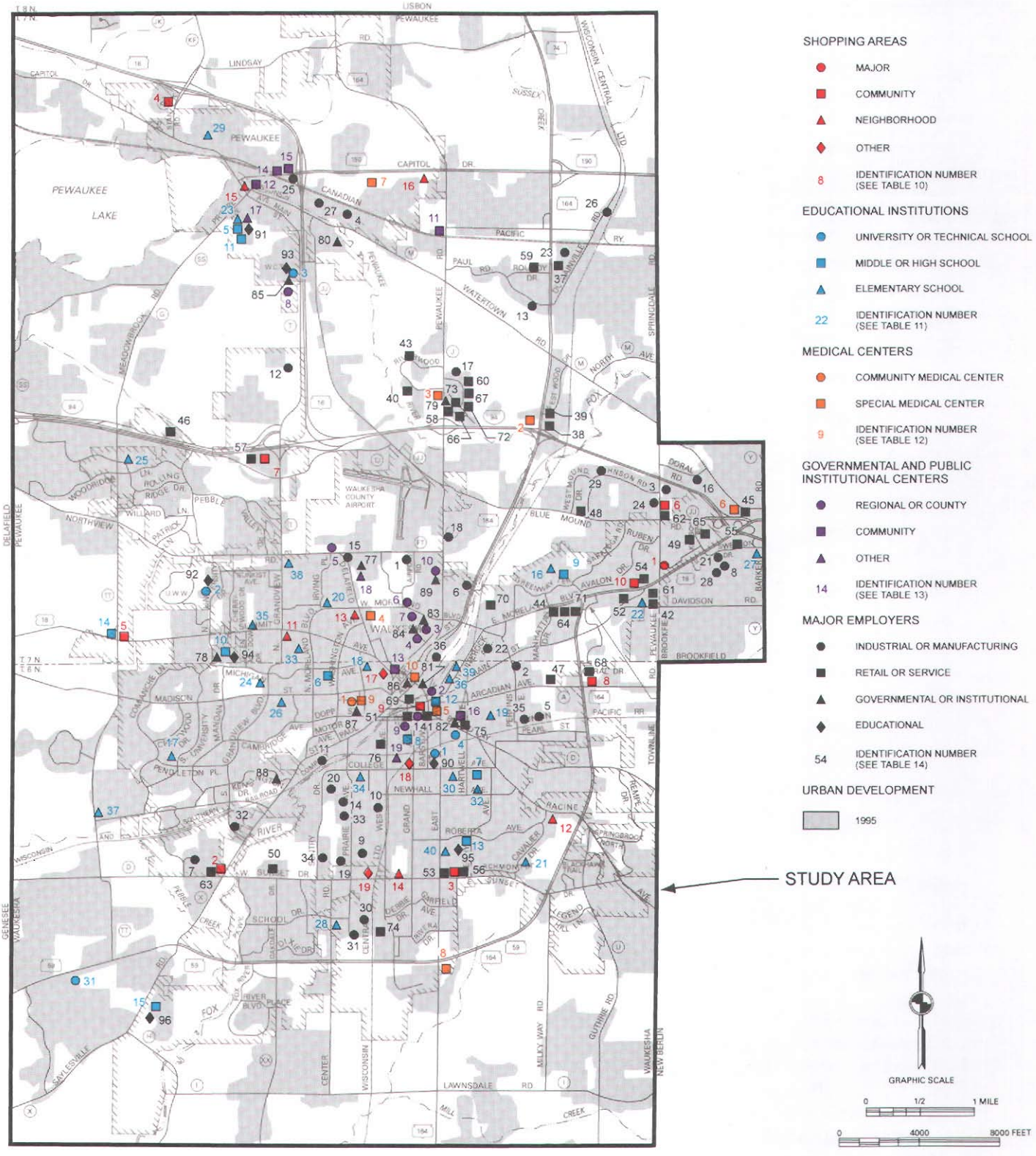
Source: SEWRPC.

inside, the study area on an average weekday in 1991. The largest proportion, 32 percent, of these trips were home-based other trips, such as trips made for medical, personal business, or social or recreational purposes. The distribution of internal person trips within the study area reflects the population and employment concentrations in the study area, which are located primarily in the City of Waukesha. About 158,500 trips, or about 81 percent, of all internal trips were made within the five subareas which approximate the City. About 71,500 person trips, or 37 percent, of all internal trips were either produced in or attracted to the subarea which includes the City of Waukesha CBD.

- The remaining 206,100 person trips, or 51 percent of all person trips, were made with one trip end outside the study area on an average weekday in 1991. The largest proportion, 36 percent, of these trips was made for work purposes. Trips made between the study area and other areas within Waukesha County accounted for about 126,200 trips, or about 61 percent, of all external trips. Of these Waukesha County trips, about 47 percent were made to or from the Brookfield-Elm Grove and New Berlin areas, and about 20 percent were made to or from the Delafield and Genesee areas. Other significant volumes of external person travel were also identified between the study area and Milwaukee County, which accounted

Map 10

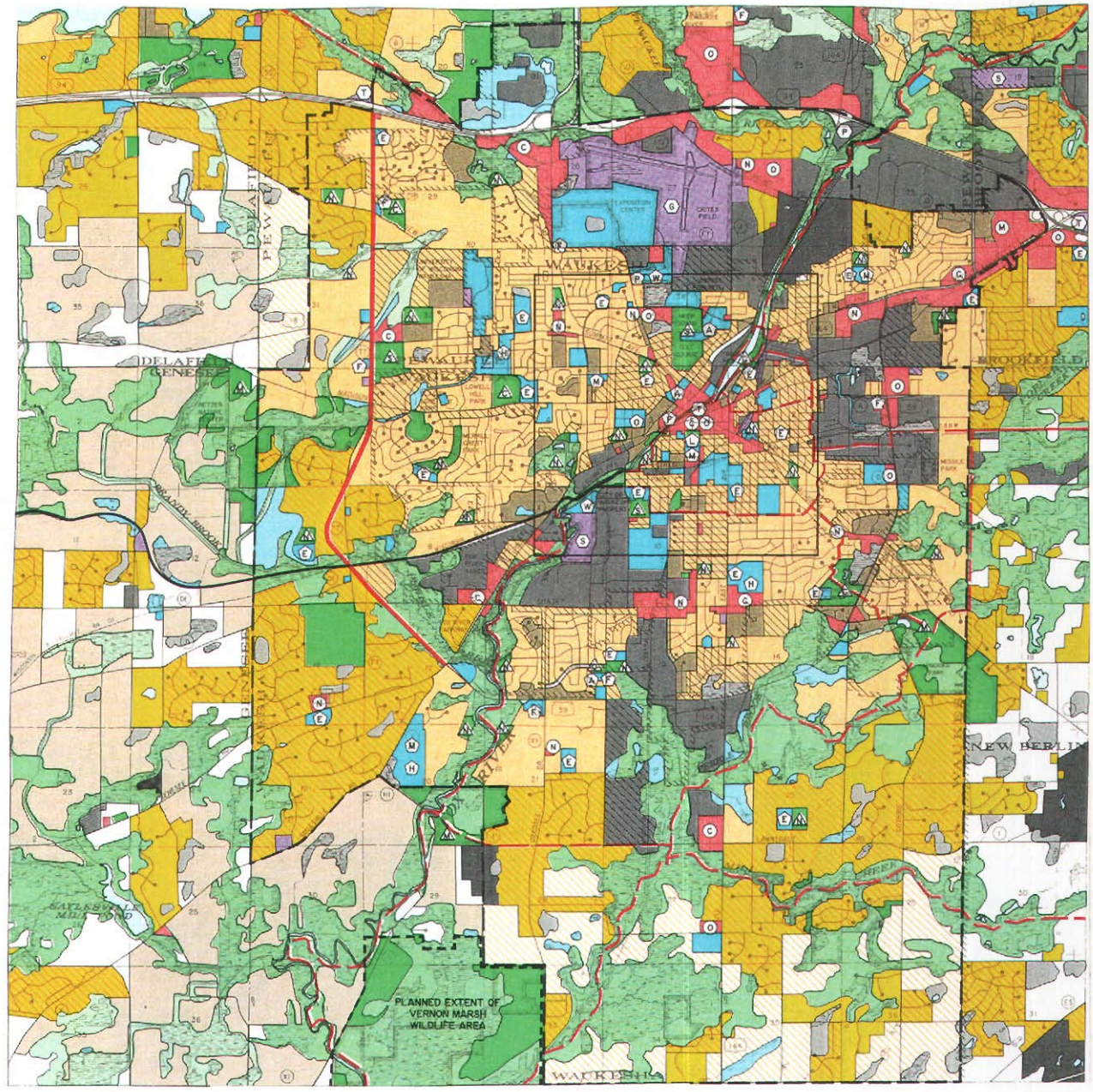
MAJOR LAND USE TRIP GENERATORS IN THE STUDY AREA: 1998



Source: SEWRPC.

Map 11

LAND USE PLAN FOR THE WAUKESHA PLANNING AREA: 2010



SUBURBAN DENSITY RESIDENTIAL
LOW DENSITY RESIDENTIAL
MEDIUM DENSITY RESIDENTIAL
MEDIUM-HIGH DENSITY RESIDENTIAL
HIGH DENSITY RESIDENTIAL
RESIDENTIAL RESERVE
RETAIL AND SERVICE COMMERCIAL
- N NEIGHBORHOOD CENTER
- C COMMUNITY CENTER
- M MAJOR CENTER
- O SERVICE AND OFFICE CENTER

GOVERNMENTAL AND INSTITUTIONAL
- O HOSPITAL
- L LIBRARY
- A MUNICIPAL ADMINISTRATIVE OFFICES
- F FIRE STATION
- P POLICE STATION
- W PUBLIC WORKS
- E PUBLIC ELEMENTARY SCHOOL
- M PUBLIC MIDDLE SCHOOL
- H PUBLIC HIGH SCHOOL

TRANSPORTATION AND UTILITIES
- T TRANSIT STATION WITH PARKING
- P PARK AND POOL LOT
- G GENERAL UTILITY- STAGE II AIRPORT
- S SEWAGE TREATMENT PLANT

INDUSTRIAL
INDUSTRIAL PARK
QUARRYING
RECREATIONAL
- M MAJOR PARK
- C COMMUNITY PARK
- N NEIGHBORHOOD PARK
- S SPECIAL USE SITE

PRIMARY ENVIRONMENTAL CORRIDOR
SECONDARY ENVIRONMENTAL CORRIDOR
ISOLATED NATURAL RESOURCE AREA
OTHER ENVIRONMENTALLY SIGNIFICANT AREAS
PRIME AGRICULTURAL LAND

OTHER AGRICULTURAL AND OPEN LAND
WATER
EXISTING TRAIL
PROPOSED TRAIL
LIMIT OF PROPOSED EXPANDED WAUKESHA URBAN SERVICE AREA
PROPOSED WESTERN SEGMENT OF WAUKESHA BYPASS

GRAPHIC SCALE
0 2000 4000 8000 FEET
0 1 MILE

Source: SEWRPC.

Table 15

DISTRIBUTION OF AVERAGE WEEKDAY PERSON TRIPS FOR THE STUDY AREA BY TRIP PURPOSE: 1963, 1972 AND 1991

Area	Trip Purpose	Person Trips						Change in Person Trips			
		1963		1972		1991		1963-1991		1972-1991	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Within the Study Area	Home-based work	17,800	19.2	25,600	17.5	34,900	17.9	17,100	96.1	9,300	36.3
	Home-based shopping	13,300	14.3	20,600	14.1	29,400	15.1	16,100	121.1	8,800	42.7
	Home-based other	33,200	35.7	57,000	39.1	62,100	31.9	28,900	87.0	5,100	8.9
	Nonhome-based	18,900	20.3	28,700	19.7	44,700	23.0	25,800	136.5	16,000	55.7
	School	9,800	10.5	14,000	9.6	23,600	12.1	13,800	140.8	9,600	68.6
	Total	93,000	100.0	145,900	100.0	194,700	100.0	101,700	109.4	48,800	33.4
Between the Study Area and other Areas in the Region	Home-based work	18,100	33.2	26,900	30.9	69,700	35.2	51,600	285.1	42,800	159.1
	Home-based shopping	5,600	10.3	9,900	11.4	21,200	10.7	15,600	278.6	11,300	114.1
	Home-based other	19,300	35.4	30,600	35.2	45,000	22.7	25,700	133.2	14,400	47.1
	Nonhome-based	7,900	14.5	15,600	17.9	47,300	23.9	39,400	498.7	31,700	203.2
	School	3,600	6.6	4,000	4.6	14,900	7.5	11,300	313.9	10,900	272.5
	Total	54,500	100.0	87,000	100.0	198,100	100.0	143,600	263.5	111,100	127.7
Between the Study Area and Areas Outside the Region	Home-based work	1,400	37.8	1,600	35.6	3,900	48.7	2,500	178.6	2,300	143.8
	Home-based shopping	100	2.7	100	2.2	500	6.3	400	400.0	400	400.0
	Home-based other	1,600	43.3	2,300	51.1	1,800	22.5	200	12.5	-500	-21.7
	Nonhome-based	500	13.5	400	8.9	1,500	18.7	1,000	200.0	1,100	275.0
	School	100	2.7	100	2.2	300	3.8	200	200.0	200	200.0
	Total	3,700	100.0	4,500	100.0	8,000	100.0	4,300	116.2	3,500	77.8
Total	Home-based work	37,300	24.7	54,100	22.8	108,500	27.1	71,200	190.9	54,400	100.6
	Home-based shopping	19,000	12.6	30,600	12.9	51,100	12.7	32,100	168.9	20,500	67.0
	Home-based other	54,100	35.8	89,900	37.9	108,900	27.2	54,800	101.3	19,000	21.1
	Nonhome-based	27,300	18.0	44,700	18.8	93,500	23.3	66,200	242.5	48,800	109.2
	School	13,500	8.9	18,100	7.6	38,800	9.7	25,300	187.4	20,700	114.4
	Total	151,200	100.0	237,400	100.0	400,800	100.0	249,600	165.1	163,400	68.8

Source: SEWRPC.

Table 16

DISTRIBUTION OF AVERAGE WEEKDAY INTERNAL PERSON TRIPS IN THE STUDY AREA: 1991

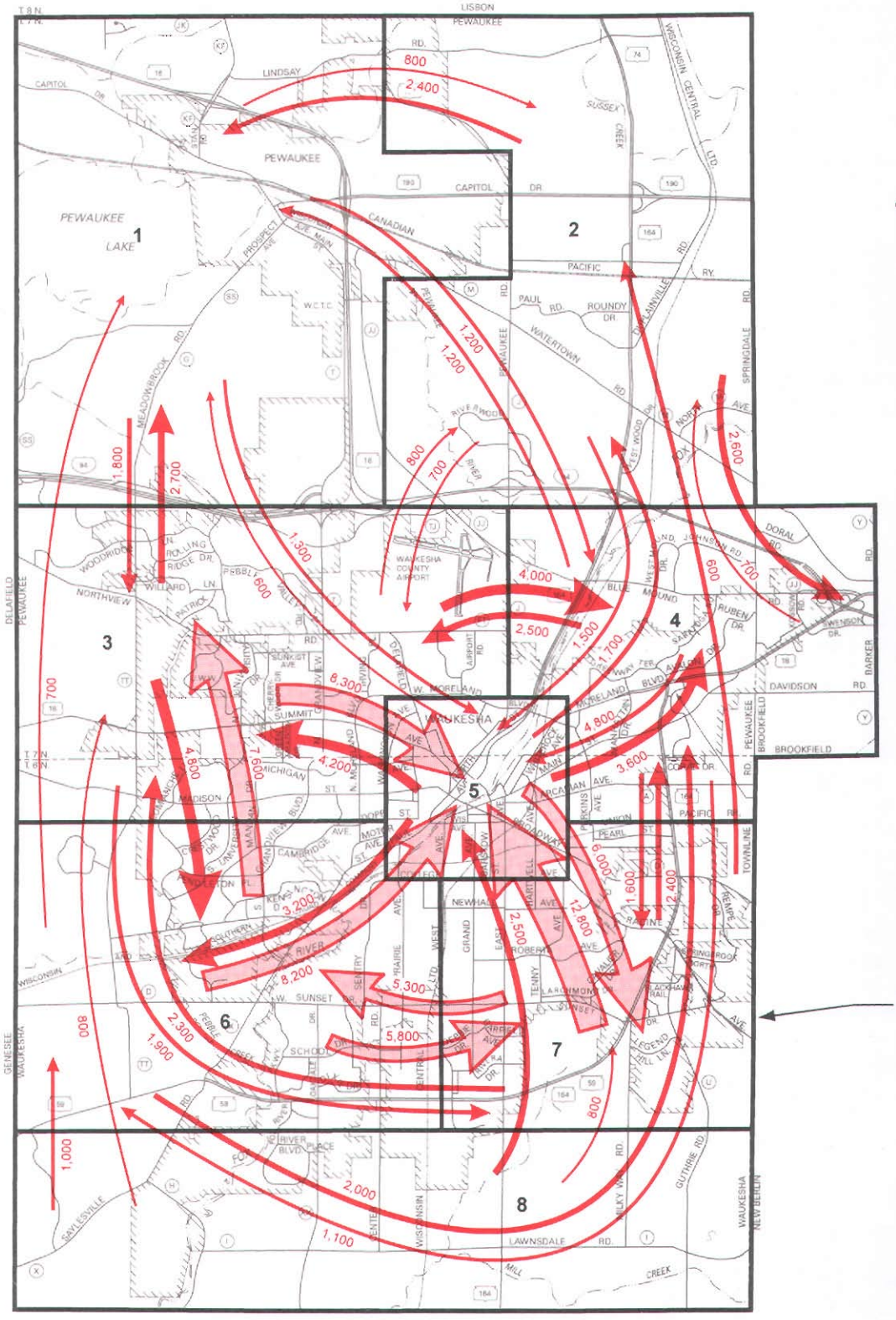
Area of Trip Production	Area of Trip Attraction								
	1	2	3	4	5	6	7	8	Total
1. West Pewaukee	5,760	770	1,770	1,150	1,340	130	60	--	10,980
2. East Pewaukee	2,360	1,150	690	2,570	1,540	360	380	--	9,050
3. Waukesha -Northwest	2,670	800	18,220	3,980	8,320	4,760	1,940	160	40,850
4. Waukesha-Northeast	1,190	660	2,540	10,670	4,820	1,130	1,620	60	22,690
5. Waukesha-Central	640	1,670	4,220	3,620	12,390	3,150	6,010	190	31,890
6. Waukesha-Southwest	740	390	7,640	1,980	8,240	11,460	5,810	160	36,420
7. Waukesha-Southeast	280	640	2,250	2,370	12,840	5,290	13,230	160	37,060
8. Waukesha-Far South	100	330	760	200	2,540	1,040	760	--	5,730
Total	13,740	6,410	38,090	26,540	52,030	27,320	29,810	730	194,670

NOTE: Shaded cells indicate trips made entirely within a subarea.

Source: SEWRPC.

Map 12

DISTRIBUTION OF AVERAGE WEEKDAY PERSON TRIPS BETWEEN SUBAREAS WITHIN THE STUDY AREA: 1991



SUBAREA BOUNDARY

6 SUBAREA IDENTIFICATION NUMBER

NOTE: TRIPS ARE SHOWN IN PRODUCED-ATTRACTED FORMAT. THAT IS, FROM AREA OF PRODUCTION TO AREA OF ATTRACTION. TRAVEL BETWEEN SUBAREAS IS NOT DEPICTED UNLESS THERE WAS A MINIMUM OF 500 TRIPS FROM ONE SUBAREA TO ANOTHER. APPROXIMATELY 118,800 OF ABOUT 121,800 TOTAL PERSON TRIPS BETWEEN SUBAREAS, OR ABOUT 98 PERCENT, ARE SHOWN HERE.

PERSON TRIPS INTERNAL TO SUBAREAS

1	5,800
2	1,100
3	18,200
4	10,700
5	12,400
6	11,500
7	13,200
8	--
TOTAL	72,900

GRAPHIC SCALE

0 1/2 1 MILE

0 4000 8000 FEET

Source: SEWRPC.

Table 17

DISTRIBUTION OF AVERAGE WEEKDAY PERSON TRIPS PRODUCED INSIDE THE STUDY AREA AND ATTRACTED TO AREAS OUTSIDE THE STUDY AREA: 1991

Area of Trip Production Inside Study Area	Area of Trip Attraction Outside Study Area												
	Inside the Region												
	Waukesha County												
	Oconomowoc	Merton	Sussex	Monomonee Falls	Delafield-Hartland	Brookfield	Dousman-Eagle	Wales-Genesee	New Berlin	Mukwonago	Big Bend-Vernon	Muskego	Subtotal
Pewaukee[a]	500	70	610	640	1,020	5,050	70	90	1,130	100	50	20	9,350
Waukesha[b]	1,880	360	1,470	2,100	2,890	19,430	910	2,380	5,450	780	1,500	1,070	40,220
Total	2,380	430	2,080	2,740	3,910	24,480	980	2,470	6,580	880	1,550	1,090	49,570

Area of Trip Production Inside Study Area	Area of Trip Attraction Outside Study Area												
	Inside the Region												
			Milwaukee County										
	Washington County	Ozaukee County	Northern	Central	Southern	Central Business District[c]	Subtotal	Walworth County	Racine County	Kenosha County	Subtotal	Outside the Region	Total
Pewaukee[a]	490	530	730	4,420	40	570	5,760	20	90	100	6,990	670	17,010
Waukesha[b]	780	140	1,670	17,910	850	3,370	23,800	950	770	340	26,780	2,310	69,,310
Total	1,270	670	2,400	22,330	890	3,940	29,560	970	860	440	33,770	2,980	86,320

[a] *Includes subareas 1 and 2 shown on Map 12.*

[b] *Includes subareas 3 through 8 shown on Map 12.*

[c] *The City of Milwaukee central business district is the area bounded o the south by the Menomonee River, Broadway, and St. Paul Avenue; on the west by N. 12th Street; on the north by E. Highland Avenue, 8th Street and Juneau Avenue; and on the east by N. Lincoln Memorial Drive.*

Source: SEWRPC.

for about 59,700 trips, or 29 percent, of all external trips.The vast majority of these trips focused on central Milwaukee County.

Transit Person Travel Characteristics of Waukesha Metro Transit System Users

Survey data indicate that about 2,000 weekday and 1,100 Saturday revenue passenger trips were made on the routes of the Waukesha Metro Transit System at the times of the survey in late April and early May 1998. Table 19 summarizes the socioeconomic characteristics of all Waukesha Metro Transit System revenue passengers in 1998. Maps 14 through Map 17 illustrate graphically the distribution of weekday and Saturday transit person trip productions and attractions in the transit system service area. The hourly distributional pattern of transit system revenue passengers is shown in Figure 1. Table 20 summarizes the comments and suggestions of surveyed passengers concerning existing service and equipment. The following observations may be made based upon the examination of this information:

- Weekday and Saturday transit system passengers were predominantly female, without a valid driver's license, ages 16 to 44, and from households with annual incomes below $30,000 per year and no vehicles available. Weekday and Saturday passengers were distinctly different in the proportions of trips made for various purposes. On weekdays, trips for work and school purposes represented about 40 and 26 percent, respectively, of all transit trips. On Saturdays, the predominant trip purposes were for shopping and other purposes, which represented about 36 and 25 percent, respectively, of all transit trips.

- The distributions of weekday and Saturday transit trip productions in the study area primarily reflect the concentrations of population within the City of Waukesha. The concentrations of weekday transit trip attractions largely reflect the locations of schools, shopping centers, and employment concentrations within the City and in the Blue Mound Road corridor. The concentrations of Saturday transit trip attractions largely reflects the locations of shopping centers and employment concentrations, particularly the Waukesha CBD and the Brookfield Square Shopping Center.

- About 58 percent of the weekday ridership occurred during two peak periods: from 6:00 a.m. until 8:30 a.m. and from 2:30 p.m. until 5:30 p.m. The morning ridership peak accounted for about 22 percent and the afternoon peak accounted for bout 36 percent of the weekday ridership. Unlike

Table 18

DISTRIBUTION OF AVERAGE WEEKDAY PERSON TRIPS PRODUCED OUTSIDE THE STUDY AREA AND ATTRACTED TO THE STUDY AREA: 1991

Area	Area of Trip Production Outside Study Area		Area of Trip Attraction Inside Study Area		
	County	Analysis Area	Pewaukee[a]	Waukesha[b]	Total
Inside the Region	Waukesha County	Oconomowoc	1,350	3,280	4,630
		Chenequa-Merton	1,000	1,320	2,320
		Sussex	2,050	2,370	4,420
		Menomonee Falls	1,410	1,910	3,320
		Delafield-Hartland	2,960	5,660	8,620
		Brookfield	4,630	14,460	19,090
		Dousman-Eagle	1,060	3,720	4,780
		Wales-Genesee	1,400	10,730	12,130
		New Berlin	1,400	7,400	8,800
		Mukwonago	310	2,930	3,240
		Big Bend-Vernon	240	3,450	3,690
		Muskego	190	1,400	1,590
		Subtotal	18,000	58,630	76,630
	Washington County	Entire County	1,020	2,020	3,040
	Ozaukee County	Entire County	230	650	880
	Milwaukee County	Northern	1,130	2,320	3,450
		Central	5,950	18,180	24,130
		Southern	680	990	1,670
		Central Business District[c]	130	820	950
		Subtotal	7,890	22,310	30,200
	Walworth County	Entire County	440	2,170	2,610
	Racine County	Entire County	230	850	1,080
	Kenosha County	Entire County	--	320	320
	--	Subtotal	27,810	86,950	114,760
Outside the Region	All Areas	All Areas	1,350	3,700	5,050
--	--	Total	29,160	90,650	119,810

[a] *Includes subareas 1 and 2 shown on Map 12.*

[b] *Includes subareas 3 through 8 shown on Map 12.*

[c] *The City of Milwaukee central business district is the area bounded on the south by the Menomonee River, Broadway, and St. Paul Avenue; on the west by N. 12th Street; on the north by E. Highland Avenue, 8th Street and Juneau Avenue; and on the east by N. Lincoln Memorial Drive.*

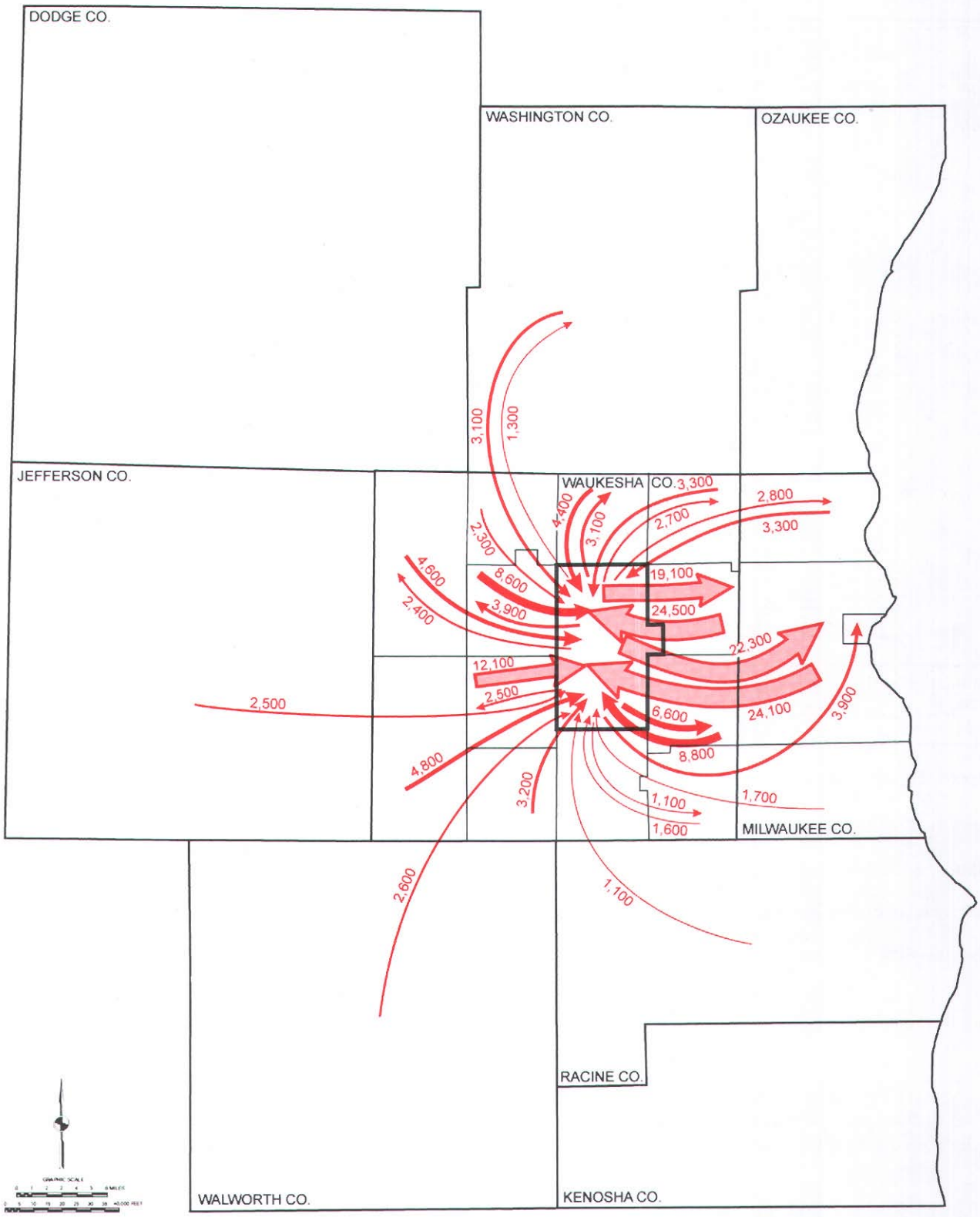
Source: SEWRPC.

the weekday ridership, Saturday ridership exhibited no distinct peak periods although the mid-afternoon exhibited the highest ridership level.

- About 62 percent of weekday and 74 percent of the Saturday passengers surveyed provided comments on the bus services. The most frequent comments received from all surveyed passengers related to requests for changes in service times or frequency, in particular for adding Sunday service, which represented between 30 and 40 percent of all comments. Other comments, each which represented about 10 percent of the comments received, included requests for improving the frequency of service, for providing longer hours of

Map 13

DISTRIBUTION OF AVERAGE WEEKDAY PERSON TRIPS BETWEEN THE STUDY AREA AND SURROUNDING AREAS: 1991



NOTE: TRIPS ARE SHOWN IN PRODUCED-ATTRACTED FORMAT. THAT IS, FROM AREA OF PRODUCTION TO AREA OF ATTRACTION. ONLY TRAVEL BETWEEN THE STUDY AREA AND SURROUNDING AREAS OF 1,000 OR MORE TRIPS IS DEPICTED. APPROXIMATELY 189,300 OF ABOUT 206,100 EXTERNAL TOTAL PERSON TRIPS, OR ABOUT 92 PERCENT, ARE SHOWN HERE.

Source: SEWRPC.

Table 19

PERCENTAGE OF DISTRIBUTION OF RIDERSHIP ON THE WAUKESHA METRO TRANSIT SYSTEM FOR VARIOUS RIDERSHIP CHARACTERISTICS: APRIL 28, 29, AND MAY 2, 1998

Ridership Characteristic	Percent of Revenue Passengers	
	Weekday	Saturday
Age		
5 and under	0.1	--
6 to 12	2.6	5.2
13 to 15	13.3	8.9
16 to 18	11.2	18.4
19 to 24	14.8	16.2
25 to 34	16.8	20.7
35 to 44	16.2	10.0
45 to 54	12.6	6.6
55 to 64	8.8	6.9
65 and over	3.6	7.1
Total	100.0	100.0
Sex		
Male	43.1	32.4
Female	56.9	67.6
Total	100.0	100.0
Licensed Driver		
Yes	34.0	27.8
No	66.0	72.2
Total	100.0	100.0
Household Income		
Under $10,000	29.8	31.2
$10,000-$19,999	25.8	18.8
$20,000-$29,999	13.3	21.2
$30,000-$39,999	10.2	10.0
$40,000-$49,999	7.7	7.4
$50,000 and Over	13.2	11.4
Total	100.0	100.0
Trip Purpose		
Home-based work	39.6	19.5
Home-based shopping	10.2	35.4
Home-based other	13.8	25.3
Nonhome-based	10.5	16.4
School	25.9	3.4
Total	100.0	100.0
Vehicles available per Household		
No vehicle	40.7	52.3
One vehicle	27.4	23.0
Two or more vehicles	31.9	24.7
Total	100.0	100.0
Frequency of Use		
Less than once a month	10.5	9.6
1-3 times a month	7.4	16.8
1-2 times a week	10.8	18.5
3-5 times a week	31.1	20.8
More than 5 times a week	40.2	34.3
Total	100.0	100.0

Source: SEWRPC.

service on Saturdays, and for improving the condition of the buses.

SUMMARY

This chapter has presented pertinent information on past trends and existing conditions for selected characteristics of the study area which affect, or may be affected by, the provision and use of transit service, including population, employment, land use, and travel habits and patterns. Information on the changes in such key characteristic which were observed over approximately the last three decades are summarized in Figure 2. The most important findings concerning these characteristics may be summarized as follows:

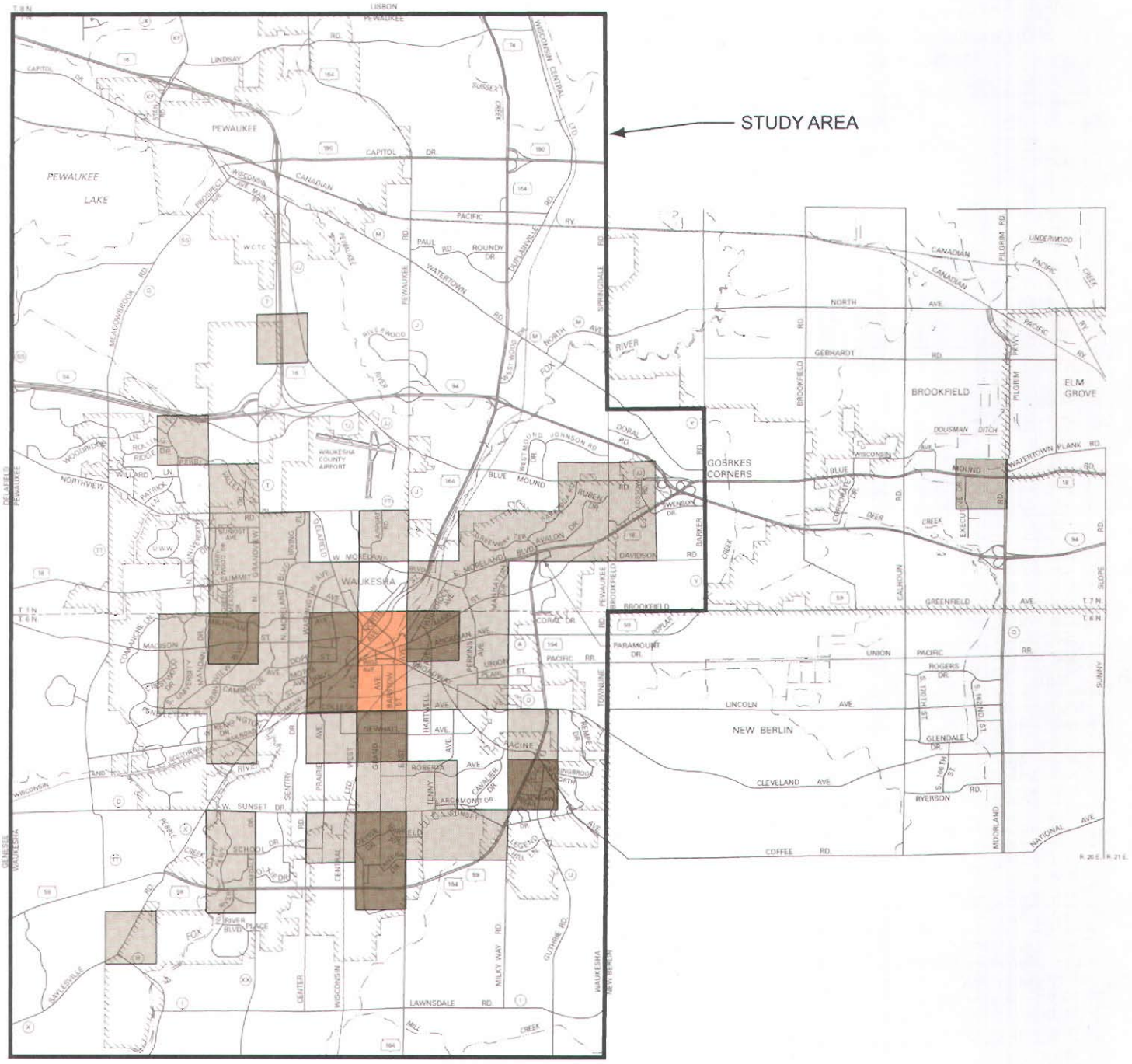
1. Since 1960, the study area population has increased by about 116 percent, from about 43,000 persons in 1960 to about 93,000 persons in 1998. Over this period, the population of the City of Waukesha, increased by about 107 percent, from about 30,000 persons in 1960 to about 62,200 persons in 1998. Significant population growth has also occurred in the other study area communities which have all experienced larger population increases on a relative basis since 1960 than in the City. During the 1990s, population growth outside the City, principally in the Pewaukee and Brookfield portions of the study area, has surpassed that inside the City.

2. The number of households in the study area increased by about 194 percent, or nearly twice as fast as the resident study area population between 1960 and 1998. Consequently, the average household size decreased from about 3.6 persons in 1960 to about 2.6 persons in 1998. Trip making and, hence, the potential need to serve trips by transit, is strongly related to the number of households and their characteristics.

3. Population subgroups whose dependence on, and use of, public transit has historically been greater than that of the general population as a whole include school-age children (ages 10 through 18), the elderly (age 60 and older), the disabled, persons in low-income households, and households with no vehicles available. Since 1960, the elderly population has increased significantly in terms of absolute numbers and in its share of the total study area population. The school-age population and zero-auto households have increased somewhat in absolute numbers but actually declined in their relative share of the total population, while the absolute number of persons residing in low-income households has remained stable but has also declined on a relative basis. Comparable data permitting a trend analysis for the disabled population since 1960 was not available. The transit-dependent population within the study area was concentrated primarily in the City of Waukesha in 1990.

Map 14

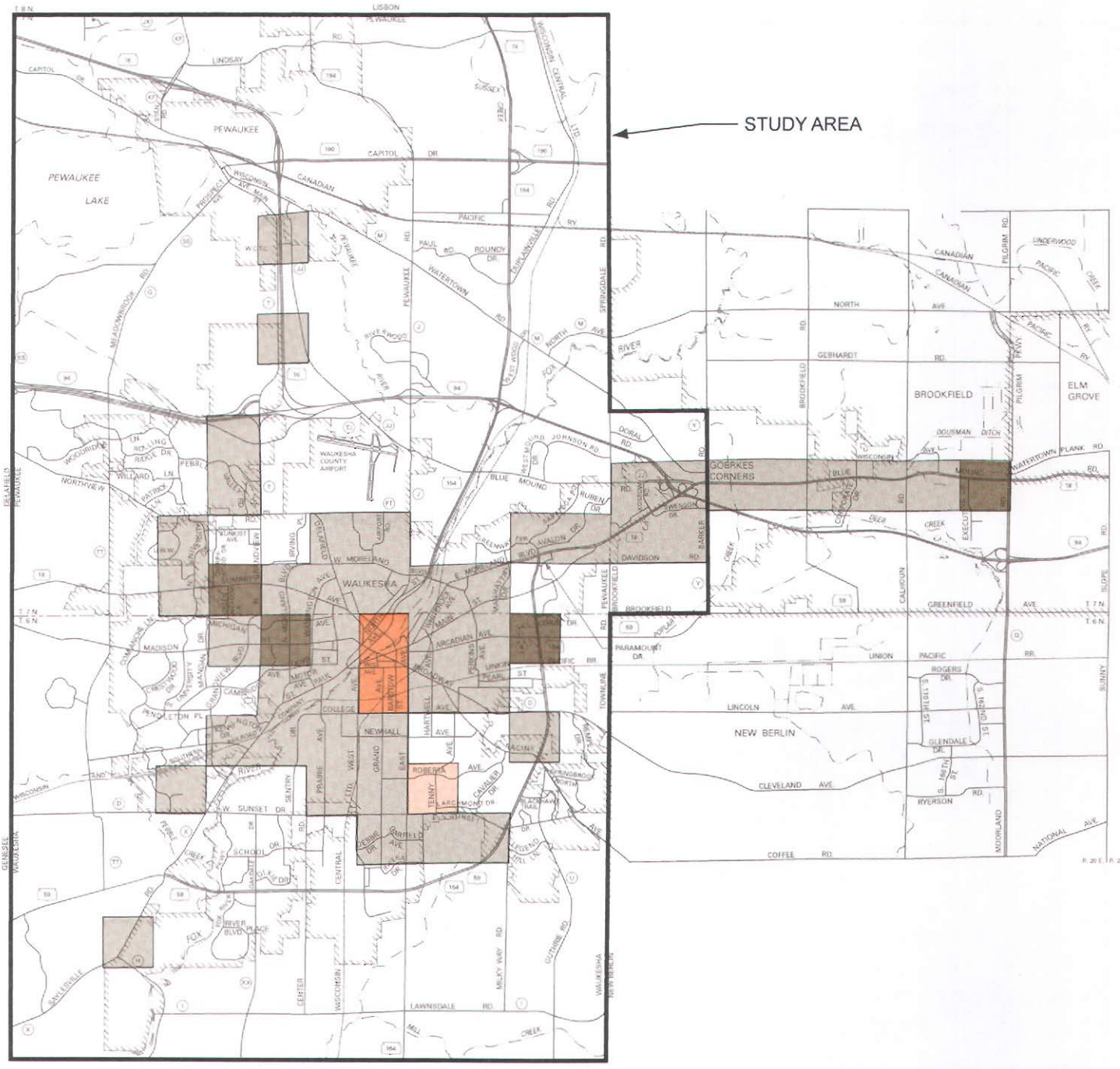
LOCATION OF TRIP PRODUCTIONS OF WEEKDAY REVENUE PASSENGERS ON THE WAUKESHA METRO TRANSIT SYSTEM: APRIL 29 AND 30, 1998



Source: SEWRPC.

Map 15

LOCATION OF TRIP ATTRACTIONS OF WEEKDAY REVENUE PASSENGERS ON THE WAUKESHA METRO TRANSIT SYSTEM: APRIL 29 AND 30, 1998



NUMBER OF TRANSIT TRIPS ATTRACTED PER U.S. PUBLIC LAND SURVEY ONE-QUARTER SECTION

- 150 OR MORE
- 100 TO 149
- 50 TO 99
- 10 TO 49
- LESS THAN 10

GRAPHIC SCALE

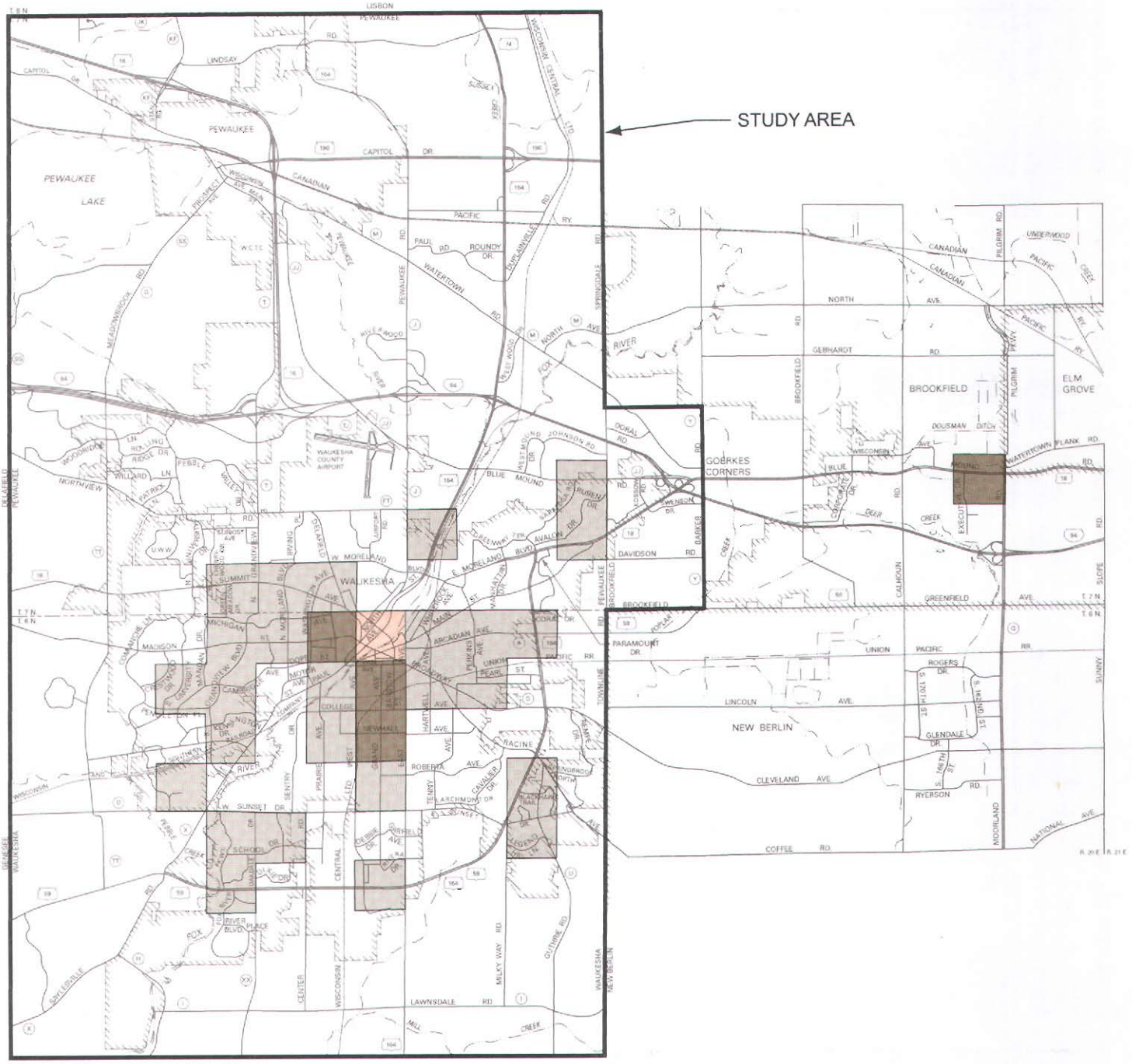
0 1/2 1 MILE

0 4000 8000 FEET

Source: SEWRPC.

Map 16

LOCATION OF TRIP PRODUCTIONS OF SATURDAY REVENUE PASSENGERS ON THE WAUKESHA METRO TRANSIT SYSTEM: MAY 2, 1998



NUMBER OF TRANSIT TRIPS PRODUCED PER U.S. PUBLIC LAND SURVEY ONE-QUARTER SECTION

(NONE)	150 OR MORE
	100 TO 149
	50 TO 99
	10 TO 49
	LESS THAN 10

GRAPHIC SCALE

0 1/2 1 MILE

0 4000 8000 FEET

Source: SEWRPC.

Map 17

LOCATION OF TRIP ATTRACTIONS OF SATURDAY REVENUE PASSENGERS ON THE WAUKESHA METRO TRANSIT SYSTEM: MAY 2, 1998

NUMBER OF TRANSIT TRIPS ATTRACTED PER U.S. PUBLIC LAND SURVEY ONE-QUARTER SECTION

- 150 OR MORE
- (NONE) 100 TO 149
- 50 TO 99
- 10 TO 49
- LESS THAN 10

GRAPHIC SCALE

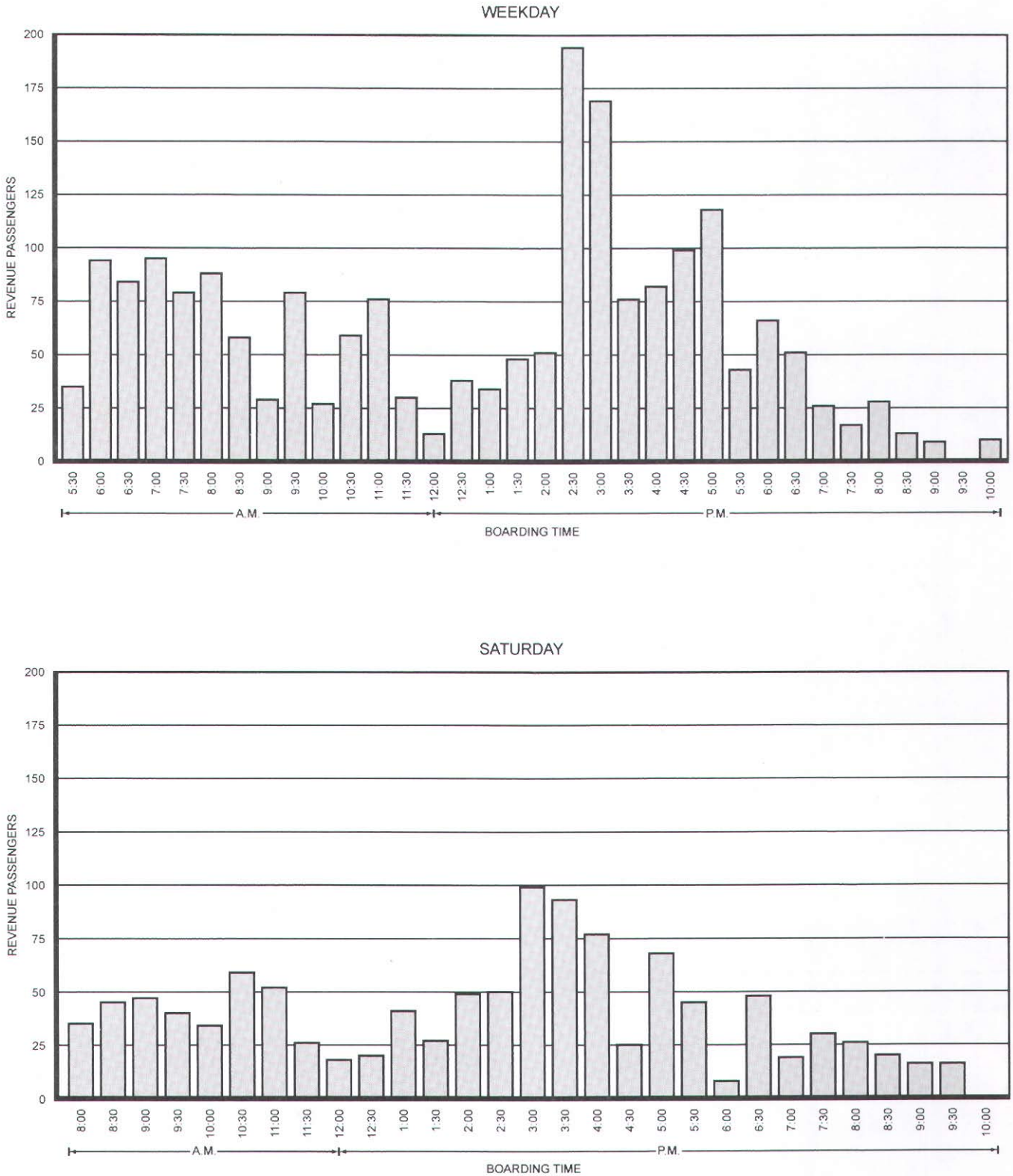
0 1/2 1 MILE

0 4000 8000 FEET

Source: SEWRPC.

Figure 1

HOURLY DISTRIBUTION OF TRIPS MADE BY REVENUE PASSENGERS ON THE WAUKESHA METRO TRANSIT SYSTEM: APRIL AND MAY 1998



Source: SEWRPC.

Table 20

SUMMARY OF COMMENTS AND SUGGESTIONS RECEIVED FROM SURVEYED PASSENGERS ON THE WAUKESHA METRO TRANSIT SYSTEM: APRIL 29 AND 30, MAY 2, 1998

Comments and Suggestions	Percent of Surveyed Passengers[a]	
	Weekday	Saturday
Change Service Times of Frequency		
Add Sunday Service	31	40
Provide Longer Hours of Service	5	11
Reduce Headways	10	9
Extend Saturday Service	4	4
Add Early Morning Service	1	1
Subtotal	51	65
Change Routes		
Add Stops	1	1
Increase Service Area	6	1
General Comments on Routes	3	2
Subtotal	10	4
Improvements to Vehicles and Facilities		
Buses in Poor Condition	10	10
Improve Stops	3	2
Subtotal	13	12
Other Service Improvements		
Improve On-Time Performance	3	2
Improve Driver Friendliness	3	2
Improve Transfers	1	--
Reduce Fares	3	3
Improve Coordination between Routes or Systems	1	1
Subtotal	11	8
No Improvement Needed	6	5
No Comment	38	26

[a] *Passengers making comments often made more than one comment.*

Source: SEWRPC.

4. The number of jobs in the study area has doubled between 1970 and 1990 from about 29,500 jobs in 1970 to about 59,300 jobs in 1990. The increase in the Waukesha area was part of the overall increase of about 137 percent in Waukesha County employment levels over this period. The increases in employment in the study area have varied significantly by municipality. While almost all of the new jobs between 1970 and 1980 were located in the City of Waukesha and Village of Pewaukee, almost two-thirds of the new jobs between 1980 and 1990 were located in the City of Pewaukee and Town of Brookfield. The highest job concentrations are currently in the City of Waukesha and in office and industrial parks in the Pewaukee and Brookfield portions of the study area.

5. The amount of land in the study area devoted to urban land uses increased from about 9.8 square miles in 1963 to about 30.5 square miles in 1995, an increase of about 211 percent. About one-half of the land in the study area is currently in fully developed urban land uses compared with about 16 percent in 1963. The rapid urbanization of the study area has been marked by a diffusion of both commercial and residential development throughout the study area.

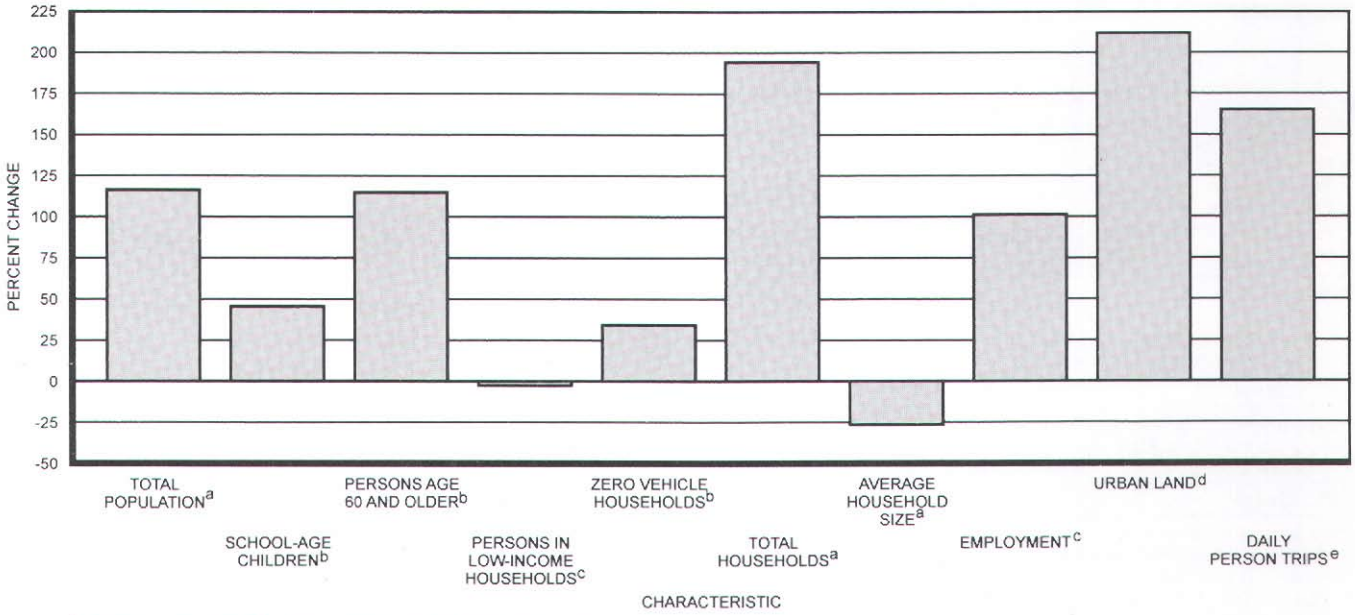
6. Certain major land uses in the study area generate a large number of person trips on a daily basis, including commercial centers, educational centers, medical centers, governmental and public institutional centers, and employment centers. In 1998, these land uses, along with housing and care facilities for elderly and disabled persons and low income housing, were identified as major potential transit trip generators and were found to be concentrated in the developed urban areas of the study area, with most located in the City of Waukesha.

7. Based on past travel surveys undertaken by the Regional Planning Commission, average weekday total person travel, including trips made entirely within the study area and between the study area and other external areas, has increased by about 165 percent, from about 151,200 person trips in 1963 to about 400,800 trips in 1991. About 59 percent of the total increase in person trips occurred as external person travel and 41 percent as internal person travel. Internal person trips accounted for about one-half of all study area person trips in 1991, with the largest proportion being home-based other trips, such as trips made for medical, personal business, or social or recreational purposes. The distribution of person-trip productions and attractions within the study area largely reflects the significant concentrations of population, employment, and major trips generators in the City of Waukesha. The remaining half of all study area person trips were made with one trip end external to the study area, with the most trips made for work purposes. Trips made between the study area and other portions of Waukesha County accounted for about the largest volume of external person travel, although other significant volumes were also identified between the study area and Milwaukee County.

8. Commission survey data indicate that about 2,000 weekday and 1,100 Saturday revenue passenger trips were made on the fixed-route-

Figure 2

RELATIVE CHANGES IN SELECTED CHARACTERISTICS OF THE STUDY AREA OVER APPROXIMATELY THE PAST THREE DECADES



[a] THE RELATIVE CHANGE SHOWN IS FOR THE PERIOD OF 1960 TO 1998.
[b] THE RELATIVE CHANGE SHOWN IS FOR THE PERIOD OF 1960 TO 1990.
[c] THE RELATIVE CHANGE SHOWN IS FOR THE PERIOD OF 1970 TO 1990.
[d] THE RELATIVE CHANGE SHOWN IS FOR THE PERIOD OF 1963 TO 1995.
[e] THE RELATIVE CHANGE SHOWN IS FOR THE PERIOD OF 1963 TO 1991.

Source: SEWRPC.

bus service provided by the Waukesha Metro Transit System on the survey days in late April and early May, 1998. The typical passenger profile can be summarized as follows: female, without a valid driver's license, 16 to 44 years old, and from a household with an annual income below $30,000 per year and no vehicle available. Most of the trips made by system passengers on weekdays were for work and school purposes, while trips made on Saturdays were largely for other purposes such as medical, personal business, and social or recreation. About 58 percent of the weekday ridership occurred during two peak-usage periods, which coincided with the starting and ending times of first shift jobs at employers and classes at local schools. Saturday ridership exhibited no distinct peak periods. As would be expected, the distribution of transit trip productions and attractions reflects the service area for the transit system, which is principally within the City of Waukesha and the Blue Mound Road corridor.

Chapter III

EXISTING PUBLIC TRANSIT SYSTEM

INTRODUCTION

An understanding of the existing public transit system within the Waukesha area is basic to the preparation of any sound transit system development plan. This understanding should be based upon pertinent information describing the operating characteristics and ridership levels for the current City transit system, as well as for the other major transit services within the study area.

This chapter documents the findings of an inventory of the principal public transit programs and services available within the Waukesha study area. Presented first is a description of the Waukesha Metro Transit System including service operations, equipment and facilities, ridership, and costs. This is followed by descriptions of the operations of other major public transit service providers serving the study area, including other bus services, taxicab service, specialized transportation services for elderly and disabled persons, and school district student transportation services.

THE WAUKESHA METRO TRANSIT SYSTEM

Public transit service was initiated in the Waukesha area in 1895 with the construction of an electric railway line between Waukesha and Waukesha Beach, a popular recreation area located on Pewaukee Lake. The electric railway line eventually extended from Watertown to Milwaukee operating on local streets in the City of Waukesha before service was discontinued in 1951. It was not until 1941 that local bus service was inaugurated in the City of Waukesha by Waukesha Transit Lines, now known as Wisconsin Coach Lines, Inc. Continuous declines in ridership and profits during the postwar period, and failure to obtain Federal and State transit assistance through the City in the mid 1970's, resulted in extreme financial difficulty for the private operator which ultimately ceased operation of regular local service in 1976 and school tripper service in 1977. After a referendum to provide publicly subsidized demand-responsive transit service in the City failed in 1977, a second referendum concerning a publicly owned, privately managed fixed-route bus system was successful in 1980. On August 31, 1981, after over five years without regular local transit service, operation of the Waukesha Metro Transit System began.

Administrative Structure

The Waukesha Metro Transit System is owned by the City of Waukesha and operated by a private contract management firm, Ryder/ATE, Inc., under the direct supervision of the Transit Director, a City of Waukesha employee. The policymaking body of the transit system is the Waukesha Transit Commission. The powers of the Transit Commission are substantial and include essentially all the powers necessary to acquire, operate, and manage the transit system. The Waukesha Common Council has the ultimate responsibility for review and approval of certain important matters, including the annual budget for the public transit program.

Fixed Route Bus Service

During 1999 fixed route bus service was provided by the Waukesha Metro Transit System using the routes shown on Maps 18 and 19. The routes operated during weekday daytime periods were somewhat different than those operated on weekday evenings and Saturdays as they include special peak hour services designed to serve major employment centers and schools. Most of the special services are not operated on weekday evenings or Saturdays. In addition, Route Nos. 5 and 6 are combined on weekday evenings and Saturdays into a single route, Route No. 5/6, with service operated only over the most productive route segments of the two routes. The current operating characteristics, service levels, and fares for the system are summarized below.

Fixed Routes

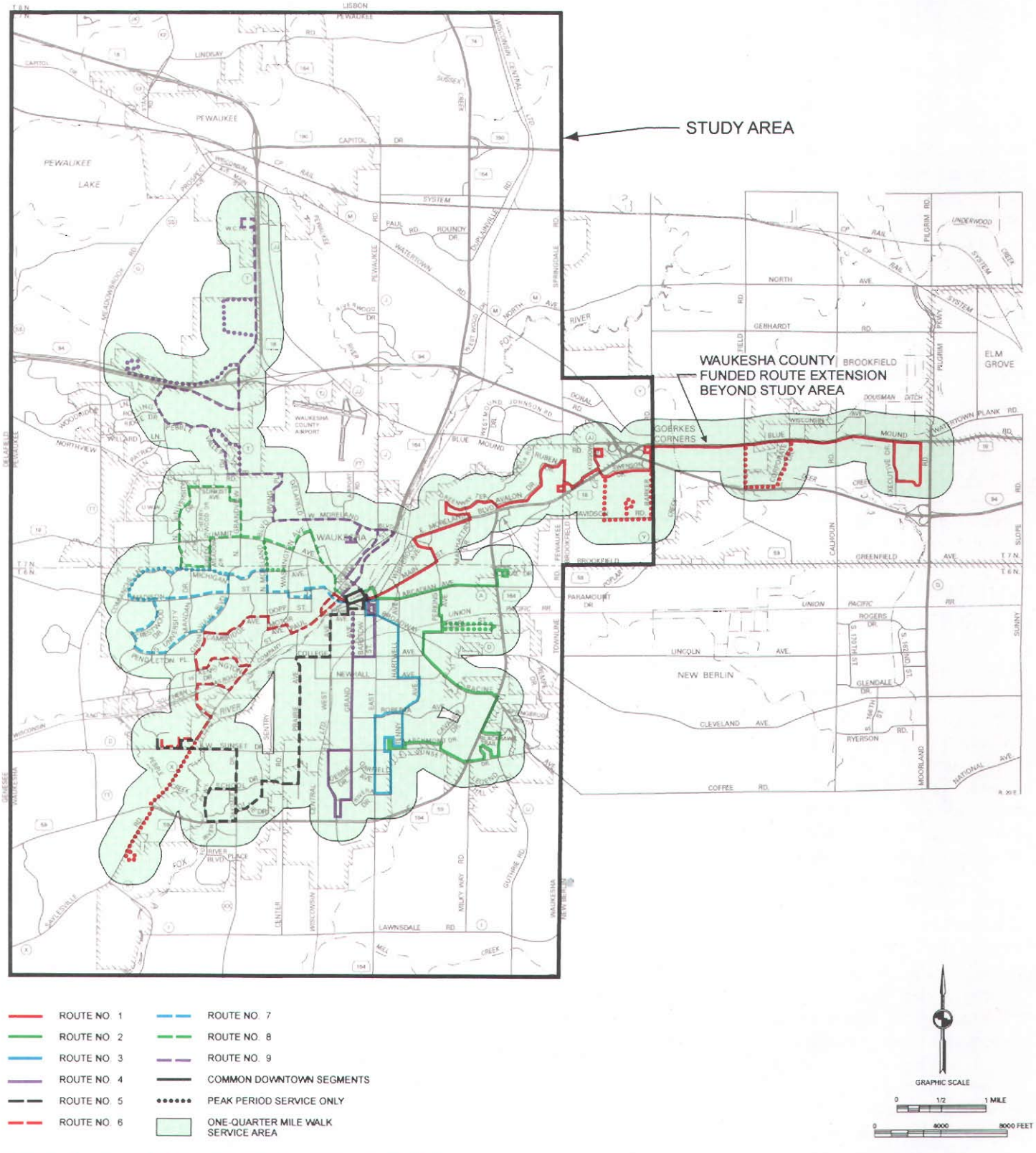
The routes operated by the transit system included the following:

- Seven downtown-oriented local routes, Route Nos. 2 through 8, that operate between outlying portions of the City of Waukesha and the Waukesha central business district (CBD). Short segments of Route Nos. 2, 5, and 6 operate in the Town of Waukesha.

- Two downtown-oriented routes that provide service within the City of Waukesha and also serve major traffic generators located outside the City. Route No. 1 extends to the Brookfield Square Shopping Center, providing service principally along Blue Mound Road in the City and Town of Brookfield. This extension of Route No. 1 is subsidized by

MAP 18

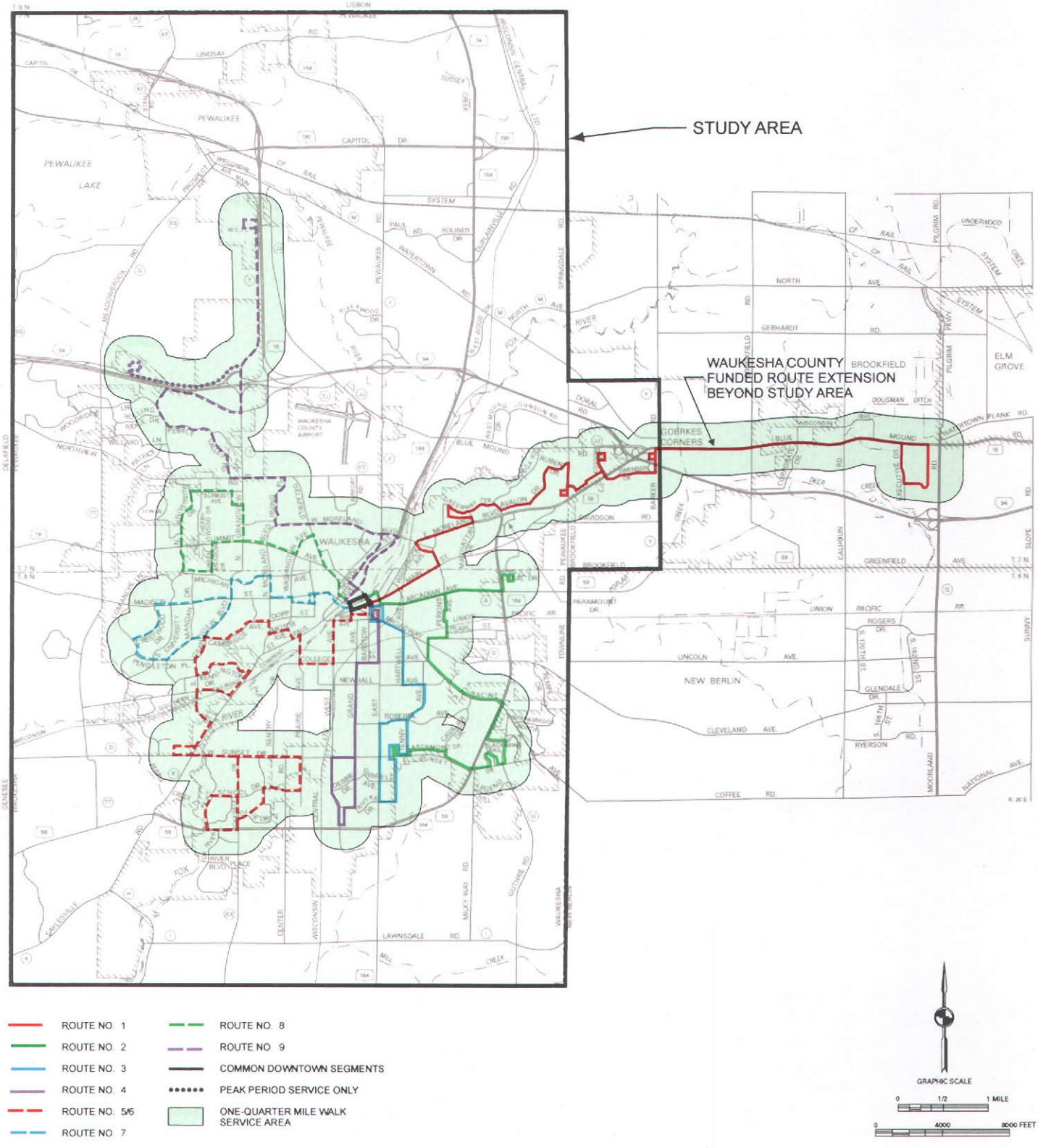
EXISTING PUBLIC TRANSIT SERVICE PROVIDED DURING THE WEEKDAY DAYTIME SERVICE PERIOD BY THE WAUKESHA METRO TRANSIT SYSTEM: APRIL 1999



Source: City of Waukesha Metro Transit System and SEWRPC.

MAP 19

EXISTING PUBLIC TRANSIT SERVICE PROVIDED DURING WEEKDAY EVENINGS AND ON SATURDAYS BY THE WAUKESHA METRO TRANSIT SYSTEM: APRIL 1999



Source: City of Waukesha Metro Transit System and SEWRPC.

Table 21

OPERATING AND SERVICE CHARACTERISTICS BY ROUTE OF THE WAUKESHA METRO TRANSIT SYSTEM: APRIL 1999

Weekday Service											
		Service Availability		Service Frequency (minutes)				Buses Required[a]			
Bus Route	Round Trip Route Length (miles)	Start Time First Trip	Start Time Last Trip	Morning Peak Period	Midday Period	Afternoon Peak Period	Evening Period	Morning Peak Period	Midday Period	Afternoon Peak Period	Evening Period
1	24.45	5:40 a.m.	10:15 p.m.	15-20	30	15-20	30	4.0	3.0	5.0	3.0
2	18.10	5:33 a.m.	10:15 p.m.	30	60	30	60	2.0	1.0	2.0	1.0
3	7.05	5:55 a.m.	9:45 p.m.	30	60	30	60	1.0	0.5	1.0	0.5
4	6.55	5:43 a.m.	10:15 p.m.	30	30	30	60	1.0	1.0	1.0	0.5
5	11.75	5:55 a.m.	6:15 p.m.	30	60	30	--	2.0	1.0	2.0	--
6	13.90	6:04 a.m.	6:15 p.m.	60	60	30	--	1.0	1.0	2.0	--
5/6	15.65	7:15 p.m.	10:15 p.m.	--	--	--	60	--	--	--	1.0
7	8.55	5:47 a.m.	10:15 p.m.	30	60	30	60	2.0	0.5	1.0	0.5
8	10.60	5:33 a.m.	9:45 p.m.	30	30	30	60	2.0	1.0	1.0	0.5
9	24.25	5:52 a.m.	10:15 p.m.	30	60	30	60	2.0	1.0	2.0	1.0
System Total	140.85	5:33 a.m.	10:15 p.m.	--	--	--	--	17.0	10.0	17.0	8.0

Saturday Service					
		Service Availability			
Bus Route	Round Trip Route Length (miles)	Start Time First Trip	Start Time Last Trip	Service Frequency (minutes)	Buses Required[a]
1	18.95	8:20 a.m.	9:50 p.m.	30	3.0
2	18.10	8:19 a.m.	9:50 p.m.	60	1.0
3	7.05	8:20 a.m.	9:20 p.m.	60	0.5
4	6.00	7:59 a.m.	9:50 p.m.	60	0.5
5/6	15.65	8:13 a.m.	9:50 p.m.	60	1.0
7	6.75	8:00 a.m.	9:50 p.m.	60	0.5
8	10.60	8:20 a.m.	9:20 p.m.	60	0.5
9	24.25	8:29 a.m.	9:50 p.m.	60	1.0
System Total	107.35	7:59 a.m.	9:50 p.m.	--	8.0

[a] *Fractions indicate a single vehicle is operated over two routes during a time period.*

Source: City of Waukesha Metro Transit System and SEWRPC.

Waukesha County and is considered to be part of the Waukesha County transit system. Route No. 9 extends to the Waukesha County Technical College (WCTC) Pewaukee campus in the Village of Pewaukee.

All the regular routes serve a common transfer point located at a downtown terminal in the City of Waukesha CBD. Cycle, or pulse, scheduling is utilized so that all buses meet at the downtown terminal at approximately the same time during peak hours. This allows bus passengers the opportunity to transfer conveniently between bus routes and complete a trip with a minimum of delay. During weekday midday and evening periods, and on Saturday, the schedules of all routes are not fully coordinated resulting in wait times of 30 minutes for some transferring passengers. Four of the nine routes—Route Nos. 3, 4, 7, and 8—while identified as individual routes, are paired and actually operated as through routes, with buses operating over these route pairs continuing on to another part of the City over a second route after meeting at the downtown terminal. Two additional routes, Route Nos. 2 and 6 are also paired and operated as through routes, but only during peak periods.

Service Levels

The current operating characteristics and service levels for the routes of the transit system are presented in Table 21. Local bus service over Route Nos. 1, 2, 3, 4, 7, 8, and 9 is provided six days per week, excluding Sundays and holidays, throughout the service day. Service over Route Nos. 5 and 6 is combined during weekday evenings and Saturdays and provided over Route No. 5/6. Weekday peak period operating headways are 30 minutes on all routes with the exceptions of Route No. 1, which operates with 15 to 20 minute headways, and Route No. 6, which operates with 60-minute headways during the morning period. During the weekday midday period, all routes operate with 60-minute headways with the exception of Route Nos. 1, 4, and 8, which operate with 30-minute

Table 22

FARES FOR FIXED-ROUTE BUS SERVICE FOR THE WAUKESHA METRO TRANSIT SYSTEM: APRIL 1999

Fare Category	Fare Type		
	Cash (per one-way trip)	Tickets	Pass
Adults (ages 18-64)	$1.00	10 for $8.50	$24.00 per month[a]
Students (ages 5-17)	$0.75	10 for $6.50	$19.00 per month[b]
Children (under age 5 when accompanied by an adult)	Free	--	--
Elderly (age 65 and older) and Disabled Persons	$0.50	10 for $4.50	--
Transfers with Other Waukesha Metro Transit System Routes[c]	Free	Free	--
Saturday Supertransfer[d]	$1.50	--	--

[a] *The monthly pass is good for unlimited riding for one calendar month.*

[b] *A summer youth pass, which is good for unlimited riding during the three-month summer season, is available for $20.*

[c] *Free transfers for the Waukesha Metro Transit System routes are currently issued at the time fares are paid by cash or ticket and are valid for 90 minutes. There is no additional charge for passengers transferring between the routes operated by Waukesha Metro Transit System and Wisconsin Coach Lines. Inc., Route Nos. 1 through 5. A transfer policy is also in effect for passengers transferring between Waukesha Metro Transit Route No. 1 and Milwaukee County Transit System Route No. 10 at the Brookfield Square and Executive Drive bus stops which allows passengers to transfer for an additional fare of $0.25 per trip.*

[d] *The Supertransfer is good for unlimited riding on the Saturday it is purchased.*

Source: City of Waukesha Metro Transit System and SEWRPC.

headways. During weekday evenings and all day on Saturdays, all other routes operate with 60-minute headways except for Route No. 1, which operates with 30-minute headways. The City uses a fleet of 23 transit buses to provide service under the program.

Fares

The current fares charged for fixed route bus service are shown in Table 22. The base adult cash fare is currently $1.00 per trip with reduced fares offered for students, elderly persons, and disabled individuals. Convenience fares are also available in the form of tickets and passes which offer a discount from the comparable cash fare. Free 90-minute transfers are issued upon request at the time the fare is paid, and may be used to transfer to any route, including the route from which the transfer was issued.

The historic transit fares for the Waukesha transit system since it began public operation in 1981 are shown in Figure 3 in both actual dollars and constant 1981 dollars. The last fare increase implemented by the City was in January 1996 when the base adult cash fare was raised by about 33 percent from $0.75 to $1.00 per trip. Even with the past fare increases, the current adult cash fare in constant 1981 dollars is only slightly above the fare of $0.50 per trip that was in effect when the City began public operation of the system in 1981.

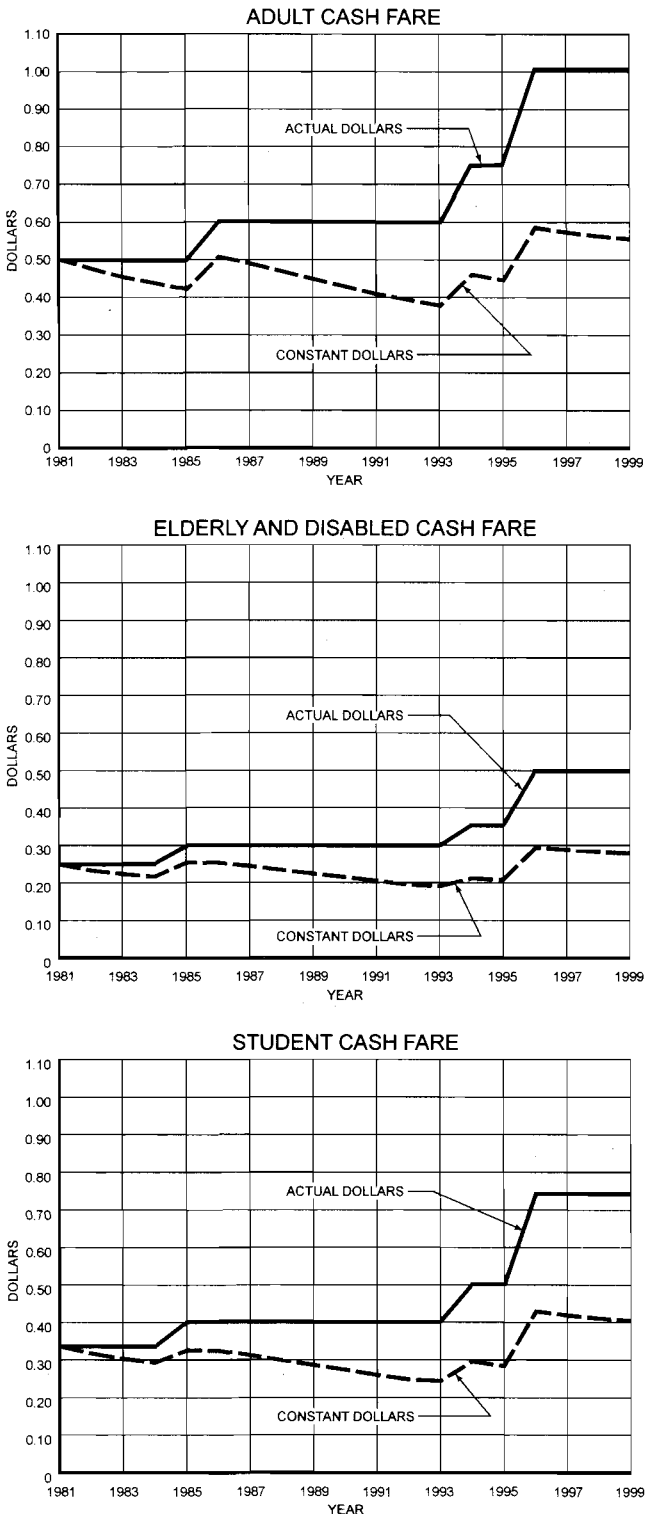
Paratransit Service for Disabled Individuals

The City of Waukesha also provides paratransit service to serve the travel needs of disabled individuals. This service is provided to comply with Federal regulations implementing the public transit requirements of the Americans With Disabilities Act of 1990. These regulations require each public entity operating fixed route transit system to provide paratransit service to disabled individuals as a complement to its fixed route bus service.

The current eligibility requirements for, and service characteristics of, the City's paratransit service are summarized in Table 23. The paratransit service is

Figure 3

HISTORIC FARES FOR FIXED-ROUTE BUS SERVICE CHARGED FOR THE WAUKESHA METRO TRANSIT SYSTEM: 1981-1999



NOTE: A special Saturday SUPERTRANSFER pass and summer youth pass are also available.

Source: City of Waukesha Metro Transit System and SEWRPC.

to provide curb-to-curb transportation to disabled individuals who are unable to use the fixed-route bus service provided by the Waukesha Metro Transit System. The service is directly provided by the transit system through the Waukesha Metrolift Program. The paratransit service offered through the Metrolift Program is available during the same service periods, and serves the entire area served by the City's fixed-route bus service. The City uses three small transit buses to provide service under the program. Fares for Metrolift service are $2.00 per trip, twice the base adult cash fare.

Disabled individuals can also use accessible bus service provided on the regular bus routes. A total of 17, or about 74 percent, of the 23 buses in the fixed-route bus fleet are accessible to individuals using wheelchairs. The City uses these buses to provide Dial-A-Lift Bus service, a program through which an accessible bus service is provided by assigning the buses to scheduled bus trips on an advance reservation basis. Disabled individuals intending to use the service must call the transit system at least 24 hours in advance of the time service is needed and indicate on what routes and at what time they would like to travel. This is not necessary during weekday offpeak periods and on Saturdays when all buses used to provide service are accessible.

Equipment and Facilities

The current bus fleet of the Waukesha Metro Transit System is listed in Table 24. The fixed facilities used by the transit system are shown on Map 20. The equipment and facilities of the transit system may be summarized as follows:

- The existing bus fleet consists of a total of 26 heavy duty, diesel-powered buses, 23 of which are 35-foot long urban transit buses used on the regular routes of the transit system. The other three buses are 29-foot long urban transit buses that are used to provide paratransit service under the Metrolift Program. All but the three oldest buses purchased in 1985 are air-conditioned. The bus fleet is relatively new, with an average age of about four years.

- The downtown terminal for the routes of the transit system is located in the municipal parking lot north of W. Main Street between W. Broadway and N. Barstow Street. Constructed in 1983, the terminal consists of a raised concrete boarding platform covered by a centrally supported roof but open on all sides. The City plans to relocate the downtown terminal to a new site approximately two blocks to the north

Table 23

OPERATING AND SERVICE CHARACTERISTICS OF THE COMPLEMENTARY PARATRANSIT SERVICES FOR DISABLED INDIVIDUALS PROVIDED THROUGH THE WAUKESHA METRO TRANSIT SYSTEM METROLIFT PROGRAM: APRIL 1999

Characteristics	Complementary Paratransit Service
Eligibility	• Disabled individuals whose physical or cognitive disability prevents them from using the Waukesha Metro Transit System
Response Time	• Service provided on a next-day reservation basis.
Restrictions or Priorities Placed on Trips	• None
Fares	• $2.00 per one-way trip
Hours and Days of Operation	• Monday-Friday: 5:30 a.m. - 10:30 p.m. • Saturdays: 8:00 a.m. - 10:00 p.m. • Sundays and holidays: No service
Service Area	• Trips made within area within three-quarters mile of a Waukesha Metro Transit System route.

Source: City of Waukesha Metro Transit System, and SEWRPC.

Table 24

BUS FLEET OF THE WAUKESHA METRO TRANSIT SYSTEM: APRIL 1999

Type of Bus		Number of Buses	Seats per Bus	Wheelchair Positions per Bus	Year of Manufacture	Special Equipment			Age (years)	Mileage[a]
Make	Model					Air Conditioning	Wheelchair Lift/Ramp	Kneeling Feature		
Orion	01.507	3	42	--	1985	No	No	No	14	458,000
Gillig	Phantom	3	39	--	1990	Yes	No	No	9	313,000
Gillig	Phantom	3	35	2	1994	Yes	Yes	No	5	183,000
Bluebird	QRE	3	13	5	1995	Yes	Yes	No	4	59,000
Gillig	Low-Floor	14	31	2	1998	Yes	Yes	Yes	1	9,000
Total		26	--	--	--	--	--	--	Average: 4.2	Average: 121,700

[a] *Figures reflect average lifetime mileage per vehicle as of January 1, 1999.*

Source: City of Waukesha Metro Transit System and SEWRPC.

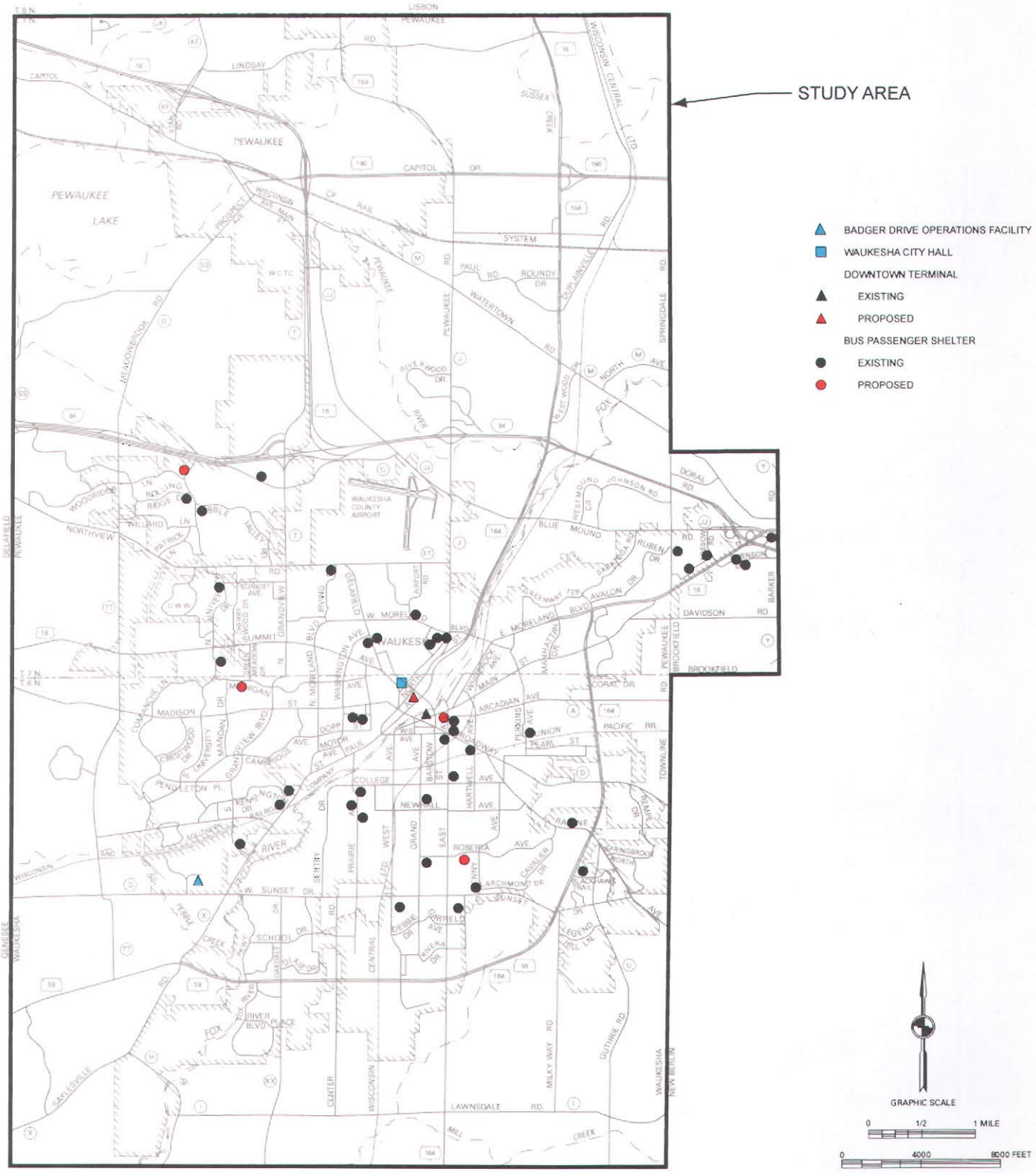
in the block bounded by St. Paul Avenue, Mary Street, North Street, and Brook Street to allow for more room for Metro buses as well as buses on connecting commuter services, and to eliminate conflicts with pedestrian activity and vehicles at the existing site.

- A total of 39 bus passenger waiting shelters have been placed at various locations throughout the transit service area. Four more shelters are scheduled to be erected during 1999. Most of the shelters are of a modular design with the size of the shelter being determined by the number of back and sidewall panels used.

- The Waukesha Metro Transit System operations facility is located at 2311 Badger Drive. The facility consists of a single-story building built in 1986 and expanded in 1995. The building is used exclusively for transit program functions, including bus storage and maintenance, vehicle cleaning and servicing, parts storage, and employee activities. The building

Map 20

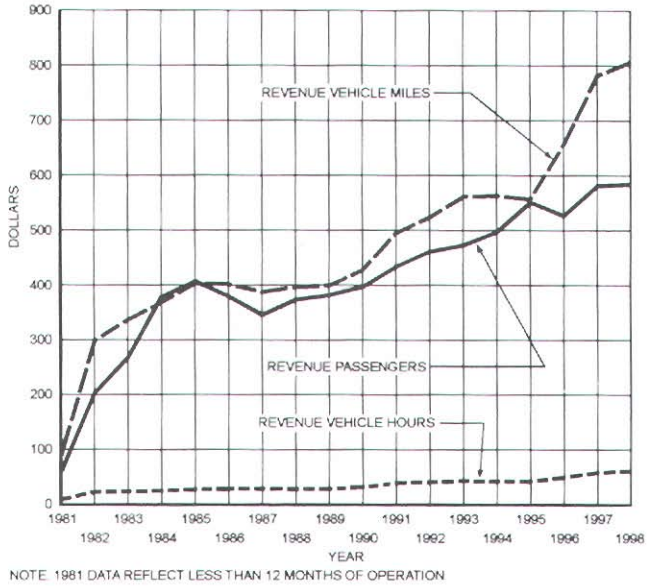
LOCATION OF FIXED FACILITIES FOR THE WAUKESHA METRO TRANSIT SYSTEM: APRIL 1999



Source: City of Waukesha Metro Transit System and SEWRPC.

Figure 4

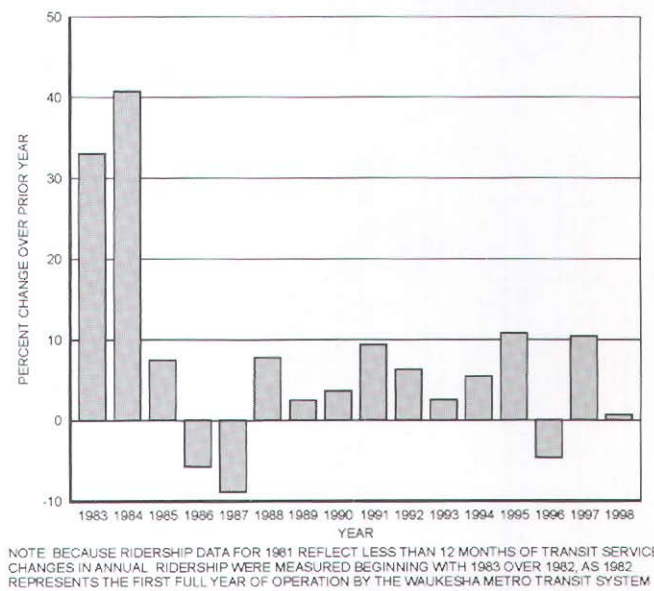
HISTORIC RIDERSHIP AND SERVICE LEVELS ON THE WAUKESHA METRO TRANSIT SYSTEM: 1981-1998



Source: City of Waukesha Metro Transit System and SEWRPC.

Figure 5

PERCENTAGE CHANGE IN ANNUAL RIDERSHIP ON THE WAUKESHA METRO TRANSIT SYSTEM: 1983-1998



Source: City of Waukesha Metro Transit System and SEWRPC.

also houses the administrative offices and meeting rooms for the transit system. Services for the general public performed in this building are limited to telephone information services.

- The Waukesha City Hall is located on the northern edge of the Waukesha CBD at 201 Delafield Street. The Waukesha City Hall houses the offices and public meeting rooms of the Mayor, the members of the Waukesha Common Council. Services for the general public performed in this building include the sale of tickets and monthly passes.

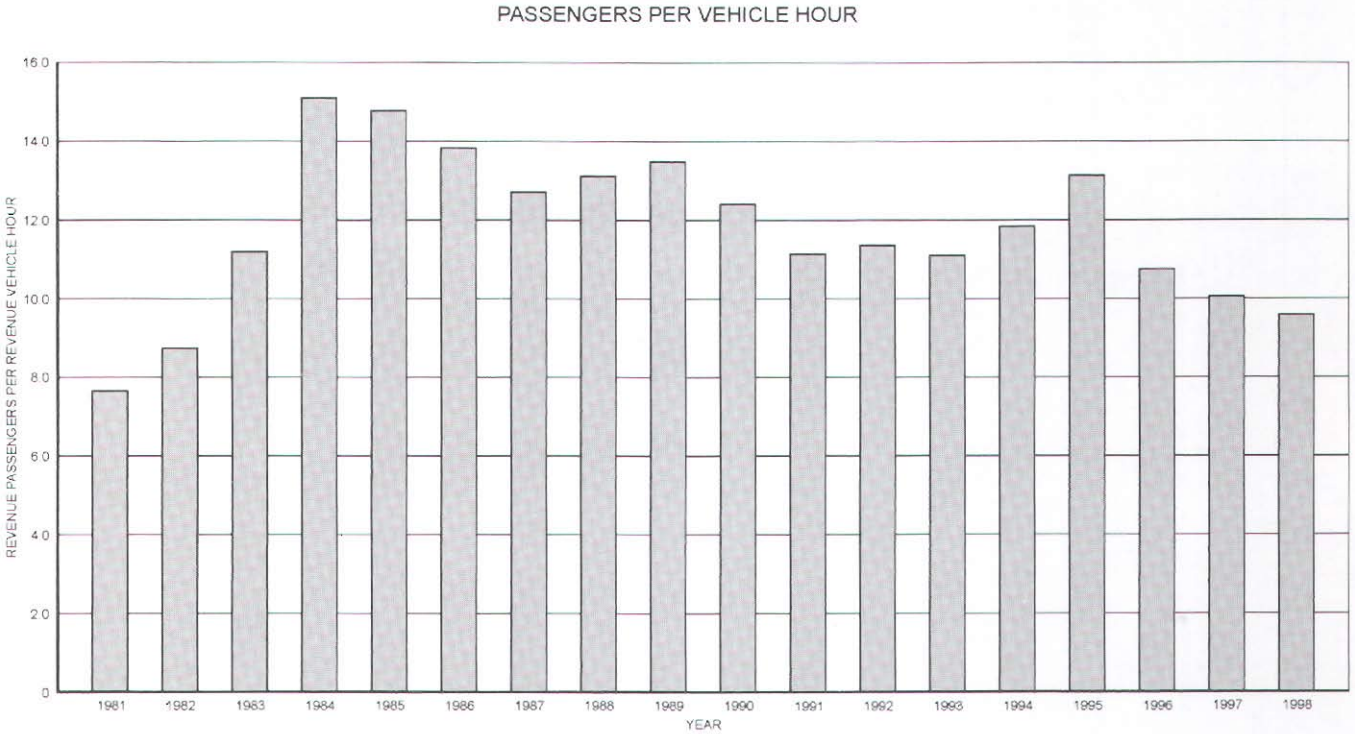
Ridership and Service Levels

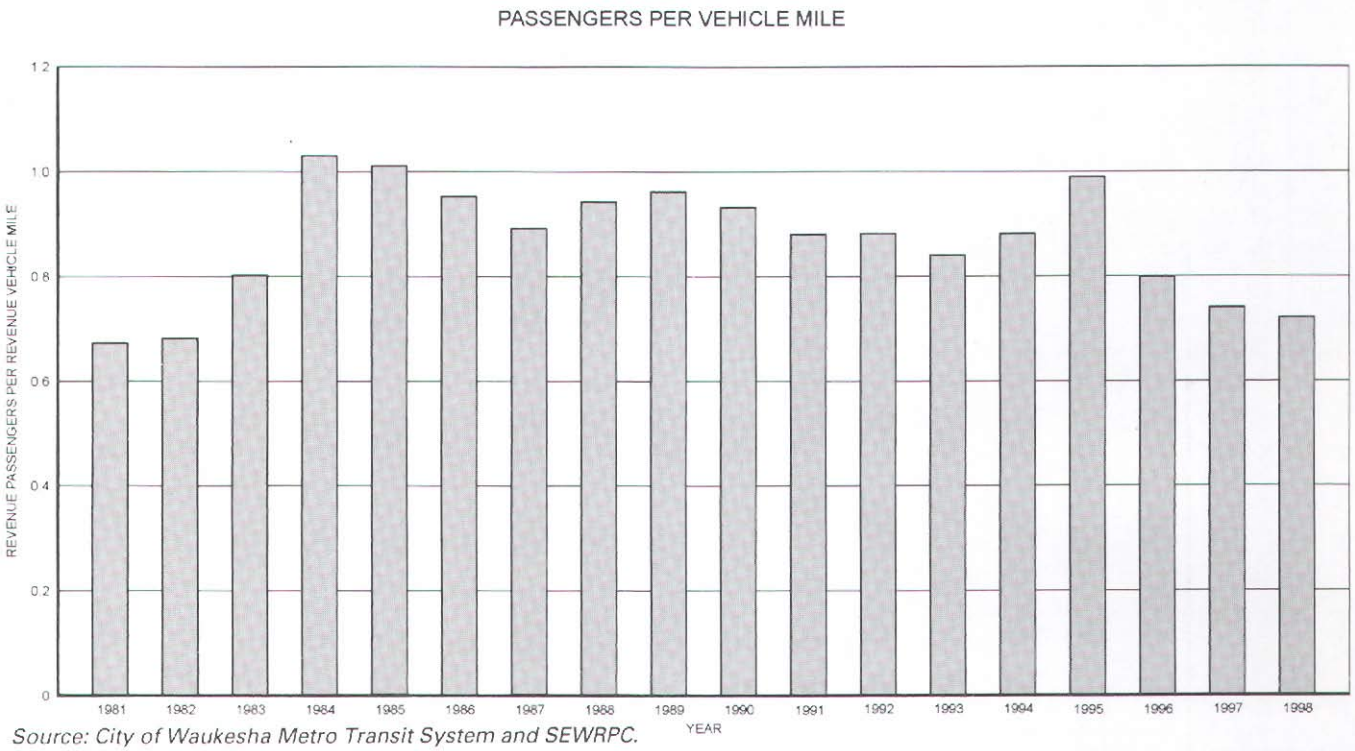
The historic trends in transit ridership and service levels for the Waukesha Metro Transit System since it began public operation in August 1981 are shown in Figures 4 and 5. Figure 6 shows the trends in passengers per vehicle hour and per vehicle mile for the system over this period. The transit system experienced steadily increasing transit ridership each year from 1981 through 1985. Over this period ridership doubled from about 202,700 revenue passengers in 1982—the first full year of operation—to about 406,200 revenue passengers in 1985. The period was one of major transit service improvement and expansion occurring immediately after the City began operation of the transit system during which the City added Saturday service, kept fares stable, and introduced a fleet of new buses. Transit ridership decreases during 1986 and 1987 may be attributed to a fare increase in August 1985. During the period of 1988 to 1993, the predominant trend on the transit system was one of increasing service levels and ridership as the City added service to some routes, extended the weekday service day, and extended service into the Blue Mound Road corridor.

Information on systemwide ridership and service levels on the transit system for the most recent five-year period—1994 through 1998—are shown in Table 25. During this period, systemwide ridership increased from about 497,700 revenue passengers in 1994 to about 584,200 revenue passengers in 1998, representing an increase of about 17 percent over the period. The growth can be attributed to expansion of service into the evening period in 1996, increased service frequency on Route No. 1 as part of efforts to mitigate congestion during the resurfacing of IH 94 in Waukesha and Milwaukee Counties during 1997 and 1998, and growth in residential, commercial, and industrial development in the service area. Service enhancements implemented over the period increased revenue vehicle-miles of service from about 563,700 miles in 1994 to about 807,800 miles in 1998, or by about 43 percent. The only year from this period during which the transit system experienced a decline in ridership was in 1996, the year of the last fare increase.

Figure 6

HISTORIC TRENDS IN SERVICE EFFECTIVENESS FOR THE WAUKESHA METRO TRANSIT SYSTEM: 1981-1998





Source: City of Waukesha Metro Transit System and SEWRPC.

Table 25

ANNUAL RIDERSHIP AND SERVICE LEVELS ON THE WAUKESHA METRO TRANSIT SYSTEM: 1994-1998

Characteristic	Year					Five-Year Average
	1994	1995	1996	1997	1998	
Primary Service Area Population[a]	58,400	59,400	59,900	61,400	62,200	60,300
Service Provided						
Revenue Vehicle-Miles	563,700	557,400	657,100	781,800	807,800	673,600
Revenue Vehicle-Hours	42,000	41,900	48,900	57,700	60,900	50,300
Revenue Passengers						
Fixed-Route Service	480,500	532,400	515,600	569,100	571,800	533,900
Paratransit Service	17,200	19,100	10,400	11,400	12,400	14,100
Total	497,700	551,500	526,000	580,500	584,200	548,000
Service Effectiveness						
Revenue Passengers per Capita	8.5	9.3	8.8	9.5	9.4	9.1
Revenue Passengers per Vehicle-Mile	0.9	1.0	0.8	0.7	0.7	0.8
Revenue Passengers per Vehicle-Hour	11.9	13.2	10.8	10.1	9.6	11.1

[a] *Based upon the estimated resident population of the City of Waukesha.*

Source: City of Waukesha Metro Transit System and SEWRPC.

The weekday and Saturday ridership on the system bus routes, based on passenger counts conducted by the transit system in April and May 1998 is presented in Table 26. As indicated in this table, Route Nos. 1, 2, 4, and 8 accounted for about two-thirds percent of the weekday ridership passengers and almost three-fourths of the Saturday ridership on the Waukesha Metro Transit System during this period. Route No. 1 by itself accounted for about 26 and 38 percent of system ridership on weekdays and Saturdays, respectively.

Operating and Capital Costs

The operating expenses of the Waukesha Metro Transit System are funded through a combination of farebox revenues, and Federal, state, and local funds. Capital expenditures are funded through a combination of Federal and local funds. The historic trends in the operating expenses, operating revenues, and total operating assistance for the transit system since it began public operation in 1981 are shown in Figure 7 in both actual dollars and constant 1981 dollars. A summary of the recent trends in operating expenses, operating revenues, total operating assistance, and local operating assistance for the transit system is shown in Table 27 for the period 1994-1998, while information on transit system capital expenditures over this same period is shown in Table 28. The following observations may be made based upon an examination of this information:

- Total operating expenses and operating assistance levels for the transit system have risen steadily in both actual and constant dollar terms since the system began operation in 1981. Increases in operating expenses were the direct result of increases in service levels after service expansions such as the introduction of Saturday service in 1985, increases in service frequencies on Route Nos. 1, 4, and 8 in 1990, the extension of Route No. 1 to the Brookfield Square Shopping Center in 1992, the expansion of service into the evening period in 1996, and increasing the service frequency on Route No. 1 in 1997 for the IH 94 resurfacing mitigation efforts.

- From 1994 through 1998, the City expended about $2,011,800 on an average annual basis on operating and maintaining the transit system. Of this total, about $388,500, or 19 percent, came from farebox and other revenue. The remaining $1,623,300, or 81 percent, constituted the average annual public operating assistance which needed to be funded through Federal and State transit assistance programs and local funds. The average annual operating assistance from local funds has been about $463,500, or about 23 percent of total system operating expenses.

Table 26

AVERAGE DAILY RIDERSHIP ON THE BUS ROUTES OF THE WAUKESHA METRO TRANSIT SYSTEM: APRIL AND MAY 1998

Route Number	Weekday[a]				Saturday[b]			
	Revenue Passengers		Total Passengers[c]		Revenue Passengers		Total Passengers[c]	
	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total
1	530	26.4	680	26.0	440	38.9	570	38.0
2	290	14.4	360	13.7	140	12.4	210	14.0
3	110	5.5	140	5.3	30	2.6	50	3.3
4	280	13.9	370	14.1	150	13.3	170	11.4
5	130	6.5	190	7.3	--	--	--	--
6[d]	100	5.0	150	5.7	--	--	--	--
5/6	--	--	--	--	120	10.6	180	12.0
7	160	8.0	190	7.3	80	7.1	110	7.3
8	220	10.9	280	10.7	90	8.0	110	7.3
9	190	9.4	260	9.9	80	7.1	100	6.7
Total	2,010	100.0	2,620	100.0	1,130	100.0	1,500	100.0

[a]Figures shown are averages for April 27 through May 1, 1998.

[b]Figures shown are averages for April 17, April 24, May 2, and May 9, 1998.

[c]Includes transfers and free passengers.

[d]Weekday ridership for this route includes Route No. 5/6 weekday ridership.

Source: SEWRPC.

- The proportions of total operating expenses funded by State operating assistance and local funds have changed somewhat between 1994 and 1998, as illustrated in Figure 8. In 1994, State operating assistance amounted to about $706,900, or about 42 percent of transit system operating expenses; and local funding assistance amounted to about $455,300, or about 27 percent of operating expenses. By 1998, however, State funding had increased by 84 percent to about $1,302,200 and covered about 52 percent of system operating expenses; and the local funding assistance had been decreased by 9 percent to about $416,300 and covered about 17 percent of operating expenses. The increase in State funding for the Waukesha Metro Transit System between 1994 and 1998 is largely due to changes in the State transit operating assistance program over this period. The effect of these changes on the City transit system was to increase the proportion of eligible operating expenses covered by State funds from about 42 percent in 1994 to about 55 percent in 1998. In addition, the transit system also received special funding from the State to cover the costs of an expansion of service requested by the State during the IH 94 resurfacing project.

- The average annual capital expenditures on the transit system over the five-year period 1994 through 1998 totaled about $1,065,100, principally for bus fleet replacement and improvements at the transit system operations facility. Of this total, about $852,100, or about 80 percent, came from Federal transit capital assistance programs, and the remaining $213,000, or about 20 percent, came from the City of Waukesha.

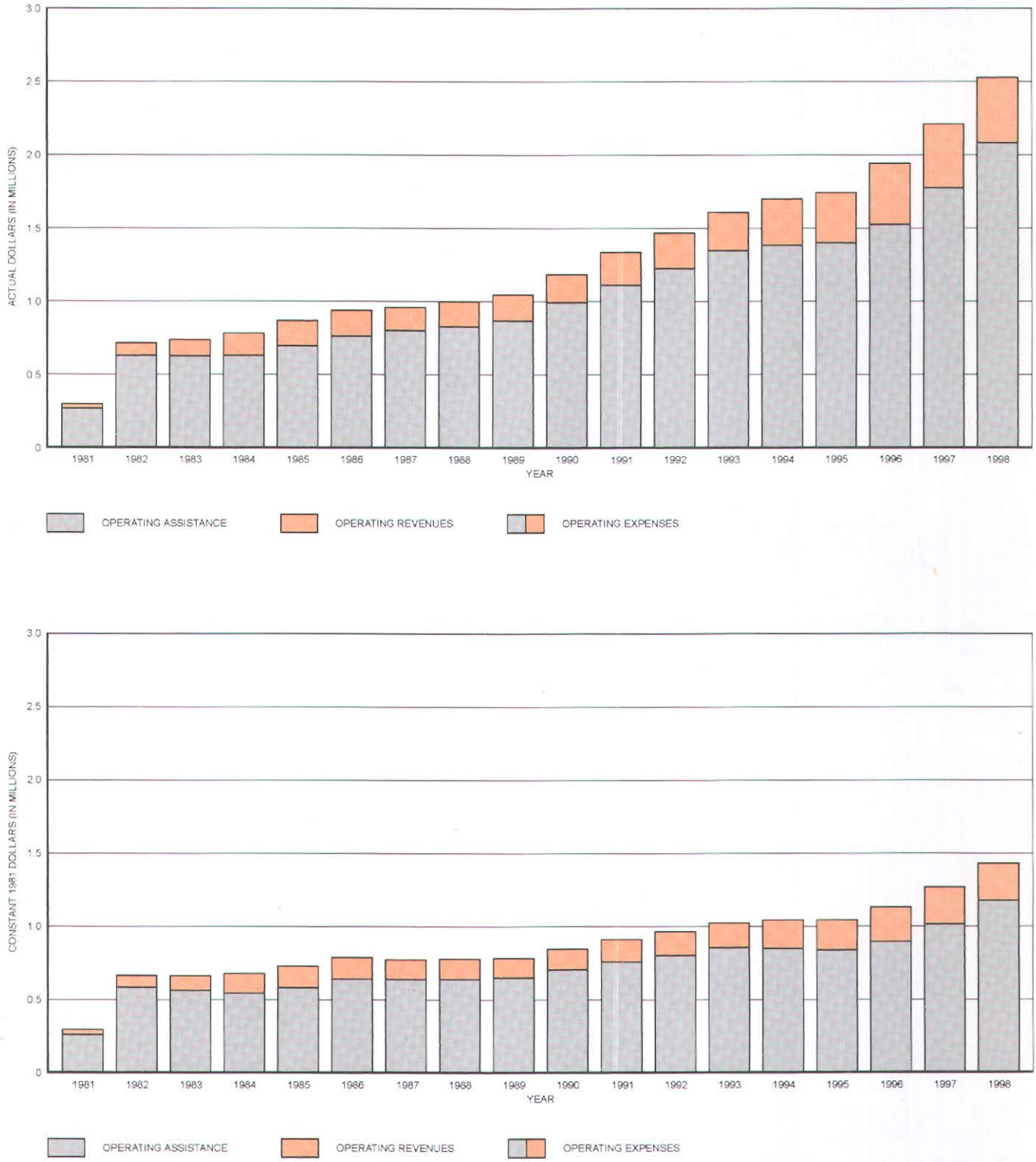
- The total average annual expenditures for transit system operations and capital projects from 1994 through 1998 amounted to about $3,076,900, or about $5.61 per trip. The total average annual public assistance funded through Federal and state transit programs and local funds amounted to about $2,688,400, or about $4.90 per trip. The total average annual funds provided by the City and other local sources amounted to about $676,500, or about $1.23 per trip.

OTHER PUBLIC TRANSIT SERVICES

The City of Waukesha is the principal provider of public transit service within the greater Waukesha area.

Figure 7

TOTAL ANNUAL OPERATING EXPENSES, OPERATING REVENUES, AND OPERATING ASSISTANCE FOR THE WAUKESHA METRO TRANSIT SYSTEM: 1981-1998



NOTE: 1981 data reflect less than 12 months of operation.

Source: City of Waukesha Metro Transit System and SEWRPC.

Table 27

ANNUAL OPERATING EXPENSES, OPERATING REVENUES, AND OPERATING ASSISTANCE FOR THE WAUKESHA METRO TRANSIT SYSTEM: 1994-1998

Characteristic	Year					Five-Year Average
	1994	1995	1996	1997	1998	
Service Provided						
Total Vehicle-Miles	602,300	621,900	720,000	834,200	892,600	734,200
Total Vehicle-Hours	46,900	48,100	58,200	64,800	69,200	57,400
Revenue Passengers	497,700	551,500	526,000	580,500	584,200	548,000
Costs, Revenues, and Assistance						
Operating Expenses	$1,686,600	$1,735,400	$1,928,200	$2,197,200	$2,511,800	$2,011,800
Revenues						
Passenger Revenues	$ 284,100	$ 313,300	$ 383,200	$ 405,300	$ 406,900	$ 358,600
Other	26,500	31,900	31,400	28,300	31,900	29,900
Total	$ 310,600	$ 345,200	$ 414,600	$ 433,600	$ 438,800	$ 388,500
Required Operating Assistance	$1,376,000	$1,390,200	$1,513,600	$1,763,600	$2,073,000	$1,623,300
Percent of Expenses Recovered through Revenues	18.4	19.9	21.5	19.7	17.5	19.3
Sources of Operating Assistance						
Federal	$ 213,800	$ 216,700	$ 266,300	$ 326,900	$ 354,500	$ 275,600
State	706,900	719,500	751,400	940,900	1,302,200	884,200
Local						
City of Waukesha	$ 417,300	$ 413,500	$ 450,600	$ 448,600	$ 366,300	$ 419,300
Waukesha County	36,000	38,400	42,500	44,200	46,500	41,500
Other[a]	2,000	2,200	2,800	3,000	3,500	2,700
Subtotal	$ 455,300	$ 454,000	$ 495,900	$ 495,800	$ 416,300	$ 463,500
Total	$1,376,000	$1,390,200	$1,513,600	$1,763,600	$2,073,000	$1,623,300
Per Trip Data						
Operating Cost	$3.39	$3.15	$3.67	$3.79	$4.30	$3.67
Revenue	0.63	0.63	0.79	0.75	0.75	0.71
Total Operating Assistance	2.76	2.52	2.88	3.04	3.55	2.96
Local Operating Assistance	0.91	0.82	0.94	0.85	0.71	0.83

[a]*Represented funds provided under a partnership with the Town of Brookfield for Route No. 1 service to the Brookfield Highlands Senior Apartments.*

Source: Wisconsin Department of Transportation, City of Waukesha Metro Transit System, and SEWRPC.

Table 28

ANNUAL CAPITAL PROJECT EXPENDITURES BY FUNDING SOURCE FOR THE WAUKESHA METRO TRANSIT SYSTEM: 1994-1998

Source of Funds	Capital Expenditures by Year					Five-Year Average
	1994	1995	1996	1997	1998	
Federal	$708,500	$177,000	$150,700	$2,876,100	$348,100	$ 852,100
City of Waukesha	177,100	44,300	37,700	719,000	87,000	213,000
Total	$885,600	$221,300	$188,400	$3,595,100	$435,100	$1,065,100

Source: City of Waukesha Metro Transit System and SEWRPC.

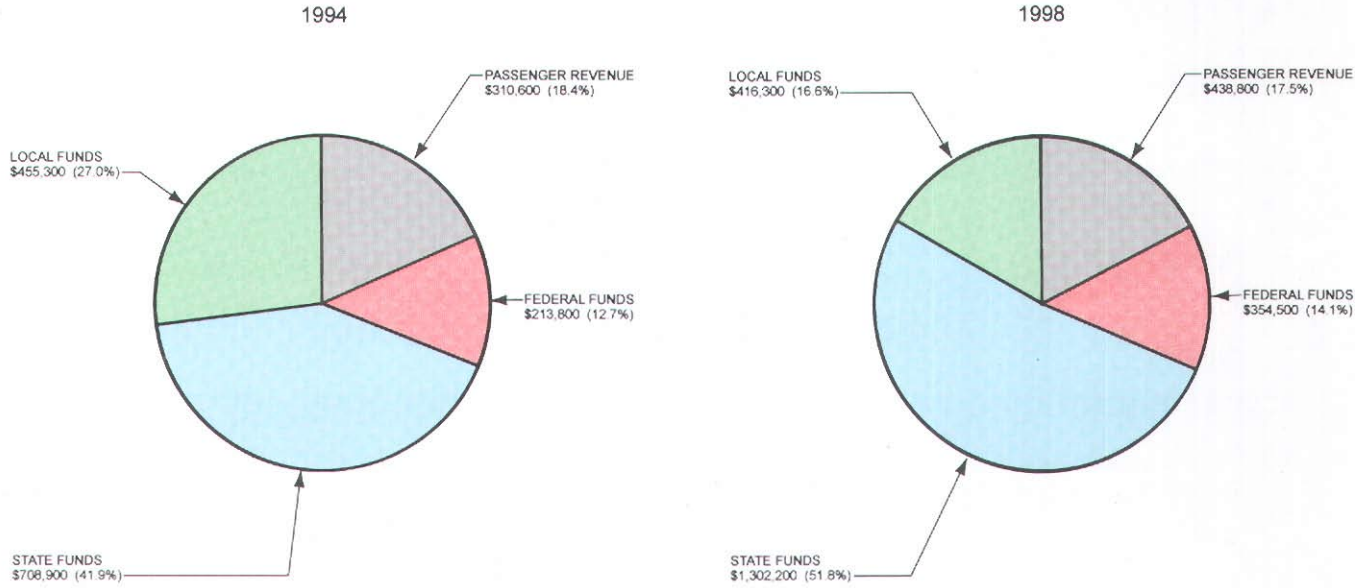
However, a number of other public transit services are also provided to study area residents, including local and intercity transit services for the general public, specialized transportation services for the elderly and disabled population, and transportation services for students at local schools.

Bus and Taxicab Services for the General Public

Additional transit services for the general public which were provided within the study area, or which provided important connections with the Waukesha Metro Transit System, are identified in Table 29 and may be briefly described as follows:

Figure 8

DISTRIBUTION OF TOTAL OPERATING EXPENSES FOR THE WAUKESHA METRO TRANSIT SYSTEM: 1994 AND 1998



Source: City of Waukesha Metro Transit System and SEWRPC.

- Waukesha County Transit System

  The Waukesha County transit system provides rapid "freeway flyer," suburban commuter express, and local bus services over a system of 16 routes operating in Waukesha and Milwaukee Counties. Ten of the County routes, shown on Map 21, operate in the study area or provide important connections with routes of the Waukesha Metro Transit System just outside the study area. Waukesha County contracts for all service from three transit operators: Wisconsin Coach lines, Inc., a private for-profit transit company, which operates seven of the 10 routes; the Milwaukee County Transit System which operates two of the 10 routes; and the Waukesha Metro Transit system which operates the remaining route. The system primarily provides service for work commuting between Waukesha and Milwaukee Counties. Of the 10 County routes serving the study area, four provide service that is primarily used for traditional commuting to Milwaukee County job locations. Four routes also provide service that is primarily used for reverse commute travel to major employment centers in Waukesha County located in the eastern half of the Blue Mound Road Corridor, the New Berlin Industrial Park, business parks in the City of Pewaukee, and employers in the Sussex area. One route operated between Waukesha and Milwaukee is used for both traditional and reverse commute travel. The remaining route is an extension of a City of Waukesha route that provides connections between the City and job and shopping opportunities in the western half of the Blue Mound Road corridor.

  The three Waukesha County routes operated between the City of Waukesha and the Milwaukee CBD directly serve the downtown terminal for the Waukesha Metro Transit System. This facilitates transfers between the County and City's bus routes and permits the City bus system to act in some degree as a local feeder bus system for the County

Table 29

ADDITIONAL TRANSIT SERVICES FOR THE GENERAL PUBLIC WHICH OPERATE IN THE STUDY AREA OR CONNECT WITH WAUKESHA METRO TRANSIT SYSTEM SERVICES: APRIL 1999

Type of Service	Name of Service Provider	Days and Hours of Operation	Fares[a]	Service Area	Vehicles Used	Average Weekday Ridership (One-way Trips)
Local, Express, and Rapid Bus (Waukesha County transit system)	Wisconsin Coach Lines, Inc.[b]	Route No. 1: Monday-Friday: 5:15 a.m.-10:45 p.m. Saturday: 7:30 a.m.-10:15 p.m. Sunday/Holiday: 10:00 a.m.-7:45 p.m. Route Nos. 2, 3, 4, 5, 7, and 8: Weekday, peak hour service only	Distance-based ranging from $1.25 to $2.00 for adults traveling between the study area and Milwaukee County[c]	Route Nos. 1,2, and 3 operate between the City of Waukesha and Milwaukee County; Route Nos. 4 and 5 operate between the City of Oconomowoc and Milwaukee County, with stops in the study area; Route No. 7 operates as a shuttle, connecting the Brookfield Square Shopping Center and the New Berlin Industrial Park; Route No. 8 operates as a shuttle, connecting the Goerkes Corners Public Transit Station with City of Pewaukee businesses	Deluxe over-the-road motor coaches and small buses	1,020
	Milwaukee County Transit System[b]	Route No. 8: Seven days a week serving 7:00 a.m. and 7:00 p.m. shift start/end times Route No. 10[d]: Monday-Friday: 5:30 a.m.-10:45 p.m. Saturday: 8:30 a.m.-5:30 p.m. Sunday/Holiday: No Service	Adults (ages 12-64): $1.35[e,f] Students (ages 6-11): $1.00[e,f] Elderly (ages 65 and over), and Disabled $0.65[e,f]	Route No. 8 has one stop in the study area at the Pewaukee Quad/ Graphics, Inc., facility; the route also serves Sussex Quad/ Graphics, Inc., facility, with connections to other routes in Milwaukee County	Urban transit buses	530
	Waukesha Metro Transit System[b]	Route No. 1: Monday-Friday: 6:00 a.m.-10:15 p.m. Saturday: 8:45 a.m.-9:45 p.m. Sunday/Holiday: No Service	Adults (ages 12-64): $1.00[c,f] Students (ages 6-11): $0.75[c,f] Elderly (ages 65 and over), and Disabled: $0.50[c,f]	Portion of Route No. 1 operated as part of Waukesha County transit system extends from the Goerkes Corners Public Transit Station to the Brookfield Square Shopping Center	Urban transit buses	330
Intercity Bus	Airport Connection[g]	24 hours a day, seven days a week	Distance-based; $24.00 for travel between study area and General Mitchell International Airport	Southeastern Wisconsin	Vans	N/A
	Badger Coaches, Inc.[g]	Weekday and Saturday service consisting of: Seven eastbound trips Six westbound trips One additional trip in each direction on Sunday	Distance-based	Two stops located at IH 94 and Barker Road (Goerkes Corners Public Transit Station) and STH 67 and CTH DR (Summit park-ride lot)	Deluxe over-the road motor coaches	N/A
	Greyhound Lines, Inc.[g]	Four trips eastbound and westbound daily on IH 94 operated between Milwaukee and Madison	Distance-based	No stops in the study area; closest stop located at IH 94 and STH 83 (Delafield park-ride lot)	Deluxe over-the-road motor coaches	N/A
	Wisconsin Coach Lines, Inc.[g]	Two eastbound trips each Friday and two westbound trips each Sunday	$5.00	Milwaukee-Whitewater service: Two stops in the study area	Deluxe over-the-road motor coaches	35
Taxicab	Best Cab of Waukesha, Inc.[g]	24 hours a day, seven days a week	Zone-based fares starting at $4.00 in central portion of City of Waukesha with increases based on number of zones crossed	City of Waukesha and environs, and City of Muskego	Automobiles	N/A

NOTE: N/A indicates data not available.

[a] *Fares shown are cash fares per trip.*

[b] *Operates with public operating assistance.*

[c] *There is no additional charge for passengers transferring between Wisconsin Coach Lines, Inc., Route Nos. 1 through 5 and Waukesha Metro Transit System routes.*

[d] *Hours of operation shown are for portion of route in Waukesha County only, more extensive schedules are operated within Milwaukee County.*

[e] *Route No. 10 passengers traveling between Milwaukee and Waukesha Counties must may a $0.25 zone fare in addition to the stated fare.*

[f] *A transfer policy is in effect for passengers transferring between Waukesha Metro Transit System Route No. 1 and Milwaukee County Transit System Route No. 10 at the Brookfield Square and Executive Drive bus stops which allows passengers to transfer for an additional fare of $0.25 per trip.*

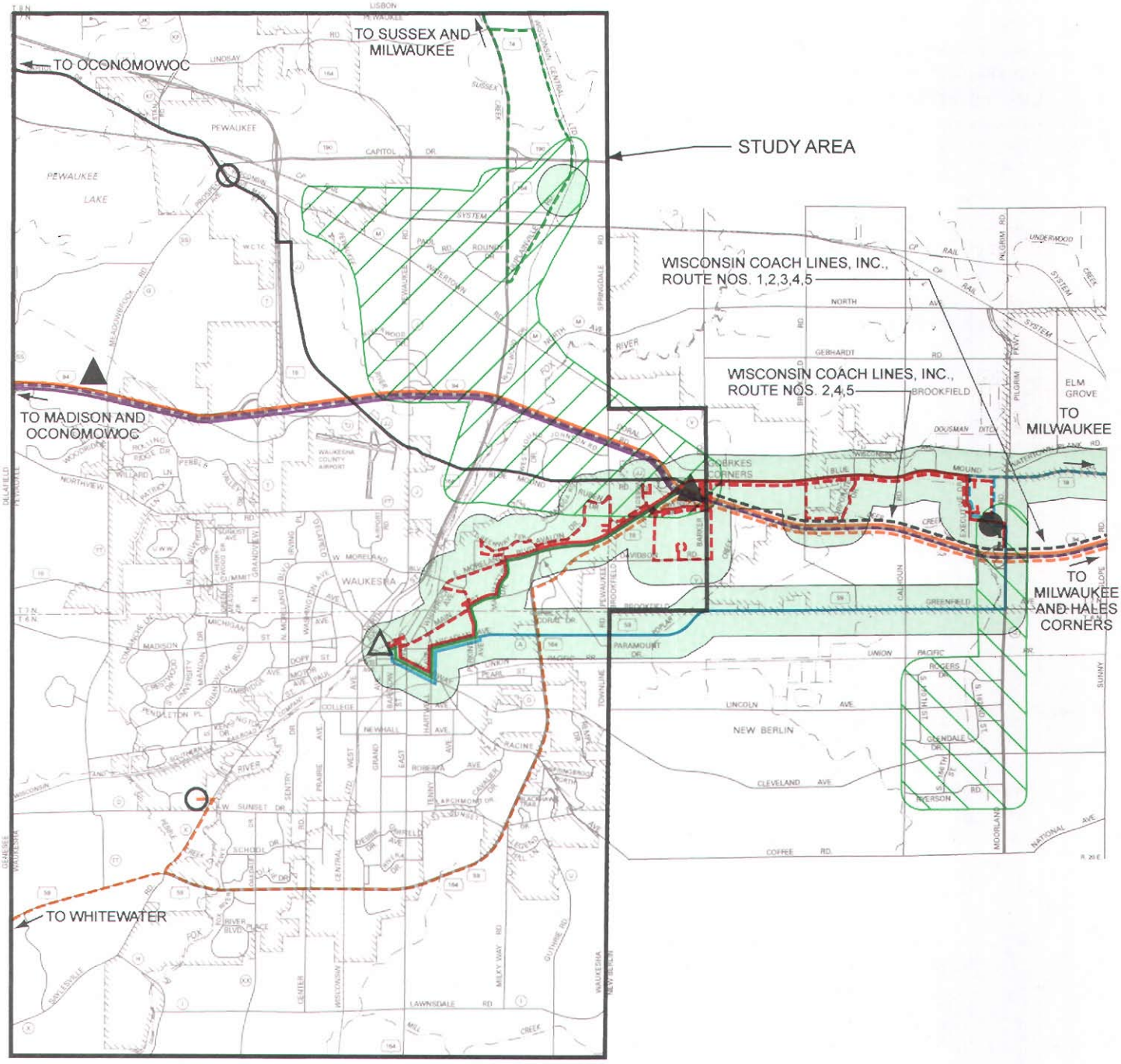
[g] *Operates without public operating assistance.*

Source: SEWRPC

routes. Transfers between the County and City bus routes can be made at several other points including at the Goerkes Corners Public Transit Station, and at the Brookfield Square Shopping Center. The vast majority of the service on the County routes is provided only during weekday peak periods from 6:00 a.m. until 9:00 a.m. and from 3:00 p.m. until 6:00 p.m. with the service hours for each route tailored to the specific service market. Headways on most routes range from about 10 to 30 minutes during weekday peak periods, 30 to 60 minutes during the weekday middays and 30 to 120 minutes on weekday evenings and weekends. The most extensive service hours and most frequent service is provided on the routes operated between the City of Waukesha and the Milwaukee CBD and in the Blue Mound Road corridor where service is available seven days a week.

MAP 21

ADDITIONAL BUS SERVICE IN THE STUDY AREA: APRIL 1999



NOTE: LOCAL FUNDING FOR WAUKESHA METRO TRANSIT SYSTEM ROUTE NO. 1 BETWEEN THE GOERKES CORNERS PUBLIC TRANSIT TERMINAL AND THE BROOKFIELD SQUARE SHOPPING CENTER PROVIDED BY WAUKESHA COUNTY.

Source: Waukesha County Department of Transportation, City of Waukesha Metro Transit System, and SEWRPC.

- Intercity Bus Services
  Intercity bus services are provided through the study area by three companies (see Map 21). Greyhound Lines, Inc., and Badger Coaches, Inc., provide service over IH 94 between Milwaukee and Madison. Greyhound Lines, Inc., operated four round trips daily, with no stops in the study area. The stop closest to the study area is located at the park-ride lot at IH 94 and STH 83 in the City of Delafield. Badger Coaches, Inc., operates six to eight round trips daily, stopping at the Goerkes Corners Public Transit Station at IH 94 and Barker Road in the Town of Brookfield. Wisconsin Coach Lines, Inc., operates service on weekends for students commuting between Waukesha and Milwaukee Counties and the University of Wisconsin-Whitewater. The service consists of two bus trips to the campus on Sunday and two bus trips from the campus on Friday. Stops on the route in the study area are made at Fox Run Shopping Center on the southwest side of the City of Waukesha and at the Goerkes Corners Public Transit Station. The service operated by Wisconsin Coach Lines, Inc., was publicly funded through a Transportation Demand Management grant awarded to the bus company in 1998 by the Wisconsin Department of Transportation. The other services were all privately funded and received no public assistance.

- Taxicab Service
  Taxicab service for the general public was provided by only one company based in the City of Waukesha during 1999. Best Cab Company provided service in the City of Waukesha and environs 24 hours a day, seven days a week. Fares were based on a system of zones with passengers charged for the number of zones their trip passes through. While principally serving the Waukesha area, the company also served trips between the City and other communities in the County.

Specialized Transportation Services

Specialized transportation services were also provided within the study area in 1999 by a number of public and private nonprofit agencies and organizations, as well as by private for-profit transportation companies. In general, most of the available specialized transportation services were provided on demand rather than on a fixed schedule, with eligibility for service usually limited to clientele of the sponsoring agency or organization, principally elderly or disabled individuals. The general characteristics of the major specialized transportation services provided within the study area in 1999 are presented in Table 30.

School District Student Transportation Service

The Waukesha Public School District provides transportation to and from public, private, and parochial schools for pupils who: reside in the School District two or more miles from the nearest public, private, or parochial school they are entitled to attend; live less than two miles from school but would face hazardous walking conditions on their journey to and from school; or participate in the District's exceptional education program. The District currently contracts for student transportation service for about 6,000 such students from a private school bus company, Dairyland Buses, Inc. Students who would not otherwise be eligible for transportation service, such as those taking advantage of the District's open enrollment policy to attend a school other than the one they would normally attend, can pay to use the District's transportation service. It is estimated that about 100 students are transported in this manner.

SUMMARY

This chapter has presented pertinent information on the existing Waukesha Metro Transit System, as well as on other major transit services provided in the study area during 1999. A summary of the most important findings concerning the transportation services identified follows.

1. The major supplier of local public transit service in the Waukesha area is the City of Waukesha, which has operated the Waukesha Metro Transit System since August 1981. The system is owned by the City of Waukesha, and operated by a private contract management firm under the direct supervision of the Transit Director, a City of Waukesha employee. While the policy making body of the transit system is the Waukesha Transit Commission, the ultimate responsibility for review and approval of certain important matters, including the annual program budget, lies with the Waukesha Common Council.

2. During 1999, fixed route bus service was provided by the Waukesha Metro Transit System over a system of nine regular bus routes. All nine routes served a common transfer point located at an off-street terminal in the City of Waukesha CBD and operated using cycle, or "pulse" scheduling to facilitate transfers. Seven of the routes operated between outlying portions of the City and the Waukesha CBD, with two of these combined into a single route on weekday evenings and on Saturdays. Of the remaining two routes, one operated between the Brookfield Square Shopping Center and the Waukesha CBD, with the segment in the

Table 30

MAJOR SPECIALIZED TRANSPORTATION SERVICES FOR ELDERLY AND DISABLED PERSONS PROVIDED IN THE STUDY AREA: APRIL 1999

Type of Provider	Name of Service Provider	Type of Service	Eligible Users	Days and Hours of Operation	Service Area	Fare Per Trip
Public	Waukesha County Department of Aging					
	ADA Parallel Corridor Paratransit Program[a]	Advance reservation required, door-through-door	Persons certified as being disabled	Monday-Friday: 5:15 a.m. to 10:45 p.m. Saturday: 7:30 a.m. to 10:15 p.m. Sunday/Holiday: 10:00 a.m. to 7:45 p.m.	Within one mile of Wisconsin Coach Lines, Inc., Route No.1 or Milwaukee county Transit System Route No. 10 between the Waukesha CBD and the Milwaukee CBD	$2.00 to $3.90; based on distance traveled
	Ride-Line[b]	Advance reservation, door-through-door	Waukesha County resident; non-driver, age 65 or older; disabled persons ages 18-64; excludes nursing home residents	Monday through Friday: 6:00 a.m. to 6:00 p.m. Holidays: only dialysis appointments	*Waukesha County; only to adjoining* counties for second opinions, consultations, or services not duplicated in Waukesha County	$2.75 to $15.75; based upon ability to pay
	User-side subsidy[c]	Door-to-door	Waukesha County resident, non-driver, age 65 years or disabled persons ages 18-64	7 days a week, 24 hours a day	Waukesha County	$2.75 plus any amount over $9.00
	Department of Health and Human Services-Volunteer Transportation Service	Advance reservation, door-to-door	Clients of Waukesha County Department of Health and Human Services	Monday through Friday: 7:30 a.m. to 8:00 p.m.	Waukesha County	No charge
Private, non-profit	*Adaptive Community Approach Program*	Advance reservation, door-through-door	Persons certified as being disabled	Monday through Friday: 8:00 a.m. to 5:00 p.m.	Waukesha County	$2.50 per one-way trip into *City of Waukesha* $2.00 per ride within City of Waukesha
	American Red Cross	Advance reservation, door-to-door	Waukesha County ambulatory residents who don't quality for other programs; medical purposes only	Monday through Friday: 8:30 a.m. to 5:00 p.m.	Waukesha County to Greater Milwaukee area	$5.00; Not denied if unable to pay.
	Curative Transportation Services	Advance reservation, door-through-door	Persons eligible for Title 19	Monday through Friday: 7:00 a.m. to 6:00 p.m.	Waukesha and Milwaukee Counties	No charge
	Elder Care Line, Inc.	Advance reservation, door-through-door	Restricted to clients funded by Waukesha County	Monday through Friday: 6:00 a.m. to 6:00 p.m.	Milwaukee, Racine, and Waukesha, Counties	Voluntary contributions
	Interfaith Caregiving Network, Inc.	Advance reservation, door-through-door	Serves ambulatory persons in need due to age or disability; excludes nursing home residents	Monday through Friday: 8:00 a.m. to 4:00 p.m.	Waukesha County and into Milwaukee County	Voluntary contributions
	Meda-Care Vans of Waukesha, Inc.	Advance reservation, door-through-door	Persons eligible for Title 19	Monday through Friday: 6:00 a.m. to 6:00 p.m. Special requests	All of Waukesha and Milwaukee Counties and to Washington County and eastern Jefferson County	No charge
Private, for-profit	Waukesha Health System, Inc.					
	Courtesy Transportation Service	*Advance Reservation,* door-through-door	*Clients of ProHealth Care, Inc., not eligible for other programs.*	Monday through Friday (except holidays): 7:00 a.m. to 5:30 p.m.	Dodge, Jefferson, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties	Voluntary contributions
	Prepaid Voucher Program	Advance Reservation, door-through-door	Any person requiring transportation for a medical or dental appointment; not restricted to clients of ProHealth Care, Inc.	Monday through Friday (except holidays): 7:00 a.m. to-5:30 p.m.	Dodge, Jefferson, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties	$15.00 base fare plus distance charges; fare must be prepaid

[a] *Service provided by Curative Transportation Services.*

[b] *Service provided by Meda-Care Vans of Waukesha, Inc.*

[c] *Service provided by Best Cab of Waukesha, Inc., within the study area and by other providers in other portions of the County.*

Source: SEWRPC

Blue Mound Road Corridor subsidized by Waukesha County. The other route operated between the Waukesha County Technical College Pewaukee campus and the Waukesha CBD. The transit system operated from 5:40 a.m. to 10:30 p.m. on weekdays and from 8:00 a.m. to 10:00 p.m. on Saturdays, with headways of 15 to 60 minutes during weekday peak-periods, and 30 to 60 minutes at all other times. The base adult cash fare charged for the regular route service was $1.00 per trip, with reduced fares charged for elderly and disabled individuals and students. The transit system main-

tained a fleet of 23 buses to provide the fixed-route service.

3. To comply with Federal regulations, the transit system also provided a paratransit service under the Waukesha Metrolift Program which was directed at serving the travel needs of disabled individuals who are unable to use the fixed-route bus service provided by the Waukesha Metro Transit System. The curb-to-curb service was operated during the same hours as the fixed route service and was available throughout the entire transit system service area. The transit system maintained a fleet of three small buses to provide the paratransit service. Disabled individuals could also use accessible bus service provided over the regular routes of the transit system.

4. Ridership on the Waukesha Metro Transit System increased steadily in each year from 1981 through 1985 during which ridership doubled from about 202,700 revenue passengers in 1982—the first full year of operation—to about 406,200 revenue passengers in 1985. The period was one of major transit service improvement and expansion occurring immediately after the City began operation of the transit system, during which the City expanded services, kept fares stable, and introduced a fleet of new buses. Transit ridership decreases during 1986 and 1987 may be attributed to a fare increase in August 1985. Since 1988, the trend on the transit system has been one of increasing service levels and ridership. Over the last five years, systemwide ridership increased from about 497,700 revenue passengers carried in 1994 to about 584,200 revenue passengers carried in 1998, representing an increase of about 17 percent. The growth can be attributed to service enhancements implemented over the period that, in turn, increased revenue vehicle-miles operated by about 43 percent during the period, and also to growth in residential, commercial, and industrial development. Route Nos. 1, 2, 4, and 8 were the most heavily used on weekdays and Saturdays, with Route No. 1 having the highest ridership level of any of the routes.

5. Over the five-year period 1994 through 1998, the City expended on an average annual basis a total of about $3,076,900, or about $5.61 per trip, for transit system operations and for capital projects. Of this total, about $388,500, or about $0.71 per trip, was recovered through farebox and other miscellaneous revenue. The remaining $2,688,400, or about $4.90 per trip, constituted the total average annual public assistance which needed to be funded through Federal and state transit assistance programs and local funds. The total average annual assistance from local funds amounted to about $676,500, or about $1.23 per trip. The local share of the total public operating assistance for the transit system decreased by about 10 percent between 1994 and 1998 while the share provided by State operating assistance increased by about 10 percent during this period partly due to additional State funding for service enhancements related to the IH 94 resurfacing project.

6. Other transit services provided in 1999 for the general public were also identified which either operated within the study area or connected with the Waukesha Metro Transit System outside the study area. These services included 10 routes of the Waukesha County transit system, which primarily transported passengers between Milwaukee and Waukesha Counties and between the City of Waukesha and the western half of the Blue Mound Road Corridor. The routes of the Waukesha County transit system were operated under contract by Wisconsin Coach Lines, Inc., the Milwaukee County Transit System, and the Waukesha Metro Transit System. Transfers between the County and City bus routes could be made at several points including in the Waukesha CBD, at the Goerkes Corners Public Transit Station, and at the Brookfield Square Shopping Center. The vast majority of the service on the County routes was provided only during weekday peak periods from 6:00 a.m. until 9:00 a.m. and from 3:00 p.m. until 6:00 p.m. with the service hours for each route tailored to the specific service market. Headways on most routes ranged from about 10 to 30 minutes during weekday peak periods, 30 to 60 minutes during the weekday middays and 30 to 120 minutes on weekday evenings and weekends. The most extensive service hours and most frequent service was provided on the routes operated between the City of Waukesha and the Milwaukee CBD and in the Blue Mound Road Corridor where service was available seven days a week.

   Intercity bus services were operated by Greyhound Lines, Inc., and Badger Coaches, Inc., over IH 94 between Milwaukee and Madison. Wisconsin Coach Lines, Inc., provided a weekend only service directed at students commuting between Waukesha and Milwaukee Counties and the University of Wisconsin-Whitewater. Taxicab service for the general public was also provided by Best Cab Company in the City of Waukesha and environs 24 hours a day, seven days a week.

7. Specialized transportation services for elderly and disabled individuals were also provided within the study area in 1999 by a number of public and private nonprofit agencies and organizations, as well as by private for-profit transportation companies. In general, most of the available specialized transportation services were provided on demand rather than on a fixed schedule, with eligibility for service usually limited to clientele of the sponsoring agency or organization, principally elderly or disabled individuals.

8. The Waukesha Public School District provided school day transportation to students residing within the School District. The District contracted for yellow school bus service for about 6,000 students from a private company, Dairyland Buses, Inc., during the 1998-1999 school year.

(This page intentionally left blank)

Chapter IV

PUBLIC TRANSIT SERVICE OBJECTIVES AND STANDARDS

INTRODUCTION

One of the critical steps in the preparation of a transit system development plan is the articulation of the objectives to be served by the transit system, together with the identification of supporting standards which can be used to measure the degree of attainment of the objectives. The objectives and standards provide the basis upon which the performance of existing transit services may be assessed; alternative service plans designed and evaluated; and recommendations made for the institution or improvement of service. The objectives formulated under this study are, accordingly, intended to represent the level of transit performance desired by the residents of the greater Waukesha area. Only if the objectives and standards clearly reflect the transit-related goals of the community will the recommended plan provide the desired level of service within the limits of available financial resources.

This chapter presents the public transit service objectives, principles, and standards formulated for the greater Waukesha area's transit system development plan. The objectives and supporting standards were used in evaluating the existing transit system, and in the design and evaluation of alternative improvement plans. The objectives and supporting standards may also be used to guide in the design, operation, and review of Waukesha area transit services after completion of the current planning effort.

OBJECTIVES

The transit service objectives, principles, and standards set forth in this chapter are intended to reflect the underlying values of the elected officials and residents of the Waukesha community. The task of formulating objectives, principles, and standards must, therefore, involve interested and knowledgeable public officials and private citizens representing a broad cross-section of interests in the community, as well as individuals familiar with the technical aspects of providing transit service. Accordingly, one of the important functions of the City of Waukesha Transit Commission Planning Advisory Panel was to articulate transit service objectives, principles, and supporting standards for the planning effort. By drawing upon the collective knowledge, experience, views, and values of the members of the Advisory Panel, it is believed that a meaningful expression of the performance desired for the Waukesha Metro Transit System was obtained, and a relevant set of transit service objectives and supporting principles and standards was defined.

The specific objectives adopted basically envision a transit system that will effectively serve the City of Waukesha and its environs while minimizing the costs entailed. More specifically, the following objectives were adopted by the Advisory Panel:

1. Public transit will be provided to those areas of the City and its immediate environs which can be efficiently served, including those areas which are fully developed to medium or high densities, and, in particular, to the transit-dependent populations in those areas;

2. The public transit system will promote effective utilization of public transit services and provide for user convenience, comfort, and safety;

3. The public transit system will promote efficiency in the total transportation system;

4. The transit system will be economical and efficient, meeting all other objectives at the lowest possible cost.

PRINCIPLES AND STANDARDS

Complementing each of the foregoing transit service objectives is a planning principle and two sets of service and design standards, as set forth in Table 31. The planning principle supports each objective by asserting its validity. Each set of standards is directly related to the transit service objective and serves several purposes. The service design and operating standards are intended to primarily provide guidelines for the design of new and improved services, for the operation of the transit system, and for purchasing capital equipment or constructing facilities. The service performance standards primarily facilitate the evaluation of the performance of the existing transit system and alternative service improvements. For each performance standard, one or

more criteria are identified which can be used to quantify the performance of the transit service or system for measurement against the standard. Some of the design and operating standards can also be useful in evaluating the performance of the transit system or individual services. Criteria have, therefore, also been identified for such standards.

The service performance standards and the associated performance measures also reflect the recommendations of the Transit Advisory Council which was created in March 1996 by the Wisconsin Department of Transportation. Among the charges to the Council was the identification of appropriate transit system performance measures and standards. The Council recommended that six measures be used to assess the performance of Wisconsin transit systems including: operating ratio, or farebox recovery rate; operating expense per passenger; passengers per capita; passengers per revenue vehicle hour of service; operating expenses per revenue vehicle hour of service; and revenue vehicle hours of service per capita. All of these performance measures have been incorporated into the performance standards and measures included in Table 31. The performance standards in Table 31 can also provide guidance to the transit system in establishing the multi-year service and performance goals that are required for systems receiving State transit operating assistance.

The performance evaluation of the existing transit system utilized in the current study included assessments of transit performance on both a systemwide and individual route basis. The service standards set forth in this chapter represent a comprehensive list from which specific performance standards and measures, as deemed appropriate, were drawn in conducting the systemwide and route performance evaluations. A more complete description of the evaluation process is presented in Chapter V.

OVERRIDING CONSIDERATIONS

The objectives, principles, and standards set forth in Table 31 were intended to be used to guide the evaluation of the performance of the existing transit system and the design and evaluation of alternative service improvements. In the application of the objectives, principles, and standards, several overriding considerations must be recognized.

First, it must be recognized that an overall evaluation of the existing public transit services and the alternative service plans must be made on the basis of cost and revenue. Such an analysis may show the attainment of one or more standards to be beyond the fiscal capability of the community and, therefore, the standards cannot be met practically and must be either modified or eliminated.

Second, it must be recognized that a transit system is unlikely to fully meet all the standards, and that the extent to which each standard is met, exceeded, or violated must serve as the final measure of the ability of the system to achieve the objective which a given standard supports.

Third, it must be recognized that certain intangible factors, including the perceived value of the transit service to the community and its potential acceptance by the concerned elected officials, may influence the preparation and selection of a recommended plan. Inasmuch as transit service may be perceived as a valuable service within the community, the community may decide to initiate or retain such services regardless of performance or cost. Only if a considerable degree of such acceptance exists will service recommendations be implemented and their anticipated benefits realized.

Table 31

PUBLIC TRANSIT SERVICE OBJECTIVES, PRINCIPLES, STANDARDS, AND PERFORMANCE MEASURES FOR THE WAUKESHA METRO TRANSIT SYSTEM

Objective	Principle	Standards	Performance Measure
1. Public transit will be provided to those areas of the City and its immediate environs which can be efficiently served, including those areas which are fully developed to medium or high densities and, in particular, to the transit-dependent populations in those areas	Public transit provides an important means of access for all segments of the population	Service Design and Operating Standards 1. Transit service will be provided to serve existing and potential travel demand generated within areas of contiguous high density (12.1-48.0 dwelling units per net residential acre), medium-high density (6.2-12.0 dwelling units per net residential acre), and medium density (2.2-12.0 dwelling units per net residential acre) urban development	1. --
		2. Transit service will be provided, where possible, to major potential transit trip generators within the transit service area including: a. Shopping areas b. Educational institutions c. Medical centers d. Major employers with 100 or more employees e. Governmental and public institutional centers f. Facilities serving elderly individuals g. Facilities serving disabled individuals h. Facilities serving low income individuals	2. Number of major potential transit trip generators in each category within one-quarter mile of a bus route
		3. Paratransit service will be available within the transit service area to meet the needs of disabled individuals who are unable to use fixed-route bus service	3. --
		Service Performance Standards 1. The population served and, particularly that portion which is transit-dependent, will be maximized	1a. Total population within one-quarter mile of a bus route 1b. Transit-dependant population concentrations within one-quarter mile of a bus route
		2. The number of jobs served will be maximized	2. Number of jobs within one-quarter mile of a bus route
2. The public transit system will promote effective utilization of public transit services and provide for user convenience, comfort, and safety	The benefits of a public transit system are, to a large extent, greatly related to the degree to which it is used. The extent of such use, as measured by public transit ridership, is a function of the degree to which the transit facilities and services provide for user convenience, comfort, and safety	Service Design and Operating Standards 1. Transit routes will be direct in alignment, with a minimum of turns, and arranged to minimize transfers and duplication of service, which would discourage transit use	1. --
		2. Local fixed-route bus service will have a route spacing of one-half mile in high-density and medium-density areas	2. --
		3. Express fixed-route bus service will be provided as necessary to reduce travel times for the longest trips made between component parts of the study area or between the study area and other major trip generators in immediately adjacent communities	3. --

Table 32 (continued)

<table>
<tr><th>Objective</th><th>Principle</th><th>Standards</th><th>Performance Measure</th></tr>
<tr><td>2. (continued)</td><td></td><td>4. Transit stops will be located two to three blocks apart along the entire length of local routes; and at intersecting transit routes, signalized intersections, and major traffic generators along express transit routes</td><td>4. --</td></tr>
<tr><td></td><td></td><td>5. All transit stops will be clearly marked by easily recognized signs and will be paved whenever possible</td><td>5. --</td></tr>
<tr><td></td><td></td><td>6. Transit service will provide adequate service and vehicle capacity to meet existing and projected demand. The average maximum load factor, measured as the ratio of passengers to bus seats at that point on a route where passenger loads are highest, will not exceed the following during any one-hour period:

Average Maximum Load Factor
Service Type | Peak Periods | All Other Times
Local | 1.25 | 1.00
Express | 1.00 | 1.00</td><td>6.</td></tr>
<tr><td></td><td></td><td>7. Operating headways will be capable of accommodating passenger demand at the specified load standards but will not exceed 30 minutes during weekday peak period and 60 minutes during weekday off-peak and weekend periods</td><td>7. --</td></tr>
<tr><td></td><td></td><td>8. Transit service will be designed and operated so as to achieve the following minimum overall travel speeds by area based on average weekday conditions:

Transit Speed (miles per hour)
Service Type | CDB | Other Times
Local | 5 | 10
Express | 10 | 20</td><td>8. --</td></tr>
<tr><td></td><td></td><td>9. Consideration will be given to rehabilitating or replacing each transit vehicle at the end of its normal service life as defined below for different types of transit vehicles:

Vehicle Type | Length (feet) | Normal Service Life: Years | Mileage
Heavy-duty bus | 35 or more | 12 | 500,000
Heavy-duty bus | 25-30 | 10 | 350,000
Medium-duty bus | 25-30 | 7 | 200,000
Light-Duty bus | 25-30 | 5 | 150,000
Cars and Vans | -- | 4 | 100,000</td><td>9. --</td></tr>
</table>

Table 31 (continued)

Objective	Principle	Standards	Performance Measure
2. (continued)		10. Consideration will be given to providing passenger shelters of an attractive design at all bus stops where: a. The location serves major facilities designed specifically for the use of, or is frequently used by, elderly or disabled individuals b. The location has a boarding passenger volume of 50 or more passengers per day c. The location is a major passenger transfer point between bus routes d. The location is in a wide open space where waiting patrons are unprotected from harsh weather conditions	10. --
		Service Performance Standards 1. Ridership on the transit system and the overall effectiveness of the service provided will be maximized.	1a. Total passengers 1b. Total passengers per capita 1c. Revenue vehicle hours per capita 1d. Total passengers per revenue vehicle hour 1e. Total passengers per revenue vehicle mile
		2. Transit routes with ridership and service effectiveness levels which are less than 80 percent of the average for all routes of the transit system will be reviewed for potential service changes unless special circumstances warrant otherwise[a]	2a. Total passengers 2b. Total passengers per route mile 2c. Total passengers per revenue vehicle hour 2d. Total passengers per revenue vehicle mile 2e. Percent of weekday passengers riding on Saturday
		3. The service provided by the transit system will closely adhere to published timetables. Service will be "on time" at least 90 percent of the time. On time is defined as departing from scheduled stops within the range of zero minutes early and three minutes late	3. Percent of scheduled bus trips on time
		4. Travel times for transit patrons will be kept reasonable in comparison to travel times by automobile for trips made between component parts of the service area	4a. Ratio of transit to highway distance 4b. Ratio of transit to highway travel time

Table 31 (continued)

Objective	Principle	Standards	Performance Measure
3. The public transit system will promote efficiency in the total transportation system	Public transit facilities and services can promote economy and efficiency in the transportation system. The public transit system has the potential to supply additional passenger capacity, which can alleviate peak loadings on arterial streets and assist in educing the demand for parking facilities at major land use activity centers. Efficient public transit service also has the potential to reduce energy consumption and air pollutant emissions	Service Performance Standards 1. The total amount of energy, and the total amount of energy per passenger mile consumed in operating the total transportation system of which the transit system is an integral part, particularly petroleum-based fuels, will be minimized	1. Passenger miles per gallon of motor fuel
		2. The amount of highway system capacity which must be provided to serve travel demand will be minimized	2. Potential increase in vehicle traffic on surface streets if transit trips use automobile
4. The transit system will be economical and efficient, meeting all other objectives at the lowest possible cost	The total resources of the City are limited; therefore, total transit system costs will be minimized for the desired level of transit service and transit revenues will be maximized to maintain the financial stability of the system	Service Design and Operating Standards 1. The total operating and capital investment for the transit system will be minimized and reflect efficient utilization of resources	1. --
		2. The fare policy for the transit system will provide for premium fares for premium transit services, as well as special or discounted fares for priority population groups, including transit-dependent individuals and frequent riders	2. --
		3. Periodic increases in passenger fares will be considered to maintain the financial stability of the transit system when: a. The farebox recovery rate for the transit system goes below levels determined to be acceptable by local officials b. Operating expenses for the transit system have increased by 10 to 15 percent since fares were last raised c. Projected levels of Federal and State operating assistance funds would require an increase in projected local operating assistance levels above that determined to be acceptable by local officials	3. --
		Service Performance Standards 1. The operating expense per unit of transit service, the operating expense per passenger, and the total operating assistance per passenger will be minimized for the system as a whole. Annual increases in such costs will not exceed the average percentage increase experienced by comparable urban bus systems	1a. Operating expense per total vehicle mile 1b. Operating expense per revenue vehicle hour 1c. Operating expense per passenger 1d. Total operating assistance per passenger
		2. Transit system operating revenues generated from passenger fares and sources other than public operating assistance will be maximized.	2. Percent of operating expenses recovered through passenger and other operating revenues, excluding public operating assistance

Table 31 (continued)

Objective	Principle	Standards	Performance Measure
4. (continued)		3. Transit routes with financial performance levels which are less than 80 percent of the average for all routes of the transit system will be reviewed for service changes, unless special circumstances warrant otherwise[a]	3a. Operating expense per boarding passenger 3b. Total operating assistance per boarding passenger 3c. Percent of operating expenses recovered through passenger and other operating revenues, excluding public operating assistance

[a]A reasonable period of time will be allowed for ridership to develop and stabilize before evaluating the performance of new transit services to determine if the service is to be continued, modified, or eliminated. Performance goals will be for new transit services to achieve 30 percent of average performance levels for existing routes after six months of operation; 60 percent of average performance levels for existing routes after one year of operation; and 100 percent of average performance levels for existing routes after two years of operation.

Source: SEWRPC.

(This page intentionally left blank)

Chapter V

EVALUATION OF THE EXISTING TRANSIT SYSTEM

INTRODUCTION

This chapter documents the results of an evaluation of the performance of the City of Waukesha transit system based on the four transit service objectives and supporting standards set forth in Chapter IV of this report. Table 32 lists the objectives and the standards which were used in this evaluation of the existing system and identifies the standards that were used under either the systemwide or route performance evaluations. The performance measures used to quantify the achievement of each standard were identified in Table 31 in Chapter IV.

Not all the standards under each objective were used in the performance evaluation process since not all were deemed appropriate. Table 33 lists the standards not used. Some standards not used were primarily intended to serve as guidelines in the design of new and improved service. Other standards not used were intended to serve as warrants for providing equipment and facilities for the transit system. These standards will be used in the development of a program of recommended capital projects for the recommended transit system development plan. Other standards were intended to be used in comparing the costs of alternative plans, and will be considered in Chapter VI.

The performance evaluation conducted for this study is not intended to be as comprehensive as the audit of transit system management and operations required under State administrative regulations for bus systems receiving State urban mass transit operating assistance funds. Such management performance audits are to be conducted at least once every five years by the Wisconsin Department of Transportation and address management structure and operating and service characteristics in greater detail. The performance data identified in this chapter will complement the State management performance audit and incorporate any significant findings pertaining to the planning and operation of transit services in City of Waukesha and environs identified in the State report.

The following sections of this chapter present the findings of the performance evaluation. Presented first is an assessment of transit performance on a systemwide basis to ascertain the extent to which the transit system currently serves the existing land use pattern, employment, and resident population of the study area; to assess the overall ridership and financial performance of the transit system; and to determine the transit system's contribution to the efficiency of the total transportation system. This is followed by an evaluation of the performance of each route of the transit system with respect to ridership and effectiveness levels, operating headways and peak passenger loading characteristics, on-time performance, directness of route alignments, and coordination of schedules for passengers transferring in downtown Waukesha. The findings of the evaluation were used to develop the recommended transit system plan described in Chapter VI of this report.

SYSTEMWIDE PERFORMANCE EVALUATION

Service to Existing Population, Employment, and Land Uses

Performance measures used to evaluate the existing transit service provided to study area population, employment, and land uses included estimates of the total and transit dependent population, job locations, major land use trip generators, and transit-dependent population trip generators within the service area of the City transit system. This evaluation was based on selected standards under Objective 1 including design and operating standard 2 and performance standards 1 and 2. The evaluation was based upon the locations of the existing bus routes and the areal extent of service coverage provided by these routes, as shown on Map 18 in Chapter III. Ideally, the areal coverage should include the residential concentrations of the general and transit-dependent population, employment concentrations, and the potential major transit trip generators within the study area and, in particular, the City of Waukesha. Such residential areas, employment concentrations, and potential transit trip generators were identified in Chapter II.

The performance of the existing transit system with respect to these measures is summarized in Tables 34 through 36 and on Maps 22 and 23. Based upon this information, the following conclusions were reached:

1. The existing transit system provides excellent areal coverage of the existing residential areas in the City of Waukesha. About 98 percent of the City's resident population resided within the

Table 32

STANDARDS USED IN THE PERFORMANCE EVALUATION OF THE EXISTING TRANSIT SYSTEM

Objective	Standard	Systemwide Evaluation	Route Evaluation
1. Provide service to portions of City that can be efficiently served	Design and Operating Standards		
	2. Provide transit service to major potential transit trip generators	X	--
	Performance Standards		
	1. Maximize the population served	X	--
	2. Maximize the jobs served	X	--
2. Promote transit utilization and provide for user comfort, convenience, and safety	Design and Operating Standards		
	1. Minimize indirect routing	--	X
	6. Provide adequate service and vehicle capacity to stay within specified load factors	--	X
	Performance Standards		
	1. Maximize ridership and effectiveness levels	X	X
	2. Review routes with substandard ridership and effectiveness levels	--	X
	3. Achieve minimum acceptable schedule adherence	--	X
	4. Provide for reasonable transit travel times in comparison to automobile travel times	--	X
3. Promote efficiency in the total transportation system	Performance Standards		
	1. Minimize the energy used in operating the total transportation system	X	--
	2. Minimize the amount of highway system capacity needed to serve travel demand	X	--
4. Provide economical and efficient service	Design and Operating Standards		
	--	--	--
	Performance Standards		
	1. Minimize operating expense per unit of transit service, operating expense per passenger, and operating assistance per passenger	X	X
	2. Maximize the percent of operating expenses recovered through passenger revenues	X	X
	3. Review routes with substandard financial performance levels	--	X

Source: SEWRPC.

Waukesha Metro Transit System service area, that is, within one-quarter mile of a bus route. Only small, newly developed portions of the City are not served by the existing bus routes, including portions of The Windings and Rolling Ridge subdivisions on the northwest side of the City; portions of the Springbrook subdivision on the southeast side; and subdivisions developing near STH 59 and Oakdale Drive and adjacent to Waukesha West High School on the southwest side. About 71 percent of the total study area resident population resided within the Waukesha Metro Transit System service area. The study area population outside the City that is not served by the transit system principally resides in partially developed or undeveloped areas, and other areas where residential densities are generally too low to support conventional fixed route transit service. Areas outside the City with residential densities high enough to be considered

Table 33

STANDARDS NOT USED IN THE PERFORMANCE EVALUATION OF THE EXISTING TRANSIT SYSTEM

Objective	Standard
1. Provide service to portions of City that can be efficiently served	Design and Operating Standards 1. Provide transit service to contiguous areas of high, medium-high, and medium density development 3. Provide paratransit service for disabled individuals Performance Standards - -
2. Promote transit utilization and provide for user comfort, convenience, and safety	Design and Operating Standards 2. Provide local routes at intervals of no more than one-half mile in high, medium-high, and medium density areas 3. Provide express bus service for the longest trips in the area 4. Provide stops meeting minimum spacing 5. Provide signs and paved loading areas at bus stops 7. Provide service meeting minimum headways 8. Provide service which meets or exceeds minimum vehicle speeds 9. Replace transit vehicles at end of maximum service life for vehicle type 10. Construct passenger shelters at major passenger loading areas Performance Standards - -
3. Promote efficiency in the total transportation system	Performance Standards - -
4. Provide economical and efficient service	Design and Operating Standards 1. Minimize the total system operating and capital costs 2. Provide premium fares for premium service and special fares for frequent transit riders 3. Consider periodic increases in passenger fares Performance Standards - -

Source: SEWRPC.

for bus service are located in the Village of Pewaukee. Generally, the City does not extend routes to serve areas outside the City unless another municipality or Waukesha County agrees to provide the local operating assistance funds.

2. The transit system provides excellent areal coverage of the employment concentrations within the City of Waukesha, with about 96 percent of the jobs in the City at employers located in the transit system service area. About 65 percent of all jobs in the total study area are located in the transit service area. Major employment concentrations in the study area that are outside the service area for the City transit system are found in the City of Pewaukee near the intersection of IH 94 and CTH J, along STH 164 between IH 94 and Capitol Drive, and north of Blue Mound Road along Eastmound Drive and Johnson Road; and in the Town of Brookfield immediately to the northwest of Goerkes Corners. While not directly served by City of Waukesha bus routes, these areas can be reached using connecting routes of the Waukesha County transit system.

Table 34

TRANSIT SERVICE PROVIDED TO LAND USES AND POPULATION GROUPS IN THE STUDY AREA BY THE WAUKESHA METRO TRANSIT SYSTEM: 1998

Performance Measure	Systemwide Performance Characteristics
Population Served[a]	
Inside City of Waukesha	60,700
Outside City of Waukesha	5,600[b]
Total	66,300
Percent of City of Waukesha Resident Population Served	97.6
Percent of Study Area Resident Population Served	71.3
Employment Served[c]	
Inside City of Waukesha	49,300
Outside City of Waukesha	4,200[d]
Total	53,500
Percent of Total Employment Within City of Waukesha Served	95.7
Percent of Total Employment Within Study Area Served	65.4
Major Land Use Trip Generators Served[e]	
Shopping Areas	15 of 19
Educational Institutions	32 of 40
Community and Special Medical Centers	6 of 10
Governmental and Public Institutional Centers	13 of 19
Major Employers	64 of 96
Total	110 of 162[f]
Transit-Dependent Population Trip Generators Served[g]	
Elderly Facilities	19 of 22
Disabled Facilities	22 of 24
Facilities for Low-Income Persons	11 of 11
Total	51 of 56[f]
Residential Concentrations of Transit-Dependent Population Groups	Served[h]

[a]All population figures are based on 1990 census data allocated to U.S. Public Land Survey quarter sections by Commission staff and adjusted to reflect estimated year data using population estimates prepared by the Wisconsin Department of Administration.

[b]An additional population of 700 persons was served by the extension of Route No. 1 to the Brookfield Square Shopping Center.

[c]All employment figures are based on 1990 U.S. Bureau of Economic Analysis data allocated to U.S. Public Land Survey quarter sections by Commission staff and adjusted to reflect estimated year data using employment estimates prepared by the U.S. Bureau of Economic Analysis and the Wisconsin Department of Workforce Development.

[d]Additional employment of 22,000 jobs were served by the extension of Route No. 1 to the Brookfield Square Shopping Center.

[e]The major land use trip generators within the study area not served by the Waukesha Metro Transit System are presented in Table 35 and shown on Map 22.

[f]The total number of trip generators served does not equal the sum of the trip generators for all categories because some trip generators have been assigned to more than one category. The total reflects a correction for such trip generators so they are counted only once for this analysis.

[g]The transit-dependent population trip generators within the study area not served by the Waukesha Metro Transit System are presented in Table 36 and shown on Map 23.

[h]The major residential concentrations of transit dependent persons identified within the study area based upon 1990 U.S. Census data are shown on Map 3 in Chapter II by Census block group. Virtually all concentrations were served by the Waukesha Metro Transit System with the exception of one area in the Town of Waukesha in the southwestern portion of the study area, and one area in the Village of Pewaukee.

Source: SEWRPC.

Table 35

MAJOR LAND USE TRIP GENERATORS IN THE STUDY AREA NOT SERVED[a] BY THE WAUKESHA METRO TRANSIT SYSTEM: 1998

Number on Map 22	Name	Located Outside City of Waukesha	Type of Major Land Use Trip Generator				
			Shopping Area	Educational Institution	Hospital and Special Medical Center	Governmental and Public Institutional Center	Major Employer
1	Acme Machell Co., Inc.	--	--	--	--	--	X
2	American TV Retail Store	X	--	--	--	--	X
3	American TV, Appliance, and Furniture-Distribution Center	X	--	--	--	--	X
4	Ameriserve Food Distribution, Inc	X	--	--	--	--	X
5	Ameritech	X	--	--	--	--	X
6	Asa Clark Middle School	X	--	X	--	--	--
7	Aurora Health Center-Waukesha	X	--	--	X	--	--
8	Beatrice Cheese, Inc.	X	--	--	--	--	X
9	Blue Cross & Blue Shield United Of Wisconsin	X	--	--	--	--	X
10	Cooper Power Systems	X	--	--	--	--	X
11	Cooper Power Systems	--	--	--	--	--	X
12	Dalum's Utility Equipment Company, Inc.	X	--	--	--	--	X
13	G E Medical Systems	X	--	--	--	--	X
14	H & K Machine, Inc.	X	--	--	--	--	X
15	Holoubek, Inc.	X	--	--	--	--	X
16	Horizon Elementary School	X	--	X	--	--	--
17	Husco International, Inc.	X	--	--	--	--	X
18	Lake Country Square	X	X	--	--	--	--
19	Market Place	--	X	--	--	--	--
20	Meadowbrook Elementary School	--	--	X	--	--	--
21	Medical Associates Health Center	X	--	--	X	--	X
22	NCL Graphic Specialists, Inc.	X	--	--	--	--	X
23	Ortho-Kinetics, Inc.	X	--	--	--	--	X
24	Pewaukee Central Business District	X	X	--	--	--	--
25	Pewaukee City Hall and Police Department	X	--	--	--	X	--
26	Pewaukee High School	X	--	X	--	--	--
27	Pewaukee Post Office	X	--	--	--	X	--
28	Pewaukee Public Library	X	--	--	--	X	--
29	Pewaukee Public Schools Campus	X	--	--	--	--	X
30	Pewaukee School District	X	--	--	--	X	--
31	Pewaukee Village Hall and Police Department	X	--	--	--	X	--
32	Plastic Molded Concepts, Inc.	X	--	--	--	--	X
33	PMI-Eisenhart, Inc.	X	--	--	--	--	X
34	Quad/Graphics, Inc.	X	--	--	--	--	X
35	Queen of Apostles School	X	--	X	--	--	--
36	River Hills West Health Care Center	X	--	--	--	--	X
37	Rose Glen Elementary School	X	--	X	--	--	--
38	Roundy's, Inc.	X	--	--	--	--	X
39	Ruekert & Mielke, Inc.	X	--	--	--	--	X
40	Sentry Supersaver-Ace Hardware	X	X	--	--	--	--
41	Stark Candy Company	X	--	--	--	--	X
42	Technology Consulting Corporation	X	--	--	--	--	X
43	TruGreen-Chemlawn	X	--	--	--	--	X
44	W O W Distributing Company, Inc.	X	--	--	--	--	X
45	Waukesha Christian Academy Elementary School	X	--	X	--	--	--
46	Waukesha Christian Academy High School	X	--	X	--	--	--
47	Waukesha Cutting Tools, Inc.	--	--	--	--	--	X
48	Waukesha Medical Center-Pewaukee	X	--	--	X	--	--
49	Waukesha Medical Center-South	--	--	--	X	--	--
50	Wisconsin Department of Transportation	--	--	--	--	X	X
51	Wisconsin Electric Power Company	X	--	--	--	--	X
52	Wisconsin Electric Power Company	X	--	--	--	--	X

[a] *Major land use trip generators were considered to have been served by the transit system if they were located within one-quarter mile of a bus route.*

Source: SEWRPC.

Table 36

MAJOR TRANSIT-DEPENDENT POPULATION TRIP GENERATORS IN THE STUDY AREA NOT SERVED[a] BY THE WAUKESHA METRO TRANSIT SYSTEM: 1998

Number on Map 23	Name	Located Outside City of Waukesha	Type of Transit-Dependent Population Trip Generator		
			Facility for the Elderly	Facility for the Disabled	Facility for Low-Income Persons[b]
1	Homes for Independent Living–Lakeview House	X	--	X	--
2	Homes for Independent Living–Pewaukee House	X	--	X	--
3	River Hills West Health Care Center	X	X	--	--
4	Waukesha County Adult Day Care	X	X	--	--
5	Sunnyridge Home	X	X	--	--

[a]*Transit-dependent population trip generators were considered to have been served by the transit system if they were located within one-quarter mile of a bus route.*

[b]*All facilities were served by the transit system.*

Source: SEWRPC.

Not all jobs within the transit service area should be considered as completely served because of the current hours of operation of the Waukesha Metro Transit System which extend from about 6:00 a.m. until about 10:30 p.m. on weekdays and from about 8:00 a.m. until about 10:00 p.m. on Saturdays. With these operating hours, transit service would be convenient for most weekday first-shift starting and ending times. The weekday and Saturday hours, however, would not serve the ending times of most second-shift jobs and the starting times of most third-shift jobs, as service ends just before the second-third shift change times. The absence of Sunday service also restricts the ability of individuals working on weekends to use the transit system even though the job location may be within the service area.

3. The transit system provides good coverage of the existing major land use trip generators in the study area, serving 110, or about 68 percent, of the 162 trip generators identified. Of the 52 trip generators not considered as served, 45 are located outside the City of Waukesha, and, therefore, outside the primary service area of the transit system. Of the seven unserved generators within the City, one—Cooper Power Systems—is partially within the one-quarter mile service area for the transit system.

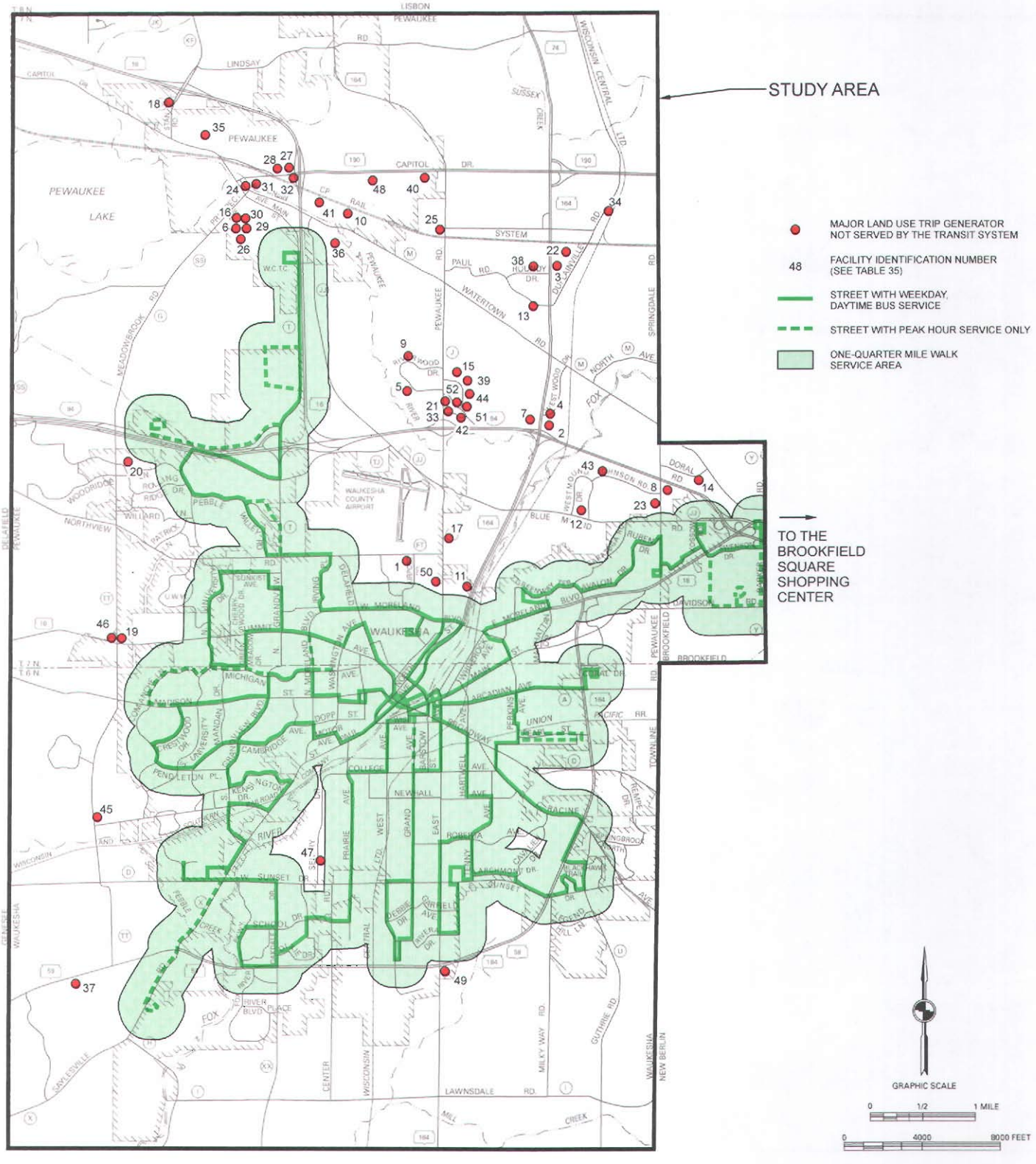
4. The transit system provides good areal coverage of both the residential concentrations of transit dependent population groups and the facilities used by these groups. A total of 51, or about 91 percent, of the 56 facilities identified were served by the transit system including all 11 of the facilities identified for low income persons; all but two of the 24 facilities identified for the disabled; and all but three of the 22 facilities identified for the elderly. Four of the five transit-dependent population trip generators not served were located in the Village of Pewaukee.

Ridership and Financial Performance-Peer Group Evaluation

The performance characteristics of the Waukesha Metro Transit System were compared to peer groups in order to measure the system's performance within the context of similar transit systems. Two peer groups were created, one comprised of other systems from within the State of Wisconsin, and the other comprised of systems from other states. The selection of the peer group's members was based on the other system having similar characteristics as those of the Waukesha Metro Transit System. Table 37 presents the characteristics of the Waukesha Metro Transit System and other systems included in the Wisconsin peer group in 1997. Similarly, Table 38 presents the characteristics of the Waukesha Metro Transit System and other systems included in the national peer group in 1997.

MAP 22

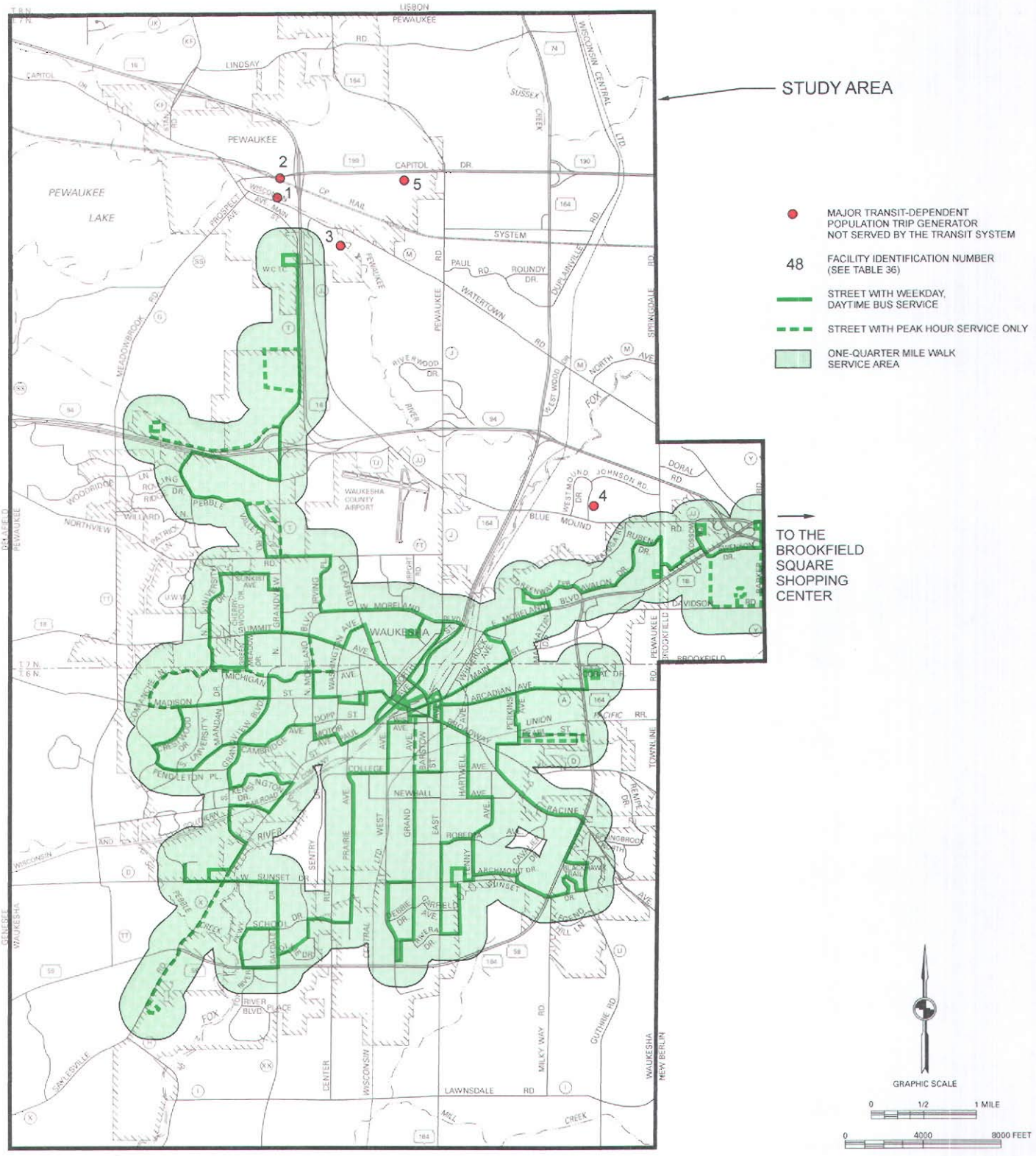
MAJOR LAND USE TRIP GENERATORS IN THE STUDY AREA NOT SERVED BY THE WAUKESHA METRO TRANSIT SYSTEM: APRIL 1999



Source: SEWRPC.

MAP 23

MAJOR TRANSIT-DEPENDENT POPULATION TRIP GENERATORS IN THE STUDY AREA NOT SERVED BY THE WAUKESHA METRO TRANSIT SYSTEM: APRIL 1999



Source: SEWRPC.

Table 37

SELECTED SERVICE CHARACTERISTICS FOR THE WAUKESHA METRO TRANSIT SYSTEM AND TRANSIT SYSTEMS IN THE WISCONSIN PEER GROUP: 1997

Transit System	Ownership/ Management	Routing and Scheduling	Hours of Operation		
			Weekdays	Saturdays	Sundays
Waukesha Metro Transit System	Public with private management	Radial, pulse	5:30 a.m.-10:30 p.m.	8:00 a.m.-9:50 p.m.	--
Peer Group Transit System					
Eau Claire Transit System	Public	Radial, pulse	5:45 a.m.-11:30 p.m.[a]	8:15 a.m.-6:45 p.m.	--
Janesville Transit System	Public	Radial, pulse	6:15 a.m.- 6:15 p.m.	8:45 a.m.-6:15 p.m.	--
La Crosse Municipal Transit Utility	Public	Radial, pulse	5:10 a.m.-10:40 p.m.	5:40 a.m.-7:40 p.m.	7:40 a.m.-6:40 p.m.
Oshkosh Transit System	Public	Radial, pulse	6:00 a.m.- 6:00 p.m.	6:00 a.m.-6:00 p.m.	--
Sheboygan Transit System	Public	Radial, pulse	5:15 a.m.-10:15 p.m.	7:15 a.m.-6:45 p.m.	--
Wausau Area Transit System, Inc.	Public	Radial, pulse	6:00 a.m.- 6:30 p.m.	8:30 a.m.-5:30 p.m.[b]	--

Transit System	Peak Buses Operated Weekdays	Fares		Special School Routes	Major College or University
		Adult Cash Fare	Special Fares		
Waukesha Metro Transit System	18	1.00	--	No	No
Peer Group Transit System					
Eau Claire Transit System	13	$0.90	--	Yes	Yes
Janesville Transit System	17	1.00	--	Yes	No
La Crosse Municipal Transit Utility	13	0.80	--	No	Yes
Oshkosh Transit System	14	0.50	--	Yes	Yes
Sheboygan Transit System	25	1.25	--	Yes	No
Wausau Area Transit System, Inc.	21	0.75	--	Yes	No

[a] *Weekday evening operation began in August 1997.*

[b] *No service was provided on Saturdays in summer.*

Source: SEWRPC.

Information useful to illustrate the performance of the Waukesha Metro Transit System and the peer systems was collected from several sources. The key indicators of ridership and financial performance for the Waukesha Metro Transit System and the Wisconsin and national peer groups in 1993 and 1997 are presented in Table 39. Additionally, more detailed data are provided in Appendix B which include key data used to develop Table 39 as well as figures which display year-by-year ridership and performance information for the Waukesha Metro Transit System and the peer groups' averages.

Based on the above information, the following conclusions were reached:

1. Between 1993 and 1997, the Waukesha Metro Transit System's ridership increased at an average annual rate of 4.7 percent, while the average ridership levels of the two peer groups both decreased. During this same period, the Waukesha Metro Transit System increased the amount of service provided as measured by revenue vehicle miles and revenue vehicle hours, while the transit systems in the two peer groups modestly reduced service. The ridership and service level increases of the Waukesha Metro Transit System occurred when evening service and expanded service on Route No. 1 during the IH 94 resurfacing project were introduced, respectively, in 1996 and 1997.

2. Regarding service effectiveness measures, the Waukesha Metro Transit System experienced increased levels of passengers and revenue vehicle hours operated per capita between 1993 and 1997, while the peer groups experienced decreased levels for both of those service effectiveness measures. Regarding the service effectiveness measures of passengers per revenue vehicle mile and passengers per revenue vehicle hour of transit service, the Waukesha Metro Transit System in 1997 carried about 1.0 passenger per revenue vehicle mile, but the peer group transit systems

Table 38

SELECTED SERVICE CHARACTERISTICS FOR THE WAUKESHA METRO TRANSIT SYSTEM AND TRANSIT SYSTEMS IN THE NATIONAL PEER GROUP: 1997

Transit System	Ownership/ Management	Routing and Scheduling	Hours of Operation		
			Weekdays	Saturdays	Sundays
Waukesha Metro Transit System	Public with Private Management	Radial, pulse	5:30 a.m.-10:30 p.m.	8:00 a.m.-9:50 p.m.	--
Peer Group Transit System					
Altoona Metro Transit (Altoona, Pennsylvania)	Public	Radial, pulse	6:00 a.m.- 6:30 p.m.	6:00 a.m.-6:30 p.m.	--
Battle Creek Transit (Battle Creek, Michigan)	Public	Radial, pulse	6:00 a.m.-12:00 a.m.[a]	9:15 a.m.-5:15 p.m.	--
The Bus (Greeley, Colorado)	Public	Modified Grid	6:45 a.m.- 6:45 p.m.	9:45 a.m.-5:45 p.m.	--
City Bus (Grand Forks, North Dakota)	Public	Radial, pulse	6:30 a.m.- 6:30 p.m.	10:00 a.m.-6:30 p.m.	--
Keyline Transit (Dubuque, Iowa)	Public	Radial, pulse	6:00 a.m.- 6:00 p.m.	8:00 a.m.-6:00 p.m.	--
Metro Bus (St. Cloud, Minnesota)	Public	Radial, pulse	6:00 a.m.- 9:15 p.m.[b]	8:00 a.m.-6:00 p.m.	--
Mountain Line (Missoula, Montana)	Public	Radial, pulse	6:00 a.m.- 7:00 p.m.	10:00 a.m.-6:00 p.m.	--
Muncie Indiana Transit System (Muncie, Indiana)	Public with Private Management	Radial, pulse	6:00 a.m.- 9:00 p.m.	8:00 a.m.-6:00 p.m.	--
Springfield City Area Transit (Springfield, Ohio)	Public with Private Management	Radial, pulse	6:40 a.m.- 5:40 p.m.	--	--
Wheeling-Ohio Valley Regional Transportation Authority (Wheeling, West Virginia)	Public	Radial, pulse	6:00 a.m.- 6:45 p.m.	9:45 a.m.-5:45 p.m.	--

Transit System	Peak Buses Operated Weekdays	Fares		Special School Routes	Major College or University
		Adult Cash Fares	Special Fares		
Waukesha Metro Transit System	18	$1.00	--	No	No
Peer Group Transit System					
Altoona Metro Transit (Altoona, Pennsylvania)	24	$1.25	College students ride free	Yes	Yes
Battle Creek Transit (Battle Creek, Michigan)	17	1.00[c]	--	Yes	No
The Bus (Greeley, Colorado)	10	0.75	College students ride free	Yes	Yes
City Bus (Grand Forks, North Dakota)	12	1.00	College students pay reduced fare of $0.35	Yes	Yes
Keyline Transit (Dubuque, Iowa)	9	1.00	--	Yes	No
Metro Bus (St. Cloud, Minnesota)	19	0.50[d]	College students may purchase semester bus pass for $31.00	Yes	Yes
Mountain Line (Missoula, Montana)	15	0.85	Children 6-18 years old ride free in summer and pay $0.25 remainder of year; college students ride free	No	Yes
Muncie Indiana Transit System (Muncie, Indiana)	21	0.50	Children 6-18 years old pay $5.00 for summer bus pass	Yes	Yes
Springfield City Area Transit (Springfield, Ohio)	13	0.75	--	No	No
Wheeling-Ohio Valley Regional Transportation Authority (Wheeling, West Virginia)	16	0.80	--	No	No

[a] *Service provided after 6:00 p.m. operated as demand-responsive service with a trip reservation required to be made 24 hours prior to travel.*

[b] *Service is operated over a reduced system of routes until 12:30 a.m. to serve university-related demand.*

[c] *Premium fare of $3.00 is charged for evening demand-response service.*

[d] *The adult cash fare was raised in March 1997 from $0.35 charged each time a passenger boarded a bus including when transferring between routes, to $0.50 for the initial boarding and $0.25 for each transfer.*

Source: SEWRPC.

Table 39

COMPARISON OF KEY INDICATORS OF RIDERSHIP AND FINANCIAL PERFORMANCE FOR THE WAUKESHA METRO TRANSIT SYSTEM AND OTHER URBAN BUS SYSTEMS IN THE WISCONSIN AND NATIONAL PEER GROUPS: 1993 AND 1997

Performance Measure	Operating Data[a]								
	Waukesha Metro Transit System			Average[b] for Bus Systems in Wisconsin Peer Group[c]			Average[b] for Bus Systems in National Peer Group[d]		
	1993	1997	Average Annual Percent Change	1993	1997	Average Annual Percent Change	1993	1997	Average Annual Percent Change
Ridership									
Total Passengers[e]	604,500	727,500	4.7	851,800	748,400	-3.2	715,700	701,900	-0.5
Service Levels									
Revenue Vehicle Miles	561,500	746,475	7.4	563,200	553,100	-0.5	507,400	498,500	-0.4
Revenue Vehicle Hours	42,500	54,500	6.4	42,000	40,000	-1.2	37,500	36,900	-0.4
Service Effectiveness									
Passengers per Capita	9.8	12.5	6.1	15.9	13.8	-3.6	11.2	10.8	-1.0
Revenue Vehicle Hours per Capita	0.7	0.9	6.4	0.8	0.7	-2.3	0.6	0.6	-0.3
Passengers per Revenue Vehicle Mile	1.05	1.00	-1.2	1.54	1.37	-2.8	1.51	1.51	0.1
Passengers per Revenue Vehicle Hour	13.8	13.7	-0.3	21.1	19.2	-2.3	20.6	19.9	-0.9
Service Efficiency									
Operating Expense per Revenue Vehicle Mile	$ 2.56	$ 2.88	3.0	$ 3.05	$ 3.40	2.7	$ 3.15	$ 3.40	1.9
Operating Expense per Revenue Vehicle Hour	$33.84	$39.42	3.9	$41.73	$47.50	3.3	$42.58	$45.01	1.4
Cost Effectiveness									
Operating Expense per Passenger									
Fixed Route Service	$ 2.44	$ 2.88	4.2	$ 2.08	$ 2.64	6.1	$ 2.29	$ 2.46	1.8
Total System	$ 2.61	$ 3.09	4.3	$ 2.14	$ 2.87	7.6	$ 2.61	$ 2.97	3.3
Total Operating Assistance per Passenger for All Service	$ 2.18	$ 2.50	3.5	$ 1.74	$ 2.28	6.9	$ 2.13	$ 2.39	2.9
Farebox Recovery Rate for All Service (percent)	16.7	19.3	3.7	18.2	20.3	2.8	18.3	20.3	2.7

[a] *Based on ridership, service, and financial data obtained from the Federal Transit Administration National Transit Database for the years 1993 and 1997. Performance measures are for fixed-route bus operations except where noted as for all service. Performance measures for the total system include data for complementary paratransit service for disabled individuals and for any other demand-responsive transit services provided by the transit systems.*

[b] *Averages reflect the mean of the individual performance measure values calculated for each transit system in the peer group.*

[c] *Key performance indicators were developed based on information reported by six other urban bus systems in Wisconsin having total service area populations of between approximately 40,000 and 65,000 persons. The six systems are identified in Table 37. Operating and financial data for each system for 1993 and 1997 are presented in Appendix B, along with figures which provide a graphic comparison of the trends in the performance measures over this five-year period for the peer group average and the Waukesha Metro Transit System.*

[d] *Key performance indicators were developed based on information reported by ten other urban bus systems in the central portion of the United States having total service area populations of between approximately 45,000 and 85,000 persons. The ten systems are identified in Table 38. Operating and financial data for each system for 1993 and 1997 are presented in Appendix B, along with figures which provide a graphic comparison of the trends in the performance measures over this five-year period for the peer group average and the Waukesha Metro Transit System.*

[e] *This measure of ridership counts all passengers each time they board a transit vehicle. Passengers who transfer one or more times to different routes of a transit system are counted as two or more passengers in completing a single trip between a specific origin and destination.*

Source: SEWRPC.

carried about 1.4 and 1.5 passengers per revenue vehicle mile. Also in 1997, the Waukesha Metro Transit System carried about 13.7 passengers per revenue vehicle hour, but the peer group transit systems carried about 21.1 and 20.6 passengers per revenue vehicle hour.

3. The Waukesha Metro's Transit System's service efficiency, as measured by operating expenses per revenue vehicle mile and revenue vehicle hour, was consistently and significantly better than the service efficiency of the peer group transit systems.

4. The cost effectiveness of the Waukesha Metro Transit System in 1997, as measured by operating cost and assistance per passenger and by percent of operating costs funded by passenger revenues, was somewhat less than the peer groups transit systems, but not significantly less cost effective.

Overall, the Waukesha Metro Transit System compares favorably compared to the two peer groups. The Waukesha Metro Transit System consistently outperformed the peer group transit systems with respect to service efficiency, including operating expense per revenue vehicle mile and revenue vehicle hour. Also compared to the peer group systems which experienced decreases in ridership and service levels, the Waukesha Metro Transit System experienced increased service levels and ridership. However, the peer group systems modestly outperformed the Waukesha Metro Transit System with respect to service effectiveness (passengers per revenue vehicle mile and hour) and cost effectiveness (operating cost and assistance per passenger and percent of operating costs paid by passenger revenues). The trends of several service and cost effectiveness measures changed for the Waukesha Metro Transit System during the analysis period. The transit system's performance improved from 1993 to 1994 and from 1994 to 1995 using measures such as passengers per vehicle mile, passengers per vehicle hour, total system operating cost per passenger, and total system operating assistance per passenger. The transit system's performance declined from 1995 and 1996 and from 1996 to 1997. Changes were made by the transit system in 1996, including a fare increase and the introduction of evening service. Service was also added in 1997 with the expansion of service on Route No. 1. An evaluation of evening service is included later in this chapter.

Contributions to the Efficiency of the Total Transportation System

Objective No. 3 concerns the operation of public transit services and facilities which promote both economy and efficiency in the total transportation system. This objective is supported by two standards relating to utilization of energy and the provision of adequate highway system capacity.

The first standard under this objective requires that the amount of energy, particularly motor fuels, utilized in operating the transportation system be minimized. This standard is intended to measure the potential energy savings of public transit services provided by the Waukesha Metro Transit System. To measure compliance with this standard, a comparison of the relative energy efficiency of the current Waukesha transit system with that of automobile travel was undertaken and is presented in Table 40, along with similar comparisons for the other urban public transit systems in Southeastern Wisconsin.

The second standard under Objective No. 3 states that the amount of highway system capacity provided to serve total travel demand should be minimized. The intent of this standard is to measure the impact of the additional passenger transportation capacity that is provided by the public transportation system on peak traffic loadings on arterial street and highway facilities, and on the need for improvements to existing arterial streets and highways. Table 41 provides a comparison of the current total vehicle traffic volume and the transit passenger volume for selected arterial street segments within the Waukesha transit system service area. The street segments selected include arterial streets carrying a major route of the transit system and streets within the central business district where, generally, more than one route uses the same street. In reviewing this information, it should be noted that information presented on an average weekday basis understates somewhat the transportation system benefits of public transit. This understatement occurs because a higher percentage of average weekday transit passenger volumes—between about 20 and 25 percent for the Waukesha transit system—is typically carried during the morning or evening peak traffic hour, than vehicle traffic volumes, the latter peaking at 8 to 10 percent of the average weekday total. For this reason, information is also provided for peak hour traffic and transit passenger volumes.

Based on the above information, the following conclusions were reached:

1. The overall energy efficiency of the Waukesha Metro Transit system in serving travel on an average weekday in 1997 within the Waukesha area was somewhat less than that of the private automobile. Operating information indicated that the Waukesha transit system provided an

Table 40

COMPARISON OF THE ESTIMATED WEEKDAY ENERGY EFFICIENCY OF PUBLIC TRANSIT SYSTEMS WITHIN SOUTHEASTERN WISCONSIN: 1997

Characteristic	Transit System Operating Data[a]					
	City of Waukesha Transit System	Waukesha County Transit System	Milwaukee County Transit System	Milwaukee-Racine-Kenosha Commuter Bus Service[c]	City of Racine Transit System	City of Kenosha Transit System
Estimated Energy Efficiency of Travel By Transit						
Unlinked Transit Passenger Trips[d]	2,590	1,880[b]	226,100	220	6,950	5,650
Transit Passenger-Miles of Travel	8,500	25,300[b]	594,300	4,620	17,400	18,300
Passenger-Miles per Transit Trip	3.3	13.5	2.6	21.0	2.5	3.2
Total Bus-Miles	2,730	3,470[b]	60,530	950	4,530	3,430
Gallons of Fuel Used	640	690[b]	14,020	190	1,060	890
Bus Miles per Gallon of Fuel	4.4	5.0	4.3	5.0	4.1	4.3
Transit Passenger-Miles per Gallon of Fuel	13.3	36.7	42.4	24.3	16.4	20.6
Estimated Energy Efficiency if Transit Trips Were Made by Automobile						
Automobile Passenger-Miles of Travel	8,500	25,300	594,300	4.620	17,400	18,300
Vehicle-Miles (at 1.0-1.2 passengers per automobile)	7,080-8,500	21,080-25,300	495,250-594,300	3,850-4,620	14,500-17,400	15,250-18,300
Gallons of Fuel Used	510-610	920-1,100	33,920-40,710	230-270	1,040-1,240	1,090-1,310
Vehicle-Miles per Gallon of Fuel[e]	14.0	23.0	14.6	17.0	14.0	14.0
Automobile Passenger-Miles per Gallon of Fuel	14.0-16.7	23.0-27.5	14.6-17.5	17.0-20.6	14.0-16.7	14.0-16.7

[a] *Unless otherwise noted, transit system data are based upon information reported by each transit operator in its 1997 National Transit Database report submitted to the Federal Transit Administration.*

[b] *The data from National Transit Database report for the Waukesha County transit system was adjusted to include estimated weekday ridership, passenger miles, and bus miles for County bus routes for which data was not reported. Figures for fuel consumed are estimates based on vehicle miles of service and average miles per gallon for the various transit operators providing service.*

[c] *All data are estimates developed from the annual report submitted to the Wisconsin Department of Transportation and other transit operator data.*

[d] *Represents all boarding passengers including transfer and free passengers.*

[e] *Estimated based on an average auto fuel efficiency of about 21 miles per gallon, with average efficiency of about 14 miles per gallon for central city standard arterial travel and 26 miles per gallon for freeway and expressway travel. For the Waukesha County transit system, it was assumed that about 25 percent of travel would be on standard arterials and 75 percent on freeways. For the Milwaukee County Transit System, it was assumed that about 95 percent of travel would be on standard arterials and 5 percent on freeways. For the Milwaukee-Racine-Kenosha commuter bus service, it was assumed that about 75 percent of travel would be on standard arterials and 25 percent on freeways. For the Racine, Kenosha, and Waukesha transit systems, it was assumed that all travel would be on standard arterials.*

Source: SEWRPC

average of about 13 passenger miles of travel for every gallon of fuel consumed in providing the service in 1997. This compares with an estimated 14 to 17 passenger miles of travel provided per gallon of fuel consumed if the transit trips had, instead, been made by automobile.[1] The information presented in Table 40 would indicate that the transit systems within the Region are generally more energy efficient than the automobile, and that the transit system serving

[1] *This estimated range of automobile efficiency assumes an average 14 mile-per-gallon fuel efficiency for an automobile operated in city travel. The upper end of the range assumes that the comparable automobile travel is made at the average automobile occupancy in the Waukesha area, or at about 1.2 persons per vehicle. The lower end of the range for automobile travel is based on an average auto occupancy of 1.0 person, assuming that present transit passengers do not now have the opportunity to travel by carpool and, would not have such opportunity if they were assumed to have an automobile available for their travel.*

Table 41

TOTAL VEHICLE AND TRANSIT PASSENGER VOLUMES ON SELECTED SURFACE ARTERIALS WITHIN THE CITY OF WAUKESHA: 1998

Location	Average Weekday			Peak Hour		
	Vehicle Count	Transit Passenger Count	Potential Percent Increase in Vehicle Traffic if Transit Trips Use Automobile[a]	Vehicle Count	Transit Passenger Count	Potential Percent Increase in Vehicle Traffic if Transit Trips Use Automobile[a]
W. Main Street (between N. East Avenue and N. Barstow Street)	8,700	855	8	870	110	11
W. Madison Street (between Bank Street and E. St. Paul Avenue)	8,000	740	8	800	130	14
S. Grand Avenue (between W. College Avenue and W. Laflin Avenue)	6,600	260	3	660	55	7
E. Main Street (between N. Greenfield Avenue and Perkins Avenue)	7,600	500	6	760	80	9

[a]*Assumes an average automobile occupancy of 1.06 persons per auto for work trips and 1.33 persons per auto for all other trips. About 40 percent of weekday trips on the transit system are home-based work trips.*

Source: Waukesha Metro Transit System and SEWRPC.

Milwaukee County is substantially more energy efficient than the private automobile, as is the Waukesha County transit system which serves primarily commuter travel between Waukesha County and the Milwaukee central business district. The higher efficiency of the Milwaukee County transit system may be attributed to its service area, which includes central Milwaukee County with high density land uses and attendant travel and transit demand, particularly to and from the City of Milwaukee central business district. The higher energy efficiency of the Waukesha County transit system may be attributed to the focus of its service on travel between Waukesha County and the Milwaukee central business district, and to the limitation of a sizable portion of its service to the morning and afternoon peak traffic periods.

Each of the transit systems generally operates at levels substantially higher than their average energy efficiency during the weekday peak traffic periods and generally substantially lower than their average levels during off-peak periods. In addition, each of the transit systems generally operates at substantially higher than their average energy efficiency levels on their routes which carry more than their average passenger loadings and, conversely, each generally operates at substantially lower than their average energy efficiency levels on their routes which carry less than their average passenger loadings.

Consequently, it can be stated that the Waukesha Metro Transit System during 1997 provided some energy savings as compared to the automobile on its more heavily traveled routes and during peak traffic periods, but was only marginally more energy efficient, or, in some cases, less energy efficient, than the automobile on its more lightly traveled routes and during off-peak traffic periods. In addition, some improvement in the energy efficiency of the transit system has resulted from the operation of the 14 new buses acquired in the fall of 1998 as replacements for the oldest buses in the fleet. The new buses are 15 to 20 percent more fuel-efficient, getting about five miles per gallon of fuel compared with the average of about 4.3 miles per gallon for the old bus fleet. Assuming this rate for 1997, the Waukesha Metro Transit System would have provided about 16 passenger miles of travel for every gallon of fuel consumed in providing the service with the new buses, about the same as the estimated 14 to 17 passenger miles of travel provided per gallon of fuel consumed if the transit trips had, instead, been made by automobile.

2. It would appear that the Waukesha Metro Transit System may contribute to efficiency in the utilization of the total capacity of the transportation system. If the people traveling by public transit were, instead, traveling by automobile, there would be an increase in automobile traffic utilizing arterial streets of the area of from 10 to 15 percent during the peak traffic hour. The

effect would be most pronounced on the streets within the City of Waukesha central business district, where the potential exists for traffic congestion to occur during peak traffic hours.

ROUTE PERFORMANCE EVALUATION

Route Ridership and Financial Performance

The evaluation of route ridership and financial performance was based on Performance Standards 1 and 2 under Objective 2, and Performance Standards 2 and 3 under Objective 4. The estimated average daily service effectiveness and cost efficiency measures for the routes of the Waukesha Metro Transit System are shown in Tables 42 and 43, and in Figure 9. The performance measures presented in these tables and figures are based upon the daily operating characteristics of each route of the transit system; the total daily boarding passengers—including revenue, free, and transfer passengers—for each route obtained from passenger counts taken by transit system staff during the period October 19 through 26, 1998; and the average systemwide cost per vehicle hour and passenger revenue per boarding passenger for the transit system during 1998.

The performance measures presented in the above tables and figure provide an indication of the ridership, productivity, and financial performance of each bus route. These performance measures included: total boarding passengers; passengers per route-mile, per revenue vehicle-mile, and per revenue vehicle-hour; total operating cost and operating assistance per passenger; farebox recovery rate; and the percent of weekday passengers riding on Saturdays. For each performance measure, a minimum performance level was identified based on the overall systemwide average. Routes which had service-based performance measures that were more than 20 percent below the average for all routes, or cost-based performance measures that were more than 20 percent above the systemwide average, were identified as poor performers for the specific measure. Use of the systemwide average as the performance standard directs the transit system toward improving the performance of routes that are significantly below average so that, over time, the overall performance of the entire transit system will improve. Use of the systemwide average in this manner will also help to improve the overall performance of the transit system in comparison to other transit systems in State or national peer groups.

The boarding and alighting passenger activity along each bus route of the Waukesha Metro Transit System was also examined to help identify productive and nonproductive route segments and stops. Information concerning the number of boarding and alighting passengers on weekdays by location for each bus route was obtained from the same October 1998 passenger counts used in assessing the average daily service effectiveness and cost efficiency of each route. In total, approximately 5,500 boarding and alighting passengers were estimated to have used the transit system with these passenger counts. This ridership was then assigned to 67 major route segments identified on the transit system. A rank ordering of the route segments by total passenger activity, including both boarding and alighting passengers, is displayed graphically in Figure 10. Because total ridership levels can be expected to be affected by the amount of service provided over each route and segment, and because service levels vary somewhat among the routes and segments of the transit system, particularly for the special services operated only during peak periods, the total passenger activity per scheduled bus trip was also examined for each route segment. A rank ordering of the route segments by total passenger activity per bus trip is displayed graphically in Figure 11. Table 44 presents the total passenger activity and total passenger activity per bus trip for each bus route by route segment. The route segments which ranked in the top one-third in terms of both total passenger activity and total passenger activity per bus trip were considered as the most productive segments in the transit system, and the route segments which ranked in the bottom one-third in terms of both measures were considered as the least productive segments in the transit system. The most productive and the least productive route segments and stops that were identified in this manner are shown by route on Map 24. The 16 most productive route segments accounted for about 2,830 boarding and alighting passengers, or about 51 percent of the total observed passenger activity, and averaged about four boarding and alighting passengers per bus trip. The 14 least productive route segments accounted for about 290 boarding and alighting passengers, or about 5 percent of the total observed passenger activity, and had an average of less than one boarding and alighting passenger per bus trip.

Based on the above information, the following conclusions were reached:

1. Route Nos. 3, 4, 7, and 8 have superior weekday performance levels which, for the most part, are consistently above systemwide average performance levels for service effectiveness measures or below systemwide average levels for cost effectiveness measures. Of these four routes, Route Nos. 4 and 8 are clearly the best performers, exceeding the systemwide average for all performance measures. Route Nos. 3

Table 42

AVERAGE DAILY SERVICE EFFECTIVENESS MEASURES FOR THE ROUTES OF THE WAUKESHA METRO TRANSIT SYSTEM: OCTOBER 19-26, 1998

Weekdays							
				Service Effectiveness Measure			
Route Number	Length (round-trip route-miles)	Revenue Vehicle-Hours	Revenue Vehicle-Miles	Total Passengers	Passengers per Route-Mile	Passengers per Revenue Vehicle-Hour	Passengers per Revenue Vehicle-Mile
1	24.8	60.4	817.3	730	29.4	12.1	0.89
2	18.3	21.0	315.0	290	***15.9***	13.8	0.92
3	7.2	11.6	142.3	***190***	26.6	16.4	1.34
4	6.7	15.9	185.1	330	49.3	20.8	1.78
5[a]	13.4	19.7	258.9	***200***	***15.0***	***10.2***	***0.77***
6[a]	13.9	17.0	219.1	***210***	***15.1***	***12.3***	0.96
7	9.3	11.9	157.3	180	19.5	15.1	1.14
8	11.2	16.1	205.5	280	25.1	17.4	1.36
9	22.3	21.0	377.0	340	***15.2***	16.2	0.90
Systemwide Total/Average	126.9	194.6	2,677.5	2,750	21.7	14.1	1.03
Minimum Acceptable Performance Level[b]	--	--	--	244	17.3	11.3	0.82

Saturdays								
				Service Effectiveness Measure				
Route Number[a]	Length (round-trip route-miles)	Revenue Vehicle-Hours	Revenue Vehicle-Miles	Total Passengers	Passengers per Route-Mile	Passengers per Revenue Vehicle-Hour	Passengers per Revenue Vehicle-Mile	Percent of Weekday Ridership Riding on Saturdays
1	23.2	39.7	532.9	510	22.0	12.8	0.96	69.9
2	18.3	14.0	221.6	250	13.7	17.9	1.13	86.2
3	7.2	7.0	91.7	***80***	11.2	11.4	0.87	***42.1***
4	6.2	7.1	88.4	240	38.7	33.9	2.71	72.7
5/6	16.8	14.2	238.2	200	11.9	14.1	0.84	51.3
7	7.0	7.1	102.6	***60***	***8.6***	***8.4***	***0.58***	***33.3***
8	11.2	7.0	95.2	***100***	***9.0***	14.3	1.05	***34.5***
9	22.3	13.7	226.1	***130***	***5.8***	***9.5***	***0.57***	***38.2***
Systemwide Total/Average	112.1	109.8	1,596.7	1,570	14.0	14.3	0.98	57.3
Minimum Acceptable Performance Level[b]	--	--	--	157	11.2	11.4	0.79	45.8

[a]The data presented for Route Nos. 5 and 6 are for weekdays only, as Route No. 5/6 combines portions of Route Nos. 5 and 6 and operates on weekday evenings and Saturdays. Weekday evening data for Route No. 5/6 is included in the data presented for Route Nos. 5 and 6 on weekdays.

[b]Levels shown are 20 percent below the overall average for all routes in the service category. Routes with performance levels below the identified minimum levels, which should be considered as poor performers as specified under service performance standard 2 of Objective 2, are listed in bold, italicized type.

Source: Waukesha Metro Transit System and SEWRPC.

Table 43

AVERAGE DAILY COST EFFECTIVENESS MEASURES FOR THE ROUTES OF THE WAUKESHA METRO TRANSIT SYSTEM: OCTOBER 19-26, 1998

Weekdays						
				Cost Effectiveness Measure		
Route Number	Total Passengers	Operating Cost	Operating Assistance	Operating Cost per Passenger	Operating Assistance per Passenger	Farebox Recovery Rate (percent)
1	730	$2,468	$2,082	$3.38	***$2.85***	15.6
2	290	858	705	2.96	2.43	17.8
3	***190***	479	378	2.52	1.99	21.0
4	330	651	477	1.97	1.45	26.8
5[a]	***200***	796	696	***3.98***	***3.45***	***13.3***
6[a]	***210***	675	569	3.21	***2.69***	16.4
7	***180***	501	406	2.78	2.25	19.0
8	280	661	508	2.36	1.83	22.4
9	340	853	673	2.51	1.98	21.1
Systemwide Total/Average	2,750	$7,942	$6,495	$2.89	$2.36	18.3
Minimum Acceptable Performance Level[b]	244	--	--	$3.47	$2.83	14.6

Saturdays						
				Cost Effectiveness Measure		
Route Number[a]	Total Passengers	Operating Cost	Operating Assistance	Operating Cost per Passenger	Operating Assistance per Passenger	Farebox Recovery Rate (percent)
1	510	$1,601	$1,332	$3.14	$2.61	16.8
2	250	559	427	2.24	1.71	23.6
3	***80***	276	233	***3.44***	***2.92***	15.3
4	240	286	159	1.19	0.66	44.3
5/6	200	561	455	2.81	2.28	18.8
7	***60***	290	258	***4.83***	***4.30***	***10.9***
8	***100***	276	223	2.76	2.23	19.2
9	***130***	555	486	***4.27***	***3.74***	***12.4***
Systemwide Total/Average	1,570	$4,403	$3,574	$2.80	$2.28	18.8
Minimum Acceptable Performance Level[b]	140	--	--	$3.37	$2.73	15.1

[a]The data presented for Route Nos. 5 and 6 are for weekdays only, as Route No. 5/6 combines portions of Route Nos. 5 and 6 and operates on weekday evenings and Saturdays. Weekday evening data for Route No. 5/6 is included in the data presented for Route Nos. 5 and 6 on weekdays.

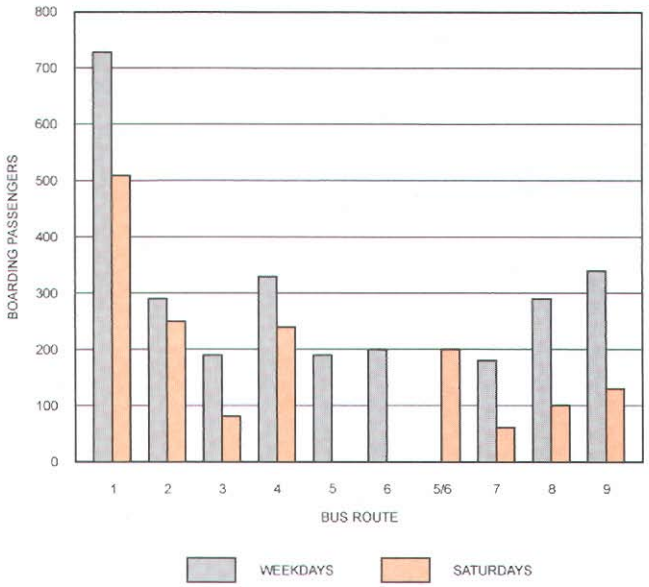
[b]Levels shown are 20 percent above the overall average for all routes in the service category, with the exception of farebox recovery rate, which has a level 20 percent below the overall average for all routes. Routes with performance levels above or below the identified minimum levels, which should be considered as poor performers as specified under service performance standard 3 of Objective 4, are listed in bold, italicized type.

Source: Waukesha Metro Transit System and SEWRPC.

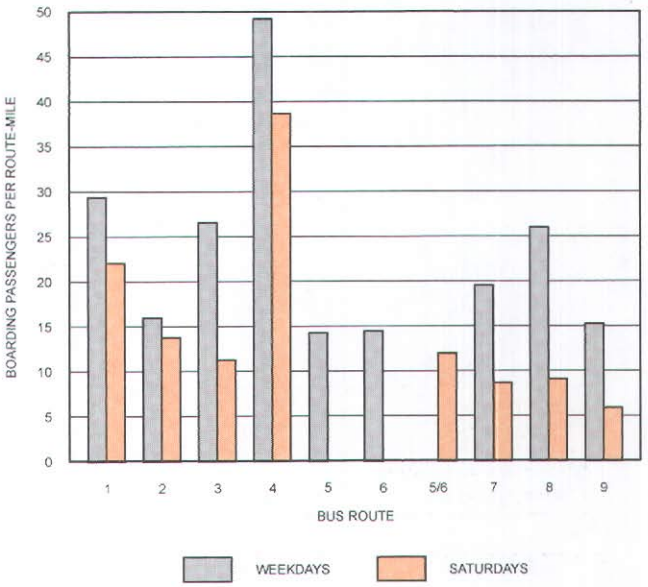
Figure 9

SELECTED SERVICE AND COST EFFECTIVENESS MEASURES FOR THE ROUTES OF THE WAUKESHA METRO TRANSIT SYSTEM: OCTOBER 19-26, 1999

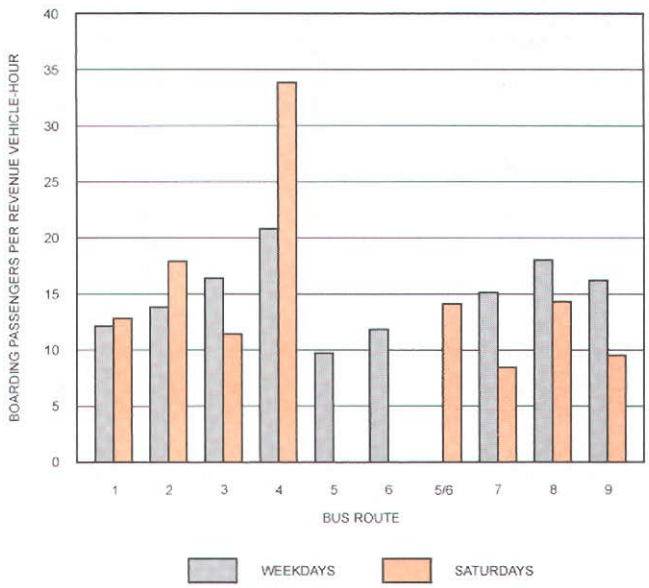
TOTAL PASSENGERS



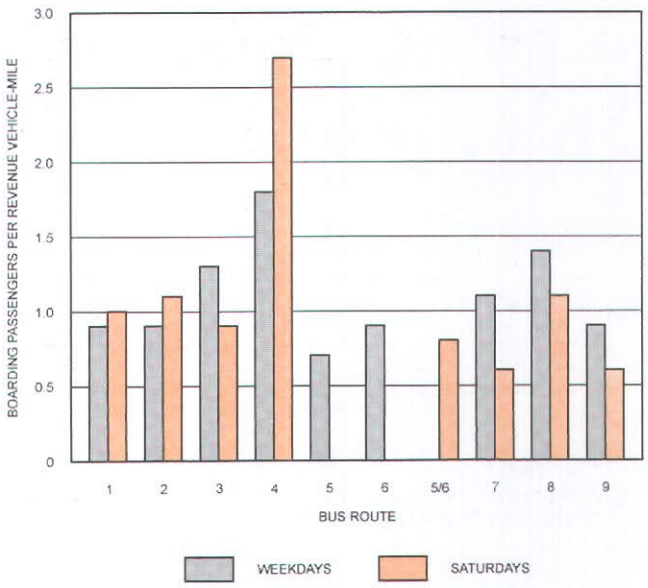
TOTAL PASSENGERS PER ROUTE MILE



TOTAL PASSENGERS PER REVENUE VEHICLE-HOUR

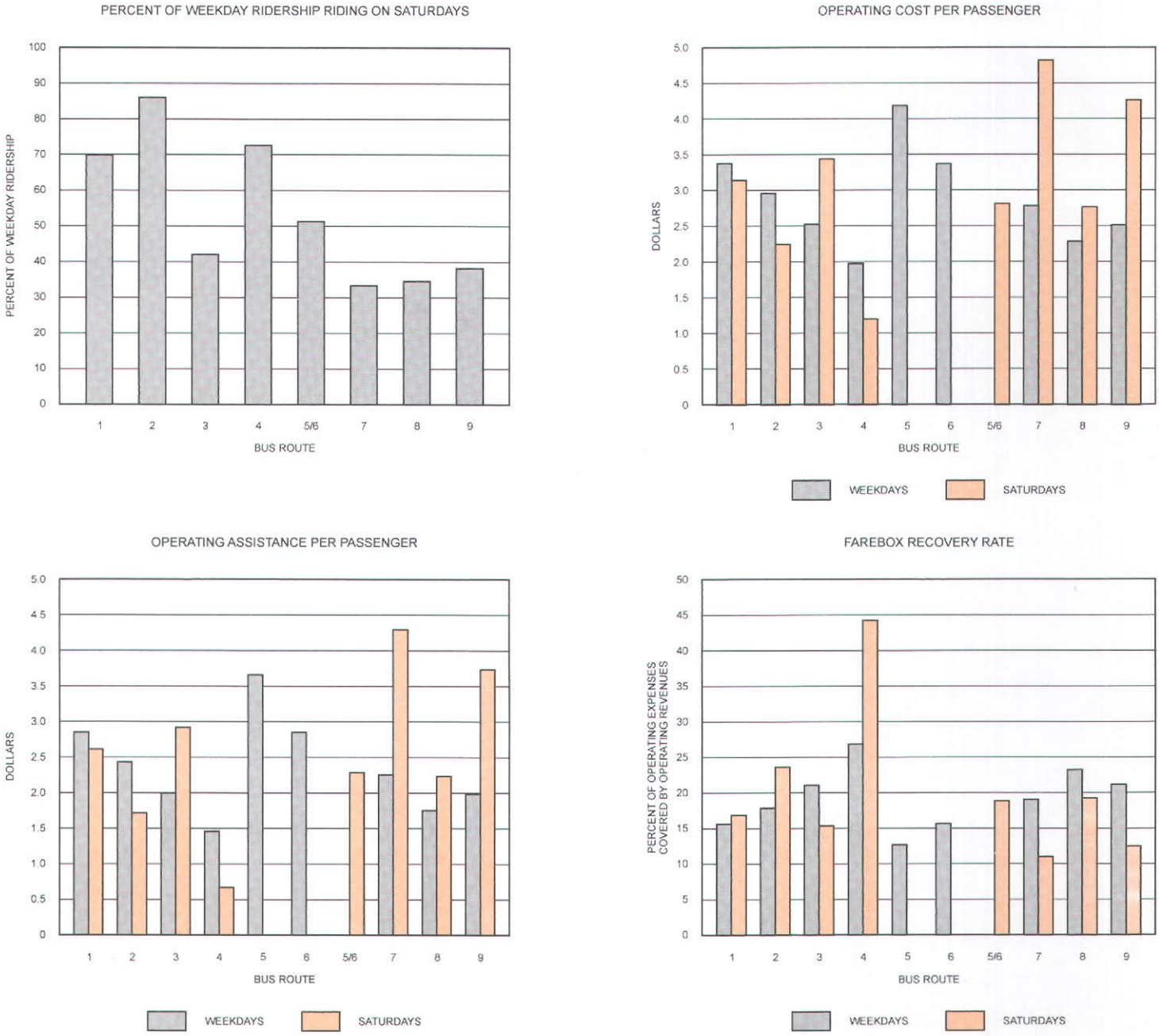


TOTAL PASSENGERS PER REVENUE VEHICLE-MILE



NOTE: THE DATA PRESENTED FOR ROUTE NOS. 5 AND 6 ARE FOR WEEKDAYS ONLY, AS ROUTE NO. 5/6 COMBINES PORTIONS OF ROUTES NOS. 5 AND 6 AND OPERATES ON WEEKDAY EVENINGS AND SATURDAYS. WEEKDAY EVENING DATA FOR ROUTE NO. 5/6 IS INCLUDED IN THE DATA PRESENTED FOR ROUTE NOS. 5 AND 6 ON WEEKDAYS.

Figure 9 (continued)

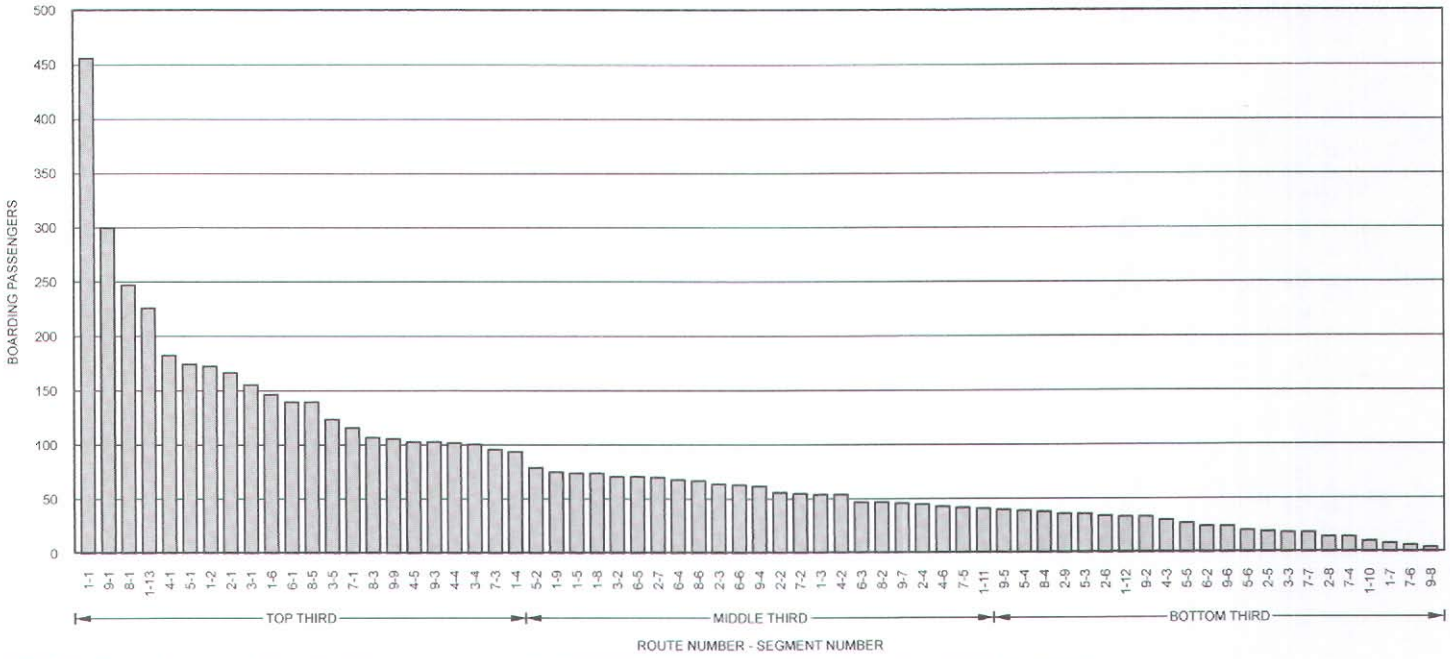


NOTE: THE DATA PRESENTED FOR ROUTE NOS. 5 AND 6 ARE FOR WEEKDAYS ONLY, AS ROUTE NO. 5/6 COMBINES PORTIONS OF ROUTES NOS. 5 AND 6 AND OPERATES ON WEEKDAY EVENINGS AND SATURDAYS. WEEKDAY EVENING DATA FOR ROUTE NO. 5/6 IS INCLUDED IN THE DATA PRESENTED FOR ROUTE NOS. 5 AND 6 ON WEEKDAYS.

Source: SEWRPC.

Figure 10

TOTAL PASSENGER ACTIVITY BY ROUTE SEGMENT ON THE WAUKESHA METRO TRANSIT SYSTEM: WEEKDAYS, OCTOBER 19 THROUGH 26, 1998

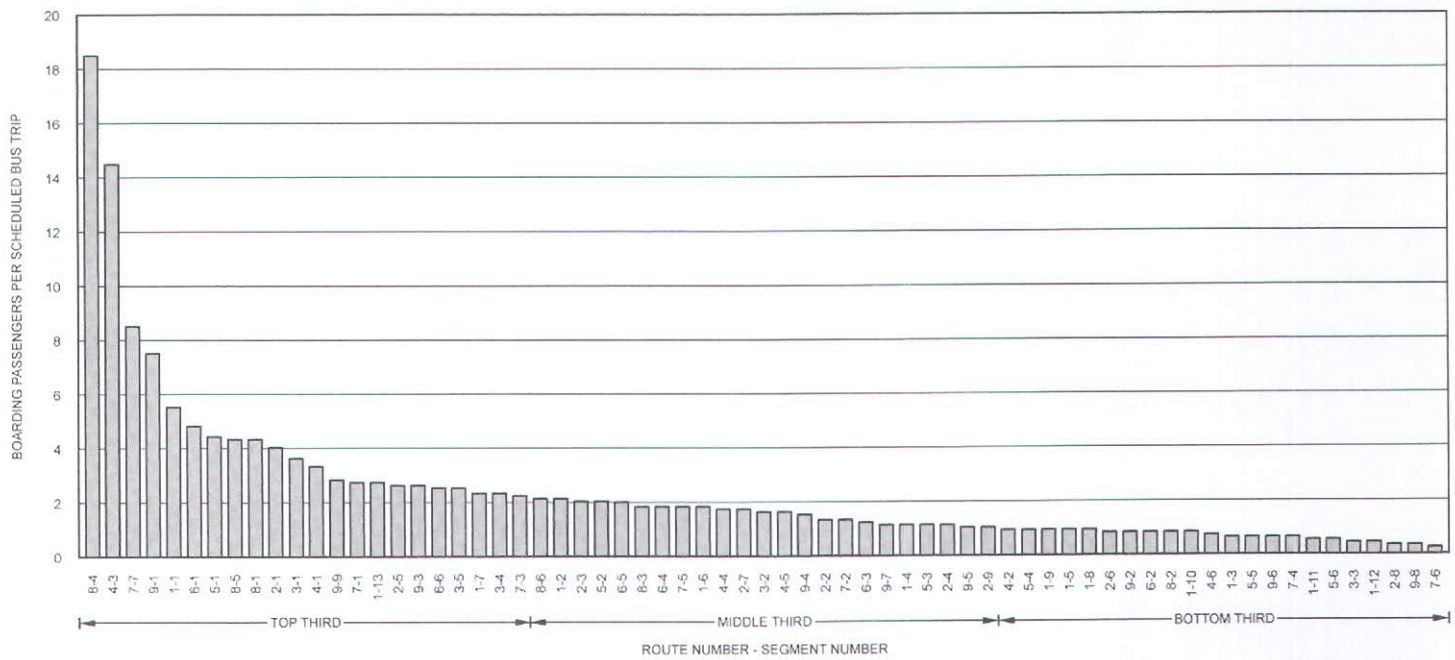


NOTE: DATA PRESENTED FOR ROUTE NOS. 5 AND 6 INCLUDE DATA FOR ROUTE NO. 5/6 WHICH COMBINED PORTIONS OF ROUTE NOS. 5 AND 6 ON WEEKDAY EVENINGS.

Source: SEWRPC.

Figure 11

TOTAL PASSENGER ACTIVITY PER SCHEDULED BUS TRIP BY ROUTE SEGMENT ON THE WAUKESHA METRO TRANSIT SYSTEM: WEEKDAYS, OCTOBER 19 THROUGH 26, 1998



NOTE: DATA PRESENTED FOR ROUTE NOS. 5 AND 6 INCLUDE DATA FOR ROUTE NO. 5/6 WHICH COMBINED PORTIONS OF ROUTE NOS. 5 AND 6 ON WEEKDAY EVENINGS.

Source: SEWRPC.

Table 44

PASSENGER ACTIVITY BY ROUTE SEGMENT ON THE WAUKESHA METRO TRANSIT SYSTEM: WEEKDAYS, OCTOBER 19 THROUGH 26, 1998

Route Number	Segment Number[a]	Total Passenger Activity[b]	Total Passenger Activity Per Scheduled Bus Trip
1	1	457	5.5
	2	172	2.1
	3	53	0.6
	4	93	1.1
	5	73	0.9
	6	146	1.8
	7	7	2.3
	8	73	0.9
	9	74	0.9
	10	9	0.8
	11	40	0.5
	12	32	0.4
	13	226	2.7
2	1	166	4.0
	2	55	1.3
	3	63	2.0
	4	44	1.1
	5	18	2.6
	6	33	0.8
	7	69	1.7
	8	13	0.3
	9	35	1.0
3	1	155	3.6
	2	70	1.6
	3	17	0.4
	4	100	2.3
	5	123	2.5
4	1	182	3.3
	2	53	0.9
	3	29	14.5
	4	101	1.7
	5	102	1.6
	6	42	0.7
5[c]	1	174	4.4
	2	78	2.0
	3	35	1.1
	4	38	0.9
	5	26	0.6
	6	19	0.5
6[c]	1	139	4.8
	2	23	0.8
	3	46	1.2
	4	67	1.8
	5	70	1.9
	6	62	2.5
7	1	115	2.7
	2	54	1.3
	3	95	2.2
	4	13	0.6
	5	41	1.8
	6	5	0.2
	7	17	8.5
8	1	247	4.3
	2	46	0.8
	3	106	1.8
	4	37	18.5
	5	139	4.3
	6	66	2.1
9	1	300	7.5
	2	32	0.8
	3	102	2.6
	4	61	1.5
	5	39	1.0
	6	23	0.6
	7	45	1.1
	8	3	0.3
	9	105	2.8

[a] *See Map 24.*

[b] *Includes total boarding and alighting passengers.*

[c] *Data presented for this route include data for Route No. 5/6, which combined portions of Route Nos. 5 and 6 on weekday evenings.*

Source: Waukesha Metro Transit System and SEWRPC.

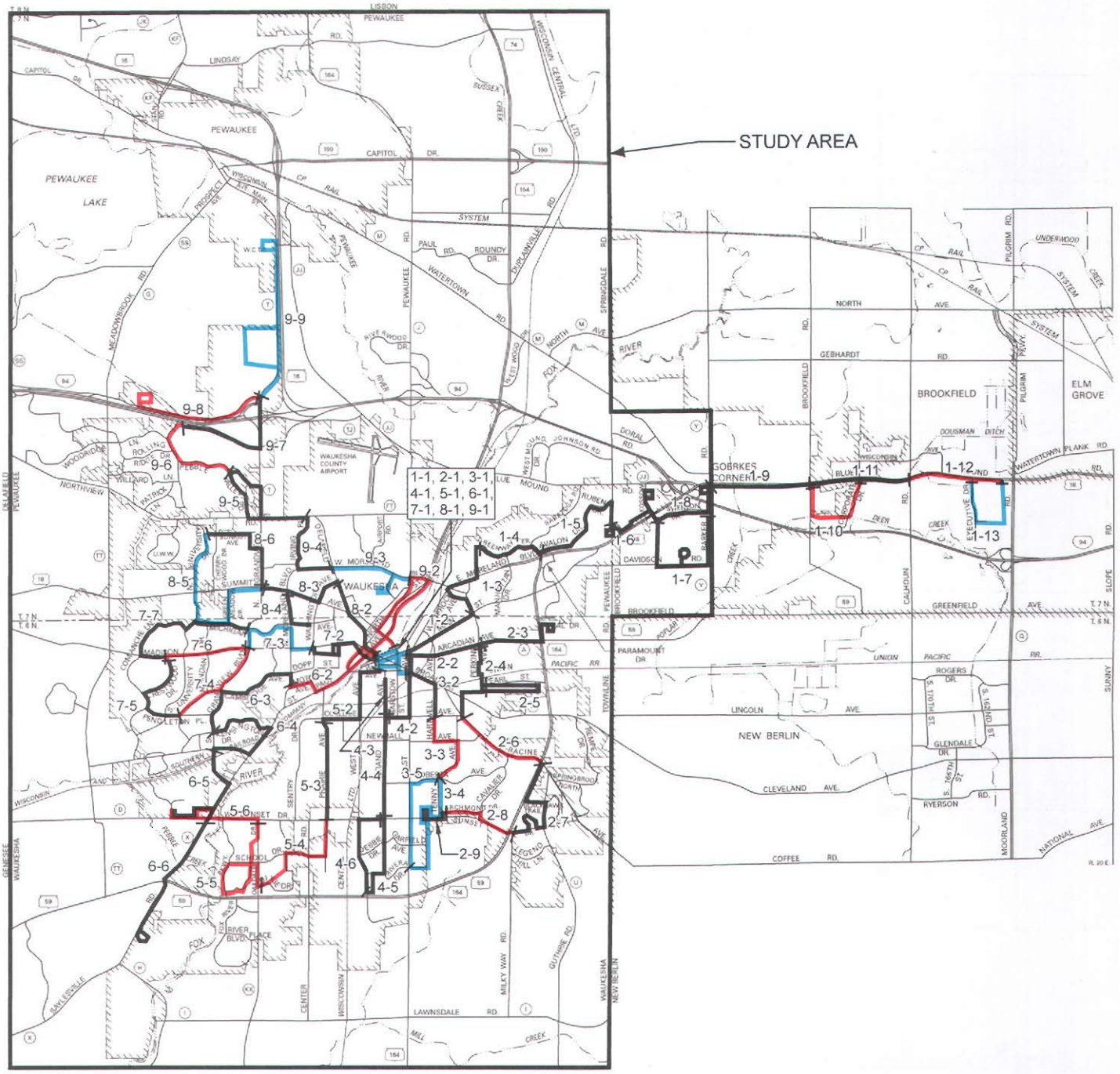
and 7 follow closely, exceeding the systemwide average for most measures. Based solely upon ridership and financial performance, these four routes could continue to be operated without change.

2. Route Nos. 1, 2, and 9 have acceptable weekday performance levels which, for the most part, are consistently above minimum performance levels for service effectiveness measures or below the minimum levels for cost effectiveness measures. Weekday performance levels for Route No. 9 are better than the systemwide average for most measures while performance levels for Route Nos. 1 and 2 at least meet the specified minimum levels for most measures. These routes could also continue to be operated without change but should have their performance levels closely monitored.

3. Route Nos. 5 and 6 can be considered to be the poorest performers in the system. Route No. 5 shows weekday performance levels which consistently do not meet the specified minimum

Map 24

PRODUCTIVE AND UNPRODUCTIVE ROUTE SEGMENTS OF THE WAUKESHA METRO TRANSIT SYSTEM: WEEKDAYS, OCTOBER 19 THROUGH 26, 1998



Source: SEWRPC.

levels for any of the service effectiveness or cost effectiveness measures. Route No. 6 shows similar performance traits for three of the seven measures while meeting the specified minimum levels for four measures. Potential changes to these routes to improve their performance should be considered.

4. At least one unproductive route segment was found on each route of the transit system, except for Route Nos. 4 and 8 which had no unproductive route segments. This information, as displayed on Map 24, along with the source data in Figures 10 and 11 used to identify the unproductive route segments, should be reviewed to determine if and where routing changes should be considered. It should be noted, however, that some of the route segments with the lowest ridership occur where routes pass through areas with little residential development or few major trip generators as they travel to or from residential areas or employment centers within City of Waukesha which do generate significant ridership. Consequently, if the transit system is to continue to provide good areal coverage of the greater Waukesha area, some bus routes must be expected to perform at relatively lower levels of efficiency than other routes because of the specific and constrained operating and service area characteristics of each route.

5. On Saturdays, Route Nos. 4 continues to be the best performer, followed closely by Route Nos. 1, 2, and 8. The combined operation of Route Nos. 5 and 6 also results in acceptable performance levels for the joint Route No. 5/6. The poorest performers on Saturday are Route Nos. 3, 7, and 9 which all had at least acceptable weekday performance levels. The lower Saturday performance of these routes can be attributed to the significant proportion of ridership that uses the routes for school-related travel on weekdays but not on Saturdays, and to fewer trips being generated on Saturdays by the land uses served by each route.

Route Ridership and Financial Performance- Evening Service

In addition to reviewing the overall average daily performance of the routes of the Waukesha Metro Transit System, an evaluation of evening bus service was also conducted. Evening bus service has been provided on the transit system since late August 1996, funded largely through a Federal grant made under the Congestion Management and Air Quality Improvement (CMAQ) Program. With these Federal funds, weekday service hours were extended from about 6:30 p.m. to 10:30 p.m. on most routes, and Saturday service hours were extended from about 6:00 p.m. to 10:00 p.m. on most routes. The extended service hours added about four round trips to the schedules for all routes except Route No. 1, which had about seven and one-half round trips added to its schedule.

Data on evening ridership levels is collected on a daily basis by the transit system and consists of counts of all boarding passengers using bus service after approximately 6:20 p.m. on weekdays and 5:55 p.m. on Saturdays. The total systemwide evening ridership for each day during October 1998 based on such counts is displayed in Figure 12. Figure 13 and Table 45 display the average systemwide evening ridership by day of the week during October 1998. A detailed performance review of evening bus service by route was conducted using the same basic methodology followed in assessing the overall average daily performance of each route. For this analysis, the service effectiveness and cost efficiency of each route in the system was estimated for both the daytime and evening periods using estimates of daytime and evening ridership developed from passenger count data for the period October 19 through 26, 1998; estimates of daytime and evening service levels; and estimates of operating costs and passenger revenues for the daytime and evening periods based on systemwide average costs per vehicle hour and revenue per passenger for the transit system during 1998.[2] The estimated daytime and evening service effectiveness and cost efficiency measures for each route in the system are shown in Tables 46 through 49, and in Figures 14 and 15. The impact of evening service on daily performance levels can be identified by presenting information on both the daytime and evening performance of each route.

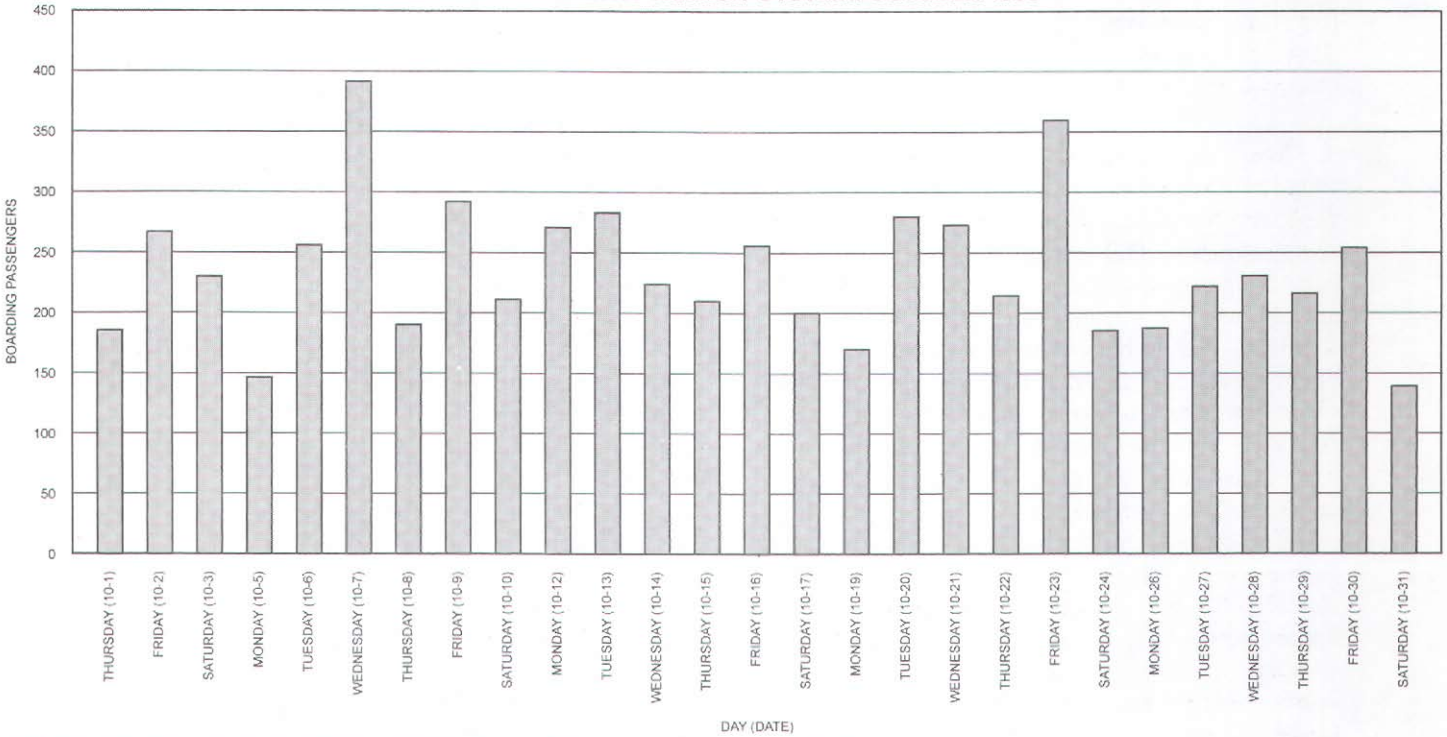
Based on the above information, the following conclusions were reached:

1. Systemwide evening ridership varies widely by day over the course of a month. During October 1998, the daily high of 392 total evening passengers was almost three times greater than the daily low of 139 passengers. Such fluctuations in ridership are not uncommon among other bus

[2] *For this analysis, the evening period included all service operated from approximately 6:15 p.m. on weekdays and 5:50 p.m. on Saturday until the end of each service day. Ridership for the evening period included passengers boarding at the downtown terminal for the 6:15 p.m. trip on weekdays and the 5:50 p.m. trip on Saturdays. These passengers are not included in the evening passenger counts taken on a regular basis by the transit system and used to develop the data presented in Table 45 and Figures 12 and 13.*

Figure 12

TOTAL EVENING RIDERSHIP BY DAY ON THE WAUKESHA METRO TRANSIT SYSTEM: OCTOBER 1998

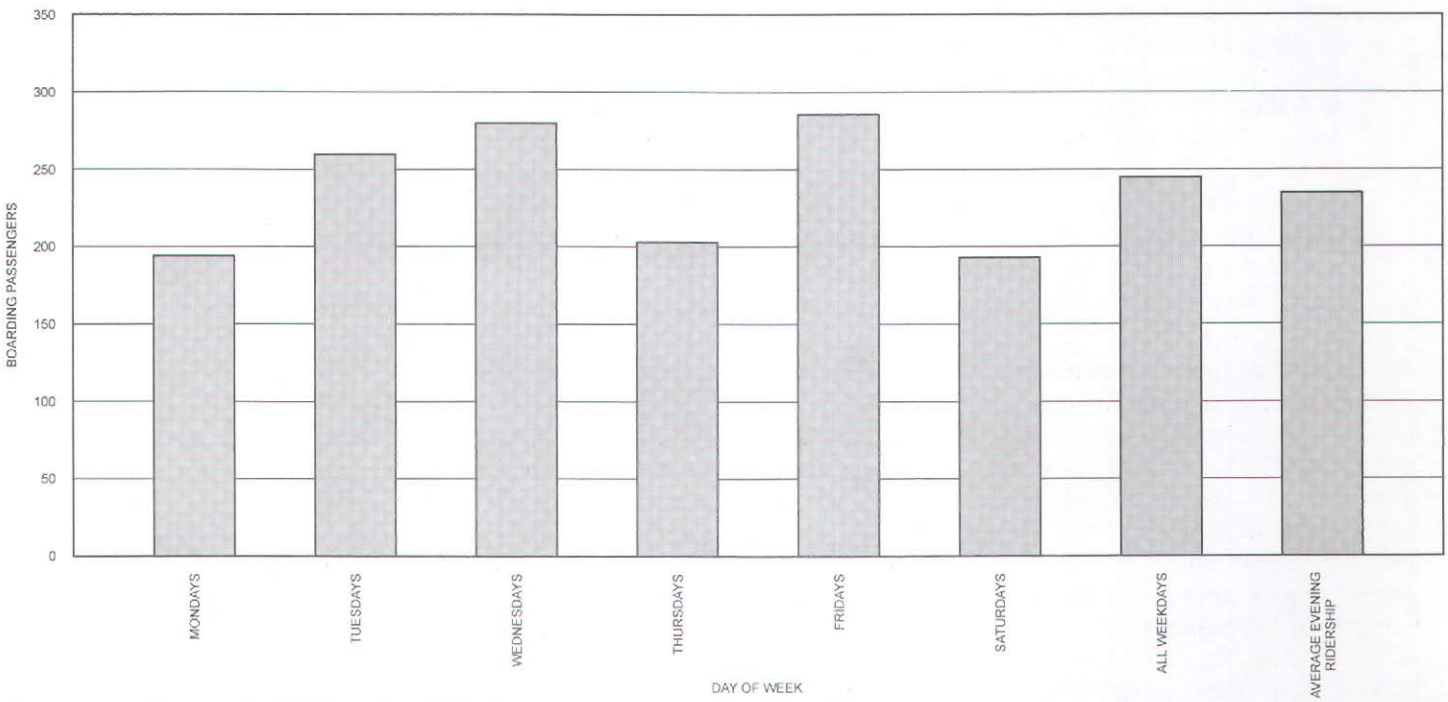


NOTE: DATA PRESENTED INCLUDES PASSENGERS BOARDING AFTER 6:20 P.M. ON WEEKDAYS AND AFTER 5:55 P.M. ON SATURDAYS.

Source: Waukesha Metro Transit System and SEWRPC.

Figure 13

AVERAGE EVENING RIDERSHIP BY DAY OF THE WEEK ON THE WAUKESHA METRO TRANSIT SYSTEM: OCTOBER 1998



NOTE: DATA PRESENTED INCLUDES PASSENGERS BOARDING AFTER 6:20 P.M. ON WEEKDAYS AND AFTER 5:55 P.M. ON SATURDAYS.

Source: Waukesha Metro Transit System and SEWRPC.

Table 45

AVERAGE EVENING RIDERSHIP BY DAY OF THE WEEK ON THE WAUKESHA METRO TRANSIT SYSTEM: OCTOBER 1998

Day of Week	Evening Ridership[a]		
	Average Boarding Passengers	Percent of Highest Daily Average	Percent of Weekday Average
Weekdays			
Mondays	194	67.7	79.1
Tuesdays	260	91.1	106.4
Wednesdays	280	98.0	114.5
Thursdays	203	71.0	83.0
Fridays	286	100.0	116.9
All Weekdays	245	85.5	100.0
Saturdays	193	67.5	78.9
All Days	235	82.2	96.1

[a]Reflects passengers boarding between approximately 6:20 p.m. and 10:30 p.m. on weekdays and between approximately 5:55 p.m. and 10:00 p.m. on Saturdays.

Source: Waukesha Metro Transit System and SEWRPC.

systems in Wisconsin providing evening service. The fluctuations in evening ridership are not as large when the average evening ridership by day of the week is viewed. The average evening ridership on the system on weekdays ranged from a high of 286 passengers on Fridays to a low of 194 passengers on Mondays, figures which were within approximately 20 percent of both the weekday average of 245 passengers and the daily average for the month of 235 passengers. The average evening ridership on the system on Saturday of 193 passengers was also within about 20 percent of the both the weekday and daily averages. Evening ridership over the month was generally highest on Fridays and Wednesdays and lowest on Mondays and Saturdays.

2. Based on the sample passenger counts taken systemwide during the period October 19 through 26, 1998, evening ridership represents about 8 percent of total systemwide ridership on weekdays and about 12 percent of total systemwide ridership on Saturday. Between 18 and 20 percent of the revenue vehicle hours and miles of service provided on weekdays, and between 27 and 29 percent of the service provided on Saturday occurs during the evening period. Given these characteristics, the service and cost effectiveness of evening bus service is below the average observed for the entire day. In terms of service effectiveness measures, the systemwide average passengers per revenue vehicle hour and per revenue vehicle mile for both weekday and Saturday evening service are between 40 and 50 percent of the systemwide average levels for the entire day. In terms of cost effectiveness measures, the systemwide average operating cost and assistance per passenger are about 116 and 142 percent, respectively, higher than the systemwide average levels for the entire day for weekday evening service, and are about 131 and 161 percent, respectively, higher than the systemwide average levels for the entire day for Saturday evening service. Farebox recovery rates for weekday and Saturday evening service are about 46 and 44 percent, respectively, of the systemwide average levels for the entire day. Somewhat lower performance levels for evening service in comparison to daytime service should be expected given the smaller overall travel market served in terms of total person travel, and the experience of other bus systems in Wisconsin providing evening service. The specific performance levels for evening service which can be tolerated for the Waukesha Metro Transit System must be determined by local officials.

3. Based on the sample passenger count data for October 19 through 26, 1998; the routes with the highest weekday evening performance levels included Route Nos. 4, 5/6, 7, and 8, and the routes with the highest Saturday evening performance levels included Route Nos. 2 and 4. These routes all had evening performance levels that were generally better than the systemwide average for evening service. The poorest performing routes included Route No. 2 on weekday evenings and Route Nos. 7 and 8 on Saturday evenings which all had evening performance levels that were generally much worse than the evening systemwide average. This information should be viewed with caution given the daily fluctuation of ridership shown in Figure 12. However, consideration should be given to restructuring evening bus service where passenger counts are consistently found to be low. Such service restructuring could possibly include: combining routes to eliminate service to unproductive areas; to reducing service hours or service frequency on low ridership routes; or considering alternatives to the fixed route service operated during daytime hours such as demand-responsive route-deviation, dial-a-ride bus, or shared-ride taxicab services.

Table 46

AVERAGE WEEKDAY DAYTIME AND EVENING SERVICE EFFECTIVENESS MEASURES FOR THE ROUTES OF THE WAUKESHA METRO TRANSIT SYSTEM: OCTOBER 19-26, 1998

Daytime (5:30 a.m. - 6:14 p.m.)							
				Service Effectiveness Measure			
Route Number	Length (round-trip route-miles)	Revenue Vehicle-Hours	Revenue Vehicle-Miles	Total Passengers	Passengers per Route-Mile	Passengers per Revenue Vehicle-Hour	Passengers per Revenue Vehicle-Mile
1	24.8	48.2	625.1	662	26.7	13.7	1.06
2	18.3	16.5	232.6	278	15.2	16.8	1.20
3	7.2	9.4	109.5	176	24.6	18.7	1.61
4	6.7	13.6	156.5	304	45.4	22.3	1.94
5	13.4	17.2	210.4	170	12.7	9.9	0.81
6	13.9	14.5	185.1	200	14.4	13.8	1.08
7	9.3	9.7	124.3	162	17.5	16.8	1.30
8	11.2	13.9	173.8	257	23.0	18.5	1.48
9	22.3	16.7	296.8	312	14.0	18.7	1.05
Systemwide Total/Average Weekday Daytime	126.9	159.8	2,114.1	2,521	19.9	15.8	1.19
Systemwide Total/Average Entire Day	126.9	194.6	2,677.5	2,750	21.7	14.1	1.03

Evening (6:15 p.m. - 10:30 p.m.)							
				Service Effectiveness Measure			
Route Number	Length (round-trip route miles)	Revenue Vehicle-Hours	Revenue Vehicle-Miles	Total Passengers	Passengers per Route Mile	Passengers per Revenue Vehicle-Hour	Passengers per Revenue Vehicle-Mile
1	23.2	12.2	192.2	68	2.9	5.6	0.35
2	18.3	4.5	82.4	12	0.7	2.7	0.15
3	7.2	2.2	32.8	14	2.0	6.4	0.43
4	6.2	2.2	28.6	26	4.2	11.6	0.91
5/6	16.8	5.0	82.5	39	2.3	7.9	0.47
7	7.0	2.3	33.0	18	2.6	7.9	0.55
8	6.9	2.2	31.7	23	3.3	10.4	0.73
9	22.3	4.3	80.2	28	1.3	6.5	0.35
Systemwide Total/Average Weekday Evening	107.8	34.8	563.4	228	2.1	6.6	0.40
Systemwide Total/Average Entire Day	126.9	194.6	2,677.5	2,750	21.7	14.1	1.03

Source: Waukesha Metro Transit System and SEWRPC.

Compliance with Operating Headway and Passenger Loading Standards

Service Design and Operating Standard No. 7 of Objective No. 2 states that operating headways for fixed bus routes should be capable of accommodating passenger demand at the recommended load standards. The recommended load standards call for maximum load factors for local bus service which do not exceed 1.25 during peak periods and 1.00 at all other times. The maximum load factor is defined as the ratio of passengers to bus seats as measured at the point on the route where passenger loads are highest. The maximum load factor provides a measure of the quality of bus service by indicating the number of passengers who must stand on the bus on a given route.

The performance of Waukesha Metro Transit System bus routes against these two standards was determined from the weekday boarding and alighting passenger count data collected over the period October 19 through 26, 1998. Information on the total weekday boarding passengers by bus run by direction of travel for each

Table 47

AVERAGE WEEKDAY DAYTIME AND EVENING COST EFFECTIVENESS MEASURES FOR THE ROUTES OF THE WAUKESHA METRO TRANSIT SYSTEM: OCTOBER 19-26, 1998

Daytime (5:30 a.m. - 6:14 p.m.)						
				Cost Effectiveness Measure		
Route Number	Total Passengers	Operating Cost	Operating Assistance	Operating Cost per Passenger	Operating Assistance per Passenger	Farebox Recovery Rate (percent)
1	662	$1,971	$1,621	$2.98	$2.45	17.7
2	278	676	529	2.43	1.90	21.7
3	176	389	296	2.21	1.68	23.9
4	304	560	399	1.84	1.31	28.7
5	170	695	605	4.09	3.56	12.9
6	200	576	470	2.88	2.35	18.3
7	162	405	319	2.50	1.97	21.1
8	257	570	435	2.22	1.69	23.8
9	312	678	514	2.17	1.65	24.3
Systemwide Total/Average Weekday Daytime	2,521	$6,520	$5,189	$2.59	$2.06	20.4
Systemwide Total/Average Entire Day	2,750	$7,942	$6,490	$2.89	$2.36	18.3

Evening (6:15 p.m. - 10:30 p.m.)						
				Cost Effectiveness Measure		
Route Number	Total Passengers	Operating Cost	Operating Assistance	Operating Cost per Passenger	Operating Assistance Per Passenger	Farebox Recovery Rate (percent)
1	68	$ 497	$ 461	$ 7.31	$ 6.78	7.2
2	12	182	176	15.21	14.68	3.5
3	14	90	83	6.43	5.90	8.2
4	26	92	78	3.52	2.99	15.0
5/6	39	200	179	5.13	4.60	10.3
7	18	96	86	5.32	4.79	9.9
8	23	91	79	3.96	3.44	13.3
9	28	174	160	6.23	5.70	8.5
Systemwide Total/Average Weekday Evening	228	$1,422	$1,302	$ 6.24	$ 5.71	8.5
Systemwide Total/Average Entire Day	2,750	$7,942	$6,490	$ 2.89	$ 2.36	18.3

Source: Waukesha Metro Transit System and SEWRPC.

bus route was used to identify individual bus trips with total passenger boardings in excess of the seated capacity of the buses used. The pattern of boarding and alighting passengers on these individual bus runs was then reviewed to determine the highest passenger loads for the particular bus trip from which the maximum load factor was computed. Information reflecting counts of the total weekday passengers carried on each scheduled bus trip for each of the regular bus routes is presented in Appendix C. The maximum load factors observed on each regular bus route are presented in Table 50.

Route Nos. 2 and 7 had peak period load factors which met or exceeded 1.00. The observed passenger loads did not result in a load factor which exceeded the peak period service standard of 1.25. The highest load factor of about 1.1 was found on Route No. 2 during the morning peak in the southbound direction and was due to a significant level of passengers travelling to South High School. The load factor of 1.0 found on Route No. 7 was due to passengers boarding at Butler Middle School in the afternoon peak period. It may, therefore, be concluded that the existing headways operated on the

Table 48

AVERAGE SATURDAY DAYTIME AND EVENING SERVICE EFFECTIVENESS MEASURES FOR THE ROUTES OF THE WAUKESHA METRO TRANSIT SYSTEM: OCTOBER 19-26, 1998

Daytime (5:30 a.m. - 5:49 p.m.)							
				Service Effectiveness Measure			
Route Number	Length (round-trip route-miles)	Revenue Vehicle-Hours	Revenue Vehicle-Miles	Total Passengers	Passengers per Route-Mile	Passengers per Revenue Vehicle-Hour	Passengers per Revenue Vehicle-Mile
1	23.2	29.0	362.2	447	19.3	15.4	1.23
2	18.3	10.0	148.4	204	11.2	20.4	1.37
3	7.2	5.0	62.9	69	9.7	13.8	1.10
4	6.2	5.4	66.0	224	36.1	41.8	3.39
5/6	16.8	10.2	171.0	184	11.0	18.1	1.08
7	7.0	5.3	76.6	57	8.1	10.7	0.74
8	11.2	5.0	67.6	93	8.3	18.6	1.38
9	22.3	10.0	196.4	106	4.8	10.7	0.54
Systemwide Total/Average Saturday Daytime	112.1	79.8	1,151.1	1,384	12.4	17.3	1.20
Systemwide Total/Average Entire Day	112.1	109.8	1,596.7	1,570	14.0	14.3	0.98

Evening (5:50 p.m. - 10:30 p.m.)							
				Service Effectiveness Measure			
Route Number	Length (round-trip route-miles)	Revenue Vehicle-Hours	Revenue Vehicle-Miles	Total Passengers	Passengers per Route-Mile	Passengers per Revenue Vehicle-Hour	Passengers per Revenue Vehicle-Mile
1	23.2	10.7	170.7	63	2.7	5.9	0.37
2	18.3	4.0	73.2	46	2.5	11.5	0.63
3	7.2	2.0	28.8	11	1.5	5.5	0.38
4	6.2	1.7	22.4	16	2.6	9.3	0.71
5/6	16.8	4.0	67.2	16	1.0	4.0	0.24
7	7.0	1.8	26.0	3	0.4	1.7	0.12
8	6.9	2.0	27.6	7	1.0	3.5	0.25
9	22.3	3.8	29.7	24	1.1	6.4	0.81
Systemwide Total/Average Saturday Evening	107.8	30.0	445.6	186	1.7	6.2	0.42
Systemwide Total/Average Entire Day	112.1	109.8	1,596.7	1,570	14.0	14.3	0.98

Source: Waukesha Metro Transit System and SEWRPC.

regular routes of the transit system are capable of accommodating existing levels of passenger demand.

The information in Table 50 shows that the maximum loads on several routes are much lower during the weekday evening than during daytime hours. A review of the passenger count data for each route of the system by bus trip included in Appendix C indicates that most of the bus trips operated after 7:00 p.m. carry less than five passengers, and some routes have one or more bus trips which carry no passengers. For those routes and areas where passenger loads are lowest, consideration should be given to restructuring bus routes to possibly combine routes and eliminate unproductive areas; to providing demand-responsive service such as route-deviation, dial-a-ride bus, or shared-ride taxicab

Table 49

AVERAGE SATURDAY DAYTIME AND EVENING COST EFFECTIVENESS MEASURES FOR THE ROUTES OF THE WAUKESHA METRO TRANSIT SYSTEM: OCTOBER 19-26, 1998

Daytime (5:30 a.m. – 5:49 p.m.)						
				Cost Effectiveness Measure		
Route Number	Total Passengers	Operating Cost	Operating Assistance	Operating Cost per Passenger	Operating Assistance per Passenger	Farebox Recovery Rate (percent)
1	447	$1,168	$ 932	$2.61	$2.09	20.2
2	204	399	291	1.96	1.43	27.0
3	69	197	160	2.85	2.32	18.5
4	224	217	98	0.97	0.44	54.6
5/6	184	402	305	2.19	1.66	24.1
7	57	217	187	3.81	3.28	13.9
8	93	197	148	2.12	1.59	24.9
9	106	403	347	3.80	3.28	13.9
Systemwide Total/Average Saturday Daytime	1,384	$3,201	$2,470	$2.31	$1.78	22.8
Systemwide Total/Average Entire Day	1,570	$4,403	$3,574	$2.80	$2.28	18.8

Evening (5:50 p.m. - 10:30 p.m.)						
				Cost Effectiveness Measure		
Route Number	Total Passengers	Operating Cost	Operating Assistance	Operating Cost per Passenger	Operating Assistance per Passenger	Farebox Recovery Rate (percent)
1	63	$ 432	$ 399	$ 6.86	$ 6.33	7.7
2	46	160	136	3.48	2.95	15.2
3	11	79	73	7.16	6.63	7.4
4	16	69	61	4.33	3.80	12.2
5/6	16	159	150	9.91	9.38	5.3
7	3	73	71	24.19	23.66	2.2
8	7	79	75	11.25	10.72	4.7
9	24	152	139	6.33	5.80	8.3
Systemwide Total/Average Saturday Evening	186	$1,202	$1,104	$ 6.46	$ 5.94	8.2
Systemwide Total/Average Entire Day	1,570	$4,403	$3,574	$ 2.80	$ 2.28	18.8

Source: Waukesha Metro Transit System and SEWRPC.

services instead of the fixed-route bus service operated during daytime hours; or to reducing service hours or service frequency for low ridership areas.

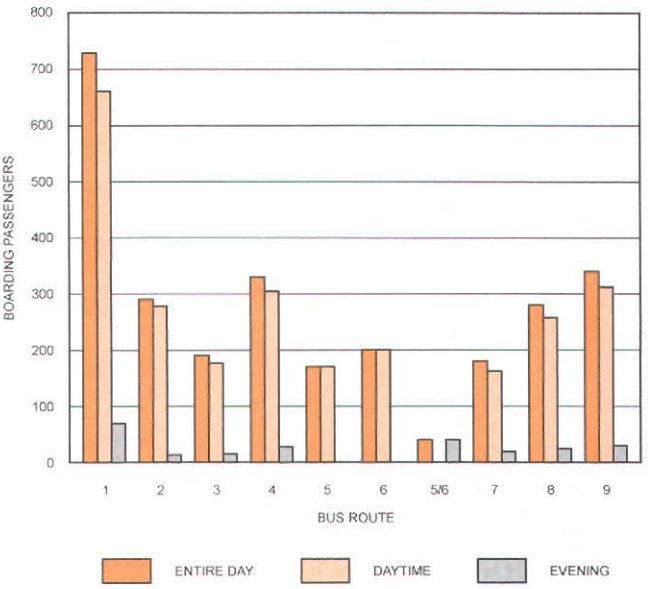
Schedule Adherence

The provision of reliable and on-time transit service is important in attracting and retaining transit riders. For the purpose of this study, "on time" has been defined as adherence to published schedules within the range of zero minutes early and three minutes late. The headways operated on the bus routes of the Waukesha Metro Transit System range from 15 to 60 minutes. As a result, excessive waiting times can occur for passengers who miss service connections because of bus departures

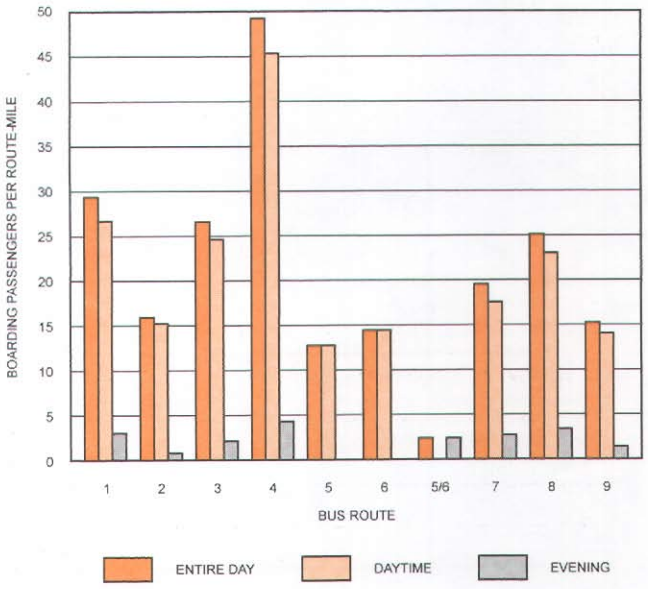
Figure 14

SELECTED WEEKDAY ENTIRE DAY, DAYTIME, AND EVENING SERVICE AND COST EFFECTIVENESS MEASURES FOR THE ROUTES OF THE WAUKESHA METRO TRANSIT SYSTEM: OCTOBER 19-26, 1999

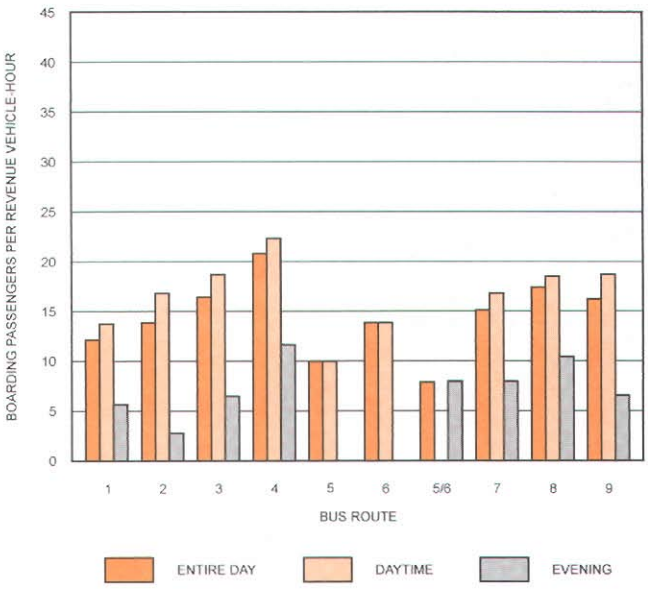
TOTAL PASSENGERS



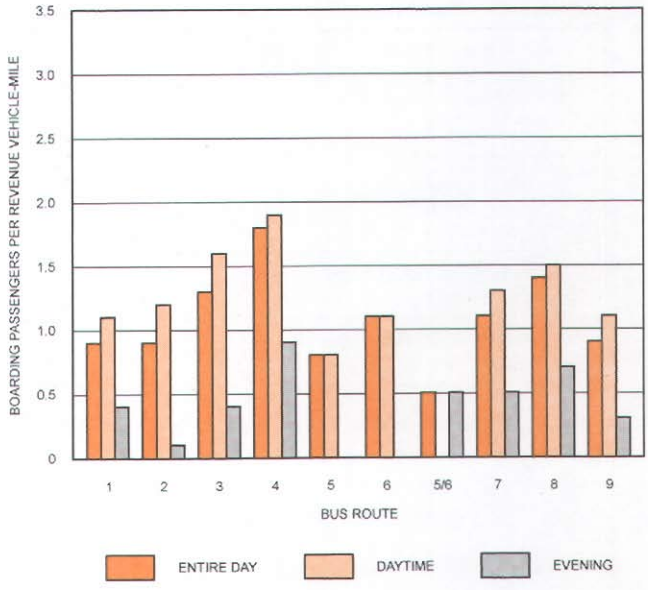
TOTAL PASSENGERS PER ROUTE-MILE



TOTAL PASSENGERS PER REVENUE VEHICLE-HOUR

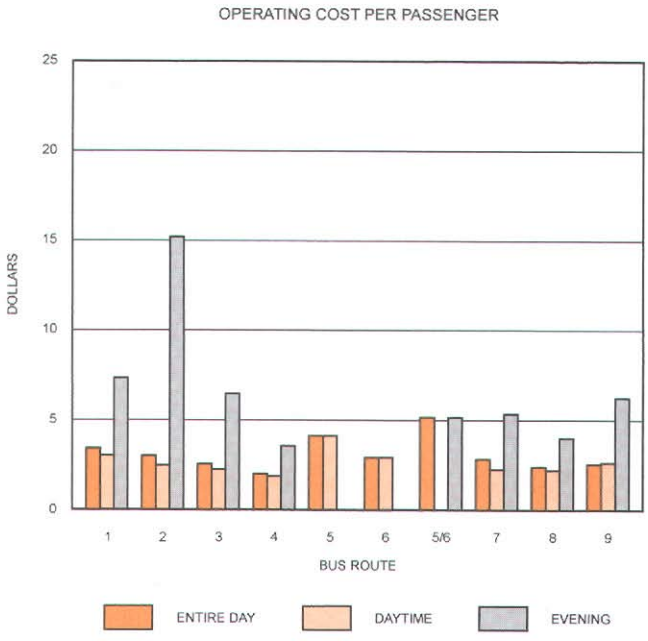


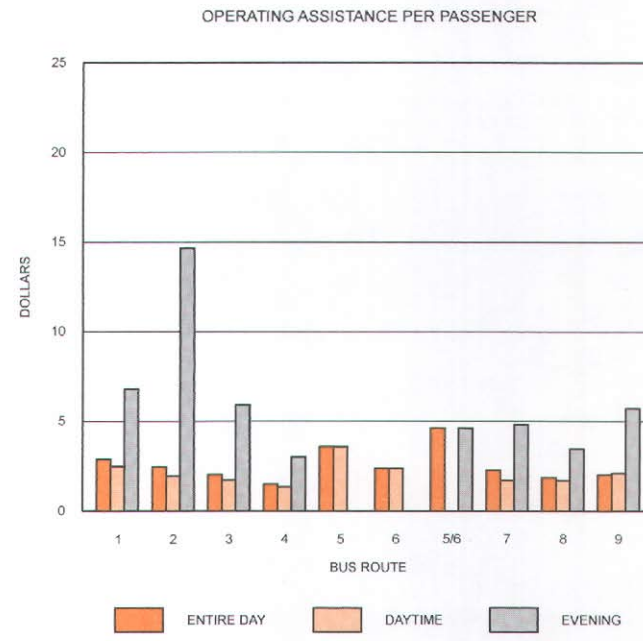
TOTAL PASSENGERS PER REVENUE VEHICLE-MILE

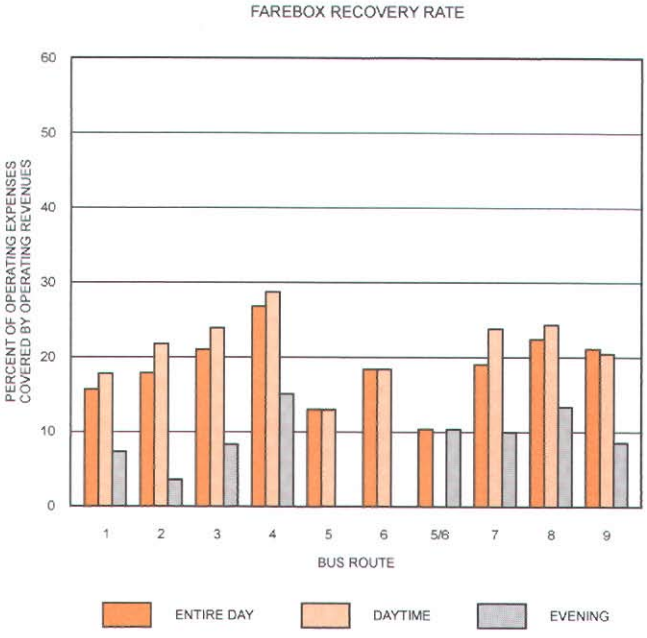


NOTE: NO SERVICE ON WEEKDAY EVENINGS OPERATED OVER ROUTE NOS. 5 AND 6, AS ROUTE NO. 5/6 COMBINES PORTIONS OF ROUTE NOS. 5 AND 6 AND OPERATES ON WEEKDAY EVENINGS.

Figure 14 (continued)







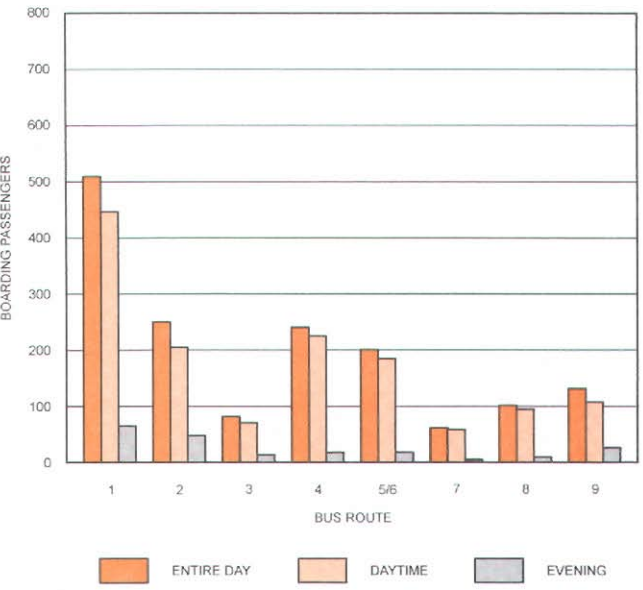
NOTE: NO SERVICE ON WEEKDAY EVENINGS OPERATED OVER ROUTE NOS. 5 AND 6, AS ROUTE NO. 5/6 COMBINES PORTIONS OF ROUTE NOS. 5 AND 6 AND OPERATES ON WEEKDAY EVENINGS.

Source: Waukesha Metro Transit System and SEWRPC.

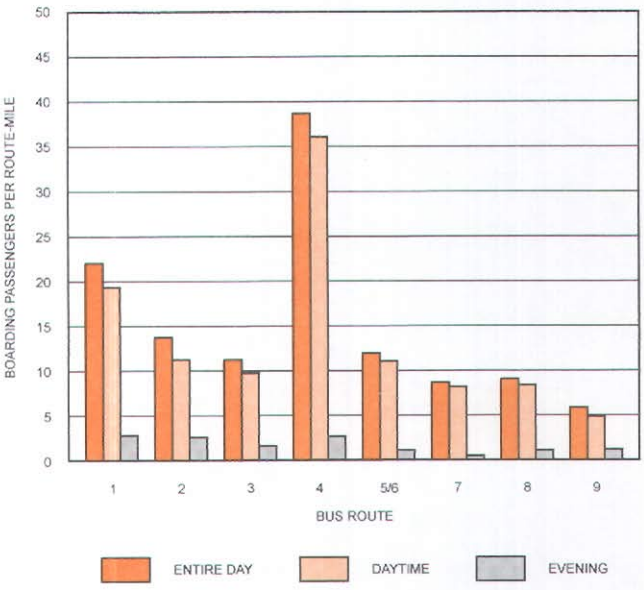
Figure 15

SELECTED SATURDAY ENTIRE DAY, DAYTIME, AND EVENING SERVICE AND COST EFFECTIVENESS MEASURES FOR THE ROUTES OF THE WAUKESHA METRO TRANSIT SYSTEM: OCTOBER 24, 1999

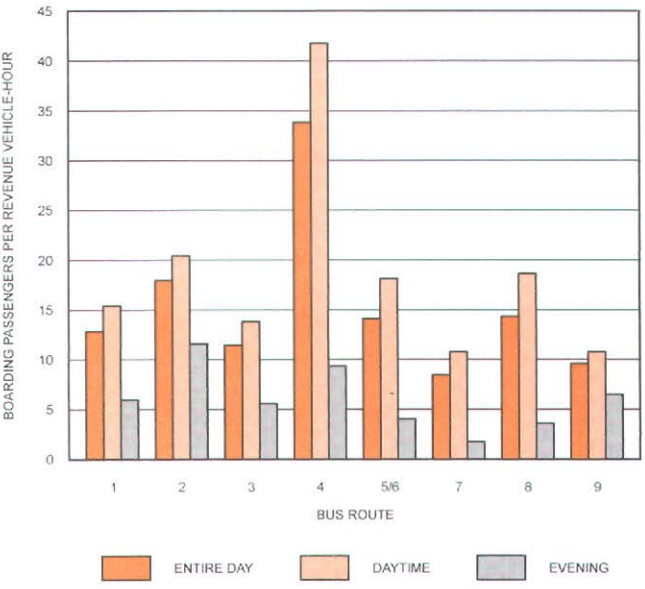
TOTAL PASSENGERS



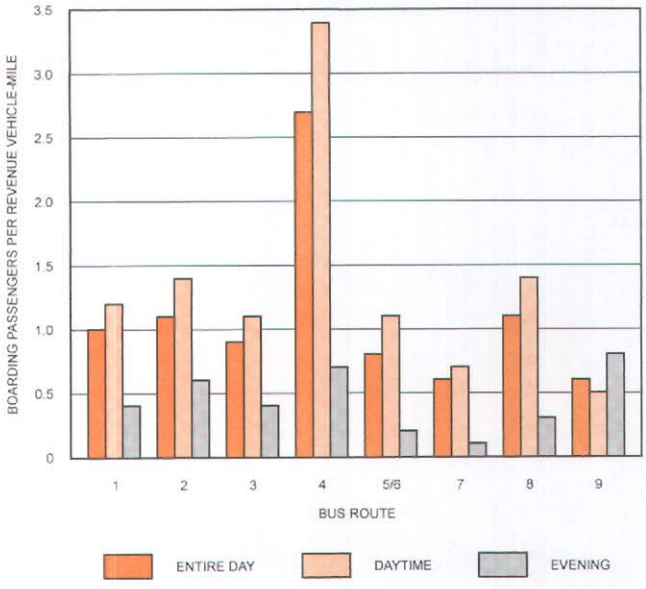
TOTAL PASSENGERS PER ROUTE-MILE



TOTAL PASSENGERS PER REVENUE VEHICLE-HOUR

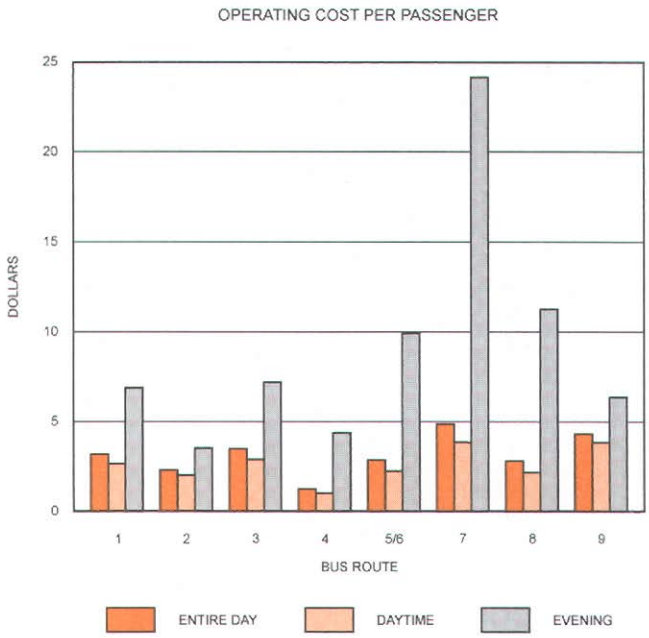


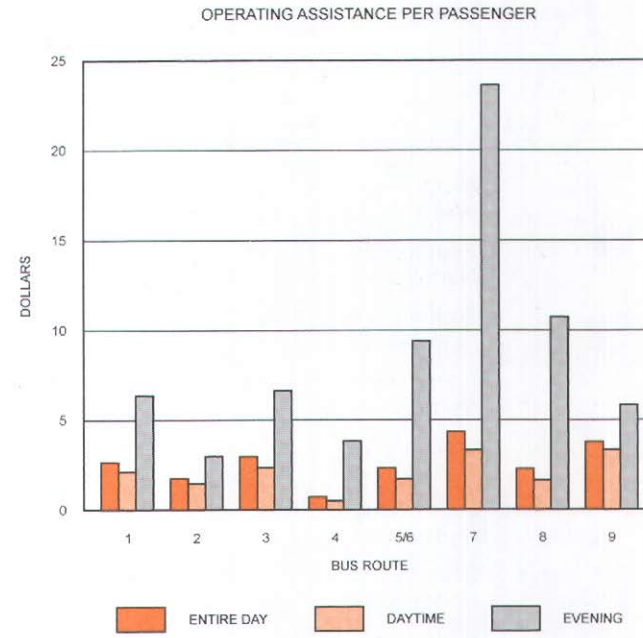
TOTAL PASSENGERS PER REVENUE VEHICLE-MILE

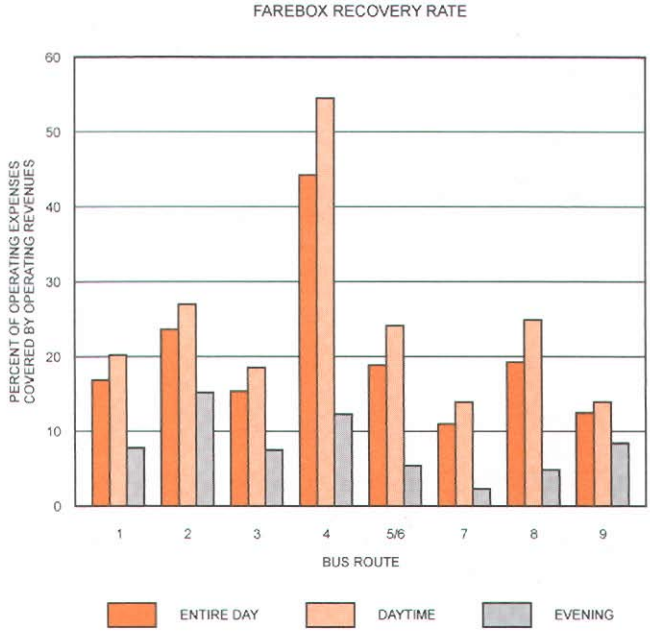


NOTE: NO SERVICE ON SATURDAYS OPERATED OVER ROUTE NOS. 5 AND 6, AS ROUTE NO. 5/6 COMBINES PORTIONS OF ROUTE NOS. 5 AND 6 AND OPERATES ON SATURDAYS.

Figure 15 (continued)







NOTE: NO SERVICE ON SATURDAYS OPERATED OVER ROUTE NOS. 5 AND 6, AS ROUTE NO. 5/6 COMBINES PORTIONS OF ROUTE NOS. 5 AND 6 AND OPERATES ON SATURDAYS.

Source: Waukesha Area Metro System and SEWRPC.

Table 50

MAXIMUM LOAD FACTORS FOR THE ROUTES OF THE WAUKESHA METRO TRANSIT SYSTEM: WEEKDAYS, OCTOBER 19-26, 1998

Route Number	Direction	Morning Peak Period (5:00 a.m. - 8:29 a.m.)		Midday Off-Peak Period (8:30 a.m. - 2:29 p.m.)		Afternoon Peak Period (2:30 p.m. - 5:59 p.m.)		Nighttime Off-Peak Period (6:00 p.m. - 10:30 p.m.)	
		Maximum Passenger Volume	Maximum Load Factor[a]	Maximum Passenger Volume	Maximum Load Factor[a]	Maximum Passenger Volume	Maximum Load Factor[a]	Maximum Passenger Volume	Maximum Load Factor[a]
1	Eastbound	18	0.53	16	0.47	20	0.59	8	0.24
	Westbound	11	0.32	20	0.59	28	0.82	8	0.24
2	Southbound	38	1.12	9	0.26	17	0.50	3	0.09
	Northbound	10	0.29	8	0.24	29	0.85	4	0.12
3	Southbound	16	0.47	11	0.32	7	0.21	4	0.12
	Northbound	4	0.12	12	0.35	10	0.29	4	0.12
4	Southbound	9	0.26	12	0.35	23	0.68	11	0.32
	Northbound	11	0.32	10	0.29	8	0.24	3	0.09
5	Southbound	11	0.32	9	0.26	9	0.26	3	0.09
	Northbound	10	0.29	7	0.21	12	0.35	--	--
6	Southbound	12	0.35	11	0.32	19	0.56	8	0.24
	Northbound	10	0.29	9	0.26	9	0.26	--	--
5/6	Southbound	--	--	--	--	--	--	7	0.21
	Northbound	--	--	--	--	--	--	4	0.12
7	Westbound	6	0.18	6	0.18	34	1.00	6	0.18
	Eastbound	10	0.29	3	0.09	26	0.76	2	0.06
8	Westbound	10	0.29	10	0.29	21	0.62	7	0.21
	Eastbound	14	0.41	7	0.21	29	0.85	5	0.15
9	Northbound	23	0.68	25	0.74	13	0.38	6	0.18
	Southbound	11	0.32	16	0.47	16	0.47	4	0.12

[a]Assumes 34 seats per bus. The maximum load factors specified under Objective No. 2, service design and operating standard No. 6, are 1.25 for local transit service during peak periods, and 1.00 for express transit service during peak periods and for all services at all other times.

Source: SEWRPC.

ahead of schedule. Performance within these guidelines, therefore, becomes an important means of minimizing passenger inconvenience.

To obtain a measure of schedule adherence on the Waukesha Metro Transit System, spot checks were made by the Commission staff of departure times at bus stop locations along each regular route on December 8 and 9, 1998. The random checks were made on selected inbound and outbound bus trips during all periods of transit system operation at the downtown terminal, and also at bus stops located along each route outside the downtown area. These checks of schedule adherence were made on 162, or 36 percent, of the 452 one-way bus trips operated on the regular routes on weekdays. Actual departure times were recorded at each bus stop and compared with the scheduled departure times at the stop to determine if any problems in schedule adherence existed. The schedule adherence data collected are summarized in Table 51.

On the basis of this information, the following conclusions may be drawn:

1. For the 162 stops for which observed bus departure times were checked for adherence to published schedules, 129 departures, or 80 percent, were considered to be on time, in accordance with the foregoing definition. This falls below the recommended performance level of 90 percent on time set forth under the transit service objectives and standards. Route Nos. 2, 3, 5/6, 6,

Table 51

ON-TIME PERFORMANCE OF THE WAUKESHA METRO TRANSIT SYSTEM: DECEMBER 8 AND 9, 1998

Route Number	Weekday One-Way Bus Trips			Schedule Adherence Checks Made at Downtown Transfer Terminal							
				Total		Early Departures		On-Time[a]		Late Departures	
	Total	Number of Bus Trips Checked	Percent of Bus Trips Checked	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1	83	28	34	5	100	1	20	4	80	--	--
2	41	17	41	1	100	--	--	1	100	--	--
3	44	15	34	4	100	--	--	4	100	--	--
4	64	19	30	3	100	--	--	3	100	--	--
5	33	13	39	1	100	--	--	1	100	--	--
5/6	8	4	50	1	100	--	--	1	100	--	--
6	29	12	41	1	100	--	--	1	100	--	--
7	47	17	36	2	100	--	--	2	100	--	--
8	63	21	33	4	100	--	--	4	100	--	--
9	40	16	40	2	100	--	--	2	100	--	--
Total	452	162	36	24	100	1	4	23	96	--	--

Route Number	Schedule Adherence Checks Made at Stops Outside Downtown Transfer Terminal								Schedule Adherence Checks Made over Entire System							
	Total		Early Departures		On-Time[a]		Late Departures		Total		Early Departures		On-Time[a]		Late Departures	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1	23	100	2	--	18	78	3	13	28	100	3	11	22	79	3	11
2	16	100	--	--	14	88	2	13	17	100	--	--	15	88	2	12
3	11	100	2	--	9	82	--	--	15	100	2	13	13	87	--	--
4	16	100	5	31	10	63	1	6	19	100	5	26	13	68	1	5
5	12	100	3	--	8	67	1	8	13	100	3	23	9	69	1	8
5/6	3	100	--	--	3	100	--	--	4	100	--	--	4	100	--	--
6	11	100	--	--	11	100	--	--	12	100	--	--	12	100	--	--
7	15	100	3	20	9	60	3	20	17	100	3	18	11	65	3	18
8	17	100	3	--	14	82	--	--	21	100	3	14	18	86	--	--
9	14	100	1	7	10	71	3	21	16	100	1	6	12	75	3	19
Total	138	100	19	14	106	77	13	9	162	100	20	12	129	80	13	8

[a] *Defined as adherence to published schedules within the range of zero minutes early and three minutes late.*

Source: SEWRPC.

and 8 were found to have the best on-time performance which either met, or were within 4 percent of, the specified performance level of 90 percent on-time.

2. Almost all problems with schedule adherence were found at bus stops located away from the downtown terminal. Problems with schedule adherence were found to be almost equally divided between early and late departures at bus stops. Such problems most commonly are related to differences between the actual running time and scheduled time for a round trip on each route resulting from different passenger loading patterns or traffic conditions. Unless drivers constantly compensate for running time and scheduled time differences, schedule adherence problems will occur. To correct the problems with schedule adherence observed, the scheduled running times between checkpoints along each route should be reviewed and, possibly, modified to reflect different passenger loading and traffic conditions occurring throughout the day, affecting actual running times between stops.

Directness of Public Transit Route Alignments

The directness of route alignments can affect the ability of the transit system to compete with private automobiles because indirect and circuitous routing alignments can affect travel time and can discourage transit use. In order to measure the directness of the alignments of the existing Waukesha Metro Transit System bus routes, the over-the-road distance and time for travel by transit and by automobile between selected locations within the transit service area were compared. The Waukesha CBD is the focus of all the routes of the system. Accordingly, distances and travel times were measured for travel between the outlying termini and other major stops along each route and the Waukesha CBD. While no single route of the system provides crosstown service, distances and travel times for crosstown travel were also measured between outlying stops using two routes and assuming a transfer in the Waukesha CBD. Table 52 presents the comparison of automobile and transit travel distances and times used to measure the directness of the current route alignments and the comparability of transit and automobile travel times. The following observations can be made based on the information in this table:

Table 52

TRANSIT-TO-AUTOMOBILE DISTANCES AT SELECTED LOCATIONS SERVED BY THE WAUKESHA METRO TRANSIT SYSTEM: APRIL 1999

Route Number	Termini for Measurements of Travel Distance and Time	One-Way Travel Distance (miles)[a]				One-Way Travel Time (minutes)[b]			
		Transit	Automobile	Difference (transit to automobile)	Ratio (transit to automobile)	Transit[c]	Automobile	Difference (transit to automobile)	Ratio (transit to automobile)
1	Brookfield Square Shopping Center to Downtown Terminal	11.9	7.6	4.3	1.57	41	17	24	2.41
1	Target to Downtown Terminal	6.3	3.2	3.1	1.97	24	11	13	2.18
2	KMart (City of Waukesha Location) to Downtown Terminal	7.9	1.9	6.0	4.16	20	6	14	3.33
3	KMart (City of Waukesha Location) to Downtown Terminal	4.3	1.9	2.4	2.26	14	6	8	2.33
4	Sentinel Drive and S. West Avenue to Downtown Terminal	3.1	2.5	0.6	1.24	14	8	6	1.75
5	Fox Run Shopping Center to Downtown Terminal	6.3	2.6	3.7	2.42	26	8	18	3.25
6	Fox Run Shopping Center to Downtown Terminal	5.1	2.6	2.5	1.96	18	8	10	2.25
5/6	School Drive and S. Prairie Avenue to Downtown	6.6	2.5	4.1	2.64	24	8	16	3.00
7	Pendleton Place and Commanche Lane to Downtown Terminal	3.6	2.9	0.7	1.24	15	8	7	1.88
8	Sunkist Avenue and N. University Drive to Downtown Terminal	3.0	2.6	0.4	1.15	15	8	7	1.88
9	Waukesha County Technical College-Pewaukee Campus to Downtown Terminal	8.4	5.1	3.3	1.65	29	10	19	2.90
8 and 3	Sunkist Avenue and N. University Drive to Kmart (City of Waukesha Location)	5.7	5.3	0.4	1.08	29	10	19	2.90
5 and 1	Fox River Parkway and Waterview Road to Westbrook Shopping Center	10.2	6.6	3.6	1.55	36	13	23	2.77
4 and 9	Sentinel Drive and S. West Avenue to Waukesha County Technical College-Pewaukee Campus	11.5	7.5	4.0	1.53	44	19	25	2.32
Systemwide Average	Routes 1-9 Between Outlying Stop and Downtown Terminal	6.0	3.2	2.8	2.02	22	9	13	2.47
	Crosstown Route Combinations	9.1	6.5	2.7	1.38	36	14	22	2.66

[a] *Based on the estimated over-the-road distances between points identified.*

[b] *Based on average peak- period travel times between points identified, except Route No. 5/6 which operates only during the evening period.*

[c] *Time represents average of peak period bus trips when schedule times varied by trip.*

Source: Waukesha Metro Transit System and SEWRPC.

1. All the existing transit system routes have alignments that are less direct to some degree than the more direct path that would be followed by automobile travel. The indirectness of current route alignments results largely from efforts made to maximize ridership by maximizing service to the residential areas and major travel generators on each route while, at the same time, minimizing both the number of routes needed and the attendant total expenditures for transit system operation. In addition, the alignments of some routes have been designed to provide direct transit service between the residential areas and major traffic generators, including schools, along each route. The existing route alignments, consequently, do provide for relatively direct travel, with only a minor amount of inconvenience in travel.

2. The most unfavorable ratios of transit-travel times to automobile-travel times were found on Route Nos. 2, 5, and 5/6, where ratios of about 3.0 or more were calculated for travel to the Waukesha CBD. Of all system routes, the alignments of these routes are possibly the most indirect between their outlying termini and the downtown terminal for the reasons cited above. Alternatives which would improve the convenience of travel on these routes should be explored.

3. The examples of crosstown travel for which travel times and distances were checked indicate that the average ratio of transit-to-automobile travel distances was similar to that of travel between outlying route termini and the downtown terminal. The average ratio of transit-to-automobile travel time for crosstown travel was only slightly higher

than that for travel between outlying stops and the downtown terminal based on peak period travel times. Travel times for crosstown travel during off-peak periods, when all routes of the system do not always meet at the downtown terminal, can be much longer due to the need to wait for connecting bus service.

Schedule Coordination

The degree to which the routes and schedules of a transit system are coordinated is an important determinant of the convenience of the transit service. This is particularly true when transfers between bus routes are required to complete a bus trip. Minimizing the inconvenience of transferring between bus routes helps to promote transit ridership.

Table 53 indicates when the routes of the Waukesha Metro Transit System have coordinated arrival and departure times at the downtown terminal during the course of the service day. From the information presented in this table, the following conclusions were reached:

1. For transferring passengers, a substantial degree of coordination exists among the routes and schedules of the transit system. This results primarily from the design of the transit system, which has all bus routes terminating at a common transfer point in the Waukesha CBD; and the use of pulse scheduling, providing for buses operating on the routes to meet at the common transfer point at approximately the same time, thereby presenting passengers with the opportunity to transfer between bus routes with a minimum of delay.

2. Some problems do exist for transferring passengers because not all bus routes meet at the common transfer point at the same time at all times. Problems with transfers are most evident during weekday midday and evening periods and on Saturdays when most routes are operated with 60-minute headways and buses operated over Route Nos. 3, 4, 7, and 8 do not always meet with all other routes. An improvement to service coordination would require operation of these routes with minimum headways of 30 minutes at all times. While this would eliminate many transfer problems at the downtown terminal, its impact on the financial performance of, and local funding for, the transit system would need to be considered.

SUMMARY

This chapter has evaluated the performance of the City of Waukesha transit system based upon specific performance measures related to the attainment of key transit system objectives and standards. The evaluation included separate assessments of performance on a systemwide basis and on a route-by-route basis. The most important findings of this evaluation include:

1. The existing transit system provides excellent areal coverage of the existing residential areas within the City of Waukesha, serving about 98 percent of the resident population of the City. Some newly developed portions of the City on its northwestern, southwestern, and southeastern fringes are not served by the existing bus routes. The transit system serves about 71 percent of the total resident population within the area, with areas outside the City with residential densities high enough to be considered for bus service located only in the Village of Pewaukee. The transit system also provides good areal coverage of the residential concentrations of transit-dependent population groups within the study area as identified through 1990 U. S. Census data.

2. The transit system provides excellent areal coverage of the employment concentrations within the City of Waukesha with about 96 percent of the jobs within the City being located within the transit system service area. About 65 percent of the jobs within the study area were located within the transit system service area. Major employment concentrations in the study area that are outside the service area for the City transit system are found in the City of Pewaukee near the intersection of IH 94 and CTH J, along STH 164 between IH 94 and Capitol Drive, and north of Blue Mound Road along Eastmound Drive and Johnson Road; and in the Town of Brookfield immediately to the northwest of Goerkes Corners.

3. The transit system also provides good coverage of the existing potential transit trip generators identified in the primary study area. The system serves 110 of the 162 major land use trip generators, and 51 of the 56 major transit-dependent population trip generators, identified in the study area. Of the 52 land use trip generators not served, 45 are located outside the City of Waukesha, and, therefore, outside the primary service area of the transit system. All five of the transit-dependent population trip generators not served

Table 53

COORDINATION OF BUS ARRIVAL AND DEPARTURE TIMES AT THE DOWNTOWN TERMINAL FOR THE ROUTES OF THE WAUKESHA METRO TRANSIT SYSTEM: APRIL 1999

Weekdays																					
Route Numbers										Arrival Times	Departure Times	Route Numbers									
1	2	3	4	5	6	5/6	7	8	9			1	2	3	4	5	6	5/6	7	8	9
--	--	--	--	--	--	--	--	--	--	--	5:40 a.m.	X	--	--	--	--	--	--	--	--	--
--	X	--	X	--	--	--	X	X	--	5:52 a.m.	5:55 a.m.	X	X	X	X	X	--	--	X	X	X
--	--	--	--	--	--	--	--	--	--	--	6:10 a.m.	X	--	--	--	--	--	--	--	--	--
X	X	X	X	X	X	--	X	X	X	6:22 a.m.	6:25 a.m.	X	X	X	X	X	X	--	X	X	X
X	--	--	--	--	--	--	--	--	--	6:44 a.m.	6:45 a.m.	X	--	--	--	--	--	--	--	X[a]	--
X	X	X	X	X	--	--	X	X	X	6:55 a.m.-6:58 a.m.	7:00 a.m.	X	X	X	X	X	--	--	X	X	X
X	--	--	--	--	--	--	--	--	--	7:17 a.m.	7:20 a.m.	X	--	--	--	--	--	--	--	--	--
X	X	X	X	X	X	--	X	X	X	7:40 a.m.-7:42 a.m.	7:45 a.m.	X	X	X	X	X	X	--	X	X	X
X	--	--	--	X	--	--	--	--	X	8:00 a.m.-8:05 a.m.	8:05 a.m.	X	--	--	--	--	--	--	--	--	--
X	--	X	X	--	--	--	X	X	--	8:10 a.m.-8:15 a.m.	8:20 a.m.	X	--	X	X	--	--	--	--	X	--
X	--	--	--	--	--	--	--	--	--	8:28 a.m.	--	--	--	--	--	--	--	--	--	--	--
X	X	X	X	X	X	--	--	X	X	8:43 a.m.-8:50 a.m.	8:50 a.m.	X	X	--	X	X	X	--	X	X	X
X	--	--	X	--	--	--	X	X	--	9:17 a.m.	9:20 a.m.	X	--	X	X	--	--	--	--	X	--
X	X	X	X	X	X	--	--	X	X	9:47 a.m.	9:50 a.m.	X	X	--	X	X	X	--	X	X	X
X	--	--	X	--	--	--	X	X	--	10:17 a.m.	10:20 a.m.	X	--	X	X	--	--	--	--	X	--
X	X	X	X	X	X	--	--	X	X	10:47 a.m.	10:50 a.m.	X	X	--	X	X	X	--	X	X	X
X	--	--	X	--	--	--	X	X	--	11:17 a.m.	11:20 a.m.	X	--	X	X	--	--	--	--	X	--
X	X	X	X	X	X	--	--	X	X	11:47 a.m.	11:50 a.m.	X	X	--	X	X	X	--	X	X	X
X	--	--	X	--	--	--	X	X	--	12:17 p.m.	12:20 p.m.	X	--	X	X	--	--	--	--	X	--
X	X	X	X	X	X	--	--	X	X	12:47 p.m.	12:50 p.m.	X	X	--	X	X	X	--	X	X	X
X	--	--	X	--	--	--	X	X	--	1:17 p.m.	1:20 p.m.	X	--	X	X	--	--	--	--	X	--
X	X	X	X	X	X	--	--	X	X	1:47 p.m.	1:50 p.m.	X	X	--	X	X	X	--	X	X	X
X	--	--	X	--	--	--	X	X	--	2:17 p.m.	2:20 p.m.	X	--	X	X	--	--	--	--	X	--
--	--	--	--	--	--	--	--	--	--	--	2:40 p.m.	X	--	--	--	--	--	--	--	--	--
X	--	--	--	--	--	--	--	--	--	2:47 p.m.	--	--	--	--	--	--	--	--	--	--	--
X	X	X	X	X	X	--	--	X	X	2:55 p.m.-2:59 p.m.	3:00 p.m.	X	X	X	X	X	X	--	X	X	X
--	--	--	--	--	--	--	--	X	--	3:12 p.m.	3:15 p.m.	X	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	X	--	--	3:20 p.m.	--	--	--	--	--	--	--	--	--	--	--
X	X	X	X	--	X	--	X	X	--	3:27 p.m.-3:30 p.m.	3:30 p.m.	X	--	X	X	--	X	--	X	X	X
X	--	--	--	--	--	--	--	--	--	3:40 p.m.	3:45 p.m.	X	--	--	--	--	--	--	--	--	--
X	X	X	X	X	X	--	X	X	X	4:00 p.m.-4:03 p.m.	4:05 p.m.	X	X	X	X	X	X	--	X	X	X
X	--	--	--	--	--	--	--	--	--	4:20 p.m.	4:25 p.m.	X	--	--	--	--	--	--	--	--	--
X	X	X	X	X	X	--	X	X	X	4:40 p.m.-4:42 p.m.	4:45 p.m.	X	X	X	X	X	X	--	X	X	X
X	--	--	--	--	--	--	--	--	--	4:57 p.m.	5:00 p.m.	X	--	--	--	--	--	--	--	--	--
X	X	X	X	X	X	--	X	X	X	5:12 p.m.	5:15 p.m.	X	X	X	X	X	X	--	X	X	X
X	X	X	X	X	--	--	X	X	X	5:42 p.m.	5:45 p.m.	X	X	X	X	X	X	--	X	X	--
X	--	--	--	--	--	--	--	--	--	5:56 p.m.	--	--	--	--	--	--	--	--	--	--	--
X	X	X	X	X	X	--	X	X	X	6:12 p.m.	6: 15 p.m.	X	X	X	X	X	X	--	X	X	X
X	--	--	--	--	--	--	--	--	--	6:26 p.m.	--	--	--	--	--	--	--	--	--	--	--
X	--	--	X	--	--	--	X	--	--	6:42 p.m.	6:45 p.m.	X	--	X	--	--	--	--	--	X	--
X	X	X	--	--	--	X	--	X	X	7:12 p.m.	7:15 p.m.	X	X	--	X	--	--	X	X	--	X

Table 53 (continued)

Weekdays																					
Route Numbers										Arrival Times	Departure Times	Route Numbers									
1	2	3	4	5	6	5/6	7	8	9			1	2	3	4	5	6	5/6	7	8	9
X	--	--	X	--	--	--	X	--	--	7:42 p.m.	7:45 p.m.	X	--	X	--	--	--	--	--	X	--
X	X	X	--	--	--	X	--	X	X	8:12 p.m.	8:15 p.m.	X	X	--	X	--	--	X	X	--	X
X	--	--	X	--	--	--	X	--	--	8:42 p.m.	8:45 p.m.	X	--	X	--	--	--	--	--	X	--
X	X	X	--	--	--	X	--	X	X	9:12 p.m.	9:15 p.m.	X	X	--	X	--	--	X	X	--	X
X	--	--	X	--	--	--	X	--	--	9:41 p.m.- 9:42 p.m.	9:45 p.m.	--	--	X	--	--	--	--	--	X	--
X	X	X	--	--	--	X	--	X	X	10:12 p.m.	10:15 p.m.	X	X	--	X	--	--	X	X	--	X
X	--	--	--	--	--	--	--	--	--	10:41 p.m.	--	--	--	--	--	--	--	--	--	--	--

Saturday																			
Route Numbers								Arrival Times	Departure Times	Route Numbers									
1	2	3	4	5/6	7	8	9			1	2	3	4	5/6	7	8	9		
--	--	--	X	--	X	--	--	8:17 p.m.	8:20 a.m.	X	--	X	--	--	--	X	--		
X	X	X	--	X	--	X	X	8:47 a.m.	8:50 a.m.	X	X	--	X	X	X	--	X		
--	--	--	X	--	X	--	--	9:17 p.m.	9:20 a.m.	X	--	X	--	--	--	X	--		
X	X	X	--	X	--	X	X	9:47 a.m.	9:50 a.m.	X	X	--	X	X	X	--	X		
X	--	--	X	--	X	--	--	10:17 a.m.	10:20 a.m.	X	--	X	--	--	--	X	--		
X	X	X	--	X	--	X	X	10:47 a.m.	10:50 a.m.	X	X	--	X	X	X	--	X		
X	--	--	X	--	X	--	--	11:17 a.m.	11:20 a.m.	X	--	X	--	--	--	X	--		
X	X	X	--	X	--	X	X	11:47 a.m.	11:50 a.m.	X	X	--	X	X	X	--	X		
X	--	--	X	--	X	--	--	12:17 p.m.	12:20 p.m.	X	--	X	--	--	--	X	--		
X	X	X	--	X	--	X	X	12:47 p.m.	12:50 p.m.	X	X	--	X	X	X	--	X		
X	--	--	X	--	X	--	--	1:17 p.m.	1:20 p.m.	X	--	X	--	--	--	X	--		
X	X	X	--	X	--	X	X	1:47 p.m.	1:50 p.m.	X	X	--	X	X	X	--	X		
X	--	--	X	--	X	--	--	2:17 p.m.	2:20 p.m.	X	--	X	--	--	--	X	--		
X	X	X	--	X	--	X	X	2:47 p.m.	2:50 p.m.	X	X	--	X	X	X	--	X		
X	--	--	X	--	X	--	--	3:17 p.m.	3:20 p.m.	X	--	X	--	--	--	X	--		
X	X	X	--	X	--	X	X	3:47 p.m.	3:50 p.m.	X	X	--	X	X	X	--	X		
X	--	--	X	--	X	--	--	4:17 p.m.	4:20 p.m.	X	--	X	--	--	--	X	--		
X	X	X	--	X	--	X	X	4:47 p.m.	4:50 p.m.	X	X	--	X	X	X	--	X		
X	--	--	X	--	X	--	--	5:17 p.m.	5:20 p.m.	X	--	--	--	--	--	--	--		
X	X	X	--	X	--	X	X	5:47 p.m.	5:50 p.m.	X	X	--	X	X	X	--	X		
X	--	--	X	--	X	--	--	6:17 p.m.	6:20 p.m.	X	--	X	--	--	--	X	--		
X	X	X	--	X	--	X	X	6:47 p.m.	6:50 p.m.	X	X	--	X	X	X	--	X		
X	--	--	X	--	X	--	--	7:17 p.m.	7:20 p.m.	X	--	X	--	--	--	X	--		
X	X	X	--	X	--	X	X	7:47 p.m.	7:50 p.m.	X	X	--	X	X	X	--	X		
X	--	--	X	--	X	--	--	8:17 p.m.	8:20 p.m.	X	--	X	--	--	--	X	--		
X	X	X	--	X	--	X	X	8:47 p.m.	8:50 p.m.	X	X	--	X	X	X	--	X		
X	--	--	X	--	X	--	--	9:16 p.m.- 9:17 p.m.	9:20 p.m.	--	--	X	--	--	--	X	--		
X	X	X	--	X	--	X	X	9:47 p.m.	9:50 p.m.	X	X	--	X	X	X	--	X		
X	--	--	--	--	--	--	--	10:16 p.m.	--	--	--	--	--	--	--	--	--		

Note: An "X" indicates a bus on a route arrives or departs at the time indicated. A "--" indicates there is no connection to or from a route at the time indicated.

[a]*Departs four minutes after time shown at 6:49 a.m.*

Source: Waukesha Metro Transit System and SEWRPC.

are also located outside the City of Waukesha, with four of the five located in the Village of Pewaukee.

4. The transit system compares favorably to its peer groups' transit systems, including transit system in the State of Wisconsin and transit systems from around the country. The performance levels observed for the Waukesha Metro Transit System during the period 1993 through 1997 with respect to service efficiency were found to have been consistently better than that experienced by the transit system's peers. The transit system's peers modestly outperformed the transit system with respect to service effectiveness. During this period, the Waukesha Metro Transit System increased service and experienced increased ridership, while the transit system's peers decreased service levels and experienced reduced ridership.

5. The transit system also contributes to efficiency of the transportation system by reducing peak hour automobile traffic and the potential for congestion on streets within the Waukesha central business district. In 1997, the overall energy efficiency of the Waukesha Metro Transit System in serving travel on an average weekday within the Waukesha area was, however, somewhat below than that of the private automobile. The Waukesha Metro Transit System does provide some energy savings as compared to the automobile on its more heavily traveled routes and during peak traffic periods, but is only marginally more energy efficient, or, in some cases, less energy efficient, than the automobile on its more lightly traveled routes and during off-peak traffic periods. Some improvement in the energy efficiency of the transit system has resulted from the operation of the 14 new buses acquired in the fall of 1998 which are 15 to 20 percent more fuel efficient than the older buses they replaced. If the new buses had been in operation in 1997, the Waukesha Metro Transit System would have been comparable to automobile travel in terms of overall energy efficiency.

6. Route Nos. 3, 4, 7, and 8 have superior weekday performance levels which, for the most part, are consistently above the systemwide average for service effectiveness measures or below systemwide average for cost effectiveness measures. Route Nos. 4 and 8 are clearly the best performers, having weekday performance levels which are better than the systemwide average for all measures. Based solely on their ridership and financial performance, these four routes could continue to be operated without change.

7. Route Nos. 1, 2, and 9 have acceptable weekday performance levels which, for the most part, are consistently above minimum performance levels, those levels being no more than 20 percent below the systemwide average for ridership and service effectiveness measures, and no more than 20 percent above the systemwide average for cost effectiveness measures. Weekday performance levels for Route No. 9 are better than the systemwide average for most measures while performance levels for Route Nos. 1, and 2 at least meet the specified minimum levels for most measures. These routes could also continue to be operated without change but should have their performance levels closely monitored.

8. Route Nos. 5 and 6 can be considered to be the poorest performers in the system. Route No. 5 in particular shows weekday performance levels which consistently do not meet the specified minimum levels for any of the service effectiveness or cost effectiveness measures. Potential changes to these routes to improve their performance should be considered.

9. At least one unproductive route segment was found on each route except on Route Nos. 4 and 8 which included no unproductive segments. Some of the route segments with the lowest ridership occur where bus routes pass through areas with little residential development or few major trip generators as they travel to or from residential areas or employment centers within City of Waukesha which do generate significant ridership. If the transit system is to continue to provide good coverage of the greater Waukesha area, some bus routes must be expected to perform at relatively lower levels of efficiency than other routes because of the specific and constrained operating and service area characteristics of each route.

10. On Saturdays, the best performers in the system are Route Nos. 1, 2, 4, and 8. The combined operation of Route Nos. 5 and 6 also results in acceptable performance levels for the joint Route No. 5/6. The poorest performers on Saturday are Route Nos. 3, 7, and 9. The lower Saturday performance of these routes can be attributed to the lack of student ridership on Saturdays and to fewer trips being generated on Saturdays by the land uses served by each route.

11. Based on the sample passenger count data for October 19 through 26, 1998; the routes with the highest weekday evening performance levels included Route Nos. 4, 5/6, 7, and 8, and the routes with the highest Saturday evening performance levels included Route Nos. 2 and 4. These routes all had evening performance levels that were generally better than the systemwide average for evening service. The poorest performing routes included Route No. 2 on weekday evenings and Route Nos. 7 and 8 on Saturday evenings which all had evening performance levels that were generally much worse than the evening systemwide average. The service and cost effectiveness of evening bus service overall was below the average observed for the entire day. This information should be viewed with caution, as there was significant daily fluctuation of ridership. Somewhat lower performance levels for evening service in comparison to daytime service should be expected given the smaller overall travel market served in terms of total person travel, and the experience of other bus systems in Wisconsin providing evening service. The specific performance levels for evening service which can be tolerated for the Waukesha Metro Transit System must be determined by local officials. However, consideration should be given to restructuring evening bus service where passenger counts are consistently found to be low.

12. The existing headways on the routes of the transit system can accommodate existing levels of passenger demand at the recommended load standards. The highest load factors, ranging from 1.0 to 1.1 were found during the peak periods on routes serving schools. In no cases did the observed passenger loads result in load factors exceeding the maximum of 1.25 specified in the transit service standards. Headway reductions are not needed on any routes.

13. Based on random checks of schedule adherence, the on-time performance of the existing transit system was found to be below the performance level of 90 percent, set forth under the transit service objectives and standards. Problems with schedule adherence were found to be almost equally divided between early and late departures at bus stops. To correct the problems, the scheduled running times between checkpoints along each route should be reviewed and, possibly, modified to reflect different passenger loading and traffic conditions occurring throughout the day, affecting actual running times between stops.

14. The existing alignments of the bus routes of the transit system are relatively direct and result in only a minor amount of inconvenient travel for short trips as well as most crosstown trips. The most unfavorable ratios of transit-travel times to automobile-travel times were found on Route Nos. 2, 5, and 5/6, where ratios of about 3.0 or more were calculated for travel to the Waukesha CBD. Alternatives which would improve the convenience of travel on these routes should be explored.

15. While a substantial degree of coordination exists among the routes and schedules of the transit system, some problems do exist for transferring passengers because all buses do not meet at the downtown terminal at the same time during weekday off-peak periods and on Saturdays. Schedule coordination could be improved by maintaining minimum headways of 30 minutes on Route Nos. 3, 4, 7, and 8 at all times of operation.

The analyses documented in this chapter indicated that changes in some bus routes should be considered to improve their performance as well as the overall performance of the transit system. Alternative and recommended changes to the transit system are described in Chapter VI of this report.

(This page intentionally left blank)

Chapter VI

RECOMMENDED TRANSIT SERVICE IMPROVEMENTS

INTRODUCTION

Previous chapters of this report have described the land uses and travel patterns of the Waukesha study area and analyzed the effectiveness with which the existing Waukesha Metro Transit System served those patterns. In addition, an extensive evaluation of the ridership levels and financial performance of each route of the transit system has been documented. This information provided the basis for developing recommended transit routing and service changes for this transit system development plan for the Waukesha Metro Transit System.

The findings of the transit system evaluation indicated that the existing system performed well overall in meeting the transit service objectives and performance standards. However, some routes were found to have performance levels that warranted service changes and some areas of the City were identified as potential areas for service expansion. In addition, an extension of service periods to include Sundays was identified as desired by the existing transit patrons. Consequently, the City determined to immediately pursue several service changes during the years 2000 and 2001 that would partially address the route performance and service expansion issues raised in the performance evaluation.

This chapter describes the recommended transit system development plan for the Waukesha Metro Transit System for the five-year period from 2003 through 2007. The remainder of the chapter consists of five sections. The first section documents the changes to the 1999 transit system that were implemented between December 1999 and June 2003 and describes the existing transit system as of June 2003. The second section describes the recommended transit system which proposes changes to the existing 2003 transit system. Included in this section are descriptions of the route alignments and services levels that are envisioned as needed by the end of the planning period in 2007. The third section summarizes the anticipated performance of the recommended transit system, including information on ridership, farebox revenues, and costs. The fourth section presents an analysis of a change in the current student transportation policy within the School District of Waukesha that would replace yellow school bus service with City bus service for students residing in the City of Waukesha. The fifth section sets forth the actions required by the various agencies to achieve plan implementation. The chapter concludes with a brief summary.

THE 2003 TRANSIT SYSTEM

Service Changes Implemented Since 1999

The recommended plan set forth in this chapter seeks to build upon the existing transit system. Some changes to the June 1999 Waukesha Metro Transit System described in Chapter III have been implemented during 2000 through mid 2003, the most significant of which are summarized in Table 54 and include the following:

1. In August 1999, a new demonstration service, Route No. 14, was initiated by the City under contract with the Waukesha County Technical College (WCTC) and the University of Wisconsin-Waukesha County (UWW) using funds awarded in a 1999 Wisconsin Department of Transportation (WisDOT) Transportation Demand Management (TDM) Program grant. The route provided direct shuttle service between the Brookfield Square Shopping Center and the two campuses and was directed at students commuting from central Milwaukee County. Access to the shopping center from central Milwaukee was provided by Waukesha County express and local bus routes. This route was discontinued in February 2000 due to low ridership. The transit system also expanded morning and afternoon peak period service on Route No. 9 in August 1999 to extend service over Pewaukee Road for disabled persons employed at a business on Pilot Court. This additional bus service was discontinued in mid 2000 when the company relocated from Pilot Court.

2. In May 2000, two new demonstration routes, Route Nos. 302 and 304, were initiated by Waukesha County with Waukesha Metro Transit being the contract service provider. The routes were designed to serve major commercial and employment centers located outside of the City of Waukesha. Route No 302 provided local bus service to business and employers in the City of

Table 54

IMPLEMENTATION OF ROUTING AND SERVICE CHANGES FOR THE WAUKESHA METRO TRANSIT SYSTEM: AUGUST 1999 – JUNE 2003

Date	Affected Route Number(s)	Summary Description of Routing and Service Changes
August 1999	9	• Extend service during morning and afternoon peak periods to Pilot Court via Pewaukee Road to serve company with disabled employees. • Service discontinued in June 2000 after company relocated from Pilot Court.
	14 (New Route)	• New contract service route operated for the Waukesha County Technical College (WCTC) and the University of Wisconsin-Waukesha (UWW) providing local bus shuttle service between a transfer point with routes of the Waukesha County transit system at the Brookfield Square Shopping Center and the campuses of the two schools. • Route directed at serving students commuting from central Milwaukee County to the two Waukesha County schools. • Service provided on a demonstration basis through a State Transportation Demand Management (TDM) program grant awarded to the City of Waukesha in 1999. • Service discontinued in February 2000 due to low ridership.
May 2000	302	• New contract service route for Waukesha County transit system providing local bus service over Moorland Road, National Avenue, and S. 108 Street between transfer points with other Milwaukee and Waukesha County routes in West Allis and at the Brookfield Square Shopping Center. • Service provided on a demonstration basis through a Federal Congestion Mitigation and Air Quality Improvement (CMAQ) program grant awarded to Waukesha County in 1999. • Service discontinued by Waukesha County at the end of December 2002 due to low ridership.
	304	• New contract service route for Waukesha County transit system operated between the Goerkes Corners Public Transit Station and the Waukesha County Technical College principally over IH 94, CTH JJ, STH164, Pewaukee Road (CTH J), and Capitol Drive (STH 190) and provides for flexible routing to pick-up and discharge passengers within the designated employment service areas. • Route provided flexible-routed local shuttle transit service targeted toward both Waukesha and Milwaukee County residents commuting to jobs at employers in office and business parks located in the City and Village of Pewaukee and to classes or training at the Waukesha County Technical College • Service provided on a demonstration basis through a Federal Congestion Mitigation and Air Quality Improvement (CMAQ) program grant awarded to Waukesha County in 1999. • Service discontinued by Waukesha County at the end of December 2001 due to low ridership.
August 2000	1	• Route modified to eliminate service to Target Department Store over Kossow Road between Moreland Boulevard and Bluemound Road. Service to Target replaced by Route No. 2 (see below).
	2	• Route modified to extend service to Target Department store and the Goerkes Corners Public Transit Station over Main Street, Moreland Boulevard, Kossow Road, and Bluemound Road. Service over route segments south of Arcadian Avenue, including to the K-Mart Department Store, replaced by new Route No. 15 (see below). • Service provided on a demonstration basis through a Wisconsin Employment Transportation Assistance Program (WETAP) grant awarded to the City of Waukesha in 2000.
	15	• New route composed largely of segments of old Route 2 operated south of Arcadian Avenue serving K-Mart Department Store. • Less extensive service levels operated over new Route No. 15 with evening service provided until 8:00 p.m. on weekdays and 7:00 p.m. on Saturdays, compared with service until 10:30 p.m. on weekdays and 10:00 p.m. on Saturdays over Route No. 2. Operating headways over new Route No. 15 reduced to about 60 minutes at all times compared with headways of 30 minutes during weekday peak periods over Route No. 2.
June 2001	1 through 15	• Service on all City-sponsored bus routes and associated paratransit service for disabled individuals expanded to include Sunday service between approximately 9:00 a.m. and 7:00 p.m. • Service provided on a demonstration basis through a Federal Congestion Mitigation and Air Quality Improvement (CMAQ) program grant awarded to the City of Waukesha in 2000.
January 2002	1 through 15	• Fares for bus and paratransit services were increased. Base adult cash fares for bus service provided by Waukesha Metro Transit were increased from $1.00 to $1.25 per one-way trip. Base adult cash fares for paratransit service for disabled individuals provided by Waukesha Metrolift were increased from $2.00 to $2.50 per one-way trip. Increases were also implemented in the cash fares for all other rider categories and in the price of tickets and passes.
June 2003	3	• Service levels during weekday morning and afternoon peak periods reduced from 30-35 minutes to 60-70 minutes for summer months when schools are not in session.
	5	• Service levels during weekday morning and afternoon peak periods reduced from 30-35 minutes to 60-70 minutes throughout the year.
	7	• Service levels during weekday morning and afternoon peak periods reduced from 30-35 minutes to 60-70 minutes for summer months when schools are not in session. • Route extended to main entrance of Waukesha Memorial Hospital for morning trips leaving the downtown terminal and afternoon trips going to the downtown terminal.

Source: Waukesha Metro Transit System and SEWRPC.

New Berlin located along National Avenue and Moorland Road including the Brookfield Square Shopping Center. The route also provided connecting bus service for passengers commuting between central Milwaukee County and the New Berlin Industrial Park using other Waukesha County express and local bus routes that stopped at the shopping center. Route No 304 provided shuttle bus service to business and employers located in business and office parks in the City of Pewaukee, and operated between the Goerkes Corners Public Transit Station and the WCTC Pewaukee campus. The route terminus at Goerkes Corners served as a transfer point for passengers commuting from central Milwaukee County on the Waukesha County routes stopping at the transit station as well as Waukesha Metro Transit System passengers. Service was provided on a "flex-route" basis where buses could deviate a small distance from the primary route alignment to serve businesses generating riders. Both routes were initiated under Federal Congestion Mitigation and Air Quality Improvement (CMAQ) program grants awarded to Waukesha County in 1999. As neither route generated sufficient ridership for the County to consider operation on a regular basis, both routes were discontinued before the end of the CMAQ grant periods: Route No. 304 at the end of December 2001 and Route No. 302 at the end of December 2002.

3. In August 2000, the City added one new bus route and modified two other routes to improve service to employers in the largely commercial development on the northeast side of the City. The service changes included eliminating the segments of Route No. 2 south of Arcadian Avenue and extending the route to the northeast from the Wal-Mart Department Store to the Goerkes Corners Public Transit Station. The route extension provided additional service to the Westbrook Shopping Center and replaced Route No. 1 service over Kossow Road to the Target Department Store. A new Route No. 15 was created composed largely of former segments of Route 2 that had been operated south of Arcadian Avenue serving the Minooka Park subdivision and the K-Mart Department Store. The Route No. 2 extension was funded on a demonstration basis through a Wisconsin Employment Transportation Assistance Program (WETAP) grant awarded to the City of Waukesha in 2000. The 2003 transit system continues to operate with all of the above service changes.

4. In June 2001, the City expanded the service periods for the transit system to include Sundays between approximately 9:00 a.m. and 7:00 p.m. using funding awarded to the City in a 2000 CMAQ program grant. Sunday bus service was provided over the same routes and at the same frequencies as on weekday evenings and on Saturdays. Paratransit service for disabled persons provided by Metrolift was also expanded to include the Sunday service period. Sunday service continues to be provided by the transit system in 2003. The service was initiated under a CMAQ program grant awarded to the City in 2000.

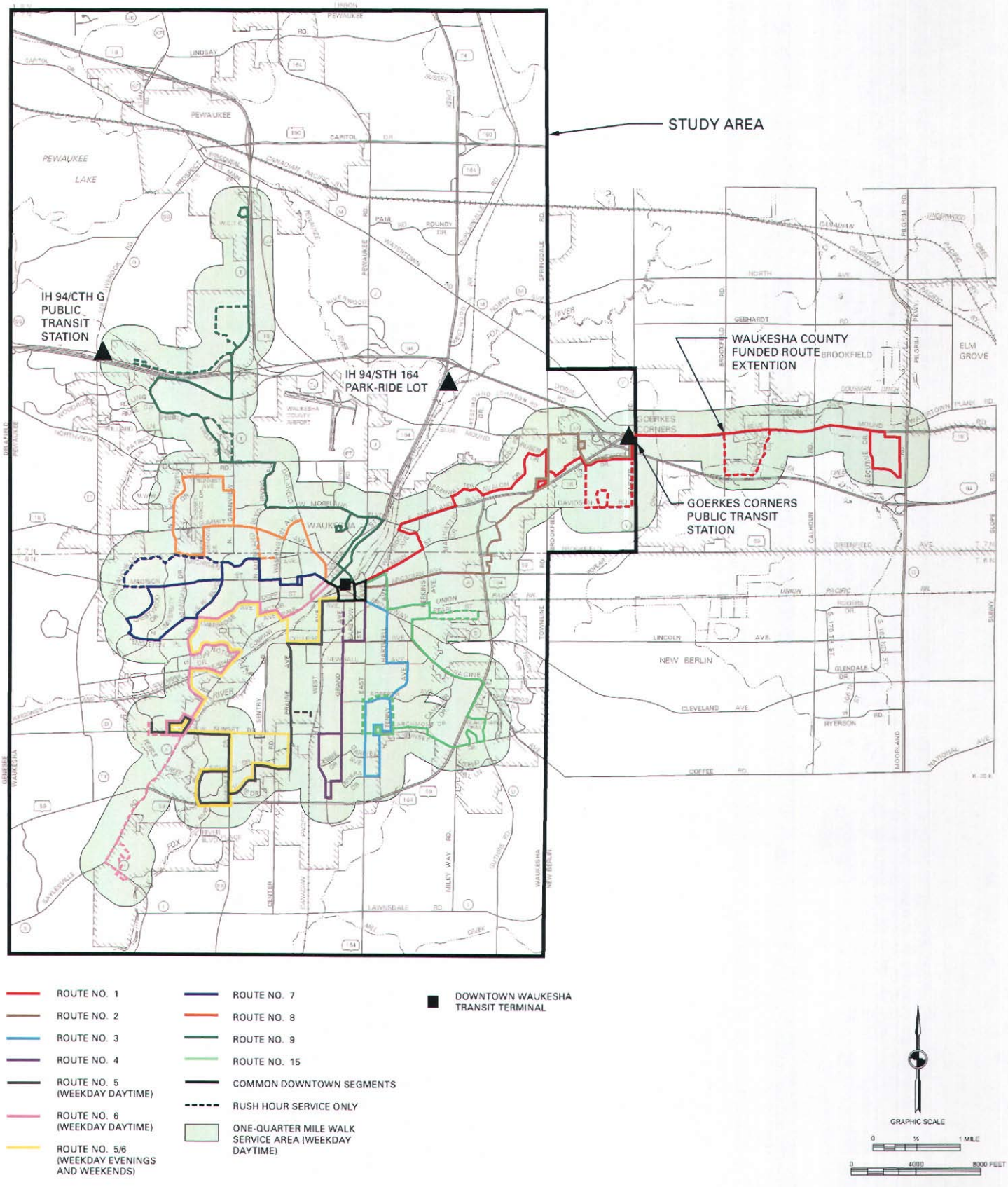
5. In January 2002, fares for City bus and paratransit services were increased. The base adult cash fare for bus service was raised by $0.25 from $1.00 to $1.25 per one-way trip while the base adult cash fare for paratransit service for disabled individuals was raised by $0.50 from $2.00 to $2.50 per one-way trip. Fares for all other rider categories were also increased along with the price of tickets and passes. The last fare increase for the City transit system occurred in January 1996.

6. In June 2003, service levels on Route Nos. 3 and 7 were reduced during weekday morning and afternoon peak periods, from 30 to 35 minute headways to 60 to 70 minute headways for the summer nonschool months. The more frequent weekday peak period service on these two routes would be restored for each school year. The same reduction in weekday peak period service levels was implemented on Route No. 5 with the service reduction being permanent. In addition, service to Waukesha Memorial Hospital over Route No. 7 was restored, with morning outbound bus trips and afternoon inbound bus trips stopping at the main hospital entrance. Direct service to the hospital entrance had been temporarily dropped during major reconstruction work at the hospital.

Map 25 displays the existing bus routes of the Waukesha Metro Transit System in June 2003, and Table 55 summarizes the current service characteristics for each route. Table 56 indicates the changes in route miles and vehicle requirements from the 1999 transit system to the June 2003 transit system. The alignments and service levels for the existing 1999 transit system routes that were not identified in the above service changes remain essentially as operated at the end of 1999. Table 57 presents the fares charged in 2003 for City bus and paratransit services.

Map 25

BUS ROUTES COMPRISING THE WAUKESHA METRO TRANSIT SYSTEM: JUNE 2003



Source: Waukesha Metro Transit System and SEWRPC.

Table 55

OPERATING AND SERVICE CHARACTERISTICS BY ROUTE OF THE WAUKESHA METRO TRANSIT SYSTEM: JUNE 2003

Weekday Service										
			Service Frequency				Buses Required[a]			
Bus Route	Round Trip Route Length (miles)	Service Availability	Morning Peak Period	Midday Period	Afternoon Peak Period	Evening Period	Morning Peak Period	Midday Period	Afternoon Peak Period	Evening Period
1	23.95	5:40 a.m. - 10:39 p.m.	15-20	30	15-20	30-60	4.0	3.0	5.0	3.0
2	11.95	5:22 a.m. - 10:41 p.m.	30-45	60	30-35	60	2.0	1.0	2.0	1.0
3	7.05	5:55 a.m. - 10:12 p.m.	30-45[b]	60	30-35[b]	60	1.0	0.5	1.0	0.5
4	6.55	5:43 a.m. - 10:28 p.m.	30-45	30	30-35	60	1.5	1.0	1.5	0.5
5	12.15	5:55 a.m. - 6:40 p.m.	60-80	60	60-70	--	2.0	1.0	2.0	--
6	13.45	6:04 a.m. - 6:33 p.m.	65-80	60	30-35	--	1.0	1.0	2.0	--
5/6	15.65	6:36 p.m. - 10:46 p.m.	--	--	--	60	--	--	--	1.0
7	8.30	5:47 a.m. - 10:43 p.m.	30-45[b]	60	30-35[b]	60	1.5	0.5	1.5	0.5
8	10.60	5:33 a.m. - 10:12 p.m.	30-45	30	30-35	60	1.5	1.0	1.5	0.5
9	23.80	5:55 a.m. - 10:30 p.m.	30-45	60	30-35	60	2.0	1.0	2.0	1.0
15	15.10	5:26 a.m. - 7:38 p.m.	30-80	60	60	60	1.5	1.0	1.5	1.0
System Total	148.55	5:22 a.m. - 10:46 p.m.	--	--	--	--	18.0	11.0	20.0	9.0

Saturday Service				
Bus Route	Round Trip Route Length (miles)	Service Availability	Service Frequency	Buses Required[a]
1	22.35	8:20 a.m. - 10:14 p.m.	30	3.0
2	11.95	8:17 a.m. - 10:16 p.m.	60	1.0
3	7.05	8:20 a.m. - 9:47 p.m.	60	0.5
4	6.05	7:59 a.m. - 10:03 p.m.	60	0.5
5/6	15.65	8:12 a.m. - 10:23 p.m.	60	1.0
7	6.55	8:00 a.m. - 10:08 p.m.	60	0.5
8	10.60	8:20 a.m. - 9:47 p.m.	60	0.5
9	23.80	8:31 a.m. - 10:07 p.m.	60	1.0
System Total	117.10	7:59 a.m. - 10:16 p.m.	--	9.0

Sunday Service				
Bus Route	Round Trip Route Length (miles)	Service Availability	Service Frequency	Buses Required[a]
1	22.35	9:20 a.m. - 7:17 p.m.	30	3.0
2	11.95	9:17 a.m. - 7:16 p.m.	60	1.0
3	7.05	9:20 a.m. - 6:47 p.m.	60	0.5
4	6.05	8:59 a.m. - 7:03 p.m.	60	0.5
5/6	15.65	9:11 a.m. - 7:23 p.m.	60	1.0
7	6.55	9:00 a.m. - 7:08 p.m.	60	0.5
8	10.60	9:20 a.m. - 6:47 p.m.	60	0.5
9	23.80	9:31 a.m. - 7:07 p.m.	60	1.0
System Total	117.10	9:20 a.m. - 7:17 p.m.	--	9.0

[a] *Fractions indicate one vehicle is operated over two routes during a time period.*

[b] *Headways on Route Nos. 3 and 7 are increased to 65-80 minutes during the summer.*

Source: Waukesha Metro Transit System and SEWRPC.

Ridership and Financial Performance

As route and service changes were implemented since the performance evaluation of the 1999 transit system documented in Chapter V was completed, Commission staff re-examined key route ridership and financial performance measures for the routes of the June 2003 Waukesha Metro Transit System prior to completing the recommended plan. Like the previously completed evaluation, the route ridership and financial performance evaluation of the 2003 transit system was based on Performance Standards 1 and 2 under Objective 2, and Performance Standards 2 and 3 under Objective 4 as documented in Chapter IV. The effectiveness and efficiency measures for the 11 bus routes of the transit system in the fall of 2002 are shown in Tables 58 through 60. The data presented in the table were developed principally from the daily service levels for the transit system from fall 2002, the total annual 2002 operating costs and service levels for the transit system identified in City reports, total boarding passengers obtained from passenger counts conducted by transit system staff between October 28 and November 3, 2002, and estimates of passenger revenues developed by Commission staff using the passenger counts and the systemwide average bus passenger revenue per passenger for 2002. The data presented includes estimated performance measures for each bus route for daytime, evening, and all day route operations.

The performance measures presented in Table 58 through 60 provide a "snapshot" of the ridership, productivity, and financial performance of each bus route operated in the fall of 2002. These performance measures include: passengers per scheduled bus trip, revenue vehicle mile, and revenue vehicle hour; total operating cost and operating assistance per passenger; and farebox recovery rate. These may be considered to be the key measures of performance for the transit system. For each performance measure specified under the objectives and standards, routes which had service-based performance measures that were more than 20 percent below the systemwide average, or cost-based performance measures more than 20 percent above the systemwide average, were "flagged" in the table as poor performers for the specific measure. Use of the systemwide average as the performance standard directs the

Table 56

ROUND-TRIP ROUTE MILES AND VEHICLE REQUIREMENTS
FOR THE WAUKESHA METRO TRANSIT SYSTEM: 1999 AND JUNE 2003

Characteristic	1999 Transit System	Change from 1999 System		June 2003 Transit System
		Absolute Amount	Percent	
Maximum Number of Routes in Operation				
Weekdays	9	1	11.1	10[a]
Saturdays	8	1	12.5	9
Sundays	--	--	--	9
Round Trip Route Miles				
Weekdays	143.65	4.90	3.4	148.55
Saturdays	112.05	5.05	4.5	117.10
Sundays	--	--	--	117.10
Vehicle Requirements				
Waukesha Metro Transit				
Weekdays	18	2	9.1	20
Saturdays	8	1	12.5	9
Sundays	--	--	--	9
Waukesha Metrolift				
Weekdays	3	--	--	3
Saturdays	1	--	--	1
Sundays	--	--	--	1
Total System				
Weekdays	21	2	9.5	23
Saturdays	9	1	11.1	10
Sundays	--	--	--	10

[a]Two routes operated during the weekday daytime period, Route Nos. 5 and 6, are combined into a single route, Route 5/6, for operation during weekday evenings and on weekends. The 11 system bus routes shown on Map 25 include Route No. 5/6.

Source: Waukesha Metro Transit System and SEWRPC.

transit system toward improving the performance of routes that are significantly below average so that, over time, the overall performance of the entire transit system will improve. The following observations can be made concerning the performance of the transit system:

1. As weekday transit service accounts for about three-fourths of the annual service operated by transit system, and as between 85 and 90 percent of system ridership occurs during daytime hours (6:00 a.m. to 6:00 p.m.), weekday daytime performance was considered as most important for system evaluation. The information in Tables 58 through 60 indicates that Route Nos. 4, 6, 8, and 9 were the best performers in the transit system, having weekday daytime performance levels that were consistently better than the systemwide averages for service effectiveness and efficiency measures. Five of the routes in the system, including Route Nos. 1, 2, 3, 7, and 15, had mixed weekday performance levels that generally were better than most of the minimum performance levels for either effectiveness or efficiency. The overall performance of these routes should be monitored and service changes considered for these routes if they have the potential to improve overall performance. For Route No. 5, weekday performance levels for most measures did not come close to meeting the specified minimum performance levels. This route has historically been the poorest performer in the transit system. Prior service changes directed at improving the performance of the routes have met with mixed results. Service changes for the route should continue to be reviewed.

Table 57

FARES CHARGED FOR FIXED-ROUTE BUS AND PARATRANSIT SERVICES PROVIDED BY THE WAUKESHA METRO TRANSIT SYSTEM: JUNE 2003

Fare Category	Fare Type		
	Cash (per one-way trip)	Tickets	Pass
Waukesha Metro Transit System Bus Service			
Adults (ages 18-64)	$1.25	10 for $11.00	$30.00 per month[a]
Students (ages 5-17)	$1.00	10 for $8.00	$23.00 per month[b]
Children (under age 4 when accompanied by an adult)	Free	--	--
Elderly (age 65 and older) and Disabled Persons	$0.60	10 for $5.50	--
Transfers with Other Waukesha Metro Transit System Routes[c]	Free	Free	--
Supertransfer[d]	$2.00	--	--
Metrolift Paratransit Service			
Adults (ages 18-64)	$2.50	10 for $25.00	--

[a]The monthly pass is good for unlimited riding for one calendar month.

[b]A summer youth pass, which is good for unlimited riding during the three-month summer season, is available for $24.

[c]Free transfers for the Waukesha Metro Transit System routes are currently issued at the time fares are paid by cash or ticket and are valid for 90 minutes. There is no additional charge for passengers transferring between the routes operated by the Waukesha Metro Transit System and Wisconsin Coach Lines, Inc. A transfer policy is also in effect for passengers transferring between Waukesha Metro Transit Route No. 1 and Milwaukee County Transit System Route No. 10 at the Brookfield Square Shopping Center and Executive Drive bus stops which allows passengers to transfer for an additional fare of $0.25 per trip. Passengers transferring to Route No. 10 at these locations must also pay an additional zone fare of $0.35 per trip.

[d]The Supertransfer is good for one full day of unlimited riding on the Saturday or Sunday it is purchased.

Source: Waukesha Metro Transit System and SEWRPC.

2. On Saturdays, total daytime system ridership was about one-half that of weekday daytime ridership, and overall system performance levels were 5 to 10 percent less than those for weekday daytime service. On Sundays, total daytime system ridership was about one-quarter that of weekday daytime ridership and overall system performance levels for service effectiveness and cost effectiveness were about 50 to 55 percent less than those for weekday daytime service. While ridership levels for weekday and Saturday evenings are much lower than for Sunday, the service effectiveness and cost effectiveness measures for the system during these periods are about the same as on Sunday.

3. The performance of some routes varies signifycantly between weekday daytime, Saturday and Sunday daytime, and weekday and Saturday evenings. Of the four routes identified as being the best performers for the weekday daytime period, only Route No. 4 continues to be the best performing route during all periods of operation. Routes No. 1, 2, 3, 5, 7, and 8 are either among the best performing routes or have mixed performance measures for at least the weekend and evening periods. Route No. 5/6, 9, and 15 are among the worst performing routes on evenings and weekend daytime operating periods.

The above conclusions, along with the other findings of the performance evaluation of the existing transit system documented in Chapter V, were explicitly considered in developing the recommended transit service changes discussed in the following section.

RECOMMENDED TRANSIT SERVICE

The recommended plan calls for a number of changes in existing route alignments and schedules of the Waukesha Metro Transit System which are envisioned as needed by 2007 for the City to fully address the transit service

Table 58

KEY PERFORMANCE MEASURES FOR WEEKDAY BUS SERVICE PROVIDED BY THE WAUKESHA METRO TRANSIT SYSTEM: OCTOBER 28-NOVEMBER 1, 2002

Weekday Daytime[a]							
		Passengers Per			Per Passenger Trip Data		
Route Number	Total Boarding Passengers	Scheduled Bus Trip	Revenue Vehicle-Hour	Revenue Vehicle-Mile	Operating Cost	Operating Assistance	Farebox Recovery (percent)
1	701	10.8	15.1	1.11	$3.36	$2.72	18.8
2	248	7.5	13.9	1.15	3.71	3.08	17.0
3	194	5.9	21.5	1.86	2.28	1.65	27.5
4	428	8.6	32.2	2.83	1.54	0.90	41.1
5	179	5.3	10.3	0.77	5.03	4.40	12.5
6	315	10.9	21.1	1.51	2.46	1.83	25.5
7	163	4.8	16.8	1.47	3.31	2.67	19.1
8	319	6.6	23.5	2.12	2.15	1.52	29.3
9	352	11.7	21.8	1.22	2.57	1.94	24.5
15	164	6.6	13.4	1.14	3.67	3.04	17.1
Systemwide Total/Average	3,063	7.3	16.4	1.23	$2.87	$2.24	22.0
Suggested Minimum Performance Level[b]	245	5.8	13.1	0.99	$3.44	$2.68	17.6

Weekday Evening[a]							
		Passengers Per			Per Passenger Trip Data		
Route Number	Total Boarding Passengers	Scheduled Bus Trip	Revenue Vehicle-Hour	Revenue Vehicle-Mile	Operating Cost	Operating Assistance	Farebox Recovery (percent)
1	102	5.7	8.3	0.67	$5.88	$5.25	10.7
2	46	4.6	9.2	0.77	5.57	4.93	11.3
3	20	2.0	8.0	0.55	6.60	5.95	9.8
4	63	6.3	25.2	1.99	2.03	1.41	30.5
5/6	21	2.6	5.0	0.28	11.43	10.81	5.4
7	20	2.0	7.8	0.58	7.35	6.75	8.2
8	50	5.0	20.0	0.96	2.62	2.00	23.7
9	33	3.3	7.0	0.40	8.24	7.61	7.7
15	12	3.0	6.3	0.52	9.00	8.33	7.4
Systemwide Total/Average	367	4.1	9.6	0.67	$5.49	$4.86	11.4
Suggested Minimum Performance Level[b]	33	3.3	7.7	0.54	$6.59	$5.83	9.1

Weekday All Day[a]							
		Passengers Per			Per Passenger Trip Data		
Route Number	Total Boarding Passengers	Scheduled Bus Trip	Revenue Vehicle-Hour	Revenue Vehicle-Mile	Operating Cost	Operating Assistance	Farebox Recovery (percent)
1	803	9.7	13.7	1.02	$3.68	$3.05	17.1
2	294	6.8	12.8	1.07	4.00	3.37	15.7
3	214	5.0	18.6	1.52	2.69	2.06	23.5
4	491	8.2	31.1	2.68	1.60	0.97	39.4
5	179	5.3	10.3	0.77	5.03	4.40	12.5
6	315	10.9	21.1	1.51	2.46	1.83	25.5
5/6	21	2.6	5.0	0.28	1.43	10.81	5.4
7	183	4.2	14.9	1.26	3.75	3.12	16.8
8	369	6.4	23.0	1.82	2.22	1.59	28.4
9	385	9.6	18.5	1.04	3.06	2.43	20.6
15	176	6.1	12.4	1.06	4.03	3.40	15.6
System wide Total/Average	3,430	7.3	16.4	1.23	$3.15	$2.52	20.0
Suggested Minimum Performance Level[b]	274	5.8	13.1	0.99	$3.78	$3.02	16.0

[a]Data are based on passenger counts taken by transit system drivers and operating data for the schedules in effect in the fall of 2002.

[b]The minimum levels shown are 20 percent above the overall average for all routes. Values which indicate poor performance levels, in accordance with Standard 2 of Objective 2, are listed in red type.

Source: Waukesha Metro Transit System and SEWRPC.

Table 59

KEY PERFORMANCE MEASURES FOR SATURDAY BUS SERVICE PROVIDED BY THE WAUKESHA METRO TRANSIT SYSTEM: NOVEMBER 2, 2002

Saturday Daytime[a]							
		Passengers Per			Per Passenger Trip Data		
Route Number	Total Boarding Passengers	Scheduled Bus Trip	Revenue Vehicle-Hour	Revenue Vehicle-Mile	Operating Cost	Operating Assistance	Farebox Recovery (percent)
1	386	10.2	13.8	1.05	$3.54	$2.91	17.8
2	242	12.7	25.3	1.99	1.94	1.31	32.5
3	137	6.9	27.4	2.21	1.69	1.06	37.3
4	205	10.3	40.3	3.29	1.17	0.54	53.8
5/6	165	8.3	16.2	0.88	3.31	2.68	19.1
7	71	3.6	14.1	1.09	3.45	2.82	18.2
8	105	5.3	21.0	1.95	2.11	1.49	29.6
9	124	6.2	12.4	0.73	4.29	3.66	14.7
15	81	4.1	8.2	0.71	5.86	5.24	10.7
Systemwide Total/Average	1,516	7.7	17.3	1.26	$2.85	$2.22	22.1
Suggested Minimum Performance Level[b]	135	6.2	13.8	1.01	$3.43	$2.67	17.7

Saturday Evening[a]							
		Passengers Per			Per Passenger Trip Data		
Route Number	Total Boarding Passengers	Scheduled Bus Trip	Revenue Vehicle-Hour	Revenue Vehicle-Mile	Operating Cost	Operating Assistance	Farebox Recovery (percent)
1	74	4.9	6.4	0.53	$7.45	$6.82	8.5
2	34	3.8	7.7	0.60	6.38	5.75	9.9
3	25	3.1	12.5	0.89	3.84	3.21	16.4
4	41	5.1	20.5	1.61	2.34	1.71	26.9
5/6	44	5.5	11.0	0.70	4.55	3.92	13.9
7	18	2.3	8.7	0.65	5.67	5.04	11.1
8	21	2.6	10.5	0.52	5.24	4.61	12.0
9	27	3.4	7.3	0.46	7.11	6.48	8.9
15	8	4.0	8.0	0.70	6.00	5.37	10.5
Systemwide Total/Average	292	3.9	8.9	0.65	$5.52	$4.86	11.4
Suggested Minimum Performance Level[b]	26	3.2	7.1	0.52	$6.62	$5.83	9.1

Saturday All Day[a]							
		Passengers Per			Per Passenger Trip Data		
Route Number	Total Boarding Passengers	Scheduled Bus Trip	Revenue Vehicle-Hour	Revenue Vehicle-Mile	Operating Cost	Operating Assistance	Farebox Recovery (percent)
1	460	8.7	11.6	0.91	$4.17	$3.54	15.1
2	276	9.9	19.7	1.55	2.49	1.86	25.4
3	162	5.8	23.1	1.79	2.02	1.39	31.2
4	246	8.8	34.7	2.80	1.37	0.74	46.1
5/6	209	7.5	14.7	0.84	3.57	2.94	17.7
7	89	3.2	12.5	0.95	3.90	3.27	16.1
8	126	4.5	18.0	1.33	2.63	2.01	23.8
9	151	5.4	11.0	0.66	4.79	4.17	13.1
15	89	4.0	8.2	0.71	5.88	5.25	10.7
Systemwide Total/Average	1,808	6.7	15.0	1.09	$3.29	$2.66	19.2
Suggested Minimum Performance Level[b]	161	5.3	12.0	0.87	$3.94	$3.19	15.3

[a]Data *are based on passenger counts taken by transit system drivers and operating data for the schedules in effect in the fall of 2002.*

[b]The *minimum levels shown are 20 percent above the overall average for all routes. Values which indicate poor performance levels, in accordance with Standard 2 of Objective 2, are listed in red type.*

Source: Waukesha Metro Transit System and SEWRPC.

Table 60

KEY PERFORMANCE MEASURES FOR SUNDAY BUS SERVICE PROVIDED BY THE WAUKESHA METRO TRANSIT SYSTEM: NOVEMBER 3, 2002

Sunday Daytime[a]							
		Passengers Per			Per Passenger Trip Data		
Route Number	Total Boarding Passengers	Scheduled Bus Trip	Revenue Vehicle-Hour	Revenue Vehicle-Mile	Operating Cost	Operating Assistance	Farebox Recovery (percent)
1	243	7.4	8.8	0.69	$5.93	$5.30	10.6
2	125	6.3	12.5	0.98	4.21	3.58	15.0
3	48	2.4	9.6	0.74	5.17	4.54	12.1
4	89	4.5	17.5	1.41	2.89	2.26	21.8
5/6	104	5.2	10.2	0.58	5.41	4.78	11.7
7	39	2.0	7.6	0.58	6.85	6.21	9.4
8	59	3.0	11.8	0.87	4.25	3.63	14.7
9	44	2.2	4.5	0.30	11.98	11.34	5.3
15	40	2.0	4.1	0.35	12.10	11.48	5.2
Systemwide Total/Average	791	4.1	9.0	0.67	$5.77	$5.14	10.9
Suggested Minimum Performance Level[b]	70	3.3	7.2	0.53	$6.92	$6.17	8.7

[a]Data *are based on passenger counts taken by transit system drivers and operating data for the schedules in effect in the fall of 2002.*

[b]*The minimum levels shown are 20 percent above the overall average for all routes. Values which indicate poor performance levels, in accordance with Standard 2 of Objective 2, are listed in red type.*

Source: *Waukesha Metro Transit System and SEWRPC.*

needs of its residents and others commuting to jobs and schools within the transit service area. The recommended routing and service changes are set forth in Table 61 and include service adjustments directed at improving or eliminating poorly performing routes and at expanding service to developing areas within the City. The table also indicates an implementation priority for the proposed service changes, identifying those changes which should be pursued immediately in 2003 and 2004, and those changes which would be pursued in the short-term future and be in place by the end of the planning period in 2007. Map 26 displays the proposed routes of the Waukesha Metro Transit System for 2007 and Map 27 displays the routing alignment changes that are recommended for each route which are also described in the following section.

Proposed Routing and Service Changes

The recommended routing and service changes include modifications to the downtown routing for each route as well as changes outside downtown Waukesha on eight of the 10 existing routes. The proposed changes include:

1. Routing adjustments in downtown Waukesha that are needed in order for each route to serve a new central transfer terminal for the transit system. The common transfer point will be relocated from its current location in the municipal parking lot north of W. Main Street between W. Broadway and N. Barstow Street to a new public terminal facility which will be constructed in the block bounded by E. North Street, Mary Street, E. St. Paul Avenue, and Brook Street. The facility will consist of an approximately 164,000 square foot bus terminal at street level with a two level public automobile parking structure above the bus terminal. Automobile parking for future retail development on adjacent property will be provided on the east side of the facility. Map 28 displays the location of the proposed facility along with the downtown routing for both the existing 2003 bus routes and the proposed routes under the plan. The routing changes will be implemented when the terminal is made operational which is expected to occur by mid 2004. The total cost of the parking ramp-bus terminal facility is estimated at about $13.4 million with the cost for the bus terminal portion of the facility estimated at about $7.2 million. Approximately $5.8 million, or 80 percent, of the cost for the bus terminal portion of the facility is to be provided through Federal Section 5309 Program grants awarded to the City. The remaining 20 percent of the bus terminal costs amounting to $1.4 million is to be paid by the City of Waukesha.

2. Changes to the weekday morning peak period departure times from the downtown transfer

Table 61

SUMMARY OF TRANSIT SERVICE CHANGES PROPOSED FOR THE WAUKESHA METRO TRANSIT SYSTEM: 2003-2007

Route Number	Recommended Routing and Service Changes		
	For Immediate Implementation (2003-2004)	For Implementation in Short Term (2005-2007)	Comments
1	• Modify downtown routing to serve new transfer terminal • Continue to operate route without any other changes[a]	• Continue to operate route without any changes[a]	• Route is forecast to continue to be one of the better performers in system
2	• Modify downtown routing to serve new transfer terminal • Eliminate route segments over Kossow Road, Swenson Drive, and Barker Road between Target Department Store and Goerkes Corners Public Transit Station • Restructure route to operate over Hartwell Avenue, Lincoln Avenue, and Perkins Avenue and to serve east side industrial area, all to replace service currently provided by Route No. 15 (see below)	• Continue to operate route without any changes	• Changes will facilitate extension of Route No. 15 to new development east of STH 59
3	• Modify downtown routing to serve new transfer terminal • Restructure route to operate over East Avenue and College Avenue instead of Broadway Street and Hartwell Avenue to replace service currently provided by Route No. 4 (see below)	• Continue to operate route without any changes	• Changes will facilitate extension of Route No. 4 to south side industrial area • Route is forecast to continue to be one of the best performers in system
4	• Modify downtown routing to serve new transfer terminal • Restructure route to operate over Grand Avenue instead of East Avenue and College Avenue • Extend route over West Avenue, and Wilmot Drive during weekday peak periods to serve south side industrial area	• Continue to operate route without any changes	• Route is forecast to continue to be one of the best performers in system
5	• Modify downtown routing to serve new transfer terminal • Eliminate service over Sunset Drive and Badger Drive west of Fox Run Shopping Center • Extend route over Oakdale Drive, River Place Boulevard, and Fox River Parkway to serve new residential development	• Continue to operate route without any changes	• Route is forecast to continue to be a marginal to poor performer and its performance should be closely monitored
6	• Modify downtown routing to serve new transfer terminal • Extend route over Sunset Drive and Badger Drive west of Fox Run Shopping Center	• Continue to operate route without any changes	• Changes will facilitate extension of Route No.5 to service new development south of STH 59
5/6	• Modify downtown routing to serve new transfer terminal • Eliminate route segments over Sunset Drive, Prairie Avenue, and School Drive between Oakdale Drive and Chapman Drive • Extend route over Oakdale Drive, River Place Boulevard, and Fox River Parkway to serve new residential development	• Continue to operate route without any changes	• Route segments dropped will facilitate extension of route to residential area south of STH 59
7	• Modify downtown routing to serve new transfer terminal • Restructure route to operate over University Drive and Michigan Avenue instead of Madison Street and Grandview Boulevard	• Continue to operate route without any changes	• Route segments dropped will facilitate extension of route to North High School

Table 61 (continued)

Route Number	Recommended Routing and Service Changes		
	For Immediate Implementation (2003-2004)	For Implementation in Short Term (2005-2007)	Comments
8	• Modify downtown routing to serve new transfer terminal	• Restructure route to operate over Summit Avenue instead of Delafield Street and Washington Avenue between Delafield Street and Washington Avenue • Eliminate service over Grandview Boulevard, Sunkist Avenue, and University Drive route • Extend route over Summit Avenue to serve Meadowbrook Marketplace and adjacent development	• Route segments dropped will facilitate extension of route to serve developing areas on the west side of City around the intersection of Summit Avenue and CTH TT • Productive route segments dropped are included in new Route No. 16 (see below)

9	• Modify downtown routing to serve new transfer terminal	• Route to be restructured in conjunction with creation of new Route No. 16 (see below) including:
		  • Operating over Delafield Street instead of Moreland Boulevard and Irving Place
		  • Eliminating segments operated over Pebble Valley Road, University Drive, and Silvernail Road between Woodburn Road and Silvernail Road
		  • Operating all bus trips over Grandview Boulevard and Woodburn Road between Silvernail Road and Northview Road
		  • Eliminating segment operated to Country Inn over Golf Road
		  • Extending regular service to the Airport Industrial Park
		• Eliminate weekday evening service after 6:15 p.m. over restructured route
		• Eliminate all Saturday and Sunday service over restructured route
			• Existing route has acceptable weekday daytime performance, marginal weekday evening performance, and poor weekend performance
			• Restructuring of route removes segments where service should be operated on weekends, putting those segments on the new Route 16

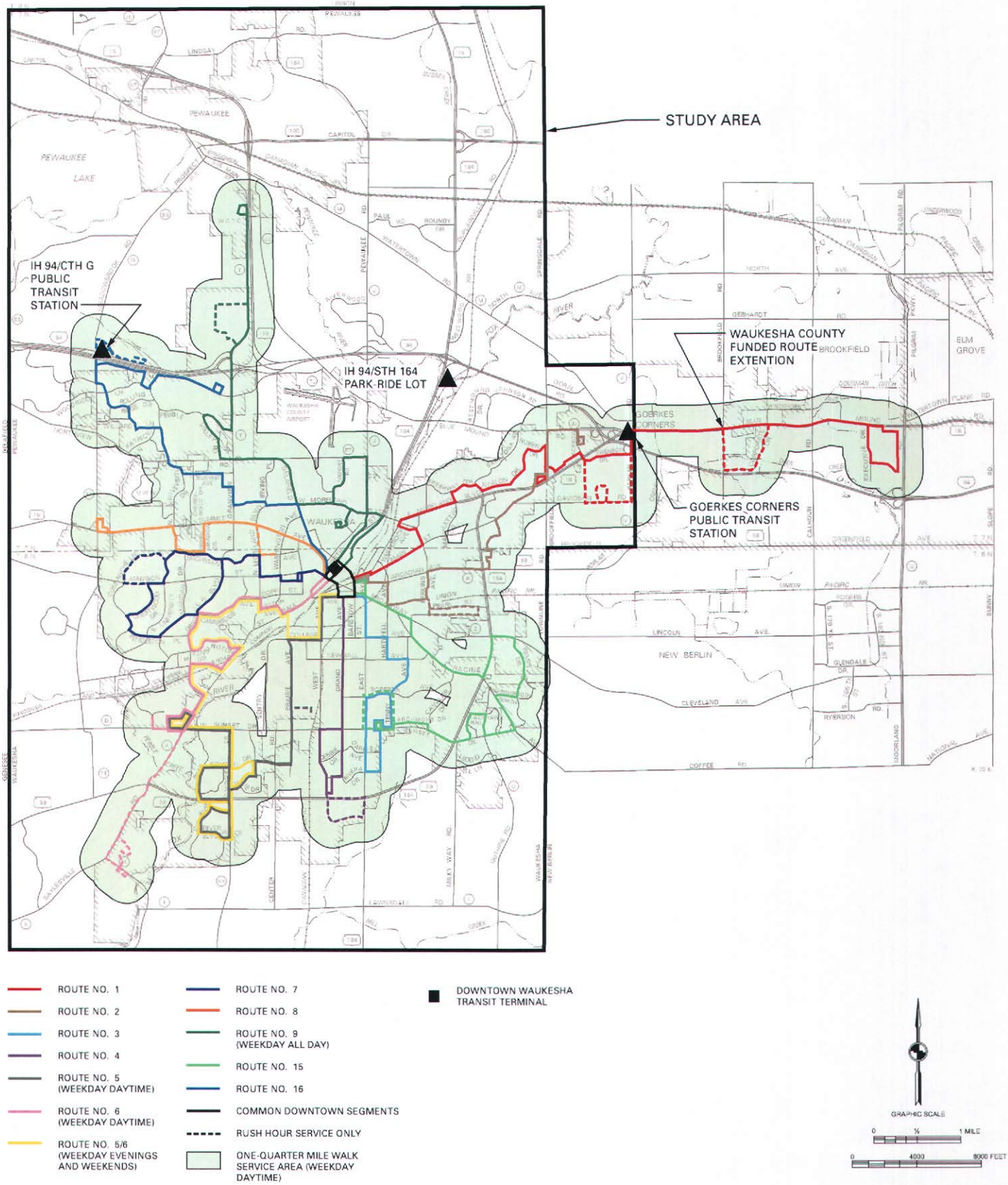
15	• Modify downtown routing to serve new transfer terminal	• Restructure route to operate over Broadway Street instead of Main Street, Hartwell Avenue, Lincoln Avenue, Frederick Street and Ellis Street between East Avenue and Oakland Avenue (see Route No. 2 above) • Restructure route alignment through Minooka Park subdivision • Extend route over STH 59, Broadway Street, Rempe Drive, and Springbrook North to serve developing residential area	• Route segments dropped will facilitate extension of route to serve developing residential area on the southeast side of City • Route is forecast to continue to be a marginal to poor performer and its performance should be closely monitored
16	--	• New route to be created in conjunction with restructuring of Route Nos. 8 and 9 (see above) • Route to serve productive areas currently served by Route Nos. 8 and 9 and developing residential areas west of University Drive, south of Silvernail Road, east of Meadowbrook Road, and north of Northview Road • Service over the route to be provided on weekdays and weekends at policy headways	• New route will retain service over existing segments of, and areas served by, Route Nos. 8 and 9 that warrant weekend service • Route will extend service to developing residential area on the northwest side of City
All Routes	• Modify weekday morning peak period departure times from the downtown transfer terminal to occur at uniform 35-minute intervals—at 5:55 a.m, 6:30 a.m., 7:05 a.m., 7:40 a.m., 8:15 a.m., and 8:50 a.m.—instead of at 30- to 45-minute intervals	--	• Longer headways and additional running time for routes no longer needed • Uniform headways will help passengers understand schedules

[a]The *segments of Route No 1 extending east of Barker Road to the Brookfield Square Shopping Center are operated as a contract service for the Waukesha County transit system. The transit system development plans for both the City of Waukesha and Waukesha County transit systems recommend that Waukesha County continue to contract for this extension of Route No. 1.*

Source: SEWRPC.

Map 26

PROPOSED BUS ROUTES FOR THE WAUKESHA METRO TRANSIT SYSTEM: 2007

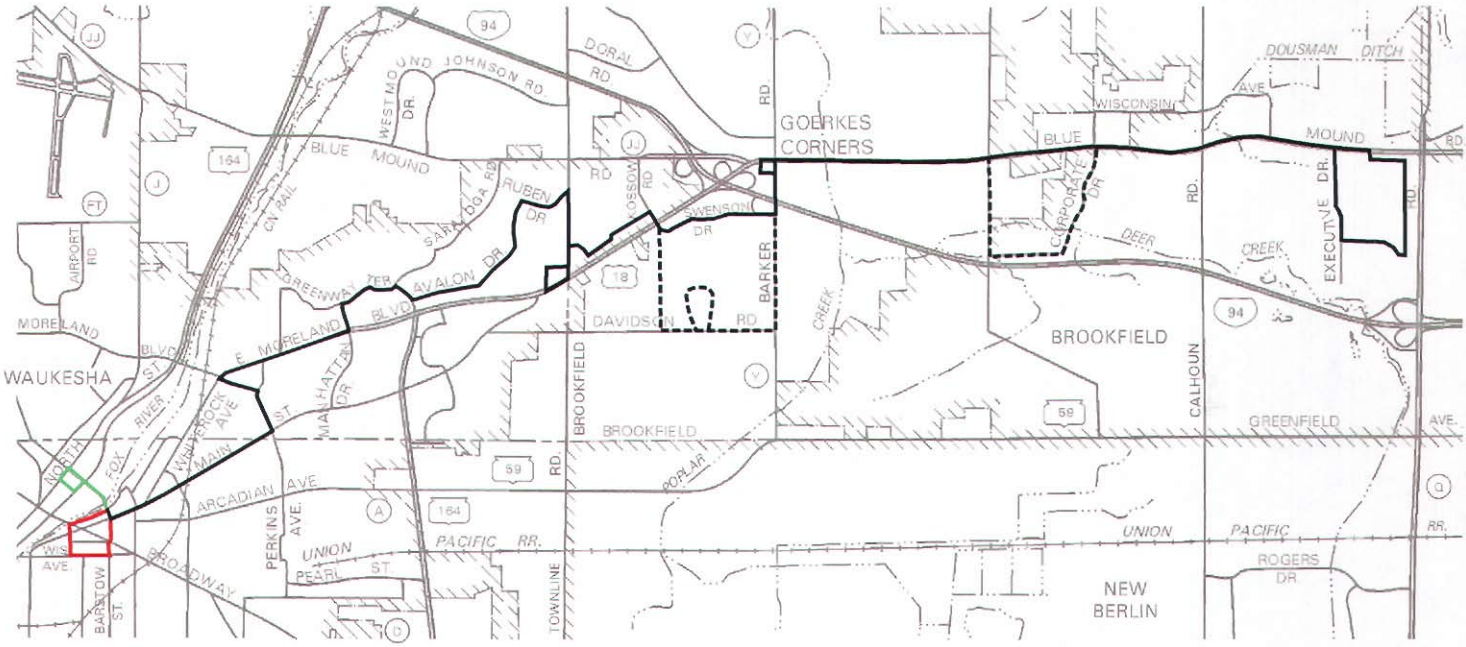


Source: Waukesha Metro Transit System and SEWRPC.

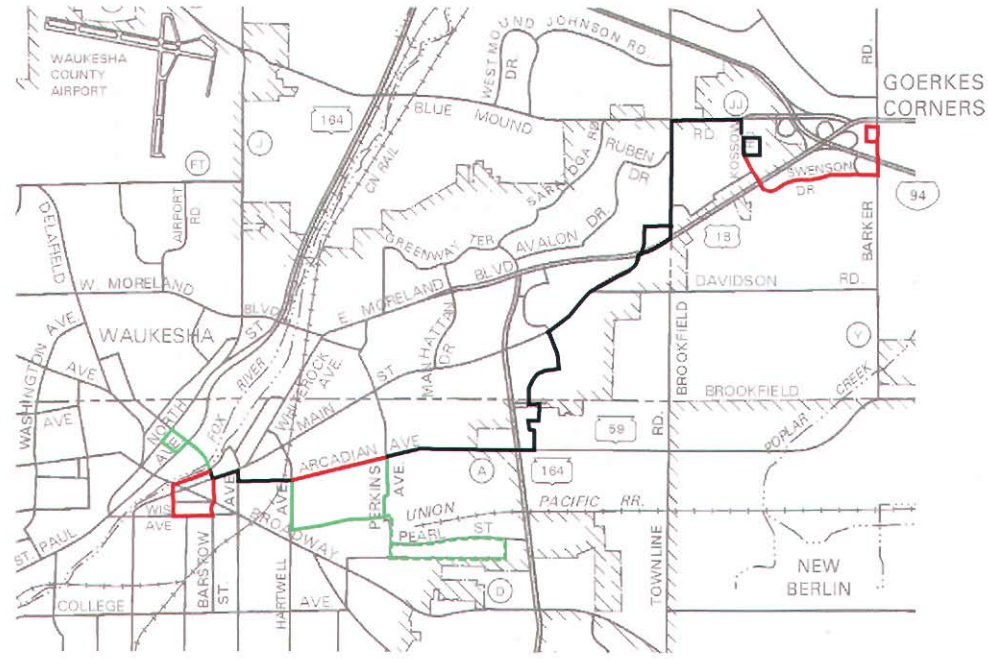
Map 27

PROPOSED CHANGES TO METRO TRANSIT SYSTEM BUS ROUTES

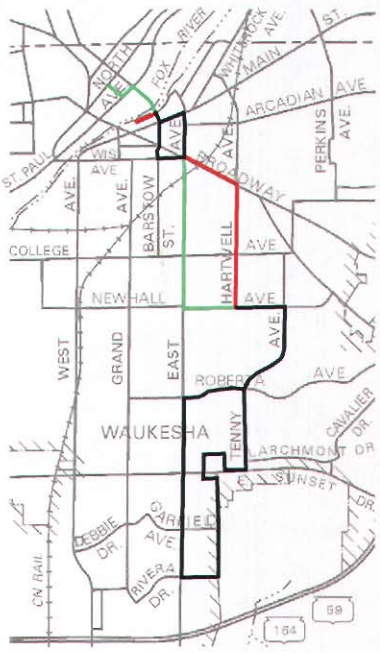
ROUTE 1



ROUTE 2



ROUTE 3



EXISTING SEGMENTS TO BE RETAINED

EXISTING SEGMENTS TO BE RETAINED WITH LIMITED SERVICE

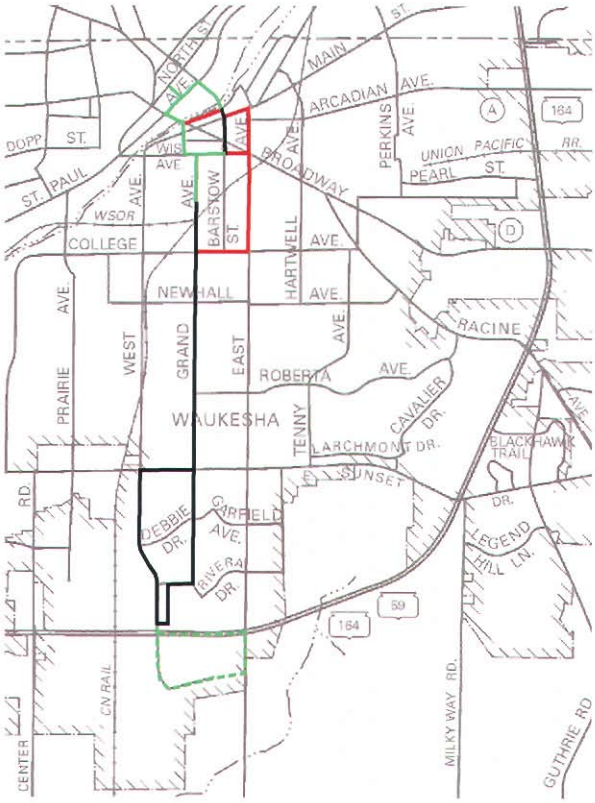
EXISTING SEGMENTS TO BE DROPPED

NEW SEGMENTS TO BE ADDED

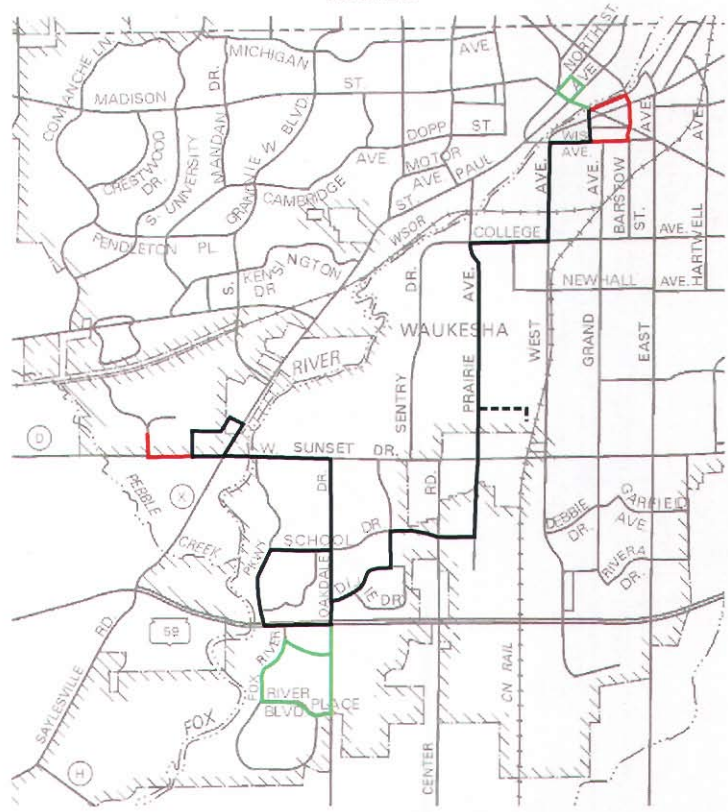
NEW SEGMENTS TO BE ADDED WITH LIMITED SERVICE

Map 27 (continued)

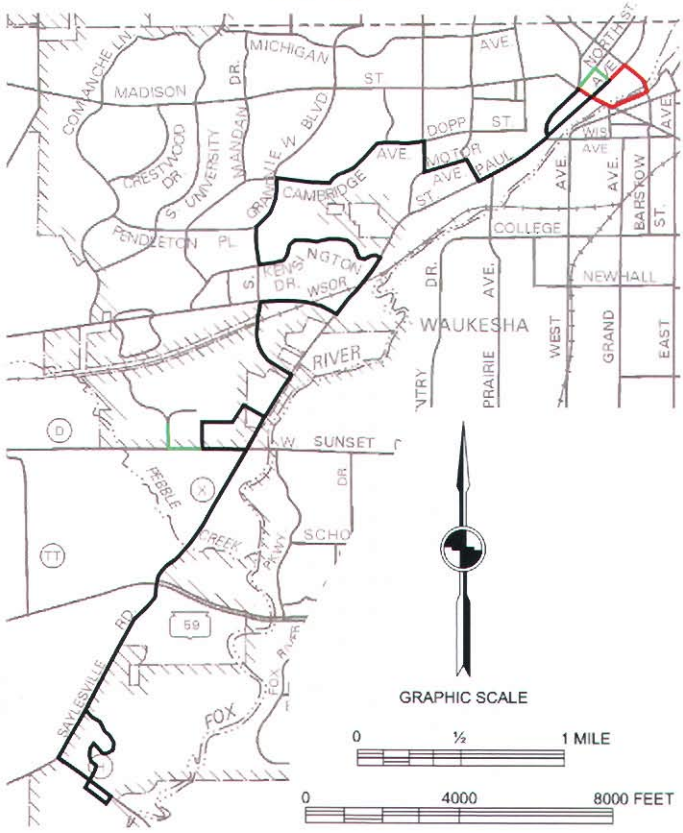
ROUTE 4



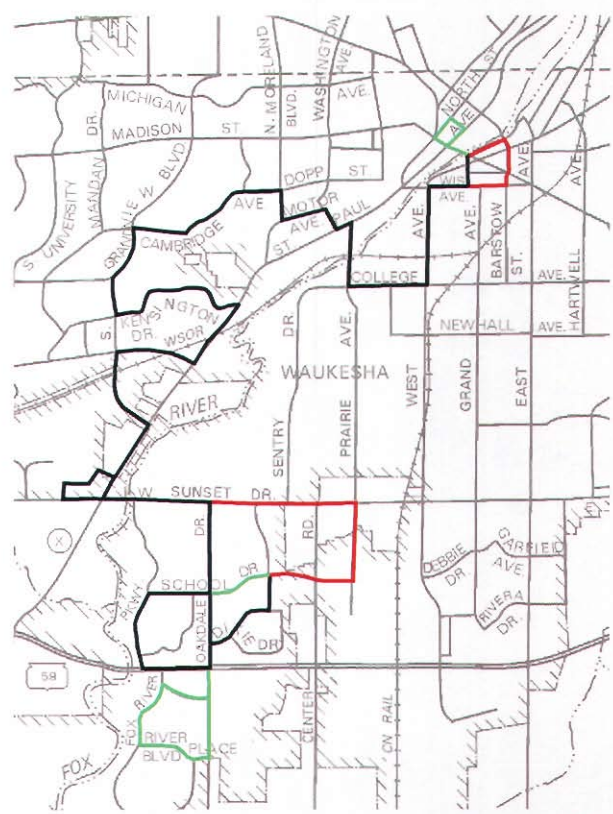
ROUTE 5



ROUTE 6

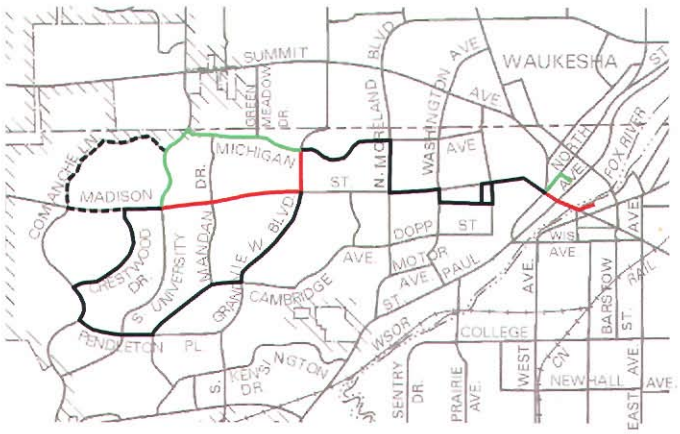


ROUTE 5/6

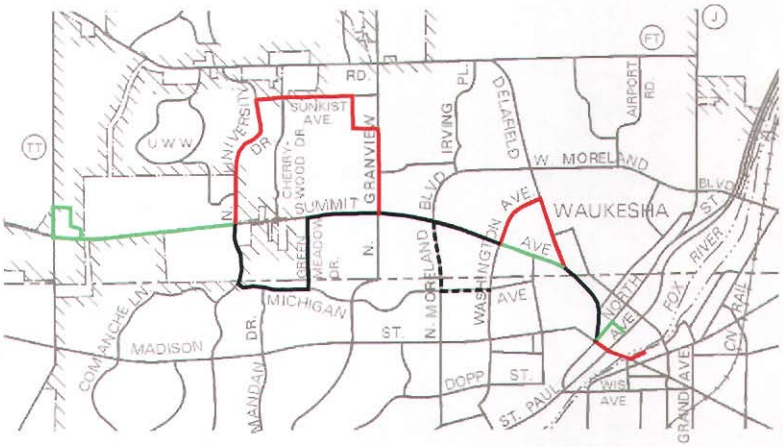


Map 27 (continued)

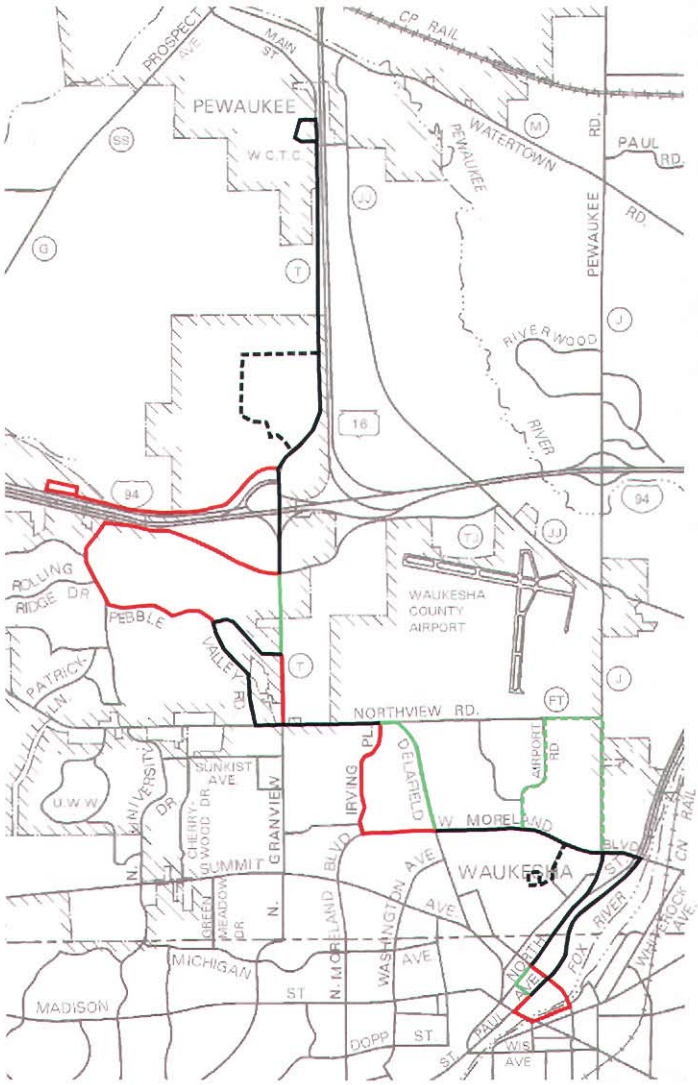
ROUTE 7



ROUTE 8

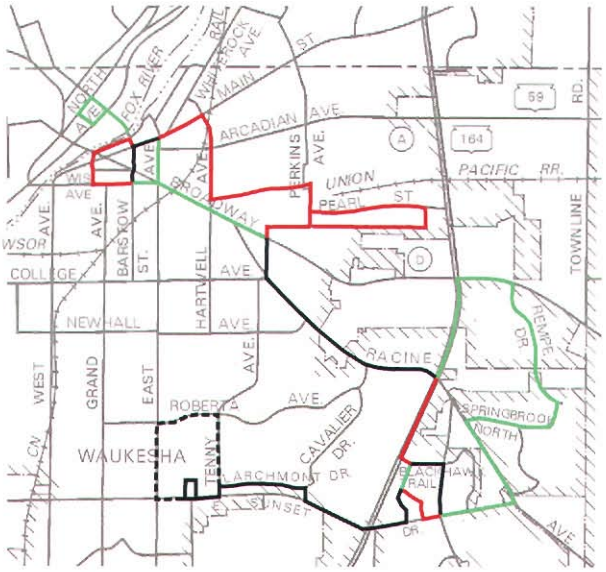


ROUTE 9



Map 27 (continued)

ROUTE 15



EXISTING SEGMENTS TO BE RETAINED

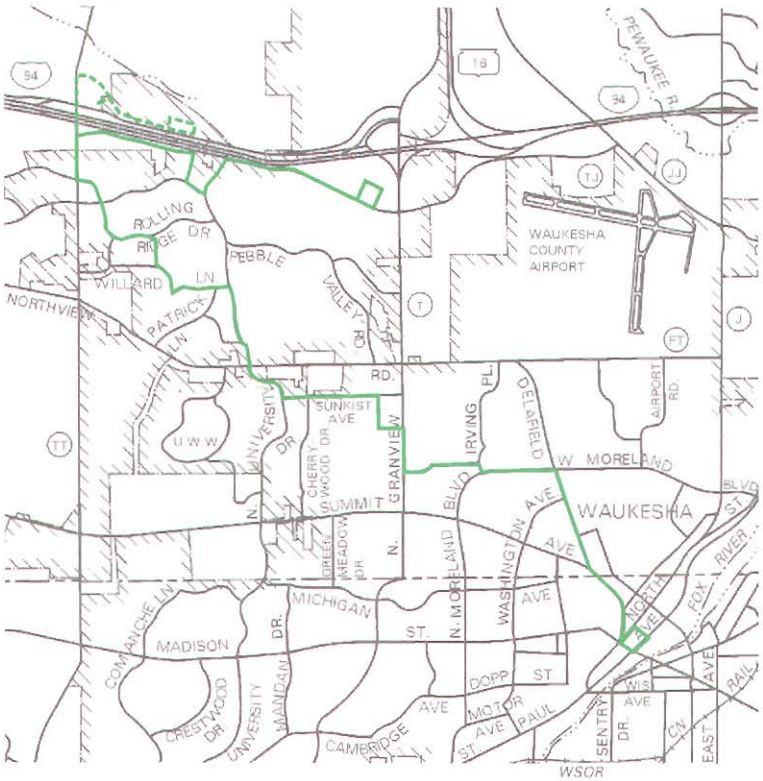
EXISTING SEGMENTS TO BE RETAINED WITH LIMITED SERVICE

EXISTING SEGMENTS TO BE DROPPED

NEW SEGMENTS TO BE ADDED

NEW SEGMENTS TO BE ADDED WITH LIMITED SERVICE

ROUTE 16



GRAPHIC SCALE

0 ½ 1 MILE

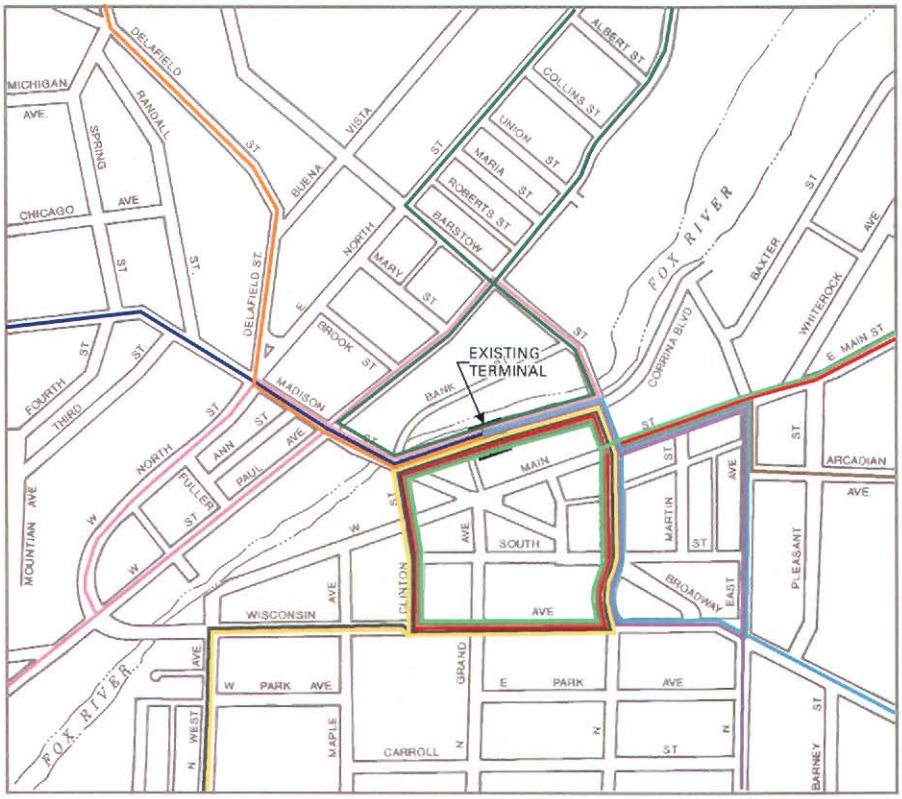
0 4000 8000 FEET

Source: SEWRPC.

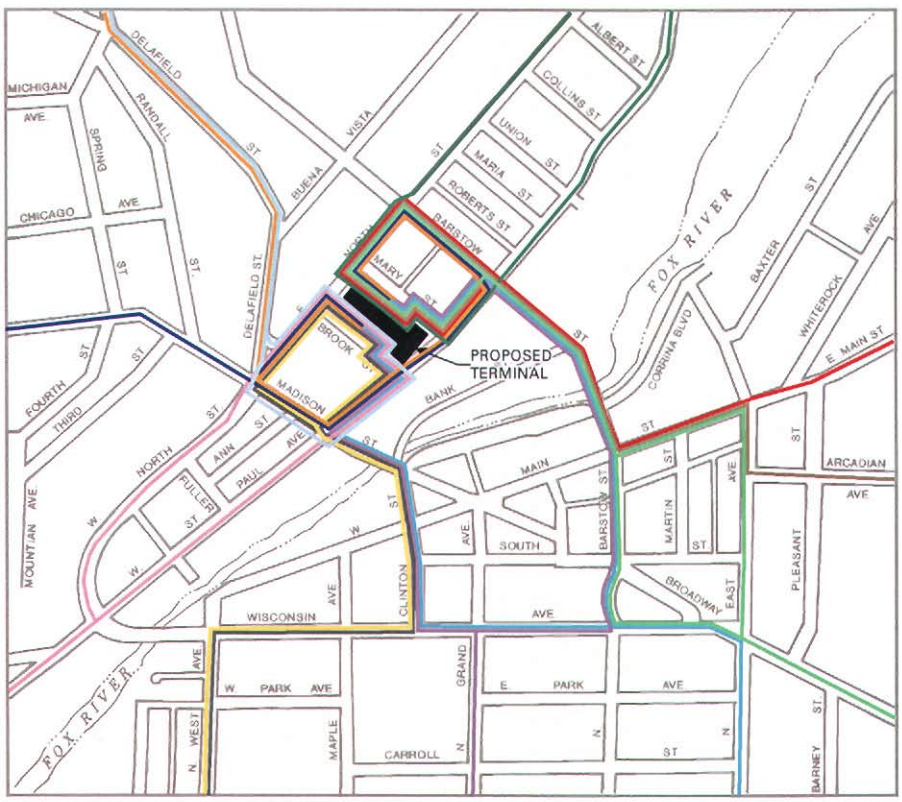
Map 28

EXISTING AND PROPOSED DOWNTOWN ROUTING FOR WAUKESHA METRO TRANSIT SYSTEM BUS ROUTES

EXISTING 2003



PROPOSED 2007



- ROUTE NO. 1
- ROUTE NO. 2
- ROUTE NO. 3
- ROUTE NO. 4
- ROUTE NO. 5
- ROUTE NO. 6
- ROUTE NO. 5/6
- ROUTE NO. 7
- ROUTE NO. 8
- ROUTE NO. 9
- ROUTE NO. 15
- ROUTE NO. 16

GRAPHIC SCALE

0 200 400 800 FEET

Source: SEWRPC

terminal. Buses currently depart from the terminal at 30- to 45–minute intervals between 5:55 a.m. and 8:20 a.m. The plan proposes that bus schedules for all routes be adjusted to reflect morning peak period departure times from the terminal occurring at uniform 35-minute intervals, or at 5:55 a.m., 6:30 a.m., 7:05 a.m., 7:40 a.m., and 8:15 a.m. Route No. 1, which operates with 15- to 20-minute headways during peak periods, would have additional departure times between those noted above. Transit system staff proposes to implement these schedule changes in January 2004.

3. Adjustments to route alignments outside downtown Waukesha that are proposed for immediate implementation in 2003 and 2004. Such changes include:

   - The restructuring of Route Nos. 2 and 15 to enable Route No. 15 to be extended to serve new residential development east of STH 59 between Broadway Street and Racine Avenue.

   - The modification of Route Nos. 3 and 4 to facilitate the extension of Route No. 4 to an area of light industry south of STH 59 between West Avenue and STH 164.

   - The extension of Route No. 5 and 5/6 to serve new residential development south of STH 59 and west of Oakdale Drive, and extending Route No. 6 to Badger Drive to replace service currently provided by Route No. 5.

   - The relocation of Route No. 7 from Madison Street and Grandview Boulevard to University Drive and Michigan Avenue to better serve North High School.

The proposed changes to these routes could be implemented together in a single scheduling change, or separately as long as the changes identified for route pairs are kept together.

4. Additional routing adjustments outside downtown Waukesha, including the creation of one new route, are proposed for implementation between 2005 and 2007. These changes include:

   - The extension of Route No. 8 over Summit Avenue to serve the Meadowbrook Marketplace Shopping Center and surrounding areas currently under development.

   - Restructuring of the existing Route No. 9 to extend regular weekday service to the Airport Industrial Park and to include route segments that only require service on weekdays. Service on weekday evenings after 6:15 p.m. and all day Saturdays and Sundays over the restructured Route No. 9 would be eliminated.

   - The creation of a new Route No. 16 to serve productive areas currently served by Route Nos. 8 and 9 and developing residential areas west of University Drive, south of Silvernail Road, east of Meadowbrook Road, and north of Northview Road. The new route would operate on weekdays and on weekends with standard policy headways.

   The proposed changes to these routes should all be implemented at the same time in order to maintain service to all the trip generators served by the three routes. It is important to note that, the identified service changes should only be considered for implementation if recent development trends in the City continue and the unserved areas to which service is proposed to be extended are deemed to need transit service by the City by the end of the planning period. Should development occur at a slower pace than currently envisioned the routing and service changes identified for 2005 through 2007 should not be implemented.

The plan proposes no changes to the June 2003 weekday and weekend service periods for the transit system, with the exception of for the restructured Route No. 9, as noted above, which is proposed to operate only during daytime hours on weekdays. In the previous section of this chapter, Commission staff reviewed the performance of the transit system for weekdays and weekends, along with daytime and evening service periods. Weekday and Saturday daytime service periods may be considered as core service periods during which the transit system needs to operate to serve a majority of the transit travel needs of City residents. The weekday evening, Saturday evening, and Sunday service periods—which represent recent service expansions—were found to have virtually the same systemwide performance levels (about one-half of the weekday daytime performance levels) and similar route by route performance. As none of these service periods stands out as an extremely poor performer, no changes aside from those for Route No. 9 have been recommended for the transit system during these periods. The performance of the transit system during these periods, however, should continue to be monitored for changes in the future.

Recommended System Operating Profile

The operating and service characteristics of the routes of Waukesha Metro Transit System in 2007, assuming implementation of all the recommended service changes, are shown in Table 62. Table 63 indicates the changes in route miles and vehicle requirements from the June 2003 transit system to the recommended 2007 system. The recommended service changes would increase round-trip route miles for the system from about 149 miles in 2003 to about 162 miles by 2007, or by about 8 percent. The number of vehicles required for weekday service operation would increase by two vehicles due to the addition of Route No. 16 from the existing 20 buses to 22 buses. However, the number of buses operated on weekends would remain at nine even with the addition of Route No. 16, as Route No. 9 would no longer operate on weekends. The total fleet used for fixed-route bus service would be expanded from 27 to 29 buses under the plan while the total system bus fleet, including four buses used for the Metrolift paratransit program, would increase from 31 to 33 buses.

Increases in Passenger Fares

Over the preceding five years, the Waukesha Metro Transit System has increased passenger fares only once, in 2002 when the base adult cash fare was increased from $1.00 to $1.25 per one-way trip. Prior to the increase in 2002, fares were last increased in 1996 when the base adult cash fare was raised from $0.75 to $1.00 per one-way trip (see Figure 5 in Chapter III). The fare increase was considered necessary by local officials to generate additional passenger revenue and maintain tolerable increases in the annual local public funding requirement for the transit system caused by inflationary increases in transit system operating expenses and changes in Federal and State transit operating assistance. For similar reasons, some increases in passenger fares are recommended to be implemented over the planning period.

It is proposed that the transit system implement fare increases in 2005 and again in 2007 to raise the base adult cash fare by $0.15 and $0.10, respectively, per one-way trip in those years. The resulting base adult cash fares for the transit system would consequently increase from the current $1.25 per one-way trip to $1.50 per one-way trip by the end of the planning period, an increase of about 20 percent. Fares in other categories, and charges for monthly passes, should also be increased by similar proportions. The proposed fare increases for the transit system will be needed in order for fares to keep pace with anticipated increases in operating expenses, thereby maintaining a stable farebox recovery rate.

Metrolift Paratransit Service for Disabled Individuals

As a consequence of the recommended routing changes, the service area for the City's complementary paratransit service for disabled individuals provided through the Metrolift Program will need to be modified slightly. Specifically, the service area will need to be expanded to cover additional areas on the southeast side of the City proposed to be served by Route No. 15, on the southwest side of the City proposed to be served by Route Nos. 5 and 5/6, and on the northwest side of the City proposed to be served by Route No. 16. No other changes are envisioned to be needed for the paratransit service.

PLAN PERFORMANCE AND COSTS

Basic Assumptions and Determinations

The analyses attendant to the performance of the recommended bus service for the Waukesha Metro Transit System, and the cost and funding forecasts associated with those services, are predicated upon the following assumptions and determinations:

- Implementation of the recommended service changes will be phased-in over the planning period to allow for time needed to obtain local approval and for the costs of new and restructured services to be incorporated into the operating budgets of the transit system and into applications for Federal and State operating assistance.

- All costs are expressed in projected "year of expenditure" dollars and assume an increase of 3 percent per year in operating costs per unit of transit service and capital project costs due to general price inflation. As a result, the unit costs of service operation would be expected to increase by about 16 percent over 2002 levels by the end of the planning period.

- Only about 20 percent of the costs of the new $7.2 million bus terminal facility for the transit system in downtown Waukesha have been included in the costs of implementing the transit system development plan over the period 2003-2007. The other 80 percent of the costs of the facility were included in City budgets and grants for 2002 and prior years.

- Fare increases have been assumed to occur in 2005 and 2007 for both City bus and paratransit services. This action will raise the base adult cash fare for the transit system by about 20 percent

Table 62

PROPOSED OPERATING AND SERVICE CHARACTERISTICS BY ROUTE FOR THE RECOMMENDED WAUKESHA METRO TRANSIT SYSTEM: 2007

Weekday Service										
			Service Frequency				Buses Required[a]			
Bus Route	Round Trip Route Length (miles)	Service Availability	Morning Peak Period	Midday Period	Afternoon Peak Period	Evening Period	Morning Peak Period	Midday Period	Afternoon Peak Period	Evening Period
1	24.00	5:40 a.m. - 10:40 p.m.	15-20	30	15-20	30-60	4.0	3.0	5.0	3.0
2	12.45	5:20 a.m. - 10:40 p.m.	35	60	30-35	60	2.0	1.0	2.0	1.0
3	7.60	5:55 a.m. - 10:15 p.m.	35[b]	60	30-35[b]	60	1.0	0.5	1.0	0.5
4	7.10	5:45 a.m. - 10:30 p.m.	35	30	30-35	60	1.5	1.0	1.5	0.5
5	14.60	6:00 a.m. - 6:45 p.m.	35	60	30-35	--	2.0	1.0	2.0	--
6	13.05	6:05 a.m. - 6:30 p.m.	70	60	30-35	--	1.0	1.0	2.0	--
5/6	16.00	6:30 p.m. - 10:45 p.m.	--	--	--	60	--	--	--	1.0
7	8.20	5:45 a.m. - 10:45 p.m.	35[b]	60	30-35[b]	60	1.5	0.5	1.5	0.5
8	9.40	5:30 a.m. - 10:15 p.m.	35	30	30-35	60	1.5	1.0	1.5	0.5
9	18.95	5:40 a.m. - 6:15 p.m.	35	60	30-35	60	2.0	1.0	2.0	1.0
15	15.60	5:25 a.m. - 7:40 p.m.	70	60	60	60	1.5	1.0	1.5	1.0
16	14.70	5:45 a.m. - 10:30p.m.	35	30	30-35	60	2.0	1.0	2.0	1.0
System Total	161.65	5:15 a.m. - 10:45 p.m.	--	--	--	--	20.0	12.0	22.0	10.0

Saturday Service				
Bus Route	Round Trip Route Length (miles)	Service Availability	Service Frequency	Buses Required[a]
1	22.40	8:15 a.m. – 10:15 p.m.	30	3.0
2	11.10	8:15 a.m. – 10:15 p.m.	60	1.0
3	7.60	8:15 a.m. - 9:45 p.m.	60	0.5
4	5.65	8:00 a.m. – 10:00 p.m.	60	0.5
5/6	16.00	8:15 a.m. – 10:15 p.m.	60	1.0
7	6.80	8:00 a.m. – 10:15 p.m.	60	0.5
8	8.50	8:15 a.m. - 9:45 p.m.	60	0.5
15	14.55	8:15 a.m. - 7:15 p.m.	60	1.0
16	14.70	8:30 a.m. – 10:00 p.m.	60	1.0
System Total	107.30	8:00 a.m. – 10:15 p.m.	--	9.0

Sunday Service				
Bus Route	Round Trip Route Length (miles)	Service Availability	Service Frequency	Buses Required[a]
1	22.40	9:15 a.m. - 7:15 p.m.	30	3.0
2	11.10	9:45 a.m. - 7:15 p.m.	60	1.0
3	7.60	9:15 a.m. - 6:45 p.m.	60	0.5
4	5.65	9:00 a.m. - 7:00 p.m.	60	0.5
5/6	16.00	9:15 a.m. - 7:15 p.m.	60	1.0
7	6.80	9:00 a.m. - 7:15 p.m.	60	0.5
8	8.50	9:15 a.m. – 6:45 p.m.	60	0.5
15	14.55	9:45 a.m. – 7:15 p.m.	60	1.0
16	14.70	9:45 a.m. - 7:00 p.m.	60	1.0
System Total	107.30	9:00 a.m. - 7:15 p.m.	--	9.0

[a]*Fractions indicate one vehicle is operated over two routes during a time period.*

[b]*Headways on Route Nos. 3 and 7 would be increased to 70 minutes during the summer.*

Source: Waukesha Metro Transit System and SEWRPC.

by 2007. The impacts of these fare increases on system ridership have been factored into the ridership forecasts and the associated passenger revenues for the recommended transit system based on fare elasticities commonly used in the transit industry.

- The Federal and State governments will not significantly change the operating and capital assistance programs that are in place during 2003.

Ridership, Service Levels, and Financial Performance

The anticipated average annual operating characteristics, ridership, costs, and revenues associated with the recommended Waukesha Metro Transit System are set forth in Table 64. The costs of needed capital equipment and facilities under the plan are presented in Table 65. The following observations may be made based upon an examination of the information presented in this table:

- Assuming implementation of all the recommended service changes, the Waukesha Metro Transit System, would operate an average of about 916,900 revenue vehicle miles of service annually over the planning period. This would be an increase of about 22,000 vehicle miles, or about 2 percent, from the 894,900 revenue vehicle miles of service operated in 2002.

- The Waukesha Metro Transit System may be expected to carry an average of about 652,300 revenue passengers annually over the period, representing an increase of about 5,800 revenue passengers, or about 1 percent, over the 2002

Table 63

ROUND-TRIP ROUTE MILES AND VEHICLE REQUIREMENTS FOR THE RECOMMENDED WAUKESHA METRO TRANSIT SYSTEM: 2007

Characteristic	June 2003 Transit System	Change from June 2003 System		Recommended 2007 Transit System
		Absolute Amount	Percent	
Maximum Number of Routes in Operation				
Weekdays	10[a]	1	10.0	11[a]
Saturdays	9	--	--	9
Sundays	9	--	--	9
Round Trip Route Miles				
Weekdays	148.55	13.10	8.9	161.65
Saturdays	117.10	-9.80	-8.4	107.30
Sundays	117.10	-9.80	-8.4	107.30
Vehicle Requirements				
Waukesha Metro Transit				
Weekdays	20	2	10.0	22
Saturdays	9	--	--	9
Sundays	9	--	--	9
Waukesha Metrolift				
Weekdays	3	--	--	3
Saturdays	1	--	--	1
Sundays	1	--	--	1
Total System				
Weekdays	23	2	8.7	25
Saturdays	10	--	--	10
Sundays	10	--	--	10

[a]Two routes operated during the weekday daytime period, Route Nos. 5 and 6, are combined into a single route, Route 5/6, for operation during weekday evenings and on weekends. The 11 system bus routes shown on Map 25 and the 12 system bus routes shown on Map 26 include Route No. 5/6.

Source: Waukesha Metro Transit System and SEWRPC.

ridership level on the system of about 646,500 revenue passengers. The forecast ridership increase under the plan reflects the expected effects of a combination of the proposed routing changes to expand service into presently unserved or developing areas of the City, and the effects of increases in passenger fares proposed for 2005 and 2007 which would be expected to negatively impact ridership growth from the service expansion.[1]

- Overall, the recommended transit system may be expected to carry about nine passengers per vehicle-hour, and 0.7 passenger per vehicle-mile of service provided, or about the same as the existing transit system.

[1]*An average elasticity for fare increases of -0.3 was used in estimating the impacts of the proposed fare increases on ridership for the Waukesha Metro Transit System. The figure reflects an average elasticity for changes in transit fares that is widely accepted in the transit industry, and assumes that for a 10 percent increase in passenger fares, a 3 percent decrease in ridership could be expected. The 20 percent increase in fares over the planning period (from $1.25 to $1.50 per adult ride) would be expected to reduce forecast ridership by approximately 6 percent from the forecast ridership with the current 2003 fares. Transit system officials have noted that fare increases on the Waukesha Metro Transit system that were implemented in 1996 and in 2002 resulted in little or no change in transit ridership. The ridership forecasts for the recommended plan may, therefore, be conservative.*

Table 64

OPERATING EXPENSES, REVENUES, AND ASSISTANCE FOR THE WAUKESHA METRO TRANSIT SYSTEM: 2002-2007

Characteristic	2002 Actual	Forecast[a] 2003	Forecast[a] 2007	Forecast[a] Average Annual
Service				
Revenue Vehicle-Miles	894,900	890,200	966,400	916,900
Revenue Vehicle-Hours	69,600	68,700	73,900	70,200
Ridership				
Revenue Passengers	646,500	653,200	649,400	652,300
Passengers per Revenue Vehicle-Mile	0.72	0.73	0.67	0.71
Passengers per Revenue Vehicle-Hour	9.3	9.5	8.8	9.3
Operating Costs, Revenues, and Assistance				
Operating Expenses	$3,350,700	$3,408,000	$4,052,000	$3,689,000
Passenger and Other Revenues	580,700	654,000	712,000	661,200
Required Public Assistance	2,770,000	2,754,000	3,340,000	3,027,800
Farebox Recovery (percent)	17.3	19.2	17.6	17.9
Sources of Public Assistance				
Federal				
Section 5307 Program	$ 196,500	$ 477,000	$ 481,000	$ 479,200
Section 5330 Program	119,600	123,200	--	37,300
CMAQ[b]	195,100	200,900	45,600	88,900
Subtotal	$ 511,200	$ 801,100	$ 526,600	$ 605,400
State				
WisDOT Operating Assistance Program	$1,523,900	$1,253,800	$1,896,900	$1,604,500
WisDOT TEAM[c] and WisDWD TANF[d] Programs	59,800	61,600	--	18,700
Subtotal	$1,583,700	$1,315,400	$1,896,900	$1,623,200
Local				
City of Waukesha	$ 617,600	$ 578,300	$ 849,900	$ 736,300
Other	57,500	59,200	66,600	62,900
Subtotal	$ 675,100	$ 637,500	$ 916,500	$ 799,200
Total	$2,770,000	$2,754,000	$3,340,000	$3,027,800
Per Passenger Trip Data				
Operating Cost	$5.18	$5.22	$6.24	$5.66
Revenue	0.90	1.00	1.10	1.02
Total Assistance	4.28	4.22	5.14	4.64
Local Assistance	1.04	0.98	1.41	1.23

[a] *The following assumptions were made in preparing the forecasts of annual ridership, revenues, and costs:*

1. *Operating expenses per vehicle hour of transit service will increase by 3 percent per year over the planning period.*
2. *The recommended service changes would be staged to occur in 2004 and 2006. The proposed changes to all routes needed to serve the new downtown terminal, and the proposed changes outside downtown Waukesha for Route Nos. 2, 3, 4, 5, and 15 were assumed to be implemented in September 2004. The proposed changes outside downtown Waukesha for Route Nos. 7, 8, and 9 and the new Route No. 16 were assumed to be implemented in September 2006.*
3. *Base adult cash fares for bus and paratransit services which are currently $1.25 and $2.50 per trip, respectively, will be increased in 2005 to $1.40 and $2.80 per trip, respectively. These fares will be increased again in 2007 to $1.50 and $3.00 per trip, respectively. Similar increases would be made in other fare categories and for convenience fares including passes and tickets.*
4. *The amounts of Federal Section 5307 transit assistance and State transit operating assistance available over the planning period will be sufficient to cover about 60 percent of operating expenses over the planning period.*

[b] *Federal Congestion Mitigation and Air Quality Improvement Program.*

[c] *Wisconsin Department of Transportation (WisDOT) Transportation, Employment, and Mobility (TEAM) Program.*

[d] *Wisconsin Department of Workforce Development (WisDWD) Temporary Assistance for Needy Families(TANF) Program.*

Source: Waukesha Metro Transit System and SEWRPC.

Table 65

PROPOSED CAPITAL EQUIPMENT EXPENDITURES FOR THE WAUKESHA METRO TRANSIT SYSTEM UNDER THE RECOMMENDED PLAN: 2003-2007

Year	Quantity	Equipment or Project Description	Unit Cost[a]	Total Cost[a]
2003	4	Replacement 35-foot long urban transit buses	$278,300	$1,113,200
	--	Downtown terminal design and construction	--	393,500
	--	Shop equipment	--	52,000
	--	Office equipment	--	44,000
	--	Replacement data processing hardware and software	--	13,600
	--	Bus parts	--	30,000
		Subtotal	--	$1,646,300
2004	4	Engine and transmission rebuild units	$ 50,000	$ 200,000
	4	Replacement wheelchair ramps and restraints	8,100	32,400
	--	Downtown terminal construction	--	1,000,000
	--	Shop equipment	--	10,000
	--	Replacement data processing hardware and software	--	20,300
	--	Bus parts	--	36,000
		Subtotal	--	$1,298,700
2005	4	Replacement 30-foot long paratransit buses	$220,000	$ 880,000
	4	Engine and transmission rebuild units	50,000	200,000
	4	Replacement wheelchair ramps and restraints	8,100	32,400
	--	Shop equipment	--	10,000
	--	Replacement data processing hardware and software	--	10,200
	--	Bus parts	--	36,000
		Subtotal	--	$1,168,600
2006	3	Engine and transmission rebuild units	$ 50,000	$ 150,000
	4	Replacement wheelchair ramps and restraints	8,100	32,400
	1	Replacement bus washer	180,000	180,000
	1	Replacement supervisor's automobile	20,000	20,000
	1	Replacement utility van	22,000	22,000
	1	Replacement service truck	30,000	30,000
	1	Replace promotional, marketing display	5,000	5,000
	--	Replacement data processing hardware and software	--	11,500
	--	Office equipment	--	3,500
	--	Shop equipment	--	10,000
	--	Bus parts	--	36,000
		Subtotal	--	$ 500,400
2007	3	Replacement 35-foot long urban transit buses	$306,800	$ 920,400
	3	Engine and transmission rebuild units	50,000	150,000
	2	Replacement wheelchair ramps and restraints	8,100	16,200
	1	Replacement water softener	6,000	6,000
	--	Remodel transit system offices	--	200,000
	--	Replacement data processing hardware and software	--	16,300
	--	Shop equipment	--	10,000
	--	Bus parts	--	40,000
		Subtotal	--	$1,358,900
Total Capital Project Costs			--	$5,972,900
Federal Transit Administration Section 5307/5309/5311 Programs			--	$4,778,300
Local Share of Costs			--	$1,194,460
Average Annual Costs over Planning Period				
Total Costs			--	$1,194,600
Federal Share			--	995,700
Local Share			--	238,900

[a]*Costs are expressed in estimated year of expenditure dollars.*

Source: Waukesha Metro Transit System and SEWRPC.

- The total cost of operating the transit system with the recommended service changes is forecast to average about $3,689,000 annually between 2003 and 2007—an increase of about 10 percent over the 2002 system operating costs of about $3,350,700. Of this total, about $661,200, or about 18 percent, may be expected to be recovered by passenger fares and other revenues including advertising. The required operating assistance would average about $3,027,800 over the planning period.

- Federal and State funds averaging about $2,228,600 per year may be expected to be available to provide about 74 percent of the required operating assistance funds. The remaining 26 percent, or about $799,200 annually, would have to be provided by local sources, including the City and by Waukesha County and the Town of Brookfield which currently contract for bus services from the City.

- The average annual costs of capital equipment and facilities and planning studies for the bus system between 2003 and 2007 would be about $1,194,600. Of this amount, about $955,700, or 80 percent, would be provided though various Federal transit assistance programs. The remaining $238,900, or 20 percent, would be funded by the City of Waukesha.

ANALYSIS OF STUDENT TRANSPORTATION OPTIONS WITHIN THE CITY OF WAUKESHA

Currently, yellow school bus service for regular education is provided by the School District of Waukesha to all students in the District who either reside at least two or more miles from the school they are entitled to attend or face hazardous conditions in walking to school. The District contracts with a private school bus operator, Dairyland Buses, Inc., to provide this school bus service, with the current contract extending though the 2004-2005 school year. Dairyland Buses, Inc., operates a peak of 67 buses each school day over approximately 130 school bus routes in the morning and in the afternoon. The routes serve 16 of the 23 public schools in the District, and 14 private and parochial schools within, or up to five miles outside, the District. All of the high and middle schools and most of the elementary schools served by the District's school bus service are located within the City of Waukesha and the Waukesha Metro Transit System service area. The Advisory Committee, consequently, requested an analysis of the feasibility and cost implications of replacing the District's existing school bus service with Waukesha Metro bus service for regular education students living in the City of Waukesha. The key elements of this proposal are presented in Table 66.

The use of municipal bus service instead of yellow school bus service to provide transportation for students in local school districts is common in Wisconsin. A review of the student transportation policies in Wisconsin communities with urban bus systems found that bus systems in at least 10 communities, including Appleton, Beloit, Eau Claire, Green Bay, Janesville, Kenosha, La Crosse, Oshkosh, Sheboygan, and Wausau, provided transportation service for students in the local school districts. These communities include five of the six transit systems that comprised the peer group of Wisconsin bus systems used in Chapter V.

Estimated Reductions in School Bus Transportation Service and Costs

The requested analysis was conducted using information on the costs of the school bus service for the 2002-2003 school year and on the students eligible for the school bus service during the 1999-2000 school year which was the most current student data readily available from the District. The analysis considered replacement of school bus service with Waukesha Metro bus service only for regular education students living in the City of Waukesha and attending the six public high schools and middle schools in the District plus the principal private high school, Catholic Memorial High School. Such high and middle school students were viewed as representing the student market which could best be served by the Waukesha Metro Transit System, having reached an age that should allow students to understand how to travel on the bus system. School bus service for elementary school students is limited primarily to intact busing of entire classes to avoid overcrowding of schools or hazardous walking conditions. School bus service was viewed as better suited for these purposes than Waukesha Metro bus service. School bus service was also viewed as better suited to meeting the school transportation needs of regular education students residing outside of the City of Waukesha in areas that cannot be efficiently and effectively served by the Waukesha Metro Transit System and the transportation needs of students participating in the exceptional educational program offered by the District.

A description of each school bus route for regular education students in December 1999 or January 2000 was provided to Commission staff by the District. The information provided for each route included: the school served, the streets traversed by the route, the locations of

Table 66

SUMMARY OF KEY ELEMENTS OF PROPOSAL TO REPLACE SCHOOL BUS SERVICE WITH WAUKESHA METRO TRANSIT SYSTEM BUS SERVICE FOR REGULAR EDUCATION HIGH SCHOOL AND MIDDLE SCHOOL STUDENTS RESIDING IN THE CITY OF WAUKESHA

Proposal Element	Description	
Affected Students	• Regular education students at the public high and middle schools in the School District of Waukesha and at Catholic Memorial High School who are presently eligible[a] for yellow school bus service provided by the District would instead be served by bus service offered by the Waukesha Metro Transit System. School bus service was viewed as better suited for transporting regular education students attending elementary schools or residing outside of the City of Waukesha in areas that cannot be efficiently and effectively served by the Waukesha Metro Transit System, and also for transporting students participating in the exceptional educational program offered by the School District. • Data from the 1999-2000 school year indicated that of the 6,525 students in the District estimated to be eligible for school bus service, about 1,865, or about 29 percent, would be in-city high and middle schools students affected by the proposal.	
Existing School Bus Service for Regular Education Students	• Data from the 1999-2000 school year indicated that the District provided 264 school bus routes each school day to serve eligible students in the District with 121 of the routes serving the high schools and middle schools in the District. About 85 percent of the high schools and middle school routes served some in-city students. • Morning and afternoon school bus trips were operated in two "tiers" with the first tier of trips serving primarily middle and high schools and the second tier of trips serving elementary schools. • Contract for school bus service provides for a high base daily rate of $147 for the first trip made by each bus every morning and afternoon which includes all fixed and variable costs for service operation, and much lower rate of $14 to $20 for each additional trip made by each bus made every morning or afternoon which includes only variable costs. Lower school bus costs for the District are achieved by keeping the number of first and second tier school bus trips close thereby minimizing the peak number of buses needed to provide service. • Contract with school bus operator for regular education school bus service has a total budget cost of about $2.24 million for 2002-2003 school year and runs through end of 2004-2005 school year.	
Proposed Waukesha Metro Bus Service	• Analysis identified the additional bus service needed for the recommended 2007 transit system to serve in-city high and middle school students. • Replacement bus service would be provided by the Waukesha Metro Transit System regular bus routes and special peak hour school day bus routes comprised largely of segments of the existing and proposed Metro bus routes (see Map 31). The special peak-hour routes would bypass the downtown terminal to provide more direct service for students and would operate over some streets not on regular route alignments to extend service to all areas of the City. • The replacement Waukesha Metro bus service would have bus routes and stops located to provide for comparable walking distances (within one or two blocks) for about 90 percent of eligible students and comparable (within five minutes) travel times to the existing school bus service for public school students. Students at Catholic Memorial High School would have travel times five to 10 minutes longer than with existing school bus service. The additional school day routes would be scheduled to provide for school arrival and departure times the same as those provided by the existing school bus service. • Two service levels for replacement City bus service were considered: Service Level A – Provide service with assumptions based on the actual experience of other public transit systems in providing similar student transportation service for school districts[b]. Service would be designed for maximum passenger loads of 1.25 passengers per seat which would not be comparable to school bus service. Some students would need to stand over a portion of each route. It was estimated that 32 additional bus trips[c] (16 in both the morning and afternoon periods) would be needed each school day to serve the eligible in-city students with this service level. Service Level B – Provide service with assumptions comparable to those used in the design and operation of yellow school bus service[c]. Service would be designed for maximum passenger loads of 1.00 passengers per seat. Students could expect to have a seat over the length of the route. It was estimated that 50 additional bus trips (24 in both the morning and afternoon periods) would be needed each school day to serve the in-city students currently eligible for school bus service with this service level. • Pursuant to Federal guidelines, the additional peak-hour bus service would be open to the general public; would be included in published transit system schedules; and would be provided with City buses that would be identified with the appropriate route markings and which would stop at appropriately signed bus stops. • Replacement Waukesha Metro bus service would be comparable to school bus service in most service characteristics but would not be a totally equivalent service for some students. About 10 percent of students would have to walk more than an additional two blocks as replacement City bus service would not always use the same stop locations used by school bus service. Service would be less convenient for Catholic Memorial High School students as these students would need to use the regular routes of the transit system and transfer between routes at the downtown terminal, or use special school day routes where the private high school would not be the primary school served by the route. For West High School students using Route No. 6, the morning arrival and afternoon departure times for that service would not be as convenient with the existing school bus service. Of the two service levels considered for the replacement City bus service, only Service Level B, which would provide a seat for each regular student rider, would be equivalent to the existing school bus service. • Student fares would be paid by the District through a special Waukesha School District student pass issued to all eligible in-city high and middle school students with the pass honored by the transit system for trips made on at any time during the school year. The District would reimburse the transit system at a fare of $0.65 per one-way trip[d] based on the average per trip fare with use of a Metro monthly student pass. The rate of reimbursement would be subject to change as Metro bus fares are changed in the future.	
Ridership	• About 935 in-city high and middle school students per day would be expected to use the replacement Metro bus service representing about 50 percent of the total eligible in-city high and middle school students, and about 70 percent of the students assumed in designing the existing school bus service. • The additional 935 student riders would add about 1,870 one-way revenue trips per school day and about 331,000 one-way school revenue trips per year to the transit system ridership—about the same as actual ridership on existing school bus service. • About 25,000 additional nonschool revenue trips per year would be expected to be made by students using special School District student pass on weekday nonschool days, weekday evenings, and weekends. • Total additional school and nonschool trips expected to be about 356,000 revenue trips annually—an increase of about 55 percent over the actual 2002 ridership level and the projected 2007 ridership level for the recommended transit system.	
Change in Student Transportation Costs for School District (2003 dollars)	Option 1 • Potential cost reduction achieved by eliminating school bus routes serving all or mostly in-city high and middle school students and restructuring or combining remaining school bus routes to serve students outside the City. Based on school bus route descriptions from the 1999-2000 school year it was estimated that 51 additional rate bus trips could potentially be eliminated each school day resulting in a potential annual cost reduction of about $220,000 in the District's 2003 school bus transportation costs. • District would reimburse Waukesha Metro Transit for student passenger fares of about $215,200. • Net costs would be a potential decrease of $4,800 in annual costs to District for student transportation.	Option 2 • Potential cost reduction achieved by eliminating school bus routes serving all or mostly in-city high and middle school students; restructuring or combining remaining school bus routes to serve students outside the City; and rebalancing first and second tier school bus trips to be almost equal. Rebalancing bus trips would require moving second tier school bus trips serving elementary schools into the first tier of school bus service. This action would require changing the start and dismissal times for some elementary schools to be earlier and similar to those for middle and high schools. Based on school bus route descriptions from the 1999-2000 school year, it was estimated that 13 base rate bus trips and 38 additional rate bus trips, a total of 51 school bus trips, could potentially be eliminated each school day resulting in a potential annual cost reduction of about $510,000 in the District's 2003 school bus transportation costs. • District would reimburse Waukesha Metro Transit for student passenger fares of about $215,200. • Net costs would be a potential decrease of $294,800 in annual costs to District for student transportation.

Table 66 (continued)

Proposal Element	Description					
Change in Transit System Costs for City (2003 dollars)	Cost Element	Under Service Level A[e] with: New Buses	Used Buses	Cost Element	Under Service Level B[e] with: New Buses	Used Buses
	• Annual costs			• Annual costs		
	Operating	$435,000	$435,000	Operating	$ 715,000	$ 715,000
	Capital	445,800	148,800	Capital	675,200	229,700
	Total	$880,800	$583,800	Total	$1,390,200	$ 944,700
	• Annual revenues			• Annual revenues		
	Student fares paid by School District	$215,200	$215,200	Student fares paid by School District	$ 215,200	$ 215,200
	State and Federal Transit Operating Assistance	261,000	261,000	State and Federal Transit Operating Assistance	429,000	429,000
	Federal Transit Capital Assistance	356,600	119,000	Federal Transit Capital Assistance	540,200	183,800
	Total	$832,800	$595,200	Total	$1,184,400	$ 828,000
	• Net increase (+) or decrease (-) in costs for Waukesha Metro Transit System	$+48,000	$ -11,400	• Net increase (+) or decrease (-) in costs for Waukesha Metro Transit System	$ +205,800	$+116,700

[a]Includes students who reside two or more miles from the school they are entitled to attend or who would otherwise face hazardous conditions in walking to school.

[b]Based on the experience of other transit systems in the Region, it is estimated that only about 935, or about 50 percent, of the 1,865 eligible in-city high and middle school students would be regular riders of the additional Metro school day bus service. The service would be provided with a maximum passenger load factor of 1.25 passengers per seat resulting in some standing passengers along the heaviest traveled segments of the routes.

[c]For the design and operation of school bus routes, the School District and contract operator assume that all eligible elementary and middle school students will be regular users and a seat for each student assigned to a bus route is provided each school day. Not all eligible high school students are assumed to be regular school bus riders and the normal daily service provides seats for only about 60 percent of the eligible high school students. Under these assumptions, about 1,330, or 71 percent, of the 1,865 eligible in-city high and middle school students would be considered as regular riders of the school bus service. Service would be provided with a maximum passenger load factor of 1.0 passengers per seat meaning a seat would be available for each student passenger.

[d]The rate is based on the 2003 cost for a Waukesha Metro Transit student pass of $23 a month, an average of 17.7 school days per month (177 schooldays over 10 months) over the school year, and students using the pass to make two trips each school day.

[e]The costs of additional bus service for the recommended 2007 Waukesha Metro Transit System have been shown here in 2003 dollars so comparisons could be made with the potential savings in yellow school bus costs based on the 2002-2003 service contract. For comparison with the forecasts for the recommended 2007 transit system presented in Table 64, The costs of the additional Metro bus service in year of expenditure 2007 dollars were also estimated and are shown below.

Cost Element	*Under Service Level A with: New Buses*	*Used Buses*	*Cost Element*	*Under Service Level B with: New Buses*	*Used Buses*
Annual costs			*Annual costs*		
Operating	*$489,600*	*$489,600*	*Operating*	*$ 804,700*	*$ 804,700*
Capital	*501,800*	*167,600*	*Capital*	*760,000*	*258,500*
Total	*$991,400*	*$657,200*	*Total*	*$1,564,700*	*$1,063,200*
Annual revenues			*Annual revenues*		
Student fares paid by School District	*$258,200*	*$258,200*	*Student fares paid by School District*	*$ 258,200*	*$ 258,200*
State and Federal Transit Operating Assistance	*293,800*	*293,800*	*State and Federal Transit Operating Assistance*	*482,900*	*482,900*
Federal Transit Capital Assistance	*401,400*	*134,100*	*Federal Transit Capital Assistance*	*608,000*	*206,800*
Total	*$953,400*	*$686,100*	*Total*	*$1,488,100*	*947,900*
Net increase (+) or decrease (-) in costs for Waukesha Metro Transit System	*$+38,000*	*$ -28,900*	*Net increase (+) or decrease (-) in costs for Waukesha Metro Transit System*	*$ +76,600*	*$ +115,200*

Source: SEWRPC.

school bus stops, the number of eligible students assigned to each stop, the times each stop was served, and the mileage for each route. From this information and school enrollment data, Commission staff developed the estimates shown in Table 67 on the number of regular education students at, and the number of school bus routes operated for, each school served by the District's school bus service. Eligible in-city student and school bus route information for the seven identified high and middle schools in December 1999-January 2000 is provided in Table 68. This information may be summarized as follows:

- The total school enrollment for the 1999-2000 school year at the 37 schools served by the District's school bus service was 17,337 students, including 12,835 students enrolled in the Waukesha public school system and about 4,502 students enrolled at private schools located within or just outside the District. By comparison, the total enrollment at these same schools for the 2002-2003 school year was 17,022 students, or about 2 percent less, including 12,689 students enrolled in the Waukesha public school system and 4,333 students enrolled at the private schools.

- Based on the December 1999-January 2000 school bus route and student information, Commission staff estimated that 6,525 students were eligible for the District's school bus service provided for regular education—about 38 percent of the 17,337 total students that were enrolled during the 1999-

Table 67

REGULAR EDUCATION STUDENTS ELIGIBLE FOR THE YELLOW SCHOOL BUS SERVICE PROVIDED BY THE SCHOOL DISTRICT OF WAUKESHA: 1999-2000 SCHOOL YEAR

School	Address[a]	Total Enrollment[b]	Regular Education Students Eligible for Yellow School Bus Service[c]			Number of School Bus Routes Serving School		
			Total	Within City of Waukesha	Within City and 2007 Transit System Service Area	Morning	Afternoon	Total Daily
Public Schools								
High Schools								
North High School	2222 Michigan Avenue	1,340	480	270	265	7	7	14
South High School	401 E. Roberta Avenue	1,403	445	285	260	5	7	12
West High School	3301 Saylesville Road	1,507	1,415	685	650	17	17	34
Subtotal	--	4,250	2,340	1,240	1,175	29	31	60
Middle Schools								
Butler Middle School	310 N. Hine Avenue	675	225	155	140	4	4	8
Central Middle School	400 N. Grand Avenue	638	350	195	195	8	10	18
Horning Middle School	2000 Wolf Road	653	450	180	170	10	12	22
Subtotal	--	1,966	1,025	530	505	22	26	48
Elementary Schools								
Banting	2019 Butler Drive	445	20	5	--	1	1	2
Bethesda	730 S. University Drive	476	80	70	5	2	2	4
Blair	301 Hyde Park	276	--	--	--	--	--	--
Hadfield	618 Oakland Avenue	333	20	5	--	1	1	2
Hawthorne	1111 Maitland Avenue	314	--	--	--	--	--	--
Heyer	1209 Heyer Drive	477	275	110	110	6	5	11
Hillcrest	21950 Davidson Road	409	365	145	145	6	6	12
Lowell	140 N. Grandview Boulevard	486	--	--	--	--	--	--
Meadowbrook	3130 Rolling Ridge Drive	326	130	45	35	2	2	4
Pleasant Hill	175 Barker Road, Town of Brookfield	217	195	5	5	4	4	8
Prairie	1801 Center Road	358	--	--	--	--	--	--
Randall	114 S. Charles Street	311	--	--	--	--	--	--
Rose Glen	W273 S3845 Brookhill Drive, Town of Waukesha	672	605	150	150	11	11	22
Saratoga	130 Walton Avenue	247	5	5	5	1	1	2
Summit View	2100 Summit Avenue	565	350	165	160	6	6	12
White Rock	1150 White Rock Avenue	347	--	--	--	--		--
Whittier	1103 S. East Avenue	360	--	--	--	--		--
Subtotal	--	6,619	2,045	705	615	40	39	79
Total Public Schools	--	12,835	5,410	2,475	2,295	91	96	187
Private Schools								
Catholic Memorial High School	601 E. College Avenue	1,026	215	95	85	6	7	13
St. Joseph Middle School	841 Martin Street	260	180	100	95	10[d]	10[d]	20[d]
Brookfield Academy	3460 N. Brookfield Road, City of Brookfield[e]	612	55	20	20	2	2	4
Christ the Lord Lutheran	1650 N. Brookfield Road, City of Brookfield[e]	72	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]
Christian Life Center	1314 S. Grand Avenue	55	40	30	30	2	2	4
Elm Grove Lutheran	945 Terrace Drive, Village of Elm Grove[e]	307	60	25	25	3	3	6
Mt. Calvary Lutheran	1941 Madison Street	155	35	20	20	3	2	5
St. Anthony on the Lake	W280 N2101 Prospect Avenue, City of Pewaukee[e]	144	25	10	5	1	1	2
St. John Vianney	17500 Gebhardt Road, City of Brookfield[e]	483	75	--	--	3	2	5
St. Luke	18000 W. Greenfield Avenue, City of Brookfield[e]	257	15	--	--	1	1	2
St. Mary	520 Newhall Avenue	382	180	70	70	7[d]	7[d]	14[d]
St. Paul	S38 W3162 Hwy D, Town of Genesee[e]	194	45	--	--	1	1	2
St. William	444 N. Moreland Boulevard	190	70	45	40	3[d]	3[d]	6[d]
Trinity Lutheran	1060 White Rock Avenue	252	95	65	65	6	4	10
Waukesha Christian Academy	W271 S2470 Merrill Hills Road, Town of Waukesha	113	25	15	15	2	2	4
Total Private Schools	--	4,502	1,115	495	470	40[d]	37[d]	77[d]
Total All Schools	--	17,337	6,525	2,970	2,765	131	133	264

[a]Except where noted, addresses are in the City of Waukesha.

[b]Includes exceptional education students.

[c]Excludes students with parent contracts with the School District for individual student transportation. Not all students that are eligible for yellow school bus service actually make use of the service offered. The School District and school bus operator assume that, while all eligible elementary and middle school students generally are regular users, only about 60 percent of eligible high school students are regular users.

[d]School bus routes serving St. Joseph Middle school also serve either St. Mary or St. William Schools. These 10 routes have been counted only once in the totals.

[e]While this private school is located outside the boundaries of the Waukesha School District, the school is located less than five miles outside of the District and the District is required under Wisconsin Statutes to provide school transportation to resident students as needed.

[f] Christ the Lord Lutheran School is served by routes also serving Brookfield Academy. Eligible student and route data is included with figures for Brookfield Academy.

Source: Wisconsin Department of Public Instruction, School District of Waukesha, and SEWRPC.

Table 68

NUMBER OF YELLOW SCHOOL BUS ROUTES FOR REGULAR EDUCATION STUDENTS SERVING THE PRINCIPAL HIGH AND MIDDLE SCHOOLS IN THE SCHOOL DISTRICT OF WAUKESHA: 1999-2000 SCHOOL YEAR

School	Address[a]	Total Enrollment[b]	Estimated Regular Education Students Eligible for Yellow School Bus Service[c]		Number of Morning School Bus Routes Serving School[d]		
			Total	Within City of Waukesha	Serving Less Than 80 Percent In-City Students	Serving 80 Percent or More In-City Students	Total
Public Schools							
High Schools							
North High School	2222 Michigan Avenue	1,340	480	270	3	4	7
South High School	401 E. Robert Avenue	1,403	445	285	2	3	5
West High School	3301 Saylesville Rd	1,507	1,415	685	10	7	17
Subtotal	--	4,250	2,340	1,240	15	14	29
Middle Schools							
Butler Middle School	310 N. Hine Avenue	675	225	155	2	2	4
Central Middle School	400 N. Grand Avenue	638	350	195	4	4	8
Horning Middle School	2000 Wolf Road	653	450	180	1	9	10
Subtotal	--	1,966	1,025	530	7	15	22
Private Schools							
Catholic Memorial High School	601 E. College Avenue	1,026	215	95	2	4	6
Total All Schools	--	7,242	3,580	1,865	24	33	57

[a] *All addresses are in the City of Waukesha.*

[b] *Includes exceptional education students.*

[c] *Excludes students with parent contracts with the School District for individual student transportation. Not all students that are eligible for yellow school bus service actually make use of the service offered. Commission staff estimates that, while all eligible elementary and middle school students generally are regular users, only about 60 percent of eligible high school students are regular users.*

[d] *Based on morning school bus schedules for December 1999 and January 2000.*

Source: Wisconsin Department of Public Instruction, School District of Waukesha, and SEWRPC.

2000 school year at the schools served by the District's school bus routes. The estimated distribution of these 6,525 students in the District and in the study area by quarter-section in 2000 is shown on Map 29. Estimates of the number of students eligible for school bus service in 2003 submitted by the District to the Wisconsin Department of Instruction indicated that about 6,800 regular education students are currently eligible for school bus service for the 2002-2003 school year, an increase of about 4 percent over the 6,525 students identified for the 1999-2000 school year. Based on this information and the change in enrollment noted above, the 1999-2000 school year data was not considered to be out-of-date for this analysis of transportation options for students in the District.

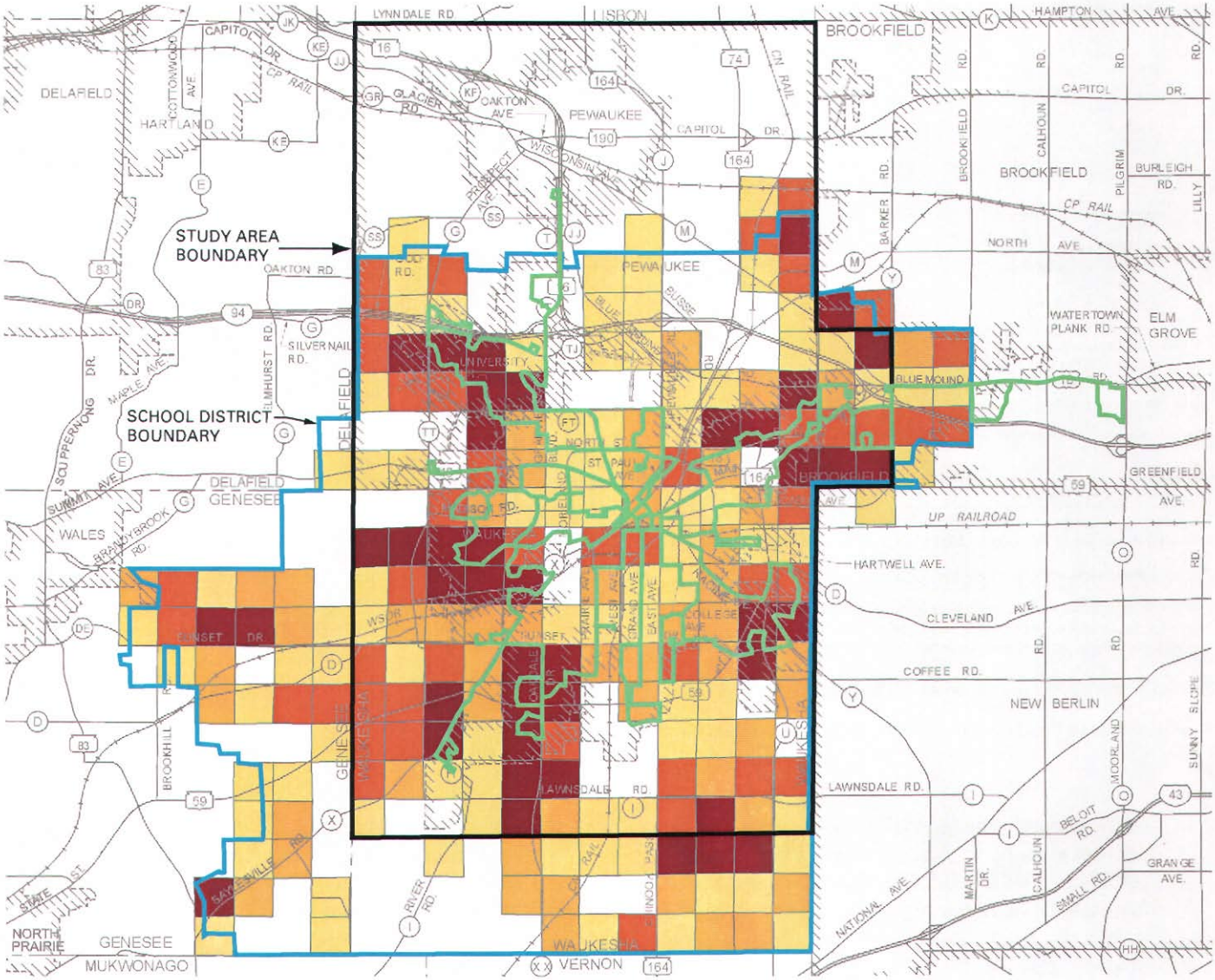
- A total of 3,580 students, or 55 percent, of the 6,525 students eligible for school bus service in December 1999-January 2000 were students at the six public high and middle schools in the District or at Catholic Memorial High School. The estimated distribution of these 3,580 students in the District and the study area by quarter-section in 2000 is shown on Map 30.

- It was estimated that 1,865, or about 52 percent, of the 3,580 high and middle school students eligible for the school bus service in December 1999-January 2000 resided within the City of Waukesha.

Because the City would assume responsibility for providing school transportation to the seven identified high and middle schools for students living in the City under this proposal, the analysis estimated the extent to which the District's school bus service and costs could potentially be reduced. In December 1999-January 2000, Dairyland Buses, Inc. operated 131 school bus routes in the morning and 133 routes in the afternoon for a total of 264 routes each day to transport regular education students to and from Waukesha area schools. The 2002-2003 budget for the School District included about

Map 29

ESTIMATED DISTRIBUTION OF ALL SCHOOL DISTRICT OF WAUKESHA REGULAR EDUCATION STUDENTS ELIGIBLE FOR SCHOOL BUS TRANSPORTATION: JANUARY 2000



STUDENTS ELIGIBLE FOR YELLOW SCHOOL BUS TRANSPORTATION* PER U.S. PUBLIC LAND SURVEY ONE-QUARTER SECTION

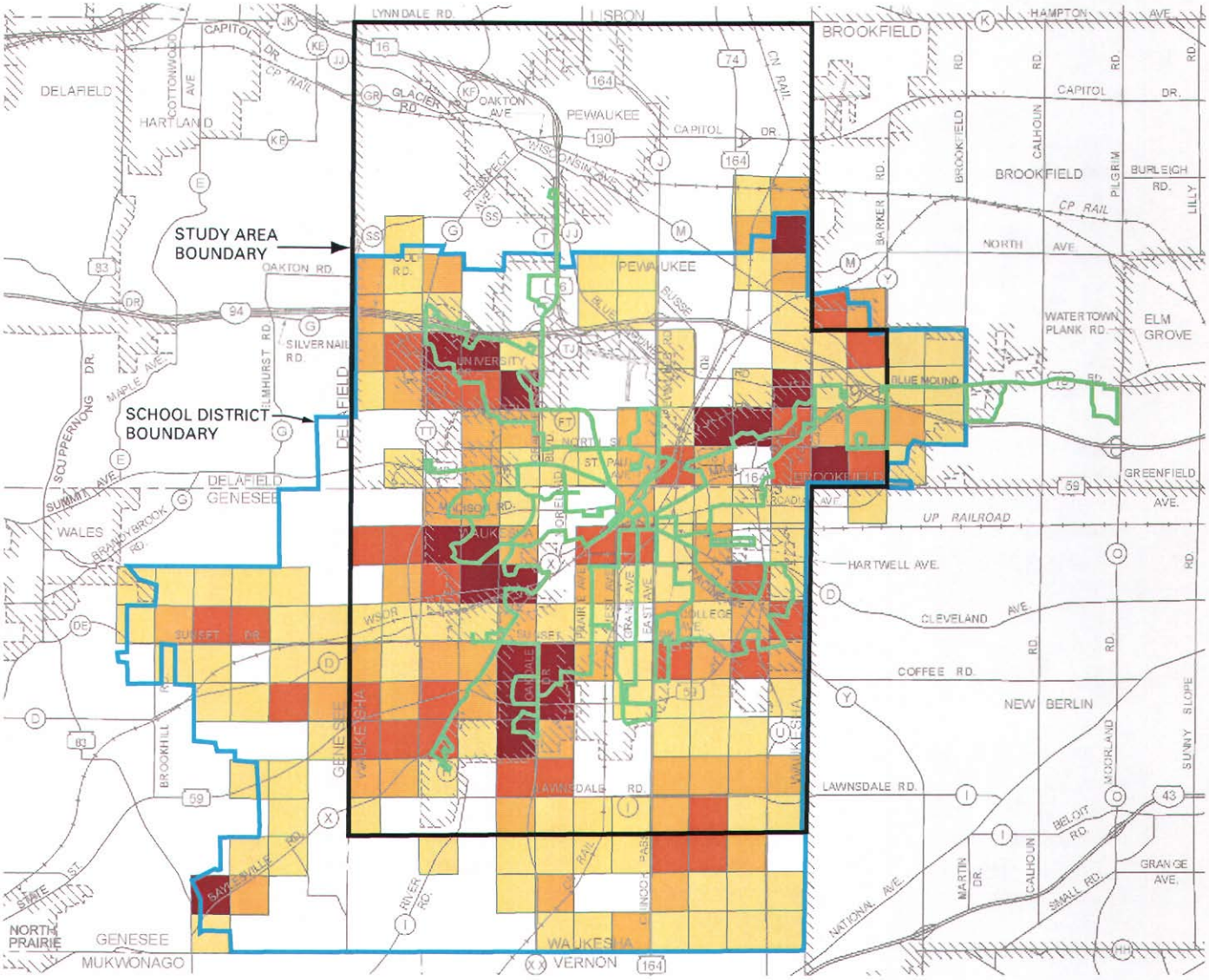
- NONE
- 1 TO 9
- 10 TO 24
- 25 TO 49
- 50 OR MORE
- STREET WITH WAUKESHA METRO BUS ROUTE: 2007

*INCLUDES ALL REGULAR EDUCATION STUDENTS ELIGIBLE FOR SCHOOL BUS TRANSPORTATION.

Source: School District of Waukesha and SEWRPC.

Map 30

ESTIMATED DISTRIBUTION OF SCHOOL DISTRICT OF WAUKESHA MIDDLE AND HIGH SCHOOL REGULAR EDUCATION STUDENTS ELIGIBLE FOR SCHOOL BUS TRANSPORTATION: JANUARY 2000



STUDENTS ELIGIBLE FOR YELLOW SCHOOL BUS TRANSPORTATION* PER U.S. PUBLIC LAND SURVEY ONE-QUARTER SECTION

- NONE
- 1 TO 9
- 10 TO 24
- 25 TO 49
- 50 OR MORE
- STREET WITH WAUKESHA METRO BUS ROUTE: 2007

*INCLUDES REGULAR EDUCATION STUDENTS ELIGIBLE FOR SCHOOL BUS TRANSPORTATION ATTENDING THE FOLLOWING HIGH AND MIDDLE SCHOOLS: NORTH HIGH SCHOOL, SOUTH HIGH SCHOOL, WEST HIGH SCHOOL, CATHOLIC MEMORIAL HIGH SCHOOL, BUTLER MIDDLE SCHOOL, CENTRAL MIDDLE SCHOOL, AND HORNING MIDDLE SCHOOL.

Source: School District of Waukesha and SEWRPC.

$2.24 million for the school bus service for regular education students (see Table 69). Several characteristics of the design, operation and costing of existing school bus service that are important to understanding how the potential cost reductions were estimated are explained below:

- The District's existing base school bus service is designed and operated with a desired maximum passenger load factor of 1.0 passenger per seat, meaning a seat would be available for each student who could potentially be a regular rider each school day. The District and contract operator assume that all eligible elementary and middle school students will be regular users and a seat is provided each school day for each such student assigned to a bus route. As not all eligible high school students are assumed to be regular school bus riders, the normal daily service provides seats for only about 60 percent of the eligible high school students. Under these assumptions, about 1,331, or 71 percent, of the 1,865 eligible in-city high and middle school students would be considered as regular riders of the school bus service.

- The school bus service is operated as a two-tiered service with each school bus typically operating two trips in the morning and two trips in the afternoon—the first trip serving high and middle school students and the second trip serving elementary school students. The later starting and dismissal times for elementary schools essentially reflects the time needed for school bus vehicles to be cycled through the routes serving high and middle school students. Additional bus trips are scheduled as needed for shuttling students between schools, for midday and early release, and for extracurricular activities.

- The current contract between the school bus operator and the Waukesha School District specifies charges for the base daily service as a cost per bus with a higher cost of about $147 per bus per school day for the first trip made each morning and afternoon by each vehicle (first tier trips). A lower cost ranging from about $14 to $20 per bus is charged for each additional trip made during the school day by each vehicle (second tier trips). The charge for the first bus trip includes all fixed and variable costs for service operation while the charge for each additional bus trip includes only variable operating costs. Under this billing system, keeping the first and second tier bus trips closely balanced minimizes the peak number of school buses used and minimizes contract costs.

- In December 1999-January 2000, there were a total of 121 bus routes, 57 morning bus routes and 64 afternoon bus routes, serving students at the seven identified high and middle schools in the District. A detailed examination of the 57 morning bus routes found that 33 of the 57 routes had 80 percent or more in-city students as eligible users assigned to the routes.

Based on the characteristics of the District's school bus service in December 1999-January 2000, including the approximate location and number of in-city high and middle school students assigned to each route, Commission staff estimated that 51 school bus trips could be eliminated each school day if students residing in the City and attending the seven schools examined were served by City bus service. Commission staff considered two options for eliminating these school bus trips which affect the potential cost reductions under the current contract terms for the 2002-2003 school year as noted below:

- Option 1: The District would reduce the number of first tier bus trips serving high and middle schools and make no changes to the second tier bus trips serving elementary schools. All of the bus trips eliminated would be those charged at the lower contract rate for additional trips and the two tiers of school bus trips would no longer be close to equal. The potential reduction in annual school bus service costs for the District under this option was estimated at about $220,000.

- Option 2: Commission staff also estimated the potential cost reduction if the District would both reduce school bus trips and rebalance the number of first and second tier school bus trips to be close to equal. Some of the bus trips eliminated would then be those charged at the higher contract rate for base trips. The potential reduction in annual school bus service costs for the District under this option was estimated at about $510,000. This rebalancing of school bus trips would, however, require earlier start and dismissal times for some elementary schools so they would be similar to those for the high and middle schools served by first tier school bus trips. This option may be impractical for the School District to implement and, therefore, may be infeasible. However, it was identified as a possible option because the Commission staff believed it could be raised as an option by the Advisory Panel which would be

interested in its cost implications for school bus service.

Offsetting the potential reductions in school bus costs under both options would be payments made by the District to the City transit system to cover the fares of student riders. A special Waukesha School District student bus pass would be issued to all eligible in-city high and middle school students with the pass honored by the transit system for trips made on the City bus system at any time, school days and nonschool days, during the school year. For this analysis, it was assumed that the District would reimburse the transit system at a fare of $0.65[2] for each one-way school trip made with the pass, that is, trips made on school days during school hours over the school year from September through mid-June. The actual rate would be determined through negotiations between the City and the School District, with the rate subject to change as Waukesha Metro bus fares are changed in the future. While the pass could also be used for nonschool trips, the School District would not be responsible for paying fares for such trips.

Based on the experience of the other public transit systems in the Region which operate peak-hour school day routes for the local school district, about 331,000 additional annual student school revenue passenger trips would be expected to be made on the transit system. At the 2003 Waukesha Metro student pass fare rate, this ridership would generate about $215,200 in fare payments annually by the District. The annual net costs to the District for student transportation for regular education students would then range from a decrease of about $4,800 under Option 1 to a decrease of about $294,800 under Option 2.

Estimated Increases in Waukesha Metro Transit System Bus Service and Costs

Commission staff also identified the modifications to the recommended 2007 transit system described in the preceding section which would be needed to replace the school bus service for in-city high and middle school students. It was estimated that about 1,765, or about 95 percent, of the 1,865 in-city high and middle school students eligible for school bus service would reside

[2]*The rate of $0.65 per one-way trip is based on the 2003 cost for a Waukesha Metro Transit student pass of $23 a month, an average of 17.7 school days per month (177 school days over 10 months) over the school year, and students using the pass to make two trips each school day. The rate would be subject to change with future fare increases on the Waukesha Metro Transit System.*

Table 69

CHARACTERISTICS OF THE YELLOW SCHOOL BUS SERVICE PROVIDED BY THE SCHOOL DISTRICT OF WAUKESHA FOR REGULAR EDUCATION STUDENTS: 2002-2003 SCHOOL YEAR

Characteristic	Value
Annual School District Budget for School Bus Transportation for Regular Education Students	$2,242,000
Estimated Eligible Students	6,800
Estimated Student Riders per School Day	
Per Service Design Standards[a]	5,700
Per Actual Use	Not Available
Annual Cost per Student	
Per Eligible Student	$329
Per Rider Based on Service Design Standards	393
Total Annual School Days	177
Estimated Cost per School Day	
Per Eligible Student	$1.86
Per Rider Based on Service Design Standards	2.22
Estimated One-Way Student Trips per School Day	
Based on Service Design Standards per Eligible Student	11,400[b]
Per Actual Use	Not Available
Estimated Cost per One-Way Student Trip	
Per Rider Based on Service Design Standards per Eligible Student	$1.11
Per Actual Use	Not Available

[a]*For the design and operation of school bus routes, the School District and contract operator assume that all eligible elementary and middle school students will be regular users and a seat for each student assigned to a bus route is provided each school day. Not all eligible high school students are assumed to be regular school bus riders and the normal daily service provides seats for only about 60 percent of the eligible high school students. When conditions warrant, the contract bus operator will supplement high school routes with additional vehicles to provide additional seats.*

[b]*Assumes each student rider makes two trips per school day.*

Source: Wisconsin, Department of Public Instruction, School District of Waukesha, and SEWRPC.

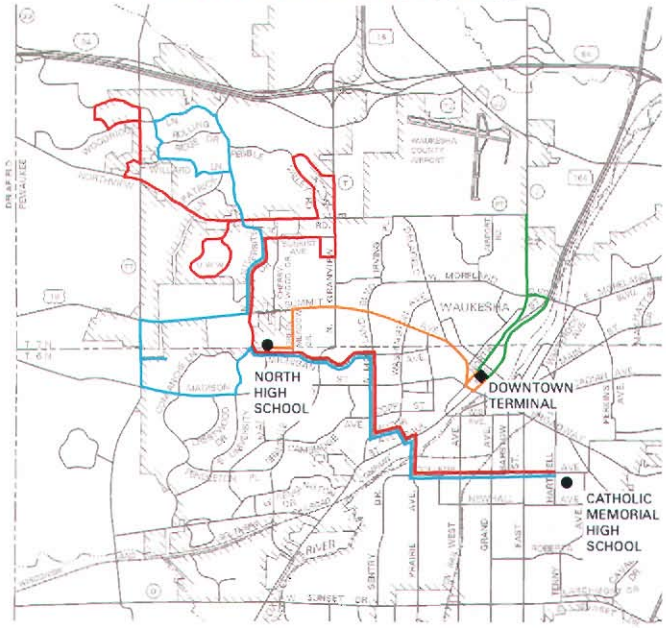
within the service area for the recommended 2007 transit system. Some expansion of the recommended transit system would, therefore, be necessary to serve all potential in-city students. Specific bus routes that are proposed to replace the existing school bus service are shown on Map 31. Some students, including those attending Catholic Memorial High School and Waukesha North and West High Schools, would also be expected to use the regular routes of the transit system (see Map 27) including Route Nos. 3, 6, 8, and 9. While designed to serve in-city students residing two or more miles from school and eligible for school transportation service from the School District, the school day routes would be open for use by any other students residing along the route including those residing between one and two miles from school who comprise most of the existing student riders on the transit system. The specific elements of the replacement City bus service would be as follows:

- To provide the replacement bus service for in-city students at the six public high and middle schools identified, the Waukesha Metro Transit System would use regular-route service provided by Route Nos. 6, 8, and 9, modify existing special school

Map 31

WAUKESHA METRO BUS ROUTES PROPOSED TO REPLACE SCHOOL BUS ROUTES FOR HIGH SCHOOL AND MIDDLE SCHOOL STUDENTS RESIDING IN THE CITY OF WAUKESHA

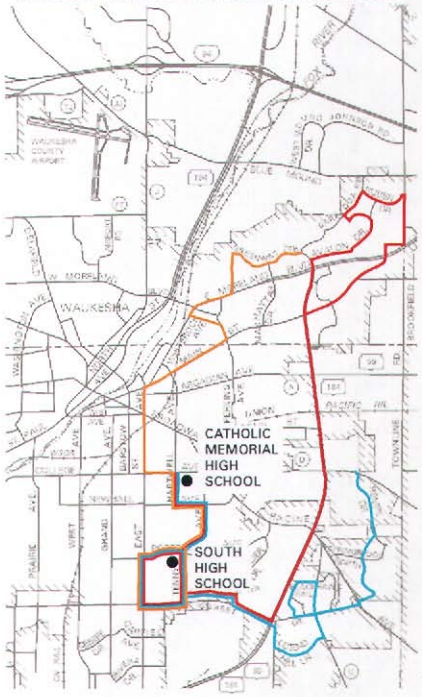
NORTH HIGH SCHOOL AND CATHOLIC MEMORIAL HIGH SCHOOL



ROUTE NO. 8*
ROUTE NO. 9*
NORTH-CMH 9/16 S1
NORTH-CMH 7/8/16 S1

*ONLY THE PORTION OF THE ROUTE SERVING THE NORTH HIGH STUDENTS ELIGIBLE FOR SCHOOL BUS SERVICE IS SHOWN.

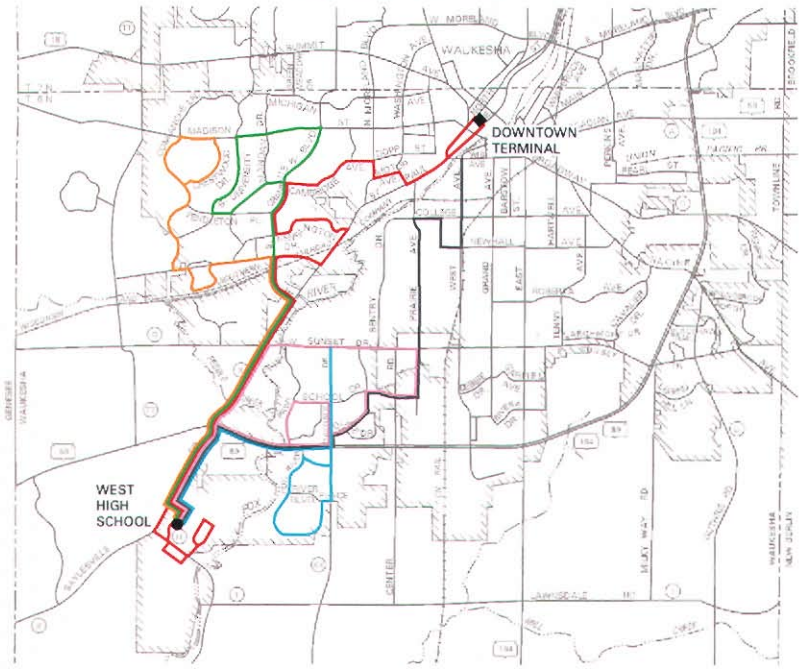
SOUTH HIGH SCHOOL AND CATHOLIC MEMORIAL HIGH SCHOOL



SOUTH-CMH 1/15 S1
SOUTH-CMH 1/3 S1
SOUTH-CMH 3/15 S1*

*ROUTE WOULD BE BASED ON EXISTING SCHOOL DAY SERVICE

WEST HIGH SCHOOL

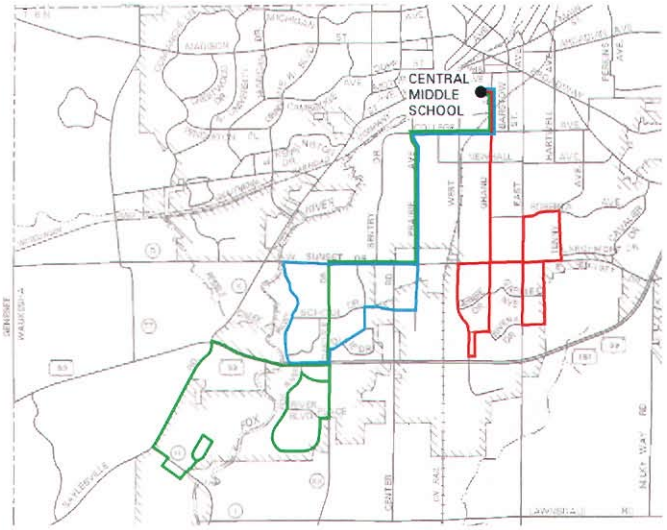


ROUTE NO. 6
WEST 5/6 S1
WEST 5/6 S2
WEST 5/6 S3
WEST 6/7 S1
WEST 6/7 S2

GRAPHIC SCALE
0 ½ 1 MILE
0 4000 8000 FEET

Map 31 (continued)

CENTRAL MIDDLE SCHOOL



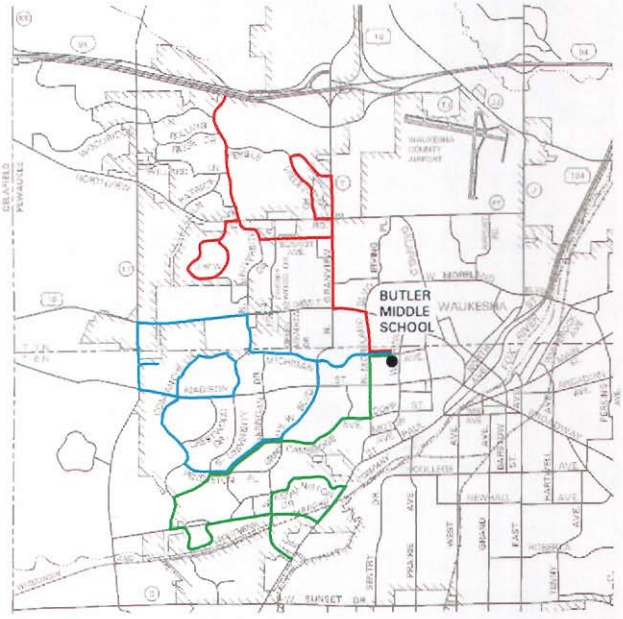
CENTRAL 5 S1

CENTRAL 5/6 S1

CENTRAL 3/4 S1*

*ROUTE WOULD BE BASED ON EXISTING SCHOOL DAY SERVICE

BUTLER MIDDLE SCHOOL



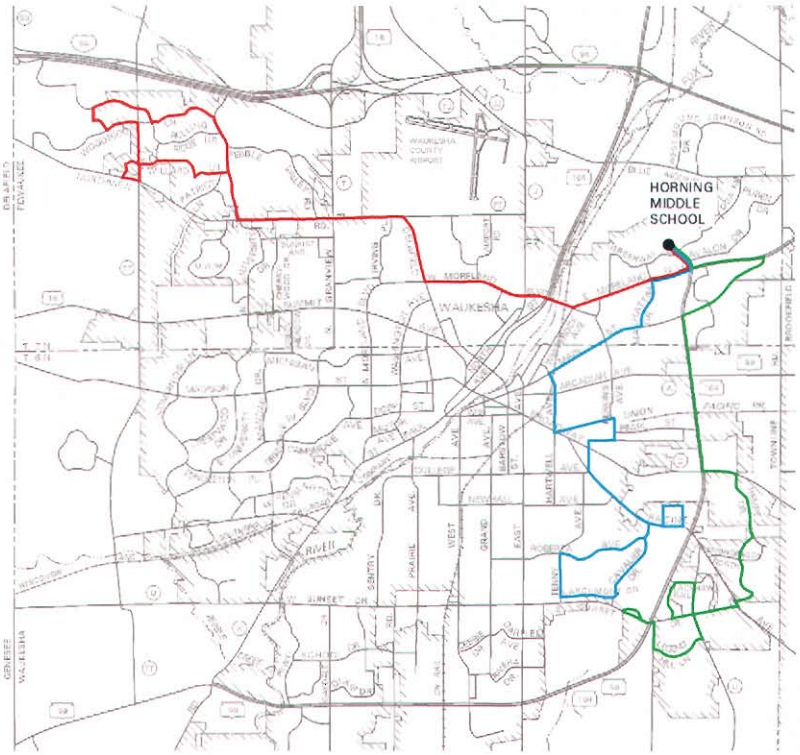
BUTLER 9/16 S1

BUTLER 7/8 S1*

BUTLER 6/7 S1

*ROUTE WOULD BE BASED ON EXISTING SCHOOL DAY SERVICE

HORNING MIDDLE SCHOOL



HORNING 2/3/15 S1

HORNING 15 S1

HORNING 16 S1

GRAPHIC SCALE

0 ¼ 1 MILE

0 4000 8000 FEET

Source: SEWRPC.

day routes to serve larger areas, and add new special school day routes designed primarily to serve the in-city students eligible for school bus service. The proposed Waukesha Metro bus service would include: existing bus service provided over three regular routes, Route Nos. 6, 8, and 9, that would serve North and West High Schools; modified school day service provided over three current school day routes that would serve South High, Butler Middle, and Central Middle Schools; and new school day service provided over 16 new school day routes serving the six public schools. The modified existing and the new school day routes would be comprised largely of segments of the existing and proposed Waukesha Metro bus routes and would be designed to operate like the existing school bus routes, that is, routed through neighborhoods to directly serve as many eligible students as possible and then operate directly to the school served. The existing and new school day routes would extend service to in-city students residing outside the existing and proposed 2007 transit system service areas and in doing so would operate over some streets not on regular route alignments. The school day routes would provide direct service to and from schools without passing through the downtown area or stopping at the transfer terminal.

- Replacement bus service for the in-city students attending Catholic Memorial High School would be provided through a combination of the special school day routes shown on Map 31 and the regular routes of the transit system, including Route No. 3 which directly serves the high school. The eligible students attending Catholic Memorial High School represent a much smaller market—95 of the 1,865 total in-City students, or about 5 percent of all eligible in-city students—than the students attending the public schools and are dispersed throughout the City of Waukesha rather than being concentrated in distinct attendance areas like the public school students. Operation of individual peak-hour school day routes serving only Catholic Memorial High School students would result in either uneconomical service due to the number of routes needed to provide the most direct service for the small number of students served or service with long travel times if students were aggregated and served by fewer and less direct routes. As a more economical way to serve these in-city students, two of the special school day routes for North High School and all three of the school day routes for South High School would be extended to also serve Catholic Memorial High School students. About 40 percent of the eligible in-city Catholic Memorial High School students, including those residing on the northwest, northeast, and southeast sides of the City of Waukesha, would be served by extending the proposed school day routes for North and South High Schools. The remaining 60 percent of the eligible in-city Catholic Memorial High School students residing on the west side, southwest side, and central portion of the City would need to use the regular routes of the transit system serving the area where they live and transfer to and from Route No. 3 at the downtown terminal.

- Student fares would be paid through a special Waukesha School District student pass issued to all eligible in-city high and middle school students and honored by the transit system for trips made on the City bus system at any time, school days and nonschool days, during the school year from September through mid-June. For this analysis, it was assumed that the District would reimburse the transit system at a fare of $0.65 for each one-way school trip made with the pass during school hours over the school year from September through mid-June. The actual rate would be determined though negotiations between the City and the School District, with the rate subject to change as Waukesha Metro bus fares are changed in the future.

- Based on the experience of the other transit systems which operate peak-hour school day routes for the local school district, it is estimated that about 935 students, or about 50 percent of the total 1,865 eligible in-city high and middle school students, would be regular riders of the additional Waukesha Metro school day bus service. This would result in about 1,870 additional revenue passengers each school day and about 331,000 additional annual revenue passengers for the transit system. This ridership level would generate about $215,200 in additional passenger revenue annually with the special School District pass.

- The special School District student pass would also be expected to generate some additional ridership on the Waukesha Metro Transit System above that generated by students on schooldays in traveling to and from classes. The proposed special student pass could be used by students at anytime during the school year when the bus system was in operation much like the UPASS

issued to college-level students by the Milwaukee County Transit System. It is estimated that the special School District student pass would generate about 25,000 additional revenue passenger trips annually made by eligible middle and high school students using the City bus system on weekday nonschool days, weekday evenings, and weekends. The School District would not be responsible for paying fares for these nonschool trips.

Commission staff considered two potential service levels for providing the expanded Waukesha Metro bus services for the 1,865 in-city students currently eligible for school bus service:

- Service Level A: This service level assumes that sufficient service would be operated for each school to ensure that maximum passenger loads on the additional school day bus service for in-city high and middle school students would not exceed a peak passenger loading factor of 1.25 passengers per seat as specified under the adopted transit service objectives and standards presented in Chapter IV of this report. This service level would mean that some students would need to stand along the segments of the route where the highest number of students would be carried, and is representative of actual practice by other public transit systems in the Region in providing similar school day bus services for students in other school districts. It was estimated that 16 additional Waukesha Metro bus trips would be needed in the morning and in the afternoon, 32 additional bus trips each school day, to serve the in-city students currently eligible for school bus service. It was assumed that the transit system would need to undertake several capital projects to provide this service including: purchase and install bus stop signs as needed along the additional school day routes; acquire a fleet of 18 new or used 40-foot-long buses;[3] and expand the existing transit system operations and maintenance facility to provide indoor storage for a total fleet of 51 buses (see Table 70).

  Under Service Level A, the total annual operating and capital costs, in 2003 dollars, for the replacement Waukesha Metro school day bus service expected to be about $880,800 with the purchase of new buses and about $583,800 with the purchase of used buses. Annual passenger revenues would amount to about $215,200. Federal and State transit assistance funds would be expected to be about $617,600 if new buses are acquired and about $380,000 if used buses are acquired. The annual net change in costs to the City for the transit system with Service Level A would then be an increase of about $48,000 with new vehicles and a decrease of about $11,400 with used vehicles.

- Service Level B: This service level assumes that maximum passenger loads on the additional school day bus routes needed to serve in-city students would not exceed the desirable peak load factor of 1.0 passenger per seat used by the School District and contract transit operator in the design and operation of the existing school bus service. A seat would be provided for each student that could be expected to ride each school day. It was estimated that 48 additional Waukesha Metro bus trips each school day would be needed under this service level to serve the in-city students currently eligible for school bus service. It was assumed that the transit system would need to undertake several capital projects to provide this service including: purchase and install bus stop signs as needed along the additional school day routes as needed; acquire a fleet of 27 new or used 40-foot-long buses; and expand the existing transit system operation and maintenance facility to provide additional indoor storage for a total fleet of 60 buses (see Table 71).

  Under Service Level B, the total annual operating and capital costs, in 2003 dollars, for the replacement Waukesha Metro school day bus service would be expected to be about $1,390,200 with the purchase of new buses and about $944,700 with the purchase of used buses. Annual passenger revenues would amount to about $215,200. Federal and State transit assistance funds would be expected to be about $969,200 if new buses are acquired and about $612,800 if used buses are acquired. The annual net change in costs to the City for the transit system with

[3] *The 40-foot long buses would have a higher passenger capacity than the 35-foot long buses recently purchased by the transit system and would reduce the total number of buses needed to serve the additional students. The 40-foot long buses would have a seated capacity of approximately 40 passengers and a maximum capacity of 50 passengers at the recommended loading standard, compared with a seated capacity of 31 passengers and a maximum capacity of 39 passengers for the 35-foot long buses most recently acquired by the transit system.*

Table 70

CAPITAL EQUIPMENT AND PLANNING PROJECT EXPENDITURES REQUIRED FOR THE WAUKESHA METRO TRANSIT SYSTEM FOR EXPANDED STUDENT TRANSPORTATION SERVICES ASSUMING SERVICE LEVEL A[a]: 2005-2007

With Purchase of New Buses						
Year	Quantity	Equipment or Project Description	Unit Cost[b]	Total Cost[b]	Average Annual Cost over Planning Period	Average Annual Cost over Useful Life of Equipment
2004	18	New 40-foot long urban buses	$270,000	$4,860,000	$972,000	$405,000
	--	Expansion of transit system operating and maintenance garage to accommodate expanded bus fleet (about 8,400 square feet)	120	1,008,000	201,600	40,300
	65	Bus stop signs	75	4,900	1,000	500
Total Capital Project Costs			--	$5,872,900	$1,174,600	$445,800
Federal Share of Costs			--	$4,698,300	$ 939,700	$356,600
Local Share of Costs			--	$1,174,600	$ 234,900	$ 89,200

With Purchase of Used Buses						
Year	Quantity	Equipment or Project Description	Unit Cost[b]	Total Cost[b]	Average Annual Cost over Planning Period	Average Annual Cost over Useful Life of Equipment
2004	18	Used 40-foot long urban buses	$30,000	$ 540,000	$108,000	$108,000
	--	Expansion of transit system operating and maintenance garage to accommodate expanded bus fleet (about 8,400 square feet)	120	1,008,000	201,600	40,300
	65	Bus stop signs	75	4,900	1,000	500
Total Capital Project Costs			--	$1,552,900	$310,600	$148,800
Federal Share of Costs			--	$1,242,300	$248,500	$119,000
Local Share of Costs			--	$ 310,600	$ 62,100	$ 29,800

[a]Service Level A assumes that service would be provided with assumptions based on the actual experience of other public transit systems in providing similar student transportation service for school districts. Service would be designed and operated with a maximum load factor of 1.25 which would allow some students to stand on each bus over the portion of each route with the highest passenger loads.

[b]Costs are expressed 2003 dollars.

Source: SEWRPC.

Service Level B would then be an increase of about $205,800 with new vehicles and an increase of about $116,700 with used vehicles.

Other Considerations

Other information was also considered in reviewing the above student transportation options within the City of Waukesha including: the safety of school bus service; the equivalency of the replacement Waukesha Metro bus service to the existing school bus service; the potential for improving the effectiveness and efficiency of the Waukesha Metro Transit System through operation of the replacement school day bus service; and the ability of existing Federal and State transit programs to fund the operating and capital costs of the replacement Waukesha Metro bus service. The principal issues associated with each topic may be summarized as follows:

1. Safety

   Representatives of the School District of Waukesha and Dairyland Buses, Inc. identified what they considered as safety benefits associated with school bus service over municipal bus service for transporting students. These included the following:

   - School bus vehicles are designed explicitly for transporting children and have safety features directed toward protecting children that are designed into their construction which urban transit buses do not have. These include

Table 71

CAPITAL EQUIPMENT AND PLANNING PROJECT EXPENDITURES REQUIRED FOR THE WAUKESHA METRO TRANSIT SYSTEM FOR EXPANDED STUDENT TRANSPORTATION SERVICES ASSUMING SERVICE LEVEL B[a]: 2005-2007

With Purchase of New Buses						
Year	Quantity	Equipment or Project Description	Unit Cost[b]	Total Cost[b]	Average Annual Cost over Planning Period	Average Annual Cost Over Useful Life of Equipment
2004	27	New 40-foot long urban buses	$270,000	$7,290,000	$1,458,000	$607,500
	--	Expansion of transit system operating and maintenance garage to accommodate expanded bus fleet (about 14,000 square feet)	120	1,680,000	336,000	67,200
	65	Bus stop signs	75	4,900	1,000	500
Total Capital Project Costs			--	$8,974,900	$1,795,000	$675,200
Federal Share of Costs			--	$7,179,900	$1,436,000	$540,200
Local Share of Costs			--	$1,795,000	$ 359,000	$135,000

With Purchase of Used Buses						
Year	Quantity	Equipment or Project Description	Unit Cost[b]	Total Cost[b]	Average Annual Cost over Planning Period	Average Annual Cost Over Useful Life of Equipment
2004	27	Used 40-foot long urban buses	$ 30,000	$ 810,000	$ 162,000	$162,000
	--	Expansion of transit system operating and maintenance garage to accommodate expanded bus fleet (about 14,000 square feet)	120	1,680,000	336,000	67,200
	65	Bus stop signs	75	4,900	1,000	500
Total Capital Project Costs			--	$2,494,900	$ 499,000	$229,700
Federal Share of Costs			--	$1,995,900	$ 399,200	$183,800
Local Share of Costs			--	$ 499,000	$ 99,800	$ 45,900

[a]Service Level B assumes that service would be provided with assumptions comparable to those used in the design and operation of the existing school bus service. Service would be designed and operated with a desirable load factor of 1.0 which would provide a seat for each student that could be expected to ride a bus route each school day.

[b]Costs are expressed 2003 dollars.

Source: SEWRPC.

bright yellow paint and a flashing strobe light which are highly visible and draw attention to the vehicle; side-mounted stop signs which can swing out to alert automobile traffic to the presence of children and require autos to stop; barrier arms which swing out to restrict the path of children across the front of the vehicle; and seat belts on some vehicles.

- School bus service may provide more protection for children in families involved in marital or child custody disputes. Access to school buses by estranged family members can be blocked by the District and contract operator as situations arise. This may be more difficult to achieve with special school day bus routes operated by municipal bus systems as they must keep such routes open to use by the general public to meet Federal regulations.

City transit system staff noted that the City transit system should be considered as safe as school bus service. Safety programs and features identified by transit system staff included:

- Safety audits are regularly conducted by the management firm for the bus system. Reviews of safety issues are also conducted as part of the triennial reviews conducted by the Federal Transit Administration every three years and

the management performance audits conducted every five years by the Wisconsin Department of Transportation. The safety record of the Waukesha Metro Transit System has earned the system the top safety award from the Transit Mutual Insurance Corporation of Wisconsin numerous times.

- All of the bus models in the Waukesha Metro bus fleet have passed a rigorous battery of tests at the Federal Transit Administration's Altoona Bus Research and Testing Center. The tests are required for all new model buses prior to purchase with Federal funds and include tests for safety, structural integrity, and durability among others.

- Like the yellow school buses currently used by the School District, all buses in the City bus fleet are radio equipped. Drivers are able to contact the dispatcher to request police intervention if there is an incident involving passengers on a City bus such as unwanted actions by estranged family members toward student passengers.

2. Equivalent Service

A second consideration was the extent to which the replacement City bus service would be viewed as equivalent to the existing school bus service by the students to be served, as well as their parents, and by School District officials. Service characteristics where equivalency may be considered important include bus route and stop locations, directness of service measured by travel times, bus arrival and departure times at schools, and flexibility in operating the service. A comparison of the service characteristics of the proposed replacement City bus service with the existing school bus service indicated the following:

- The replacement Waukesha Metro Transit System bus service would provide for equivalent stop locations near the homes of students for the vast majority of in-city students eligible for the existing school bus service. About 90 percent of the stop locations for the proposed Waukesha Metro school day bus routes shown on Map 31, and the regular transit system bus routes expected to be used by students as shown on Map 30, would either be at, or within two blocks of, the stop locations serving in-city students on the existing school bus routes. Some differences would occur as the alignments of the City bus routes would not always follow the alignments of the existing school bus routes but, rather, would follow existing City route alignments whenever possible to make use of existing City bus stops and reduce the need for new bus stops. Stop locations at the schools served would be at the same location, or within one block of the stops used by school bus service at all the identified schools except North High School. At North High School, school buses discharge and load students in the north side parking lot at the back of the school. The stop for City bus service is located in front of the school on Michigan Street across the main parking lot.

- Travel times on the replacement Waukesha Metro bus service would be comparable—within five minutes—to travel times on existing school bus routes for the vast majority of public high and middle schools students using the special school day routes. This would be expected with the operation of the school day routes like the existing school bus routes to provide direct service between residential areas and schools. However, travel times on the replacement City bus service for most Catholic Memorial High School students would be expected to be five to 10 minutes longer than with use of the existing school bus service. The replacement City bus service would be less direct than school bus service for most students as Catholic Memorial High School would be the second school served on the extended City school day bus routes serving North and South High Schools, and students using the regular Waukesha Metro bus routes would need to transfer at the downtown transfer terminal.

- The analysis assumes that all existing and proposed special school day routes operated by the Waukesha Metro Transit System would be scheduled to provide for morning arrival times at, and afternoon departure times from, the identified high and middle schools that would be within five minutes of the times provided with the existing school bus service. Like school bus service, the service schedules for the Waukesha Metro special school day routes would be controlled by school starting and dismissal times. However, the scheduled times for bus service over the regular routes would be controlled largely by the "pulse" times established for the transit system at the

downtown transfer terminal rather than school start and dismissal times. As a result, scheduled arrival and departure times for regular route bus service would be more than five minutes earlier or later than those for the existing school bus service in some cases. Examples would include service provided to South High School over Route No. 3 in the morning which would be expected to have an arrival time of 7:14 a.m. compared with 7:05 a.m. for school bus service; service provided to West High School over Route No. 6 in the morning which would be expected to have an arrival time of 6:55 a.m. compared with 7:05 to 7:06 a.m. for school bus service; and service provided to West High School over Route No. 6 in the afternoon which would be expected to have a departure time of 3:04 p.m. compared with 2:51 to 2:52 p.m. for school bus service. [4]

- The school bus service provided by the School District can be readily adjusted to meet changes in regular class start and dismissal times as the need arises. Examples of situations where school bus schedules have been adjusted include on days with early class dismissal times as required by the school calendar, or on days when class start times are delayed or classes are dismissed early in response to poor weather conditions. The replacement transit service provided by the Waukesha Metro Transit System would be open to the general public and would need to be provided in accordance with published timetables. The transit system would need to note in the timetable any variations from normal service times for schooldays with early dismissal and how service may be adjusted in response to poor weather conditions.

[4] *The times shown for school bus service are based on school bus schedules for December 1999 and January 2000. The morning times shown for Waukesha Metro regular route bus service are estimates and are five minutes later than times with existing bus schedules and reflect proposed changes to downtown departure times for all Waukesha Metro bus routes in the morning peak period as discussed previously under the proposed routing and service changes for the transit system.*

3. Potential Impacts on Transit System Performance
A third consideration was the potential impact that the additional trips made by in-city student high and middle school students would be expected to have on Waukesha Metro Transit System performance levels and local funding requirements. As shown in Table 72, the additional student ridership would be expected to improve the operating performance of the recommended 2007 transit system. The cost information this table has been presented in year of expenditure dollars for comparison with the forecast information for the recommended transit system presented in Table 64. Expected benefits to the transit system would include:

- Higher overall ridership levels on the Waukesha Metro Transit System. The special School District student pass would be expected to generate about 356,000 additional revenue passenger trips annually including about 331,000 school revenue passenger trips made by eligible middle and high school students traveling to and from school, and about 25,000 nonschool revenue passenger trips made by students on weekday nonschool days, weekday evenings, and weekends. The total additional annual system ridership of about 356,000 revenue passengers would represent an increase of about 55 percent over the actual 2002 ridership and the forecast 2007 ridership.

- Increases in the systemwide farebox recovery rate. With the additional passenger revenue, the farebox recovery rate would increase from about 17 percent in 2002 to about 21 percent with Service Level A and about 20 percent with Service Level B.

- Potentially lower, or only modest increases in, City funding levels for the recommended 2007 transit system. Assuming current Federal and State transit assistance levels continue to be available at the 2003 level to fund 60 percent of the operating costs and 80 percent of capital costs for the additional student service, a portion of the additional passenger fares under Service Level A could also be applied toward reducing the level of City property taxes needed to fund the recommended transit system. Under Service Level B, the additional service for students would increase the local operating assistance requirement by about 7 percent.

Table 72

OPERATING EXPENSES, REVENUES, AND ASSISTANCE FOR THE WAUKESHA METRO TRANSIT SYSTEM WITH ADDITIONAL SERVICE TO REPLACE SCHOOL BUS SERVICE FOR IN-CITY HIGH AND MIDDLE SCHOOL STUDENTS

Characteristic	2002 Actual	Forecast 2007				
		Under Recommended System[a]	Under Recommended System With Additional Service for In-City Students			
			Assuming Service Level A[b]		Assuming Service Level B[c]	
			Incremental Change	Total System	Incremental Change	Total System
Service						
Total Vehicle Hours	77,300	79,000	8,700	87,700	14,300	93,300
Ridership						
Revenue Passengers	646,500	649,400	356,000	1,005,400	356,000	1,005,400
Passengers per Vehicle Hour	8.4	8.2	40.9	11.5	24.9	10.8
Operating Costs and Revenues[d]						
Operating Expenses	$3,350,700	$4,109,000	$489,600	$4,598,600	$804,700	$4,913,700
Passenger and Other Revenues	580,700	712,000	258,200	970,200	258,200	970,200
Required Public Assistance	2,770,000	3,397,000	231,400	3,628,400	546,500	3,943,500
Farebox Recovery (percent)	17.3	17.3	52.7	21.1	32.1	19.7
Sources of Public Assistance						
Federal Transit Assistance Programs	$511,200	$526,600	$58,800	$ 585,400	$ 96,600	$ 623,200
State Transit Assistance Programs	1,583,700	1,930,900	235,000	2,165,900	386,300	2,317,200
Local Assistance						
City of Waukesha	617,600	872,900	-62,400	810,500	63,000	936,500
Other	57,500	66,600		66,600	--	66,600
Subtotal	$ 675,100	$ 939,500	$ -62,400	$ 877,100	$ 63,000	$1,003,100
Total	$2,770,000	$3,397,000	$231,400	$3,628,400	$546,500	$3,943,500
Per Passenger Trip Data						
Operating Cost	$5.18	$6.33	-$1.76	$4.57	-$1.44	$4.89
Revenue	0.90	1.10	-0.14	0.96	-0.13	0.97
Total Assistance	4.28	5.23	-1.62	3.61	-1.31	3.92
Local Assistance	1.04	1.45	-0.57	0.87	-0.45	1.00

[a]The basic assumptions made in preparing the forecasts of annual ridership, revenues, and costs for the recommended transit system are presented in the footnote to Table 64.

[b]Service level A assumes that service would be with assumptions based on the actual experience of other public transit systems in providing similar student transportation service for school districts. Service would be designed and operated with a maximum load factor of 1.25 which would allow some students to stand on each bus over the portion of each route with the highest passenger loads.

[c]Service level B assumes that service would be provided with assumptions comparable to those used in the design and operation of the existing school bus service. Service would be designed and operated with a desirable load factor of 1.0 which would provide a seat for each student that could be expected to ride a bus route each school day.

[d]Costs, revenues, and assistance figures are expressed in actual dollars for 2002 and estimated year of expenditure dollars for 2007.

Source: Waukesha Metro Transit System and SEWRPC.

- Improved performance on a per trip basis. The additional ridership and passenger revenues would significantly reduce the systemwide average total operating cost, total operating assistance, and local operating assistance per passenger under both service level options.

4. A fourth consideration was the levels of Federal and State transit assistance that would potentially be required to fund the replacement Waukesha Metro bus service for in-city students. The total costs of the capital projects for the replacement City bus service were estimated at about $5.9-9.0 million with the purchase of new buses and about $1.6-2.5 million with the purchase of used buses (2003 dollars). The 80 percent Federal share for these capital projects would be estimated at about $4.7-7.2 million with the purchase of new buses and about $1.2-2.0 million with the purchase of used buses (see Tables 70 and 71). For 2003, the City of Waukesha received an allocation of approximately $895,100 in Federal Transit

Administration (FTA) Section 5307 Urbanized Area Formula Program capital assistance funds. This program alone would not be sufficient to immediately fund the total costs of the identified projects for the recommended plan and the additional student bus service. A second source of Federal transit capital assistance, the FTA Section 5309 Bus Capital Program, may also be insufficient to immediately fund all the identified projects. The Wisconsin Department of Transportation has regularly been awarded state-wide Section 5309 grants for transit capital projects, including bus purchases and bus facility improvement and expansion, for all the public transit systems in the State and has distributed these funds among the transit systems in the State based on need. The City will use approximately $5.8 million in such Section 5309 funds to complete the new downtown transit terminal as previously discussed. The amount of Section 5309 funds needed by the City to fund the capital projects associated with the additional student bus service will need to be obtained over several years to balance the City's needs with the needs of other transit systems statewide.

It is possible that the potential shortfall in Federal funding could be reduced if the City were to purchase used buses from another public transit operator selling federally funded surplus buses instead of new buses. If vehicles for sale have originally been purchased using transit Federal funding, the Federal Transit Administration has processed such sales by transferring the ownership and any remaining Federal interest in the vehicles to the new public operator. The sale would essentially be completed without the use of any new Federal funding. Local funds, if any, for the used vehicle would be negotiated between the two transit operators.

Under the current State transit operating assistance program, the City of Waukesha would potentially be eligible for between $238,200 and $391,500 in additional state transit operating assistance funds for the operating costs of the replacement bus service for in-city students. These additional funds represent increases of between 12 and 20 percent over the State transit operating assistance funds needed for the recommended 2007 transit system. The total annual appropriation of State transit operating assistance funds for the urban transit systems similar in size to the Waukesha Metro Transit System is distributed among such transit systems statewide so that each transit system has an equal proportion of its operating expenses covered by the combination of Federal and State transit operating funds. The total State funds available under the program are not expected to increase significantly over the planning period. As a result, funding the additional operating expenses of the expanded Waukesha Metro student bus services could reduce the proportion of operating expenses, currently at approximately 60 percent, covered by the combination of Federal and State funds under the State transit aid program for all participating transit systems. Consequently, the actual amount of additional State transit aid for the replacement student bus services could be less than that noted in the preceding analysis, and the costs to the City could be higher than previously identified.

Conclusions

Based on the information presented in the preceding analysis, the following conclusions may be drawn:

1. The replacement of the school bus service provided by the School District of Waukesha for in-city high and middle school regular education students with bus service provided by the Waukesha Metro Transit System would potentially affect about 1,865 students in the District. This number would represent about 29 percent of the 6,525 regular education students who were eligible for the District's school bus service for the 1999-2000 school year.

2. The Waukesha Metro Transit System would be able to provide replacement bus service to all residential areas in the City for the high and middle school regular education students currently provided with school bus service. The proposed replacement Waukesha Metro bus service would by and large be equivalent to the existing school bus service for high and middle school students living in the City with the following exceptions:

   - Some students would need to walk farther to use the proposed Waukesha Metro replacement bus routes as about 10 percent of the stop locations for the City bus routes would be located more than two blocks from the stop locations on the existing school bus routes.

   - For most Catholic Memorial High School students, the replacement City bus service would be less direct than school bus service resulting in travel times that would be five to 10 minutes longer than school bus travel times.

- School arrival and departure times on City bus service provided over regular routes would not be as convenient as those for the existing school bus service for South High School students using Route No. 3 in the morning and West High School students using Route No. 6 in the morning and afternoon.

3. On a total cost basis, serving in-city high and middle school regular education students with the existing school bus service is more efficient than serving the students with the Waukesha Metro bus service. The total additional annual cost to the City for the replacement Waukesha Metro bus service is estimated to range from about $583,800, assuming a service level allowing some standing passengers and the use of used transit buses, to about $1,390,200, assuming a service level providing for a seat for each regular student rider and the use of new transit buses. Both of these figures exceed the estimated reductions in annual contract school bus costs to the School District of between $220,000 and $510,000.

   The potential reductions in the District's contract school bus costs of between $220,000 and $510,000 annually are based on the existing contract rates. If the number of existing daily school bus trips and peak buses operated are reduced as proposed, the school bus operator, Dairyland Buses, Inc., has indicated it may need to adjust its current unit cost rates upward when the contract for the remaining school bus service in the District is renegotiated or rebid. The upward adjustment of unit costs would reflect that certain fixed costs, such as for the company's garage and maintenance facility along with administrative and overhead costs, would not be reduced, or reduced only slightly, with the reduction in school bus service for in-city students. Approximately the same costs would then be allocated over a smaller service base to determine new contract rates. The expected results would be higher contract rates for the District's school bus service if it continues to be provided by Dairyland Buses, Inc. The higher contract rates would mean a smaller reduction in school bus costs than that previously identified, or possibly no reduction in school bus costs.

   The District's contract with Dairyland Buses, Inc., extends though the 2004-2005 school year. If the School District decides to solicit bids for operation of the school bus services, it is possible that competitive bidding among several school bus operators for the service contract could result in lower costs for the School District.

4. A comparison of the relative "net" annual costs of the existing school bus service and the potential replacement Waukesha Metro bus service—that is, the total costs minus off-setting passenger revenues and Federal and State financial assistance—is shown in Table 73. This information indicates that:

   - If the District eliminates school bus service for in-city high and middle school students but makes no changes to current class start and dismissal times, as proposed under Option 1, its annual costs for student transportation would be expected to decrease by about $4,800 per year (a $220,000 annual reduction in school bus costs which would be partially offset by annual payment by the District of $215,200 in student fares to the City transit system). If the School District eliminates school bus service and adjusts the class start and dismissal times of some elementary schools to facilitate balancing first and second tier school bus trips, as proposed under Option 2, its annual costs for student transportation would be expected to decrease by about $294,800 annually (a $510,000 annual reduction in school bus costs which would be partially offset by annual payment by the District of $215,200 in student fares to the City transit system).

   - If the replacement Waukesha Metro student bus services are operated with new buses, an increase of about $48,000 annually in the City's costs for Waukesha Metro bus services would be expected under Service Level A, that is, with some standing passengers allowed (a $880,200 annual increase in transit system operating and capital costs which would be partially offset by the combination of $215,200 in student fares paid annually by the District and $617,600 in Federal and State transit aid payments to the City transit system); and an increase of about $205,800 annually in the City's transit system costs would be expected under Service Level B, that is, with no standing passengers allowed (a $1,390,200 annual increase in transit system operating and capital costs which would be partially offset by the combination of $215,200 in student fares paid annually by the District and $969,200 in Federal and

Table 73

ESTIMATED NET ANNUAL COSTS FOR REPLACING SCHOOL BUS SERVICE FOR IN-CITY HIGH AND MIDDLE SCHOOL STUDENTS WITH WAUKESHA METRO TRANSIT SYSTEM BUS SERVICE

Cost Element	Costs for Student Transportation Services (2003 dollars)							
	Reduction in School Bus Service under Option 1: Reduce Service without Changing Start and Dismissal Times of Elementary Schools or Balancing of School Bus Trips between Tiers				Reduction in School Bus Service under Option 2: Reduce Service and Adjust Start and Dismissal Times of Some Elementary Schools to Facilitate Balancing of School Bus Trips between Tiers			
	Replacement City Bus Service with Service Level A: Operate with Standing Passengers		Replacement City Bus Service with Service Level B: Operate with Seats for All Passengers		Replacement City Bus Service with Service Level A: Operate with Standing Passengers		Replacement City Bus Service with Service Level B: Operate with Seats for All Passengers	
Potential Change in Annual Costs to School District of Waukesha for Reducing School Bus Service	Decrease of $4,800[a]		Decrease of $4,800[a]		Decrease of $294,800[b]		Decrease of $294,800[b]	
Potential Change in Annual Costs to Waukesha Metro Transit System for Operating Bus Service to Replace School Bus Service	With New Buses Increase of $48,000[c]	With Used Buses Decrease of $11,400[d]	With New Buses Increase of $205,800[e]	With Used Buses Increase of $116,700[f]	With New Buses Increase of $48,000[c]	With Used Buses Decrease of $11,400[d]	With New Buses Increase of $205,800[e]	With Used Buses Increase of $116,700[f]
Overall Change in Annual Costs to School District of Waukesha and Waukesha Metro Transit System for Changes in Bus Services	With New Buses Net increase of $43,200	With Used Buses Net decrease of $16,200	With New Buses Net increase of $201,000	With Used Buses Net increase of $111,900	With New Buses Net decrease of $246,800	With Used Buses Net decrease of $306,200	With New Buses Net decrease of $89,000	With Used Buses Net decrease of $178,100

[a]The potential change in cost for the School District under Option 1 was calculated as follows:
- [$220,000 reduction in annual total school bus costs]
+ [$215,200 payment to Waukesha Metro Transit System for additional student fares on City bus service]
= -$ 4,800 change in costs

[b]The potential change in cost for the School District under Option 2 was calculated as follows:
- [$510,000 reduction in annual total school bus costs]
+[$215,200 payment to Waukesha Metro Transit System for additional student fares on City bus service]
=-$294,800 change in costs

[c]The potential change in cost for the Waukesha Metro Transit System under Service Level A assuming the purchase of new buses was calculated as follows:
+ [$880,200 increase in annual total (operating and capital) transit system costs]
-[$215,200 payment from School District for additional student fares on Metro bus service]
-[$ 22,800 increase in Federal Operating Aids]
-[$238,200 increase in State Operating Aids]
- [$356,600 increase in Federal Capital Aid]
=+$ 48,000 change in costs

[d]The potential change in cost for the Waukesha Metro Transit System under Service Level A assuming the purchase of used buses was calculated as follows:
+ [$583,800 increase in annual total (operating and capital) transit system costs]
- [$215,200 payment from School District for additional student fares on Metro bus service]
- [$22,800 increase in Federal Operating Aids]
- [$238,200 increase in State Operating Aids]
- [$119,000 increase in Federal Capital Aid]
= -$11,400 change in costs

[e]The potential change in cost for the Waukesha Metro Transit System under Service Level B assuming the purchase of new buses was calculated as follows:
+ [$1,390,200 increase in annual total (operating and capital) transit system costs]
- [$ 215,200 payment from School District for additional student fares on Metro bus service]
- [$ 37,500 increase in Federal Operating Aids]
- [$ 391,500 increase in State Operating Aids]
-[$ 540,200 increase in Federal Capital Aid]
=+$ 205,800 change in costs

[f]The potential change in cost for the Waukesha Metro Transit System under Service Level B assuming the purchase of used buses was calculated as follows:
+ [$944,700 increase in annual total (operating and capital) transit system costs]
- [$215,200 payment from School District for additional student fares on Metro bus service]
- [$ 37,500 increase in Federal Operating Aids]
- [$391,500 increase in State Operating Aids]
- [$183,800 increase in Federal Capital Aid]
= + $116,700 change in costs

Source: SEWRPC.

State transit aid payments to the City transit system).

- If the replacement Waukesha Metro student bus services are operated with used buses, a decrease of about $11,400 annually in the City's costs for Waukesha Metro bus services would be expected under Service Level A (a $583,800 annual increase in transit system operating and capital costs which would be

more than offset by the combination of $215,200 in student fares paid annually by the District and $380,000 in Federal and State transit aid payments to the City transit system); and an increase of about $116,700 annually in the City's annual transit system costs would be expected under Service Level B (a $944,700 annual increase in transit system operating and capital costs which would be partially offset by the combination of $215,200 in student fares paid annually by the District and $612,800 in Federal and State transit aid payments to the City transit system).

- If the School District reduces school bus service without also making changes to the class start and dismissal times of some elementary schools, as proposed under Option 1, a reduction in the combined annual District and City costs for replacing School District school bus service with Waukesha Metro bus services could be expected under only one of the four scenarios for operation of the replacement City bus services. A reduction of about $16,200 would be expected for operation of the replacement Waukesha Metro bus services with used buses under Service Level A. For the other three scenarios for operation of the replacement City bus services under Option 1, combining the annual District and City costs could be expected to result in cost increases. The smallest increase of about $43,200 would be for replacement City bus service provided with new buses under Service Level A. The largest increase of about $201,000 would be for replacement City bus service provided with new buses under Service Level B.

- If the School District reduces school bus service and adjusts the class start and dismissal times of some elementary schools, as proposed under Option 2, a reduction in the combined annual District and City costs for replacing School District school bus service with Waukesha Metro bus services could be expected under each of the four scenarios for operation of the replacement City bus services. The smallest reduction of about $89,000 would be for replacement City bus service provided with new buses under Service Level B, and the largest reduction of about $306,200 would be for replacement City bus service provided with used buses under Service Level A.

Advisory Committee Recommendation

The Advisory Panel recommended that the findings of the analysis of transportation options for in-city middle school and high school students be considered by the City of Waukesha and the School District of Waukesha without a specific recommendation from the Advisory Panel for any of the options considered. The panel recommendation was made in light of the findings of the Commission staff analysis which indicated that under all of the service options reviewed, the total costs of serving in-city high and middle school regular education students with City bus service would be substantially more than the total costs of continuing to serve them with the existing yellow school bus service. The analysis also concluded that, in terms of the net costs of the options reviewed, there would only be a small cost savings for the City transit system which would be realized only if the replacement City bus service was provided with used buses and allowed for some standing passengers; and that a savings in the net costs to the School District for reducing school bus service would be possible only if the District adjusted the class start and dismissal times of some elementary schools to be earlier and the same as those for middle and high schools. The Panel's recommendation also recognized that there were other issues associated with the use of City buses to transport students including whether additional School District staff would be needed to handle student transportation matters now handled by the contract school bus operator; whether there would be negative reaction by parents to earlier start and dismissal times for the affected elementary schools; and whether parents would express concerns about the safety of students standing on City buses for a portion of their trip, or transferring between buses as would be the case for some students using the regular Waukesha Metro bus routes. The Panel recommended that the City and School District complete their review of the student transportation analysis by April 2004 which would allow the findings to be considered prior to the School District finalizing a new contract for yellow school bus service for the 2004-2005 school year.

PLAN ADOPTION AND IMPLEMENTATION

Plan Adoption

Adoption or endorsement of the recommended Waukesha area transit system development plan is important to ensuring a common understanding among

the concerned units and agencies of government and to enable the staffs of those governments to work cooperatively toward plan implementation. Accordingly, the following plan adoption actions are recommended:

- ***City of Waukesha***
  The City of Waukesha Common Council should act to formally adopt the plan as a guide to the provision of transit services in the City and environs. Importantly, this action would not commit the City to implement any of the recommended service changes, but would indicate that the City agrees the plan would serve as a valuable reference document. The adoption action should be certified to the Southeastern Wisconsin Regional Planning Commission with a request that the plan be incorporated into the regional transportation system plan.

- ***Southeastern Wisconsin Regional Planning Commission***
  Upon receipt of notification of adoption of the plan from the City of Waukesha, the Southeastern Wisconsin Regional Planning Commission should adopt the plan as an amendment and extension of the regional transportation system plan and formally certify such adoption to all of the local units of government in the study area, to the Wisconsin Department of Transportation, and to the Federal Transit Administration.

- ***Wisconsin Department of Transportation***
  Upon receipt of the certification by the Regional Planning Commission, the Wisconsin Department of Transportation should act to endorse the plan as a guide for the programming, administration, and granting of State transit assistance funds for the City of Waukesha transit system.

- ***Federal Transit Administration***
  Upon endorsement of the plan by the Wisconsin Department of Transportation, the Federal Transit Administration should endorse the plan as a guide for the programming, administration, and granting of Federal transit funds for the City of Waukesha transit system.

- ***Local Units of Government***
  Upon receipt of the certified plan, Waukesha County and other concerned city, village, and town boards in the study area should act to adopt the plan, thereby indicating support to the City in the implementation of that plan. Such actions on the part of the communities concerned would indicate general agreement with services proposed under the plan.

Plan Implementation

The City of Waukesha will have the primary responsibility for undertaking the necessary plan implementation actions for the recommended plan. It is recommended that the City's actions include the following steps:

- ***Refinement of Recommended Service Changes***
  Transit system staff, subject to the approval of the Waukesha Transit Commission Board, will need to complete detailed operating plans which reflect a refinement of the recommended routing and service changes. As part of this refinement, transit system staff should evaluate the need to implement service improvements recommended for implementation in the later part of the planning period between 2005 and 2007. Numerous factors including the availability of Federal and State funding, the performance of the transit system, and the pace and nature of residential and commercial development in the study area should be considered prior to the implementation of additional service improvements. Should the additional service improvements be determined to be warranted and appropriate, transit system staff will need to complete detailed operating plans prior to implementation.

- ***Public Hearings***
  Federal regulations require transit systems using Federal funds to provide the opportunity for comment through public hearings prior to the implementation of significant service and fare changes. The Waukesha Transit Commission Board may need to conduct one or more public hearings for the specific service and fare changes noted above.

- ***Federal and State Grant Applications***
  The City of Waukesha should prepare operating budgets to support applications for the Federal and State funds needed over the planning period to implement the recommended plan. Such applications would need to be prepared annually on a schedule that meets the requirements of the agencies concerned.

SUMMARY

This chapter has set forth the recommended transit system development plan for the Waukesha Metro Transit System as approved by the Waukesha Transit Commission Planning Advisory Panel. The plan is based upon the existing June 2003 transit system and identifies routing and service changes and capital improvement

projects directed at improving and expanding the existing transit system.

June 2003 Transit System Performance

A number of changes to the June 1999 Waukesha Metro Transit System described in Chapter III were implemented during 2000 through mid-2003. Consequently, prior to completing the recommended plan the Commission staff re-examined key route ridership and financial performance measures for each route and operating period using daily service data for the fall 2002 transit system, passenger count data for the period between October 28 and November 3, 2002, and annual 2002 operating costs, revenues, and service levels for the transit system. This evaluation indicated that:

1. In terms of weekday performance, Route Nos. 4, 6, 8, and 9 were the best performers in the transit system, having weekday daytime performance levels that were consistently better than the systemwide averages for all service effectiveness and efficiency measures examined. Five of the routes in the system, including Route Nos. 1, 2, 3, 7, and 15, had mixed weekday performance levels that generally were better than most of the minimum performance levels for either effectiveness or efficiency. The overall performance of these routes should be monitored and service changes considered for these routes if the changes have the potential to improve overall performance. For Route No. 5 which has historically been the poorest performing route, weekday performance levels for most measures did not come close to meeting the specified minimum performance levels. While prior service changes to this route have met with mixed results, service changes should continue to be reviewed.

2. On Saturdays, total daytime system ridership was about one-half that of weekday daytime ridership but overall system performance levels were only 5 to 10 percent below those for weekday daytime service. On Sundays, total daytime system ridership was about one-quarter that of weekday daytime ridership and overall system performance levels for service effectiveness and cost effectiveness were about 50 to 55 percent below those for weekday daytime service. Ridership levels for weekday and Saturday evenings are much lower than for Sunday. However, the service effectiveness and cost effectiveness measures for the system during these periods were about the same as on Sunday.

3. The performance of some routes varies signifycantly between weekday daytime, Saturday and Sunday daytime, and weekday and Saturday evenings. Of the four routes identified as being the best performers for the weekday daytime period, only Route No. 4 continues to be a best performing route during all periods of operation. Route Nos. 1, 2, and 3, 5, 7, and 8 are either among the best performing routes or have mixed performance measures for at least the weekend and evening periods. Route Nos. 5/6, 9, and 15 are among the worst performing routes during weekday and Saturday evenings and during weekend daytime operating periods.

Recommended Transit Service

The recommended plan calls for a number of changes in alignments and schedules of the June 2003 transit system. The proposed changes include service adjustments directed at improving or eliminating poorly performing routes and at expanding service to developing areas within the City, and include modifications to the downtown routing for each route as well as changes outside downtown Waukesha on eight of the ten existing routes. The specific changes include:

- Adjusting the downtown alignments for all routes to serve a new central transfer terminal for the transit system when the terminal is made operational in mid-2004. The new public terminal facility will be constructed in the block bounded by E. North Street, Mary Street, E. St. Paul Avenue, and Brook Street.

- Changing the weekday morning peak period departure times from the downtown transfer terminal in January 2004 to have morning peak period departure times occurring at uniform 35-minute intervals. Route No. 1, which operates with 15- to 20-minute peak period headways, would have additional departure times.

- Adjusting the alignments of several routes in 2003 or 2004 including: Route Nos. 2 and 15 to enable Route No. 15 to be extended to serve new residential development east of STH 59 between Broadway Street and Racine Avenue; Route Nos. 3 and 4 to facilitate the extension of Route No. 4 to an area of light industry south of STH 59 between West Avenue and STH 164; Route Nos. 5 and 5/6 to serve new residential development south of STH 59 west of Oakdale Drive; and Route No. 7 to relocate from Madison Street and Grandview Boulevard to University Drive

and Michigan Avenue to better serve North High School.

- Making additional routing changes from 2005 through 2007 including: extending Route No. 8 over Summit Avenue to serve the Meadowbrook Marketplace Shopping Center and surrounding areas currently under development; restructuring Route No. 9 to provide weekday service to the Airport Industrial Park and to include route segments that only require service during weekday daytime hours, thereby allowing the elimination of weekday evening, Saturday, and Sunday service over the restructured route; creating a new Route No. 16 to serve productive areas currently served by Route Nos. 8 and 9 along with developing residential areas on the northwest side of the City.

The plan proposes no changes to the current weekday and weekend service periods for the transit system, with the exception of the restruc-tured Route No. 9. As a consequence of the recommended routing changes, the service area for the City's complementary paratransit service for disabled individuals provided through the Metrolift Program will need to be expanded to cover additional areas on the southeast side, the southwest side, and the northwest side of the City to which regular bus service will be extended. It is also proposed that the transit system implement fare increases in 2005 and again in 2007 to raise the base adult cash fare from the current $1.25 per one-way trip to $1.50 per one-way trip by the end of the planning period, an increase of about 20 percent. Bus fares in other categories, charges for tickets and monthly passes, and fares for Metrolift paratransit service would also be increased by similar proportions.

System Performance and Costs of Recommended Transit Service

Assuming implementation of all the recommended service changes for the Waukesha Metro Transit System, the performance and costs of the transit system may be summarized as follows:

- The transit system would operate an average of about 916,900 revenue vehicle miles of service annually over the planning period, an increase of about 22,000 vehicle miles, or about 2 percent, from the 894,900 vehicle miles operated in 2002.

- System ridership would average about 652,300 revenue passengers annually over the period, representing an increase of about 5,800 revenue passengers, or about 1 percent, over the 2002 ridership level on the system. The forecast ridership increase under the plan reflects the expected effects of a combination of the proposed routing changes to expand service into presently unserved or developing areas of the City, and the effects of increases in passenger fares proposed for 2005 and 2007 which are expected to slow ridership growth from the service expansion.

- The total operating cost for the recommended transit service would be expected to be about $3,689,000 annually between 2003 and 2007—an increase of about 10 percent over the 2002 system operating costs. Passenger fares and other revenues, including advertising, amounting to about $661,200, or about 18 percent of the total costs, would offset some of the costs, resulting in an average total operating assistance requirement of about $3,027,800 over the planning period.

- Federal and State funds averaging about $2,228,600 per year may be expected to be available to provide about 74 percent of the required operating assistance. The remaining 26 percent, or about $799,200 annually, would have to be provided by local sources including the City of Waukesha, and Waukesha County and the Town of Brookfield which both currently contract for bus services from the City.

- The average annual costs of capital equipment and facilities and planning studies for the bus system between 2003 and 2007 would be about $1,194,600. Of this amount, about $955,700, or 80 percent, would be provided though various Federal transit assistance programs. The remaining $238,900, or 20 percent, would be funded by the City of Waukesha.

Analysis of Student Transportation Options within the City Of Waukesha

At the request of the Advisory Committee, Commission staff undertook an analysis of the feasibility of replacing some of the existing yellow school bus service for regular education students provided by the School District of Waukesha with bus service provided by Waukesha Metro Transit System. The use of City bus service instead of yellow school bus service to provide transportation for local school districts is not uncommon in Wisconsin cities with municipal bus systems. The analysis considered replacement of school bus service with Waukesha Metro bus service only for students living in the City of Waukesha and attending the six public high and middle schools in the District plus

the principal private high school, Catholic Memorial High School. The analysis used information provided to the Commission staff by the District and the contract school bus operator that identified the costs of the school bus service for regular education students for the 2002-2003 school year and along with the school bus routes, their operating characteristics, and the students eligible for service during December 1999 and January 2000. The key information and findings of this analysis are summarized below:

- Based on the school bus route and student information for December 1999-January 2000, Commission staff estimated that 6,525 regular education students were eligible for the District's school bus service representing about 38 percent of the 17,337 total students that were enrolled during the 1999-2000 school year at the schools served by the District's school bus routes. A total of 3,580, or 55 percent, of the 6,525 students eligible for school bus service were students at the identified high and middle schools in the District. An estimated 1,865 students, or about 52 percent of the 3,580 eligible high and middle school students, resided within the City of Waukesha and would be affected by the proposed change in the School District's student transportation policy.

- In December 1999-January 2000, the contract operator for the school bus service, Dairyland Buses, Inc., operated 264 school bus routes each day to transport regular education students to and from Waukesha area schools. The District provided 57 morning bus routes and 64 afternoon bus routes, a total of 121 bus routes, to serve students at the identified the high and middle schools in the District. The school bus service was operated as a two-tiered service with each school bus usually operating two trips in the morning and two trips in the afternoon—the first trip serving high and middle school students and the second trip serving elementary school students. The current school bus service contract specifies charges on a cost per bus basis with a higher cost of about $147 per bus per school day for base service consisting of the first trip made each morning and afternoon by each vehicle (first tier trips) and a lower cost ranging from about $14 to $20 per bus for each additional trip made during the school day by each vehicle (second tier trips).

- Commission staff considered two options for eliminating school bus trips serving in-city high and middle school students:

  1. Option 1 under which the District would reduce the number of first tier bus trips serving high and middle schools and make no changes to the second tier bus trips serving elementary schools. The potential reduction in annual school bus service costs for the District under this option was estimated at about $220,000 and reflects the elimination of no base bus trips, only additional bus trips. The potential cost savings would be partially offset by payments of about $215,200 annually to the Waukesha Metro Transit System for the fares for the approximately 331,000 school trips made by students on the replacement City bus services. The annual net costs to the District for student transportation for regular education students under this option would then be a decrease of about $4,800.

  2. Option 2 under which the District would both reduce school bus trips and rebalance the number school bus trips operated in the service tiers each school day to be close to equal. This rebalancing of school bus trips would, however, require earlier start and dismissal times for some elementary schools so they would be similar to those for the high and middle schools served by first tier school bus trips. This option may be impractical for the School District to implement and, therefore, may be infeasible. The potential reduction in annual school bus service costs for the District under Option 2 was estimated at about $510,000 and reflects the elimination of both base and additional bus trips and a reduction in the peak vehicles required. The potential cost savings would be partially offset by payments of about $215,200 annually to the Waukesha Metro Transit System for student fares on the replacement City bus services. The annual net costs to the District for student transportation for regular education students under this option would then be a decrease of about $294,800.

- The Waukesha Metro Transit System would be able to provide replacement bus service to all residential areas in the City for the 1,865 high and middle school regular education students living in the City and eligible for school bus service. The proposed replacement Waukesha Metro bus service would by and large be equivalent to the existing school bus service for these students with

some exceptions. Some students would need to walk farther to use the proposed Waukesha Metro replacement bus routes as about 10 percent of the stop locations for the City bus routes would be located more than two blocks from the stop locations on the existing school bus routes. For most Catholic Memorial High School students, the replacement City bus service would be less direct than school bus service resulting in travel times that would be five to 10 minutes longer than school bus travel times. School arrival and departure times on City bus service provided over regular routes would not be as convenient as those for the existing school bus service for South High School students using Route No. 3 in the morning and West High School students using Route No. 6 in the morning and afternoon.

- Commission staff considered two potential service levels for providing the expanded Waukesha Metro bus services for the 1,865 in-city students currently eligible for school bus service. In addition to operating more Waukesha Metro bus trips on school days, both options assumed that the transit system would acquire a fleet of new or used 40-foot-long buses, install bus stop signs along additional school day routes, and expand the existing transit system operation and maintenance facility. The two service levels consisted of:

  1. Service Level A which assumed that some students would need to stand along the segments of the route where the highest number of students would be carried, a policy that would be similar to actual practice by other public transit systems in the Region in providing similar school day bus services for students in other school districts. The total annual operating and capital costs, in 2003 dollars, for the replacement Waukesha Metro school day bus service under this service level were estimated at about $880,800 with the purchase of 18 new buses and about $583,800 with the purchase of 18 used buses. Payments of about $215,200 annually would be made by the School District to the Waukesha Metro Transit System for the fares for the approximately 331,000 school trips made by students on the replacement City bus services. Additional Federal and State transit assistance funds would be expected to amount to about $617,600 with the use of new buses and about $380,000 with the use of used buses. The annual net change in costs to the City for the transit system would then be an increase of about $48,000 with new buses and a decrease of about $11,900 with used buses.

  2. Service Level B which assumed that a seat would be provided for each student that could be expected to ride each school day, a policy similar to actual practice by the School District and contract transit operator in the design and operation of the existing school bus service. The total annual operating and capital costs, in 2003 dollars, for the replacement Waukesha Metro school day bus service under this service level were estimated at about $1,390,200 with the purchase of 27 new buses and about $944,700 with the purchase of 27 used buses. Payments of about $215,200 annually would be made by the School District to the Waukesha Metro Transit System for student fares on the replacement City bus services. Additional Federal and State transit assistance funds would be expected to amount to about $969,200 with the use of new buses and about $612,800 with the use of used buses. The annual net change in costs to the City for the transit system would then be an increase of about $205,800 with new buses and a increase of about $116,700 with used buses.

- On a total cost basis, serving in-city high and middle school regular education students with the existing school bus service is more efficient than serving the students with the Waukesha Metro bus service. The total additional annual cost to the City for the replacement Waukesha Metro bus service is estimated to range from about $583,800, assuming Service Level A and the use of used transit buses, to about $1,390,200, assuming a Service Level B and the use of new transit buses. The range of additional costs exceeds the estimated reductions in annual contract school bus costs to the School District of between $220,000 and $510,000.

- A comparison of the relative "net" annual costs of the existing school bus service and the potential replacement Waukesha Metro bus service—that is, the total costs minus off-setting passenger revenues and Federal and State financial assistance—found that:

  - If the School District reduces school bus service without also making changes to the

class start and dismissal times of some elementary schools, as proposed under Option 1, a reduction in the combined annual District and City costs for replacing School District school bus service with Waukesha Metro bus services could be expected under only one of the four scenarios for operation of the replacement City bus services. A reduction of about $16,200 would be expected for operation of the replacement Waukesha Metro bus services with used buses under Service Level A. For the other three scenarios for operation of the replacement City bus services under Option 1, combining the annual District and City costs could be expected to result in cost increases ranging from about $43,200 for replacement City bus service provided with new buses under Service Level A to about $201,000 for replacement City bus service provided with new buses under Service Level B.

- If the School District reduces school bus service and adjusts the class start and dismissal times of some elementary schools, as proposed under Option 2, a reduction in the combined annual District and City costs for replacing School District school bus service with Waukesha Metro bus services could be expected under each of the four scenarios for operation of the replacement City bus services. The reductions would range from about $89,000 for replacement City bus service provided with new buses under Service Level B to about $306,200 for replacement City bus service provided with used buses under Service Level A.

The Advisory Panel recommended that the findings of the analysis of transportation options for in-city middle school and high school students be considered by the City of Waukesha and the School District of Waukesha without a specific recommendation from the Advisory Panel for any of the options considered. The Panel's recommendation recognized the findings of the Commission staff analysis which indicated that the total costs of serving in-city high and middle school regular education students with City bus service would be substantially more than the total costs of continuing to serve them with the existing yellow school bus service. The analysis also concluded that there would only be a small savings for the City transit system in the net costs for the replacement bus service, and that, while a savings in the net costs to the School District for reducing school bus service would be possible, it would require the School District to adjust the class start and dismissal times of some elementary schools to be earlier and the same as those for middle and high schools. The Panel's recommendation also recognized that there were other issues associated with the use of City buses to transport students including whether additional School District staff would be needed to handle student transportation matters now handled by the contract school bus operator; whether there would be negative reaction by parents to earlier start and dismissal times for the affected elementary schools; and whether parents would express concerns about the safety of students using City buses. The Panel recommended that the City and School District complete their review of the student transportation analysis by April 2004 which would allow the findings to be considered prior to the School District finalizing a new contract for yellow school bus service for the 2004-2005 school year.

Plan Implementation

Following adoption of the transit system development plan, the City of Waukesha will have the primary responsibility for the necessary plan implementation actions through the following steps:

- Subject to the approval of the Waukesha Transit Commission Board, transit system staff would need to prepare detailed operating plans which refine the service changes proposed by the plan.

- Pursuant to Federal regulations, the Waukesha Transit Commission Board should conduct one or more public hearings for the specific service and fare changes proposed under the plan.

Chapter VII

SUMMARY AND CONCLUSIONS

INTRODUCTION

This report sets forth a short-range transit system development plan for the City of Waukesha Metro Transit System that updates the previous plan prepared by the Commission. The new plan includes recommendations for the period 2003-2007 and provides a full performance evaluation of the City bus system. In addition, the new plan addresses changes in residential, commercial, and industrial development in the Waukesha area as they affect the need for transit service.

The plan is based on a thorough evaluation of the existing transit system; analysis of the travel habits, patterns, and needs of the residents of the City and environs, as well as those commuting to jobs in the Waukesha area; analysis of the transportation needs of existing land use patterns and major land use developments that have been proposed or that are occurring within the greater Waukesha area; and a careful evaluation of improved and new bus services. The plan also identifies the financial commitments and actions that must be undertaken by the concerned levels of government to implement the plan. The plan is being prepared within the context of the Commission's ongoing regional transportation planning program.

PURPOSE OF THE TRANSIT SYSTEM DEVELOPMENT PLAN

The study was intended to serve the following purposes:

1. To evaluate the effectiveness of the existing route structure and schedules, along with the financial performance, of the current City transit system.

2. To identify, evaluate, and recommend potential transit service improvements which would:

   a. Address the recent changes in urban development which have occurred in the greater Waukesha area.

   b. Provide for coordination with other public transit services, in particular those operated by the Waukesha County transit system.

   c. Represent the initial implementation stage of the transit recommendations for the Waukesha area contained in the Commission's adopted design year 2020 regional transportation system plan.

3. To prepare a planning document that would serve as a guide for the transit system and City officials with regard to implementing service changes as well as in monitoring service operation and performance.

4. To develop a plan that will ensure adequate financing of existing and planned transit services through available Federal and State transit funding programs thereby minimizing City funding requirements.

STUDY ORGANIZATION

The preparation of this transit system development plan was a joint effort by the staffs of the City of Waukesha and of the Southeastern Wisconsin Regional Planning Commission. Additional staff assistance was obtained from other agencies concerned with transit development in the Waukesha area, including the Wisconsin Department of Transportation. To provide guidance to the technical staffs in the preparation of this plan, and to involve concerned and affected public officials and citizen leaders more directly and actively in the development of transit service policies and improvement proposals, the City of Waukesha acted to create the City of Waukesha Transit Commission Planning Advisory Panel. The full membership of the Panel is listed on the inside front cover of this report.

POPULATION, EMPLOYMENT, LAND USE, AND TRAVEL PATTERNS

This planning effort has presented pertinent information on those factors that affect, or may be affected by, the provision and use of transit service, including population, employment, land use, and travel habits and patterns, in the Waukesha study area as shown on Map 1 in Chapter I. The study area included the area served by

the Waukesha Metro Transit System and other adjacent areas for which route extensions could be considered during the development of a new plan. Information on the changes in key characteristics for the study area observed over the past four decades, along with the current population, employment, and land use characteristics of the study area, are presented in Figure 1 in Chapter II. The most important findings of these inventories may be summarized as follows:

- Since 1960, population in the study area has more than doubled as the total population increased by about 121 percent, from about 43,000 persons in 1960 to about 95,000 persons in 2000, and the population of the City of Waukesha increased by about 116 percent, from about 30,000 persons in 1960 to about 64,800 persons in 2000. The number of households in the study area increased by about 215 percent between 1960 and 2000, more than twice as fast as the resident study area population. Total employment in the study area increased by about 150 percent from about 29,500 jobs in 1970 to about 73,600 jobs in 1995. The increase in the Waukesha area was part of the overall increase of about 189 percent in Waukesha County employment levels over this period. The majority of the population and employment growth over the last three to four decades has occurred in the Cities of Waukesha and Pewaukee. The highest job concentrations are currently in the City of Waukesha and in office and industrial parks in the City of Pewaukee and Town of Brookfield.

- Population subgroups whose dependence on, and use of, public transit has historically been greater than that of the general population as a whole were identified for this study. The most significant subgroups included elderly individuals, persons in low-income households, and households with no vehicle available. The transit-dependent population within the study area was concentrated primarily in the City of Waukesha in 2000.

- The amount of land in the study area devoted to urban land uses increased by about 211 percent from about 9.8 square miles in 1963 to about 30.5 square miles in 1995. About one-half of the land in the study area is currently in fully developed urban land uses compared with about 16 percent in 1963. The urbanization of the study area has been marked by a diffusion of both commercial and residential development throughout the study area.

- Certain major land uses in the study area generate a large number of person-trips on a daily basis, including commercial centers, educational centers, medical centers, governmental and public institutional centers, and employment centers. These land uses, along with housing and care facilities for elderly and disabled persons and low-income housing, were identified as major potential transit trip generators and were found to be concentrated in the developed urban portions of the study area, with most located in the City of Waukesha (see Map 9 in Chapter II).

- On the basis of past travel surveys undertaken by the Regional Planning Commission, average weekday total person travel entirely within the study area, and between the study area and other areas, has increased by about 165 percent, from about 151,200 person trips in 1963 to about 400,800 trips in 1991. Most of the increase in travel, about 59 percent, between 1963 and 1991 occurred as external trips made between the study area and other areas. In 1991, about 51 percent of all person trips were external trips with the largest proportion made for work purposes. The remaining 49 percent of all person trips were internal trips made with both trip ends in the study area with the largest proportion being trips made for medical, personal business, or social or recreational purposes. Trips made between the study area and the remainder of Waukesha County accounted for about the largest volume of external person travel. Significant volumes of person trips were also identified between the study area and Milwaukee County.

- Surveys of passengers using the Waukesha Metro Transit System were conducted by the Commission in late April and early May 1998. About 2,000 weekday and 1,100 Saturday revenue passenger trips were made on the transit system at the time of the survey. Most of the trips made by system passengers on weekdays were for work and school purposes, while trips made on Saturdays were largely for other purposes such as medical, personal business, and social or recreational. The distribution of transit trip productions and attractions were principally within the City of Waukesha and the Bluemound Road corridor, service areas for the transit system. The typical passenger profile would be a person without a valid driver's license, 16 to 54 years old, from a household with an annual income below $30,000 per year who used the bus system three or more times a week.

EXISTING PUBLIC TRANSIT SYSTEM

The planning effort also collected pertinent information on the existing City of Waukesha Metro Transit System, as well as on other major transit services provided in the study area. The key findings of these inventories may be summarized as follows:

- The major supplier of local public transit service in the Waukesha area is the City of Waukesha, which has operated the Waukesha Metro Transit System since August 1981. The system is owned by the City of Waukesha, and operated by a private contract management firm under the direct supervision of the Transit Director, a City of Waukesha employee. While the policy making body of the transit system is the Waukesha Transit Commission, the ultimate responsibility for review and approval of certain important matters, including the annual program budget, lies with the Waukesha Common Council.

- During 2003, fixed-route bus service was provided by the Waukesha Metro Transit System over a system of 10 bus routes on weekdays and nine routes on weekends as shown on Map 25 in Chapter VI. All routes served a common transfer point located at an off-street terminal in downtown Waukesha and operated using cycle, or "pulse," scheduling to facilitate transfers. Eight of the routes operated between outlying portions of the City and downtown Waukesha, with two of these combined into a single route on weekday evenings and on Saturdays. Of the remaining two routes, one was operated between the Brookfield Square Shopping Center and downtown Waukesha, with the segment over Bluemound Road between Barker Road and Brookfield Square funded by Waukesha County. The other route was operated between the Waukesha County Technical College Pewaukee campus and downtown Waukesha. The transit system maintained a fleet of 29 buses to provide the fixed-route service.

- The transit system also operated the Waukesha Metrolift Program to provide paratransit service for the travel needs of disabled individuals who were unable to use the fixed-route bus service provided by the Waukesha Metro Transit System. The curb-to-curb service was operated during the same hours as the fixed-route service and was available throughout the entire transit system service area. Disabled individuals could also use accessible bus service provided over the regular routes of the transit system. The transit system maintained a fleet of four buses to provide the Metrolift service.

- The transit system operated from 5:40 a.m. to 10:30 p.m. on weekdays, from 8:00 a.m. to 10:00 p.m. on Saturdays, and from 9:00 a.m. to 7:00 p.m. on Sundays with headways of 15 to 45 minutes during weekday peak periods, and 30 to 60 minutes at all other times. The base adult cash fare charged for the fixed-route bus service was $1.25 per trip, with reduced fares charged for elderly and disabled individuals and students. The fare charged for paratransit service was $2.50 per trip (see Tables 55 through 57 in Chapter VI).

- Historic ridership and service levels on the City transit system are shown in Figure 4 in Chapter III. Systemwide ridership increased steadily in each year from 1981 through 1985. This was a period of major transit service improvement and expansion occurring immediately after the City began operation of the transit system, during which the City expanded services, kept fares stable, and introduced a fleet of new buses. Transit ridership decreased somewhat during 1986 and 1987 which may be attributed to a fare increase in August 1985. Since 1988, the trend on the transit system has been one of increasing service levels and ridership as shown in Figure 4 in Chapter III. Between 1994 and 1998, systemwide ridership increased from about 497,700 revenue passengers carried in 1994 to about 584,200 revenue passengers carried in 1998, representing an increase of about 17 percent as service was added and the population served increased. Systemwide ridership increased to about 646,400 revenue passengers in 2002, representing an increase of about 11 percent over 1998 ridership levels. November 2002 ridership counts indicated that Route No. 1 had the highest ridership levels of any of the routes on weekdays and weekends, with Route Nos. 2, 4, and 6 also attracting significant weekday or weekend ridership.

- Over the five-year period 1998 through 2002, the City expended on an average annual basis a total of about $4,672,700, or about $7.69 per revenue passenger, for transit system operations and for capital projects. Of this total, about $480,700, or about $0.79 per revenue passenger, was recovered through farebox and other miscellaneous revenue. The remaining $4,192,000, or about $6.90 per revenue passenger, constituted the total average annual public assistance which needed to be

funded through Federal and State transit assistance programs and local funds. The total average annual assistance from local funds amounted to about $873,200, or about $1.44 per revenue passenger.

- Other transit services for the general public were available during 2003 that either operated within the study area or connected with the Waukesha Metro Transit System outside the study area. The services included: selected routes of the Waukesha County transit system, which primarily transported passengers between the City of Waukesha and employers or traffic generators located in the Bluemound Road corridor and Central Milwaukee County, including downtown Milwaukee and the University of Wisconsin-Milwaukee; intercity bus services were operated by Greyhound Lines, Inc., and Badger Coaches, Inc., over IH 94 between Milwaukee and Madison; a weekend only bus service operated by Wisconsin Coach Lines, Inc., directed at students commuting between Waukesha and Milwaukee Counties and the University of Wisconsin-Whitewater; and taxi-cab service for the general public in the City of Waukesha and environs. Specialized transportation services for elderly and disabled individuals were also provided within the study area by a number of public and private nonprofit agencies and organizations, as well as by private for-profit transportation companies.

- The School District of Waukesha provided school day transportation to students residing within the District. The District contracted for yellow school bus service for about 6,800 students from a private company, Dairyland Buses, Inc., during the 2002-2003 school year.

PUBLIC TRANSIT SERVICE OBJECTIVES AND STANDARDS

The specific objectives adopted basically envision a transit system that will effectively serve the City of Waukesha and its environs while minimizing the costs entailed. More specifically, the following objectives were adopted by the Advisory Panel:

1. Public transit will be provided to those areas of the City and its immediate environs which can be efficiently served, including those areas which are fully developed to medium or high densities, and, in particular, to the transit dependent populations in those areas.

2. The public transit system will promote effective utilization of public transit services and provide for user convenience, comfort, and safety.

3. The public transit system will promote efficiency in the total transportation system.

4. The transit system will be economical and efficient, meeting all other objectives at the lowest possible cost.

Each objective was linked to a supporting principle and two sets of standards: one set to guide service design and operation, and one set to help evaluate service performance.

PERFORMANCE EVALUATION OF EXISTING BUS ROUTES

A performance evaluation of the City of Waukesha transit system was conducted at both a systemwide basis and on a route-by-route basis using specific performance measures related to the attainment of key transit system objectives and standards. Data used in the evaluation included historical ridership, service, and financial information for the period 1993-1997, and similar data for fall 1998 operations. The conclusions reached from the performance evaluation included:

- The existing transit system service area provided excellent coverage of the City of Waukesha, serving virtually the entire population including transit dependant persons and employment concentrations within the City. Overall, the transit system provided good coverage of the study area population and employment concentrations with about 71 percent of the population and about 65 percent of the jobs within one-quarter mile of a bus route.

- The transit system compared favorably to transit systems serving similar sized areas in the Wisconsin and around the country. The performance levels observed for the Waukesha Metro Transit System with respect to service efficiency were found to have been consistently better than that experienced by the transit system's peers. The comparable transit systems modestly outperformed the Waukesha Metro Transit System with respect to service effectiveness.

- Based on the sample passenger count data for October 19 through 26, 1998, Route Nos. 3, 4, 7, and 8 had superior weekday performance levels

consistently better than the systemwide average for both service effectiveness and cost effectiveness measures. Based solely on their ridership and financial performance, these four routes could continue to be operated without change. Route Nos. 1, 2, and 9 had acceptable weekday performance levels which, for the most part, were consistently better than the minimum performance levels—those levels being no more than 20 percent below the systemwide average for ridership and service effectiveness measures, and no more than 20 percent above the systemwide average for cost effectiveness measures. These routes could also continue to be operated without change but should have their performance levels closely monitored. Route Nos. 5 and 6 were the poorest performers in the system. Potential changes to these routes to improve their performance should be considered.

- Based on the 1998 operating data reviewed, the routes with the highest weekday evening performance levels included Route Nos. 4, 5/6, 7, and 8, and the routes with the highest Saturday evening performance levels included Route Nos. 2 and 4. The poorest performing routes included Route No. 2 on weekday evenings and Route Nos. 7 and 8 on Saturday evenings which all had evening performance levels that were generally much worse than the evening systemwide average. The overall service and cost effectiveness of evening bus service was below the average observed for the entire day. This information should be viewed with caution, as there was significant daily fluctuation of ridership. The specific performance levels for evening service which can be tolerated for the Waukesha Metro Transit System must be determined by local officials.

- On Saturdays, the best performers in the system were Route Nos. 1, 2, 4, and 8. The poorest performers on Saturday were Route Nos. 3, 7, and 9. The lower Saturday performance of these routes was attributed to the lack of student ridership on Saturdays and to fewer trips being generated on Saturdays by the land uses served by each route.

- Based on the sample passenger count data, at least one unproductive route segment was found on each route except on Route Nos. 4 and 8 which included no unproductive segments. Some of the route segments with the lowest ridership occur where bus routes pass through areas with little residential development or few major trip generators as they travel to or from residential areas or employment centers within the City of Waukesha which do generate significant ridership.

- Based on a review of maximum passenger loads on the bus routes, the maximum passenger loads observed did not result in load factors for any route that exceeded the maximum specified in the transit service standards. More frequent service was not warranted on any route.

- Based on random checks of schedule adherence, the existing transit system was found to be on-time for 80 percent of the 162 scheduled stops that were checked, below the target performance level of 90 percent on-time set forth under the transit service objectives and standards. The observed on-time performance was, however, comparable to the on-time performance observed on other urban transit systems in the Region serving similar sized areas.

- The existing alignments of the bus routes of the transit system are relatively direct and result in only a minor amount of inconvenient travel for short trips as well as most cross-town trips.

- While a substantial degree of coordination exists among the routes and schedules of the transit system, some problems do exist for transferring passengers because all buses do not meet at the downtown terminal at the same time during weekday off-peak periods and on Saturdays.

THE RECOMMENDED PLAN

The recommended transit system development plan for the Waukesha Metro Transit System as approved by the Waukesha Transit Commission Planning Advisory Panel identifies a number of changes in the existing route alignments and schedules of the Waukesha Metro Transit System which are envisioned as needed by 2007 for the City to fully address the transit service needs of its residents and others commuting to jobs and schools within the transit service area. The recommended changes are set forth in Table 61 in Chapter VI. The plan indicates an implementation priority for the proposed changes, identifying those changes which should be pursued immediately in 2003 and 2004, and those changes which would be pursued in the short-term future and be in place by the end of the planning period in 2007.

Recent Transit Service Changes and Transit System Performance

A number of changes to the June 1999 Waukesha Metro Transit System described in Chapter III were implemented during 2000 through mid-2003 to partly address route performance and service expansion issues for the City transit system raised in the performance evaluation documented in Chapter V and in response to service issues identified by the City of Waukesha and other agencies. These changes included:

1. Adding in August 1999 a new demonstration service, Route No. 14, to provide direct shuttle service between the Brookfield Square Shopping Center and the campuses of the Waukesha County Technical College (WCTC) and the University of Wisconsin-Waukesha County (UWW) using funds awarded in a 1999 Wisconsin Department of Transportation (WisDOT) Transportation Demand Management (TDM) Program grant. This route was discontinued in February 2000 due to low ridership.

2. Expanding morning and afternoon peak period service on Route No. 9 in August 1999 to extend service over Pewaukee Road for disabled persons employed at a business on Pilot Court. This additional bus service was discontinued in mid-2000 when the company relocated from Pilot Court.

3. Adding in May 2000 two new demonstration routes, Route Nos. 302-New Berlin and 304-Pewaukee, that were operated under contract with Waukesha County and designed to serve major commercial and employment centers located outside of the City of Waukesha. Funded under Federal Congestion Mitigation and Air Quality Improvement (CMAQ) program grants awarded to Waukesha County in 1999, both routes were discontinued due to low ridership before the end of the CMAQ grant periods: Route No. 304 at the end of December 2001 and Route No. 302 at the end of December 2002.

4. Modifying two bus routes (Route Nos. 1 and 2) and adding one new bus route (Route No. 15) in August 2000 to improve service to employers in the largely commercial development on the northeast side of the City. The 2003 transit system continued to operate with these service changes.

5. Expanding in June 2001, the service periods for the transit system to include Sundays between approximately 9:00 a.m. and 7:00 p.m. using Federal CMAQ funds awarded to the City in 2000. Sunday service included bus service provided over the same routes and at the same frequencies as on weekday evenings and on Saturdays and paratransit service for disabled persons. Sunday service continued to be provided by the transit system in 2003.

6. Increasing fares for City bus and paratransit services in January 2002 when the base adult cash fare for bus service was raised by $0.25 from $1.00 to $1.25 per one-way trip and the base adult cash fare for paratransit service was raised by $0.50 from $2.00 to $2.50 per one-way trip. Fares for all other rider categories were also increased along with the price of tickets and passes.

7. Reducing service levels in June 2003 on Route Nos. 3, 5, and 7. Headways on Route Nos. 3 and 7 were increased from 30 to 45 minute headways to 60- to 70-minute headways during weekday morning and afternoon peak periods but only for the summer nonschool months. A similar increase in weekday peak period headways was also implemented on Route No. 5 with the service reduction being year-round. The morning outbound bus trips and afternoon inbound bus trips on Route No. 7 were also modified to restore service to a stop at the main entrance of Waukesha Memorial Hospital.

The routes of the Waukesha Metro Transit System in June 2003 are shown on Map 25 in Chapter VI. Prior to completing the recommended plan the Commission staff re-examined key route ridership and financial performance measures for each route and operating period using daily service data for the fall 2002 transit system, passenger count data for the period between October 28 and November 3, 2002, and annual 2002 operating costs, revenues, and service levels for the transit system. This evaluation indicated that:

1. In terms of weekday performance, Route Nos. 4, 6, 8, and 9 were the best performers in the transit system, having weekday daytime performance levels that were consistently better than the systemwide averages for service effectiveness and efficiency measures. Five of the routes in the system, including Route Nos. 1, 2, 3, 7, and 15, had mixed weekday performance levels that generally met most of the minimum performance levels for either effectiveness or efficiency. The overall performance of these routes should be monitored and service changes considered for these routes if the changes have the potential to

improve overall performance. For Route No. 5, which has historically been the poorest performing route, weekday performance levels for most measures did not come close to meeting the specified minimum performance levels. While prior service changes to this route have met with mixed results, service changes should continue to be reviewed.

2. On Saturdays, total daytime system ridership was about one-half that of weekday daytime ridership but overall system performance levels were only 5 to 10 percent less than those for weekday daytime service. On Sundays, total daytime system ridership was about one-quarter that of weekday daytime ridership and overall system performance levels for service effectiveness and cost effectiveness were about 50 to 55 percent less than those for weekday daytime service. Ridership levels for weekday and Saturday evenings are much lower than for Sunday. However, the service effectiveness and cost effectiveness measures for the system during these periods were about the same as on Sunday.

3. The performance of some routes varies significantly between weekday daytime, Saturday and Sunday daytime, and weekday and Saturday evenings. Of the four routes identified as being the best performers for the weekday daytime period, only Route No. 4 continues to be a best performing route during all periods of operation. Routes Nos. 1, 2, 3, 5, 7, and 8 are either among the best performing routes or have mixed performance measures for at least the weekend and evening periods. Route Nos. 5/6, 9, and 15 are among the worst performing routes during weekday and Saturday evenings and during weekend daytime operating periods.

Recommended Transit Service

The recommended 2007 transit system is shown on Map 26 in Chapter VI. The recommended plan calls for a number of changes in alignments and schedules of the June 2003 transit system as identified in Table 61 and on Map 27 in Chapter VI. The changes include modifications to the downtown routing for each route as well as changes outside downtown Waukesha on eight of the 10 existing routes directed at improving or eliminating poorly performing routes and expanding service to developing areas within the City. The specific changes include:

- Adjusting the downtown alignments for all routes to serve a new central transfer terminal for the transit system when the terminal is made operational in mid-2004. The new public terminal facility will be constructed in the block bounded by E. North Street, Mary Street, E. St. Paul Avenue, and Brook Street.

- Changing the weekday morning peak period departure times from the downtown transfer terminal in January 2004 to have morning peak period departure times occurring at uniform 35-minute intervals. Route No. 1, which operates with 15- to 20-minute peak period headways, would have additional departure times.

- Adjusting the alignments of several routes in 2003 or 2004 including: Route Nos. 2 and 15 to enable Route No. 15 to be extended to serve new residential development east of STH 59 between Broadway Street and Racine Avenue; Route Nos. 3 and 4 to facilitate the extension of Route No. 4 to an area of light industry south of STH 59 between West Avenue and STH 164; Route Nos. 5 and 5/6 to serve new residential development south of STH 59 west of Oakdale Drive; and Route No. 7 to relocate it from Madison Street and Grandview Boulevard to University Drive and Michigan Avenue to better serve North High School.

- Making additional routing changes from 2005 through 2007 including: extending Route No. 8 over Summit Avenue to serve the Meadowbrook Marketplace Shopping Center and surrounding areas currently under development; restructuring Route No. 9 to provide weekday service to the Airport Industrial Park and to include route segments that only require service during weekday daytime hours, thereby allowing the elimination of weekday evening, Saturday, and Sunday service over the restructured route; and creating a new Route No. 16 to serve productive areas currently served by Route Nos. 8 and 9 along with developing residential areas on the northwest side of the City.

The plan proposes no changes to the current weekday and weekend service periods for the transit system, with the exception of for the restructured Route No. 9. The service area for the City's complementary paratransit service for disabled individuals provided through the Metrolift Program will also need to be expanded to cover additional areas on the southeast side, the southwest side, and the northwest side of the City to which regular bus service will be extended. It is also proposed that the transit system implement fare increases in 2005 and

again in 2007 to raise the base adult cash fare from the current $1.25 per one-way trip to $1.50 per one-way trip by the end of the planning period, an increase of about 20 percent. Bus fares in other categories, charges for tickets and monthly passes, and fares for Metrolift paratransit service would also be increased by similar proportions.

System Performance and Costs of Recommended Transit Service

The forecast service levels, ridership, operating costs, and capital projects for the recommended plan from 2003 through 2007 are presented in Tables 64 and 65 in Chapter VI. The financial forecasts for the plan assume operating costs per vehicle-hour will increase by 3 percent per year over the planning period, that fare increases of 5 to 10 percent will occur in 2005 and again in 2007, and that there will be no significant changes to existing Federal and State transit assistance programs. Assuming implementation of all the recommended service changes for the Waukesha Metro Transit System, the performance and costs of the transit system may be summarized as follows:

- The transit system would operate an average of about 916,900 revenue vehicle-miles of service annually over the planning period, an increase of about 22,000 vehicle-miles, or about 2 percent, from the 894,900 vehicle-miles operated in 2002.

- System ridership would average about 652,300 revenue passengers annually over the period, representing an increase of about 5,800 revenue passengers, or about 1 percent, over the 2002 ridership level on the system. The forecast ridership increase under the plan reflects the expected effects of a combination of the proposed routing changes to expand service into presently unserved or developing areas of the City, and the effects of increases in passenger fares proposed for 2005 and 2007 which are expected to slow ridership growth from the service expansion.

- The total operating cost for the recommended transit service would be expected to be about $3,689,000 annually between 2003 and 2007—an increase of about 10 percent over the 2002 system operating costs. Passenger fares and other revenues, including advertising, amounting to about $661,200, or about 18 percent of the total costs, would offset some of the costs, resulting in an average total operating assistance requirement of about $3,027,800 over the planning period.

- Federal and State funds averaging about $2,228,600 per year may be expected to be available to provide about 74 percent of the required operating assistance. The remaining 26 percent, or about $799,200 annually, would have to be provided by local sources including the City of Waukesha, and Waukesha County and the Town of Brookfield which both currently contract for bus services from the City.

- The average annual costs of capital equipment and facilities and planning studies for the bus system between 2003 and 2007 would be about $1,194,600. Of this amount, about $955,700, or 80 percent, would be provided though various Federal transit assistance programs. The remaining $238,900, or 20 percent, would be funded by the City of Waukesha.

Analysis of Student Transportation Options within the City Of Waukesha

At the request of the Advisory Committee, Commission staff undertook an analysis of the feasibility of replacing some of the existing yellow school bus service for regular education students provided by the School District of Waukesha with bus service provided by Waukesha Metro Transit System. The use of City bus service instead of yellow school bus service to provide transportation for local school districts is common in Wisconsin cities with municipal bus systems. The analysis considered replacement of school bus service with Waukesha Metro bus service only for students living in the City of Waukesha and attending the six public high and middle schools in the District plus the principal private high school, Catholic Memorial High School. The analysis used information provided to the Commission staff by the District and the contract school bus operator that identified the costs of the school bus service for regular education students for the 2002-2003 school year and along with the school bus routes, their operating characteristics, and the students eligible for service during December 1999 and January 2000. The key information and findings of this analysis are summarized in Tables 66 and 73 in Chapter VI. From the analysis, the following conclusions were drawn:

- Based on the school bus route and student information for December 1999-January 2000, Commission staff estimated that 6,525 regular education students were eligible for the District's school bus service representing about 38 percent of the 17,337 total students that were enrolled during the 1999-2000 school year at the schools served by the District's school bus routes. A

total of 3,580, or 55 percent, of the 6,525 students eligible for school bus service were students at the identified high and middle schools in the District. An estimated 1,865 students, or about 52 percent of the 3,580 eligible high and middle school students, resided within the City of Waukesha and would be affected by the proposed change in the School District's student transportation policy.

- In December 1999-January 2000, the contract operator for the school bus service, Dairyland Buses, Inc., operated 264 school bus routes each day to transport regular education students to and from Waukesha area schools. The District provided 57 morning bus routes and 64 afternoon bus routes, a total of 121 bus routes, to serve students at the identified high and middle schools in the District. The school bus service was operated as a two-tiered service with each school bus usually operating two trips in the morning and two trips in the afternoon—the first trip serving high and middle school students and the second trip serving elementary school students. The school bus service contract for the 2002-2003 school year specified daily charges on a cost per bus basis with a higher cost of about $147 per bus per school day for base service consisting of the first trip made each morning and afternoon by each vehicle (first tier trips) and a lower cost ranging from about $14 to $20 per bus for each additional trip made during the school day by each vehicle (second tier trips).

- Commission staff considered two options for eliminating school bus trips serving in-city high and middle school students:

  1. Option 1, under which the District would reduce the number of first tier bus trips serving high and middle schools and make no changes to the second tier bus trips serving elementary schools. The potential reduction in annual school bus service costs for the District under this option was estimated at about $220,000 and reflects the elimination of no base bus trips, only additional bus trips. The potential cost savings would be partially offset by payments of about $215,200 annually to the Waukesha Metro Transit System for the fares for the approximately 331,000 school trips made by students on the replacement City bus services. The annual net costs to the District for student transportation for regular education students under this option would then be a decrease of about $4,800.

  2. Option 2, under which the District would both reduce school bus trips and rebalance the number of school bus trips operated in the service tiers each school day to be close to equal. This rebalancing of school bus trips would, however, require earlier start and dismissal times for some elementary schools so they would be similar to those for the high and middle schools served by first tier school bus trips. This option may be impractical for the School District to implement and, therefore, may be infeasible. The potential reduction in annual school bus service costs for the District under Option 2 was estimated at about $510,000 and reflects the elimination of both base and additional bus trips and a reduction in the peak vehicles required. The potential cost savings would be partially offset by payments of about $215,200 annually to the Waukesha Metro Transit System for student fares on the replacement City bus services. The annual net costs to the District for student transportation for regular education students under this option would then be a decrease of about $294,800.

- With an expansion of service, the Waukesha Metro Transit System would be able to provide replacement bus service (see Map 31 in Chapter VI) to all residential areas in the City for the 1,865 high and middle school regular education students living in the City and eligible for school bus service. The proposed replacement Waukesha Metro bus service would by and large be equivalent to the existing school bus service for these students with some exceptions. Some students would need to walk farther to use the proposed Waukesha Metro replacement bus routes as about 10 percent of the stop locations for the City bus routes would be located more than two blocks from the stop locations on the existing school bus routes. For most Catholic Memorial High School students, the replacement City bus service would be less direct than school bus service resulting in travel times that would be five to 10 minutes longer than school bus travel times. School arrival and departure times on City bus service provided over regular routes would not be as convenient as those for the existing school bus service for South High School students using Route No. 3 in the morning and West High School students using Route No. 6 in the morning and afternoon.

- Commission staff considered two potential service levels for providing the expanded Waukesha Metro bus services for the 1,865 in-city students currently eligible for school bus service. In addition to operating more Waukesha Metro bus trips on school days, both options assumed that the transit system would acquire a fleet of new or used 40-foot-long buses, install bus stop signs along additional school day routes, and expand the existing transit system operation and maintenance facility. The two service levels consisted of:

  1. Service Level A, which assumed that some students would need to stand along the segments of the route where the highest number of students would be carried, a policy that would be similar to actual practice by other public transit systems in the Region in providing similar school day bus services for students in other school districts. The total annual operating and capital costs in 2003 dollars for the replacement Waukesha Metro school day bus service under this service level were estimated at about $880,800 with the purchase of 18 new buses and about $583,800 with the purchase of 18 used buses. Payments of about $215,200 annually would be made by the School District to the Waukesha Metro Transit System for the fares for the approximately 331,000 school trips made by students on the replacement City bus services. Additional Federal and State transit assistance funds would be expected to amount to about $617,600 with the use of new buses and about $380,000 with the use of used buses. The annual net change in costs to the City for the transit system would then be an increase of about $48,000 with new buses and a decrease of about $11,400 with used buses.

  2. Service Level B, which assumed that a seat would be provided for each student that could be expected to ride each school day, a policy similar to actual practice by the School District and contract transit operator in the design and operation of the existing school bus service. The total annual operating and capital costs in 2003 dollars for the replacement Waukesha Metro school day bus service under this service level were estimated at about $1,390,200 with the purchase of 27 new buses and about $944,700 with the purchase of 27 used buses. Payments of about $215,200 annually would be made by the School District to the Waukesha Metro Transit System for student fares on the replacement City bus services. Additional Federal and State transit assistance funds would be expected to amount to about $969,200 with the use of new buses and about $612,800 with the use of used buses. The annual net change in costs to the City for the transit system would then be an increase of about $205,800 with new buses and an increase of about $116,700 with used buses.

- On a total cost basis, serving in-city high and middle school regular education students with the existing school bus service is more efficient than serving the students with the Waukesha Metro bus service. The total additional annual cost to the City for the replacement Waukesha Metro bus service is estimated to range from about $583,800, assuming Service Level A and the use of used transit buses, to about $1,390,200, assuming a Service Level B and the use of new transit buses. The range of additional costs exceeds the estimated reductions in annual contract school bus costs to the School District of between $220,000 and $510,000. The potential reductions in the District's contract school bus costs are based on the existing contract rates. If the school bus operator adjusts its current unit cost rates upward as a result of the elimination of some school bus trips, a smaller reduction or possibly no reduction in school bus costs could result. It is also possible that competitive bidding among several school bus operators for the District's school bus service contract could result in lower costs for the School District if the School District decides to solicit bids for operation of the school bus services when the District's contract with Dairyland Buses, Inc., expires after the 2004-2005 school year.

- A comparison of the relative "net" annual costs of the existing school bus service and the potential replacement Waukesha Metro bus service—that is, the total costs minus off-setting passenger revenues and Federal and State financial assistance—found that:

  1. If the School District reduces school bus service without also making changes to the class start and dismissal times of some elementary schools, as proposed under Option 1, a reduction in the combined annual District and City costs for this action could be expected under only one of the four scenarios for operation of the replacement Waukesha Metro bus services. A reduction of about $16,200 would be expected for operation of

the replacement City bus services with used buses under Service Level A. For the other three scenarios for operation of the replacement City bus services under Option 1, combining the annual District and City costs could be expected to result in cost increases ranging from about $43,200 for replacement City bus service provided under Service Level A with new buses to about $201,000 for replacement City bus service provided under Service Level B with new buses.

2. If the School District reduces school bus service and adjusts the class start and dismissal times of some elementary schools, as proposed under Option 2, a reduction in the combined annual District and City costs for this action could be expected under each of the four scenarios for operation of the replacement Waukesha Metro bus services. The reductions would range from about $89,000 for replacement City bus service provided under Service Level B with new buses to about $306,200 for replacement City bus service provided under Service Level A with used buses.

The Advisory Panel recommended that the findings of the analysis of transportation options for in-city middle school and high school students be considered by the City of Waukesha and the School District of Waukesha without a specific recommendation from the Advisory Panel for any of the options considered. The Panel's recommendation recognized the findings of the Commission staff analysis which indicated that the total costs of serving in-city high and middle school regular education students with City bus service would be substantially more than the total costs of continuing to serve them with the existing yellow school bus service. The analysis also concluded that there would only be a small savings for the City transit system in the net costs for the replacement bus service, and that, while a savings in the net costs to the School District for reducing school bus service would be possible, it would require the School District to adjust the class start and dismissal times of some elementary schools to be earlier and the same as those for middle and high schools. The Panel's recommendation also recognized that there were other issues associated with the use of City buses to transport students including whether additional School District staff would be needed to handle student transportation matters now handled by the contract school bus operator; whether there would be negative reaction by parents to earlier start and dismissal times for the affected elementary schools; and whether parents would express concerns about the safety of students using City buses. The Panel recommended that the City and School District complete their review of the student transportation analysis by April 2004 which would allow the findings to be considered prior to the School District finalizing a new contract for yellow school bus service for the 2004-2005 school year.

Plan Implementation

Following adoption of the transit system development plan, the City of Waukesha will have the primary responsibility for the necessary plan implementation actions through the following steps:

- Subject to the approval of the Waukesha Transit Commission Board, transit system staff would need to prepare detailed operating plans which refine the service changes proposed by the plan.

- Pursuant to Federal regulations, the Waukesha Transit Commission Board should conduct one or more public hearings for the specific service and fare changes proposed under the plan.

CONCLUSION

The transit system development plan for the Waukesha Metro Transit System was formally approved by the Waukesha Transit Commission Planning Advisory Panel at a meeting held on October 9, 2003. The plan recommended by the Advisory Panel addresses the need to improve the performance of the existing transit services, along with expanded service to developing areas within the City. The plan attempts to minimize the costs to the City for new and improved services by proposing to eliminate existing unproductive service so that funds can be redirected toward other services with the potential for attracting higher levels of ridership.

(This page intentionally left blank)

APPENDICES

(This page intentionally left blank)

Appendix A

WAUKESHA METRO TRANSIT USER SURVEY FORM

PLEASE COMPLETE THIS SURVEY EVEN IF
YOU HAVE ALREADY FILLED ONE OUT TODAY
Please Complete and Deposit in any U.S. Mailbox, or Return on Bus

If you have difficulty in completing this form please call 547-6721.

PUBLIC TRANSPORTATION SURVEY

Please tell us about this bus trip.

1. ON THIS BUS TRIP, I AM COMING FROM: Enter Number
   1. Home 3. School 5. Social activity/eat meal 7. Conducting personal business/medical/dentist
   2. Work 4. Shopping 6. Recreational activity 8. Other (specify)

2. WHICH IS LOCATED AT:

(nearest street intersection or street address) (name of community)

3. ON THIS TRIP, I AM GOING TO: ☐ Enter Number
   1. Home 3. School 5. Social activity/eat meal 7. Conducting personal business/medical/dentist
   2. Work 4. Shopping 6. Recreational activity 8. Other (specify)_____

4. WHICH IS LOCATED AT:

(nearest street intersection or street address) (name of community)

5. WILL YOU TRANSFER TO ANOTHER BUS TO COMPLETE THIS TRIP? (check one)

☐ No, I will not transfer

☐ Yes, I will transfer to
- ☐ Waukesha Metro . . . . . Route(s) No. ___ and ___
- ☐ Milwaukee County Transit System (MCTS). . . . . Route(s) No. ___ and ___
- ☐ Wisconsin Coach Lines (WCL). . . . . Route(s) No. ___ and ___

6. HOW DID YOU GET TO THE BUS STOP WHERE YOU GOT ON THIS BUS?

☐ Enter Number 1. I transferred from
- ☐ Waukesha Metro . . . . . Route(s) No. ___ and ___
- ☐ Milwaukee County Transit System (MCTS). . . . . Route(s) No. ___ and ___
- ☐ Wisconsin Coach Lines (WCL). . . . . Route(s) No. ___ and ___

2. I walked 3. By private auto/truck 4. Other (specify)_____

7. HOW DID YOU PAY FOR THIS BUS TRIP?

☐ Enter Number
1. In cash (give amount) $_____
2. By weekly or monthly pass
3. By student pass
4. Saturday Supertransfer
5. By ticket or token
6. By Metro transfer
7. By WCL transfer
8. By MCTS transfer
9. By UPASS

8. WHAT TIME OF DAY WAS IT WHEN YOU GOT ON THIS BUS?

☐☐ : ☐☐ AM PM
(enter time) (circle one)

9. IS THIS PART OF A ROUND TRIP BY BUS TODAY?

(check one) ☐ Yes ☐ No

10. IN TOTAL HOW OFTEN DO YOU MAKE A ROUND TRIP BY BUS?

☐ Enter Number
1. Less than once a month
2. One to three times a month
3. Once or twice a week
4. Three to five times a week
5. More than five times a week

11. HOW LONG AGO DID YOU BEGIN USING TRANSIT?

☐ Enter Number
1. Less than three months
2. More than three months, but less than one year
3. One to two years
4. Three to four years
5. Five years or longer

Please tell us about yourself and your household.

12. MY HOME IS LOCATED AT:

(nearest street intersection or street address) (name of community)

13. OUR HOUSEHOLD HAS ____ VEHICLES AVAILABLE FOR PERSONAL USE

14. THE NUMBER OF PERSONS LIVING IN OUR HOUSEHOLD IS _____

15. I AM A LICENSED DRIVER (check one)

☐ Yes ☐ No

16. MY AGE IS:

☐ Enter Number
1. 5 or under
2. 6-12
3. 13-15
4. 16-18
5. 19-24
6. 25-34
7. 35-44
8. 45-54
9. 55-64
10. 65 and over

17. I AM: (Check one)

☐ Male ☐ Female

18. MY RACE IS: (Circle any that apply)
   1. Black or African American
   2. White
   3. American Indian or Alaska Native
   4. Asian
   5. Native Hawaiian or Other Pacific Islander
   6. Other_____

18a. CHECK IF YOU ARE OF HISPANIC OR LATINO ORIGIN ☐

19. OUR TOTAL HOUSEHOLD INCOME IS:

☐ Enter Number
1. Under $5,000
2. $5,000-$9,999
3. $10,000-$14,999
4. $15,000-$19,999
5. $20,000-$24,999
6. $25,000-$29,999
7. $30,000-$34,999
8. $35,000-$39,999
9. $40,000-$49,999
10. $50,000 and over

20. WHAT SUGGESTIONS DO YOU HAVE FOR IMPROVING BUS SERVICE?_____

Thank you for your participation; your cooperation is greatly appreciated.
This survey is being conducted by the Southeastern Wisconsin Regional Planning Commission in cooperation with the U. S. Department of Transportation, the Wisconsin Department of Transportation, and the transit operator

(This page intentionally left blank)

Appendix B

DATA FOR WISCONSIN AND NATIONAL PEER GROUPS FOR THE WAUKESHA METRO TRANSIT SYSTEM

Table B-1

RIDERSHIP, SERVICE, AND FINANCIAL DATA FOR THE WAUKESHA METRO TRANSIT SYSTEM AND TRANSIT SYSTEMS IN THE WISCONSIN PEER GROUP: 1993 AND 1997

Transit System	1993[a]								
		Fixed-Route Service				Total Transit System			
	Service Area Population	Revenue Vehicle Miles	Revenue Vehicle Hours	Total Passengers[c]	Operating Expenses	Total Passengers[c]	Operating Expenses	Operating Revenues	Operating Assistance
Peer Group Transit System									
Eau Claire Transit System	62,700	491,500	32,400	1,044,800	$1,402,600	1,083,500	$1,500,000	$210,500	$1,289,500
Janesville Transit System	53,000	378,400	24,900	516,500	1,304,100	519,300	1,318,700	269,700	1,049,000
La Crosse Municipal Transit Utility	50,000	626,000	47,600	713,700	2,027,600	713,700	2,027,600	349,300	1,678,300
Oshkosh Transit System	53,000	531,800	41,900	979,300	1,725,500	1,043,700	1,962,200	371,400	1,590,800
Sheboygan Transit System	57,300	772,800	59,100	1,035,500	2,214,100	1,048,600	2,310,200	466,300	1,843,900
Wausau Area Transit System, Inc.	44,500	578,800	46,000	820,700	1,541,000	831,600	1,643,600	301,300	1,342,300
Peer Group Minimum	44,500	378,400	24,900	516,500	$1,304,100	519,300	$1,318,700	$210,500	$1,049,000
Peer Group Maximum	62,700	772,800	59,100	1,044,800	$2,214,100	1,083,500	$2,310,200	$466,300	$1,843,900
Peer Group Average[b]	53,400	563,200	42,000	851,800	$1,702,500	873,400	$1,793,700	$328,100	$1,465,633
Waukesha Metro Transit System	59,800	561,500	42,500	588,200	$1,438,000	604,500	$1,578,700	$263,600	$1,315,100

Transit System	1997a								
		Fixed-Route Service				Total Transit System			
	Service Area Population	Revenue Vehicle Miles	Revenue Vehicle Hours	Total Passengers[c]	Operating Expenses	Total Passengers[c]	Operating Expenses	Operating Revenues	Operating Assistance
Peer Group Transit System									
Eau Claire Transit System	62,700	561,400	37,700	640,200	$1,744,800	684,200	$2,008,400	$392,500	$1,615,900
Janesville Transit System	58,600	427,400	28,000	495,800	1,482,500	498,200	1,502,600	299,400	1,203,200
La Crosse Municipal Transit Utility	51,000	604,700	45,700	710,000	2,164,900	746,900	2,510,700	522,000	1,988,700
Oshkosh Transit System	60,200	491,200	37,100	997,400	1,692,800	1,118,200	2,555,300	453,700	2,101,600
Sheboygan Transit System	57,300	676,700	53,600	701,800	2,433,700	720,100	2,555,300	627,400	1,927,900
Wausau Area Transit System, Inc.	44,500	557,000	37,600	945,400	1,780,600	964,400	1,979,100	381,800	1,597,300
Peer Group Minimum	44,500	427,400	28,000	495,800	1,482,500	498,200	1,502,600	299,400	1,203,200
Peer Group Maximum	62,700	676,700	53,600	997,400	2,433,700	1,118,200	2,555,300	627,400	2,101,600
Peer Group Average[b]	55,700	553,100	40,000	748,400	1,883,200	788,700	2,185,200	446,100	1,739,100
Waukesha Metro Transit System	59,800	746,475	54,500	727,500	2,148,300	738,800	2,249,900	433,600	1,816,300

[a]Based on ridership, service, and financial data obtained from the Federal Transit Administration National Transit Database for the years 1993 and 1997. Performance measures for the total system include data for complementary paratransit service for disabled individuals and for any other demand-responsive services provided by each system.

[b]Averages reflect the mean of the individual performance measure values calculated for each transit system in peer group.

[c]This measure of ridership counts all passengers each time they board a transit vehicle. Passengers who transfer one or more times to different routes of transit system are counted as two or more passengers in completing a single trip between a specific origin and destination.

Source: SEWRPC.

Table B-2

RIDERSHIP, SERVICE, AND FINANCIAL DATA FOR THE WAUKESHA METRO TRANSIT SYSTEM AND TRANSIT SYSTEMS IN THE NATIONAL PEER GROUP: 1993 AND 1997

Transit System	1993[a]								
		Fixed-Route Service				Total Transit System			
	Service Area Population	Revenue Vehicle Miles	Revenue Vehicle Hours	Total Passengers[c]	Operating Expenses	Total Passengers[c]	Operating Expenses	Operating Revenues	Operating Assistance
Peer Group Transit System									
Altoona Metro Transit (Altoona, Pennsylvania)	69,600	528,500	38,900	859,300	$2,111,000	869,400	$2,168,600	$829,600	$1,339,000
Battle Creek Transit (Battle Creek, Michigan)	73,000	478,400	31,500	739,100	1,394,300	773,900	1,980,700	382,700	1,598,000
The Bus (Greeley, Colorado)	66,400	419,500	28,700	450,200	992,100	476,300	1,339,700	154,200	1,185,500
City Bus (Grand Forks, North Dakota)	49,400	327,800	23,400	692,100	989,700	735,700	1,193,100	181,500	1,011,600
KeyLine Transit (Dubuque, Iowa)	54,000	251,700	25,200	573,400	1,184,400	585,000	1,283,100	174,500	1,108,600
Metro Bus (St. Cloud, Minnesota)	59,600	769,100	54,700	1,628,100	2,044,600	1,688,300	2,363,100	466,400	1,896,700
Mountain Line (Missoula, Montana)	60,900	484,300	34,100	477,900	1,409,800	493,400	1,544,400	215,200	1,329,200
Muncie Indiana Transit System (Muncie, Indiana)	72,900	861,200	61,800	841,800	2,784,000	890,900	3,498,200	325,000	3,173,200
Springfield City Area Transit (Springfield, Ohio)	70,500	246,200	15,900	428,400	857,000	437,200	995,200	133,400	861,800
Wheeling-Ohio Valley Regional Transit Authority (Wheeling, West Virginia)	82,000	707,300	60,900	466,600	1,567,100	468,000	1,713,600	492,900	1,220,700
Peer Group Minimum	49,400	246,200	15,900	428,400	$857,000	437,200	$995,200	$133,400	$ 861,800
Peer Group Maximum	82,000	861,200	61,800	1,628,100	$2,784,000	1,688,300	$3,498,200	$829,600	$3,173,200
Peer Group Average[b]	65,800	507,400	37,500	715,700	$1,533,400	741,800	$1,808,000	$335,500	$1,472,400
Waukesha Metro Transit System	59,800	561,500	42,500	588,200	$1,438,000	604,500	$1,578,700	$263,600	$1,315,100

Transit System	1997[a]								
		Fixed-Route Service				Total Transit Systems			
	Service Area Population	Revenue Vehicle Miles	Revenue Vehicle Hours	Total Passengers[c]	Operating Expenses	Total Passengers[c]	Operating Expenses	Operating Revenues	Operating Assistance
Peer Group Transit System									
Altoona Metro Transit (Altoona, Pennsylvania)	69,600	474,100	33,400	661,000	$1,810,000	670,100	$1,877,800	$792,500	$1,085,300
Battle Creek Transit (Battle Creek, Michigan)	70,000	450,200	30,500	534,500	2,010,100	390,500	2,701,300	353,000	2,348,300
The Bus (Greeley, Colorado)	66,400	410,300	28,900	368,600	935,500	548,100	1,254,700	218,900	1,035,800
City Bus (Grand Forks, North Dakota)	49,400	287,400	20,700	606,100	989,500	646,300	1,197,800	226,200	971,600
KeyLine Transit (Dubuque, Iowa)	60,000	221,000	24,300	520,100	1,031,500	548,100	1,245,600	232,300	1,013,300
Metro Bus (St. Cloud, Minnesota)	61,700	855,300	60,600	1,546,000	2,408,000	1,634,400	3,056,000	733,100	2,322,900
Mountain Line (Missoula, Montana)	60,900	521,900	34,000	574,200	1,457,400	590,000	1,626,600	250,500	1,376,100
Muncie Indiana Transit System (Muncie, Indiana)	72,900	802,900	57,800	1,171,400	2,892,000	1,231,900	3,704,800	413,300	3,291,500
Springfield City Area Transit (Springfield, Ohio)	79,900	262,900	21,000	571,300	937,900	589,400	1,049,400	184,500	864,900
Wheeling-Ohio Valley Regional Transit Authority (Wheeling, West Virginia)	70,300	699,400	58,200	465,600	1,749,900	467,100	1,938,800	483,800	1,455,000
Peer Group Minimum	49,400	221,000	20,700	368,600	$ 935,500	390,500	$1,049,400	$184,500	$ 864,900
Peer Group Maximum	79,900	855,300	60,600	1,546,000	$2,892,000	1,634,400	$3,704,800	$792,500	$3,291,500
Peer Group Average[b]	66,100	498,500	36,900	701,900	$1,622,200	731,600	$1,965,300	$388,800	$1,576,500
Waukesha Metro Transit System	59,800	746,500	54,500	727,500	$2,148,300	738,800	$2,249,900	$433,600	$1,816,300

[a]Based on ridership, service, and financial data obtained from the Federal Transit Administration National Transit Database for the years 1993 and 1997. Performance measures for the total system include data for complementary paratransit service for disabled individuals and for any other demand-responsive services provided by each system.

[b]Averages reflect the mean of the individual performance measure values calculated for each transit system in the peer group.

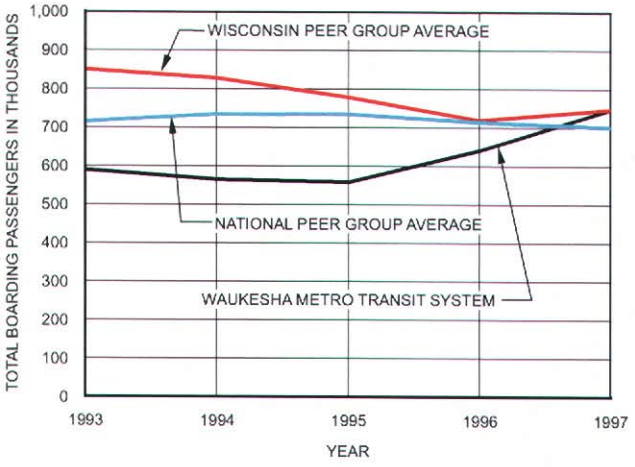
[c]This measure of ridership counts all passengers each time they board a transit vehicle. Passengers who transfer one or more times to different routes of a transit system are counted as two or more passengers in completing a single trip between a specific origin and destination.

Source: SEWRPC.

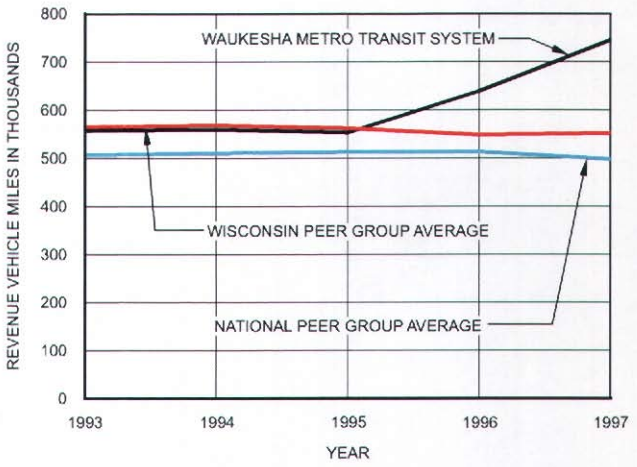
Figure B-1

COMPARISON OF RIDERSHIP AND SERVICE LEVELS FOR THE WAUKESHA METRO TRANSIT SYSTEM AND PEER GROUP TRANSIT SYSTEMS: 1993-1997

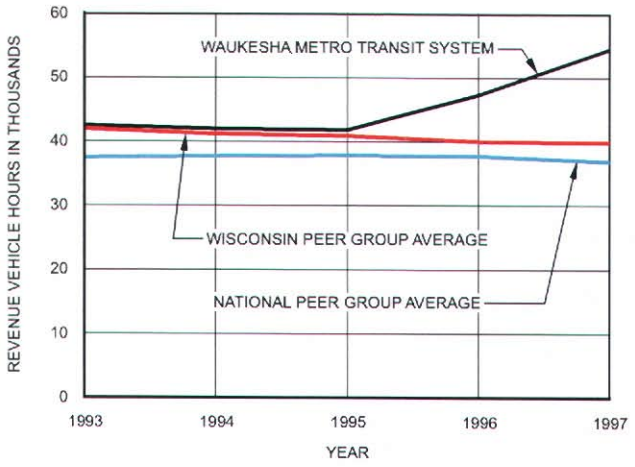
RIDERSHIP



VEHICLE MILES OF SERVICE



VEHICLE HOURS OF SERVICE

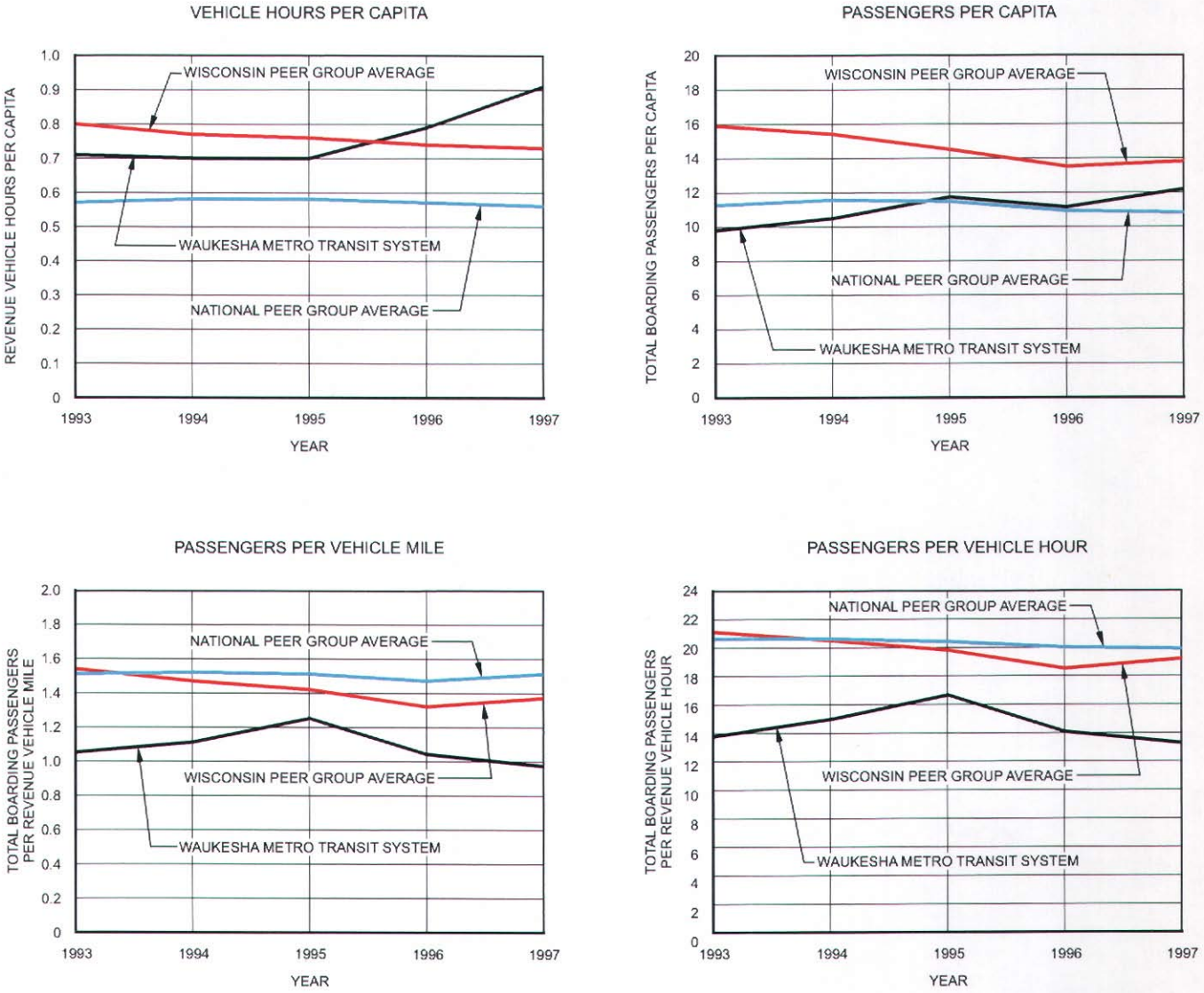


NOTE: FIGURES ARE BASED ON DATA OBTAINED FROM THE FEDERAL TRANSIT ADMINISTRATION NATIONAL TRANSIT DATABASE FOR THE YEARS 1993 THROUGH 1997. PERFORMANCE MEASURES ARE FOR FIXED-ROUTE BUS OPERATIONS ONLY.

Source: SEWRPC.

Figure B-2

COMPARISON OF SERVICE EFFECTIVENESS MEASURES FOR THE WAUKESHA METRO TRANSIT SYSTEM AND PEER GROUP TRANSIT SYSTEMS: 1993-1997

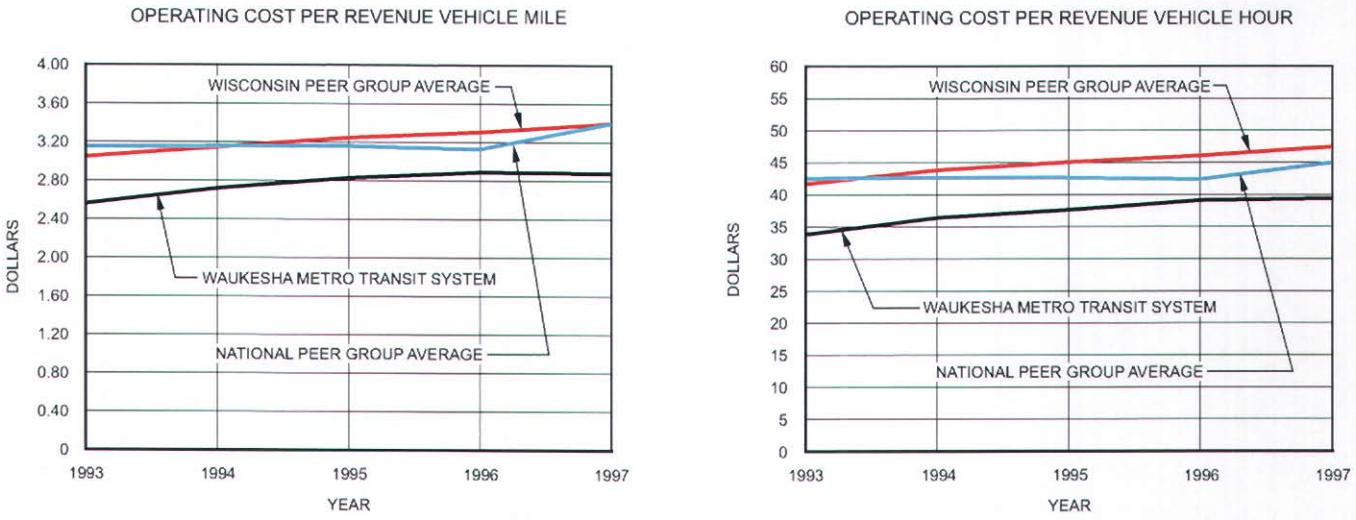


NOTE: FIGURES ARE BASED ON DATA OBTAINED FROM THE FEDERAL TRANSIT ADMINISTRATION NATIONAL TRANSIT DATABASE FOR THE YEARS 1993 THROUGH 1997. PERFORMANCE MEASURES ARE FOR FIXED-ROUTE BUS OPERATIONS ONLY.

Source: SEWRPC.

Figure B-3

COMPARISON OF SERVICE EFFICIENCY MEASURES FOR THE WAUKESHA METRO TRANSIT SYSTEM AND PEER GROUP TRANSIT SYSTEMS: 1993-1997

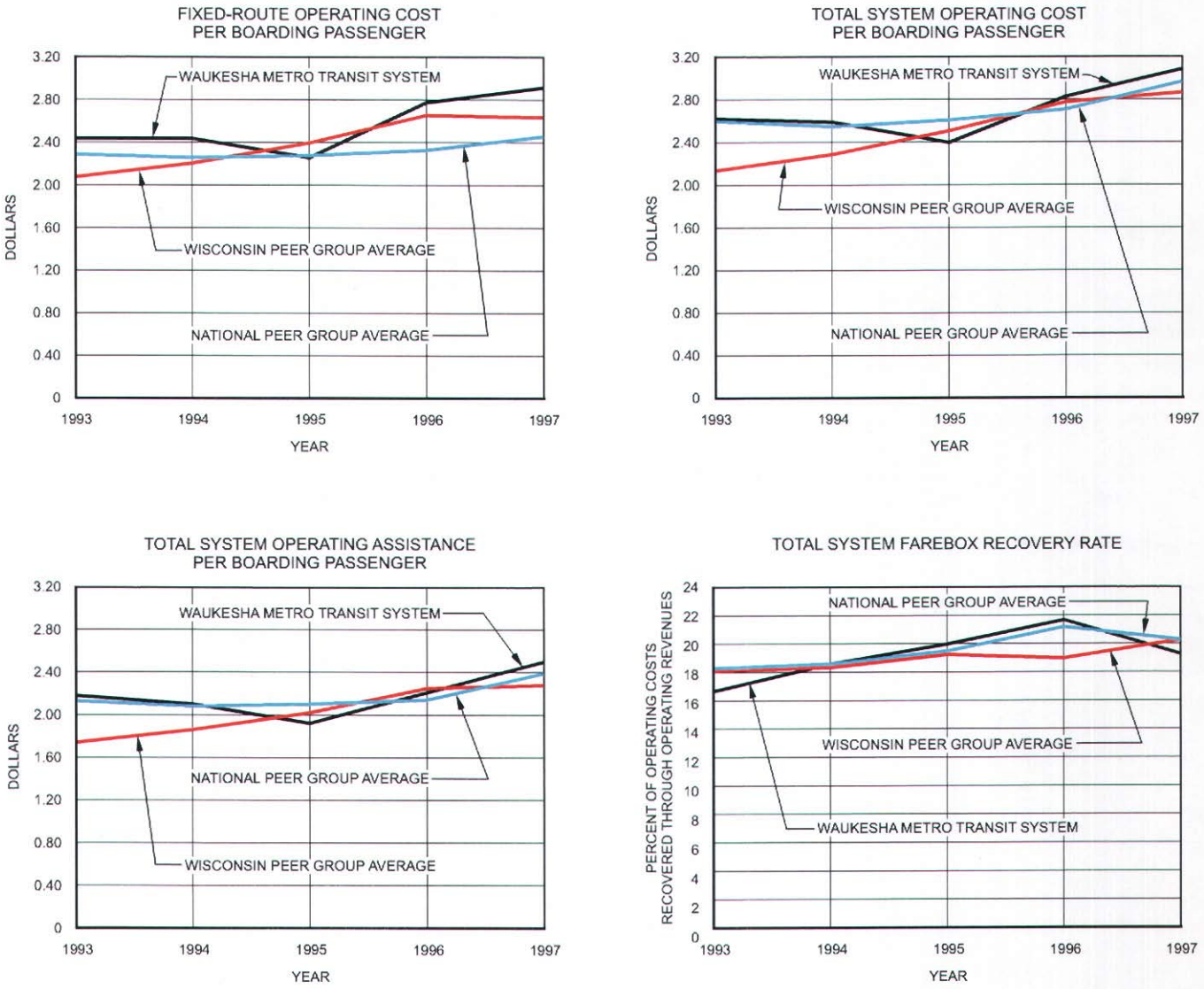


NOTE: FIGURES ARE BASED ON DATA OBTAINED FROM THE FEDERAL TRANSIT ADMINISTRATION NATIONAL TRANSIT DATABASE FOR THE YEARS 1993 THROUGH 1997. PERFORMANCE MEASURES ARE FOR FIXED-ROUTE BUS OPERATIONS ONLY.

Source: SEWRPC.

Figure B-4

COMPARISON OF COST EFFECTIVENESS MEASURES FOR THE WAUKESHA METRO TRANSIT SYSTEM AND PEER GROUP TRANSIT SYSTEMS: 1993-1997



NOTE: FIGURES ARE BASED ON DATA OBTAINED FROM THE FEDERAL TRANSIT ADMINISTRATION NATIONAL TRANSIT DATABASE FOR THE YEARS 1993 THROUGH 1997. PERFORMANCE MEASURES ARE FOR FIXED-ROUTE BUS OPERATIONS EXCEPT WHERE NOTED AS FOR THE TOTAL SYSTEM. PERFORMANCE MEASURES FOR THE TOTAL SYSTEM INCLUDE DATA FOR COMPLEMENTARY PARATRANSIT SERVICE FOR DISABLED INDIVIDUALS.

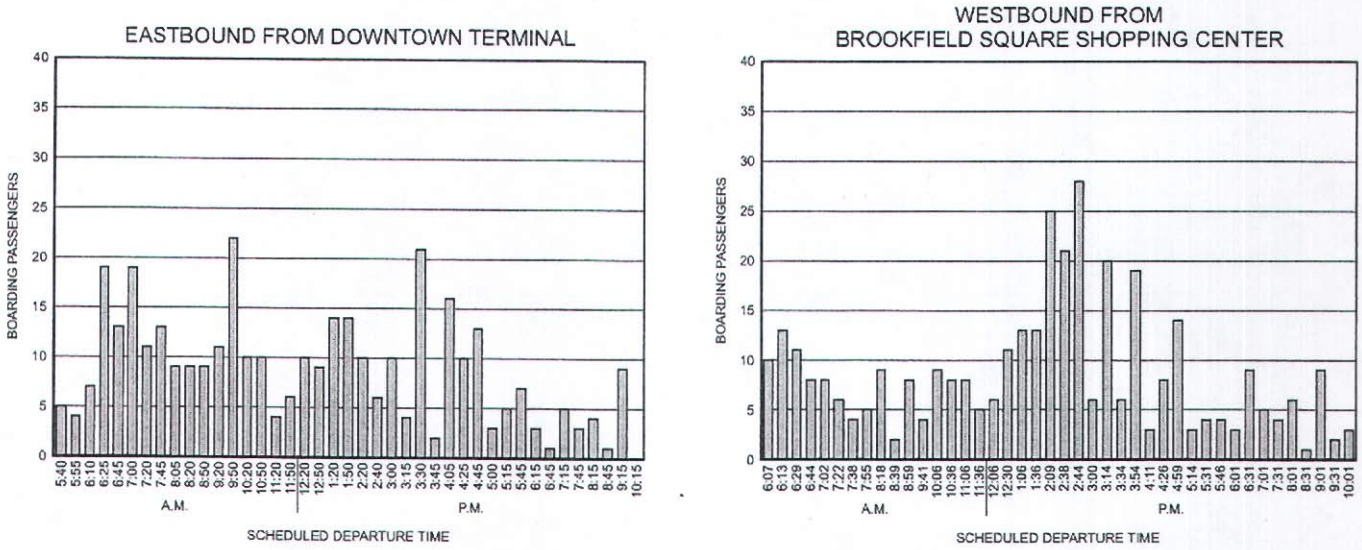
Source: SEWRPC.

APPENDIX C

WEEKDAY AND SATURDAY BOARDING PASSENGERS BY BUS RUN ON THE ROUTES OF THE WAUKESHA METRO TRANSIT SYSTEM: OCTOBER 19-26, 1998

Figure C-1

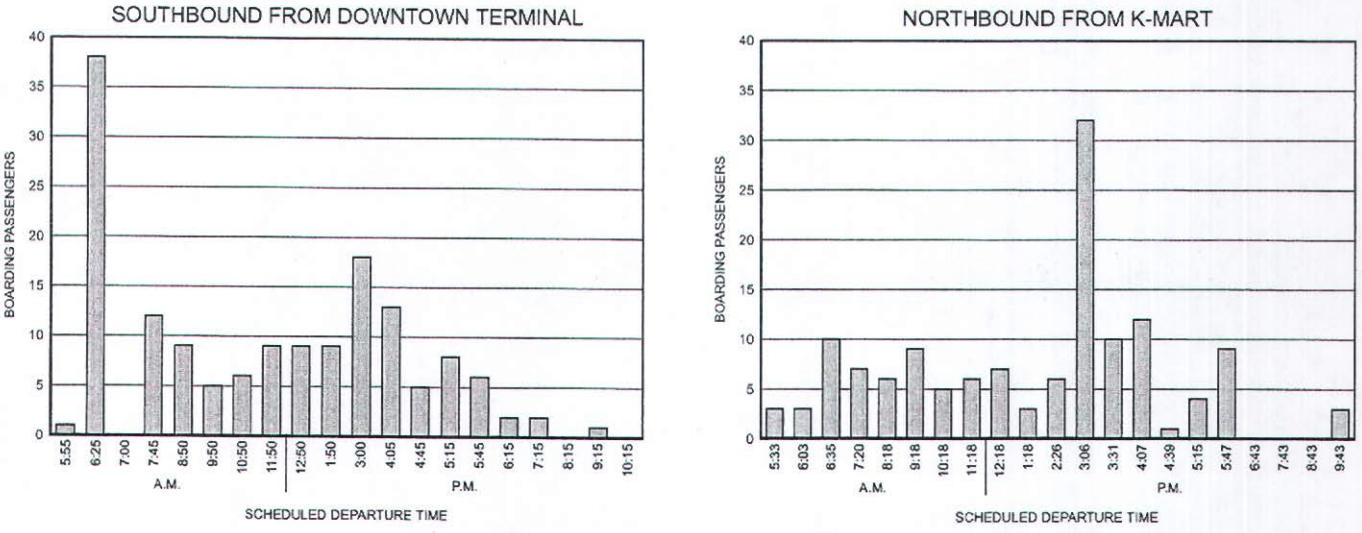
WEEKDAY BOARDING PASSENGERS ON ROUTE NO. 1



Source: Waukesha Metro Transit System and SEWRPC.

Figure C-2

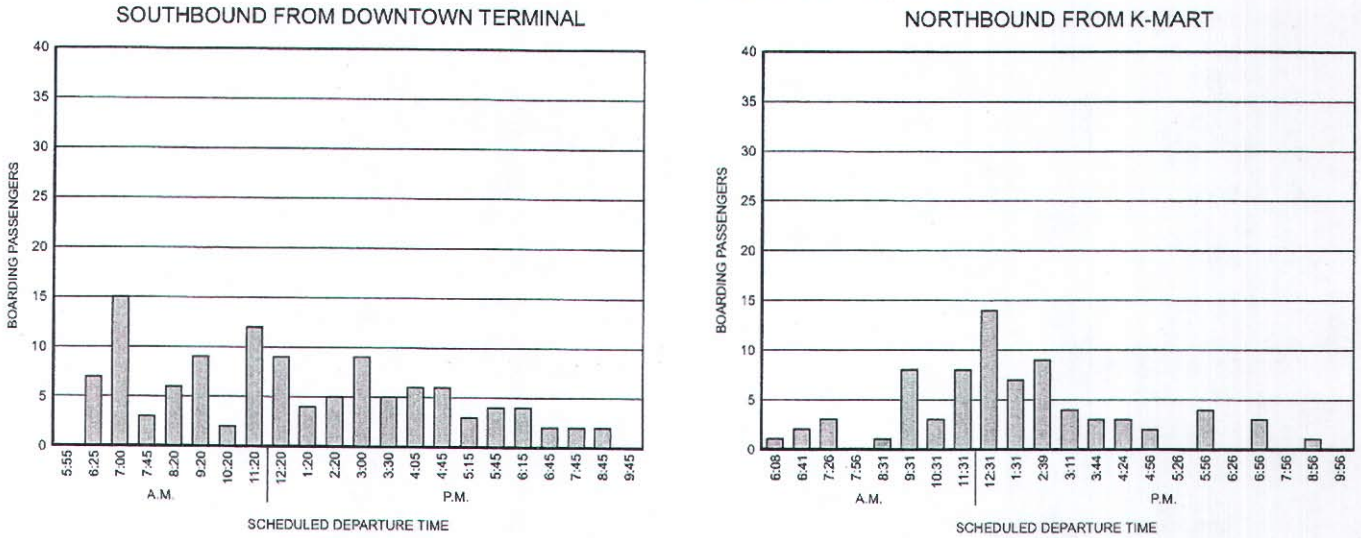
WEEKDAY BOARDING PASSENGERS ON ROUTE NO. 2



Source: Waukesha Metro Transit System and SEWRPC.

Figure C-3

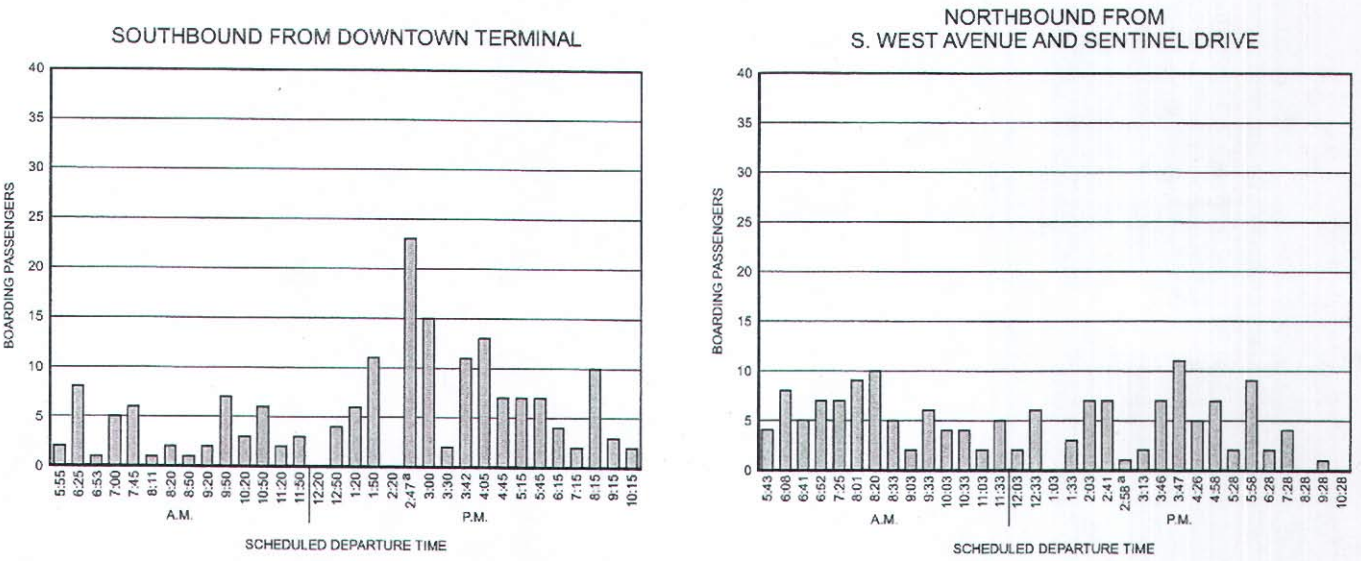
WEEKDAY BOARDING PASSENGERS ON ROUTE NO. 3



Source: Waukesha Metro Transit System and SEWRPC.

Figure C-4

WEEKDAY BOARDING PASSENGERS ON ROUTE NO. 4

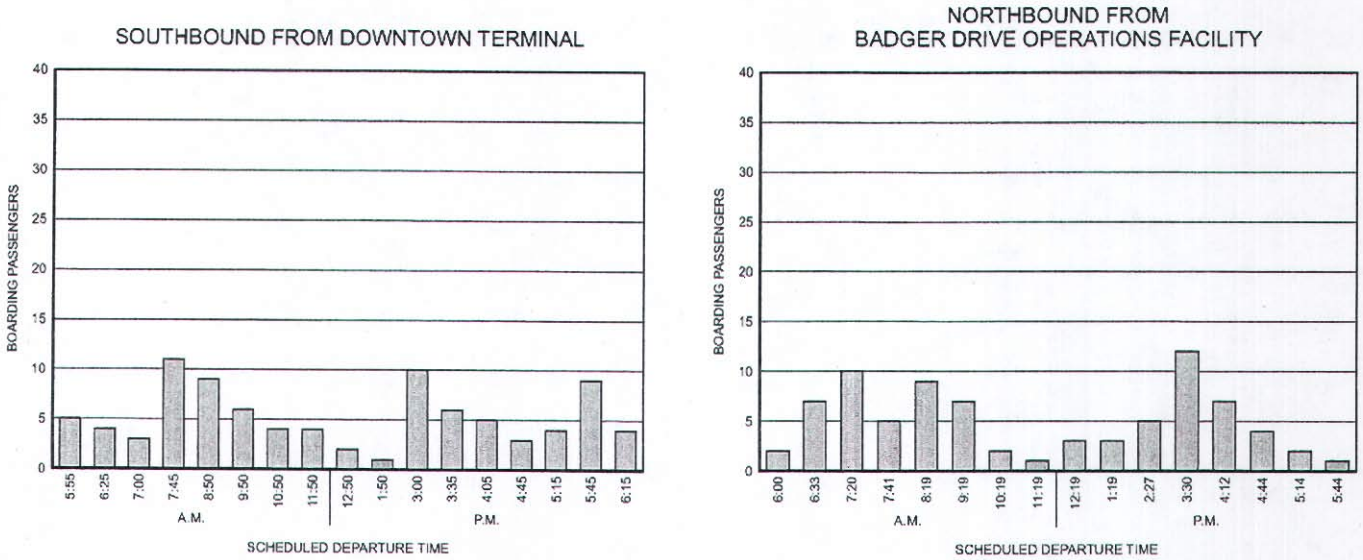


[a]*Survey conducted on a different day than the remaining surveys for that route.*

Source: Waukesha Metro Transit System and SEWRPC.

Figure C-5

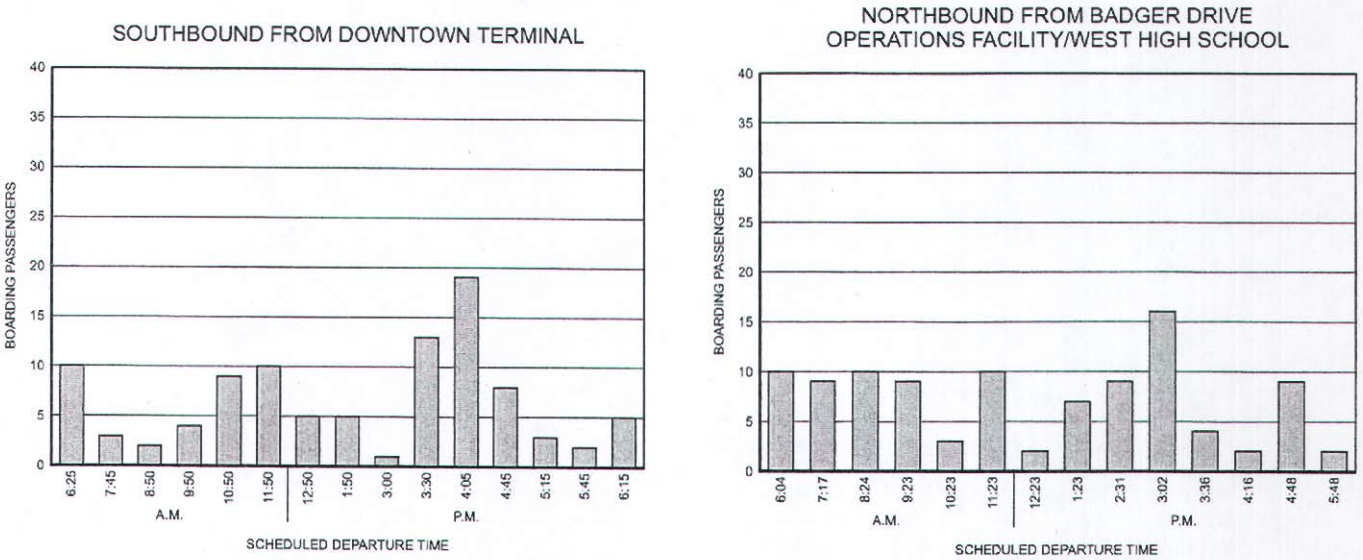
WEEKDAY BOARDING PASSENGERS ON ROUTE NO.5



Source: Waukesha Metro Transit System and SEWRPC.

Figure C-6

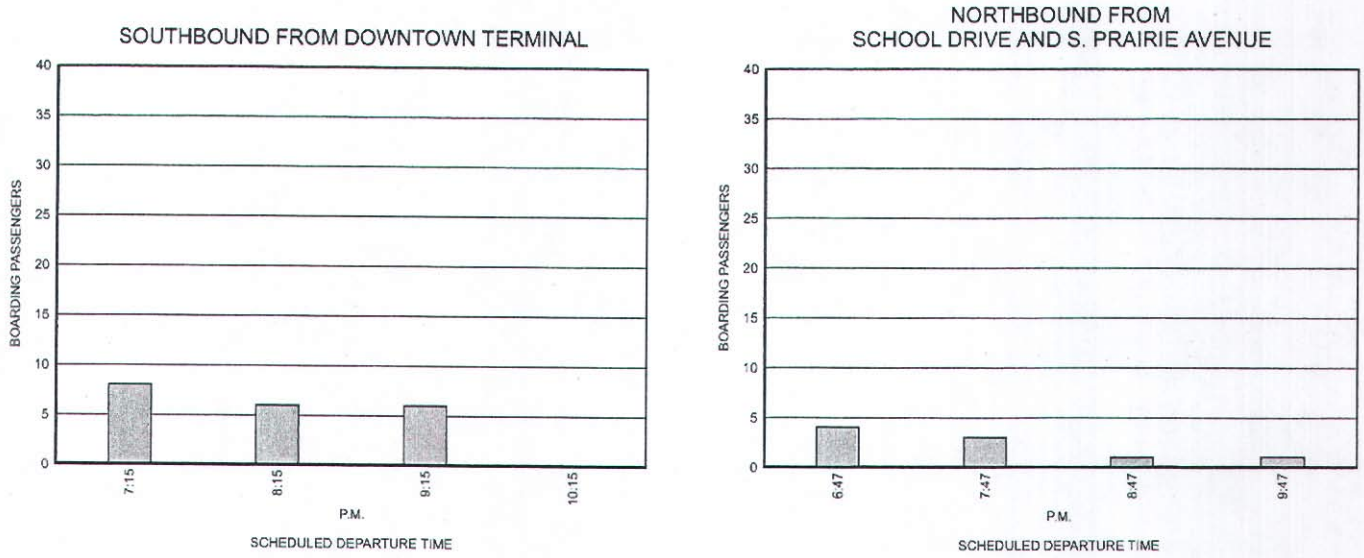
WEEKDAY BOARDING PASSENGERS ON ROUTE NO. 6



Source: Waukesha Metro Transit System and SEWRPC.

Figure C-7

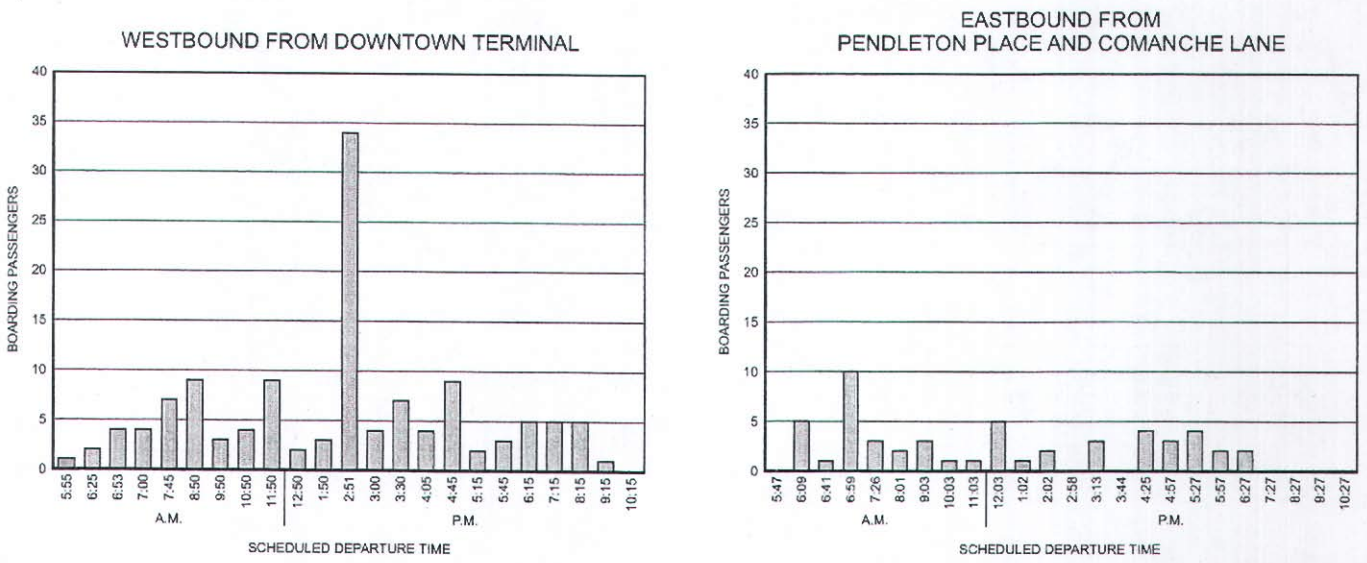
WEEKDAY BOARDING PASSENGERS ON ROUTE NO. 5/6



Source: Waukesha Metro Transit System and SEWRPC.

Figure C-8

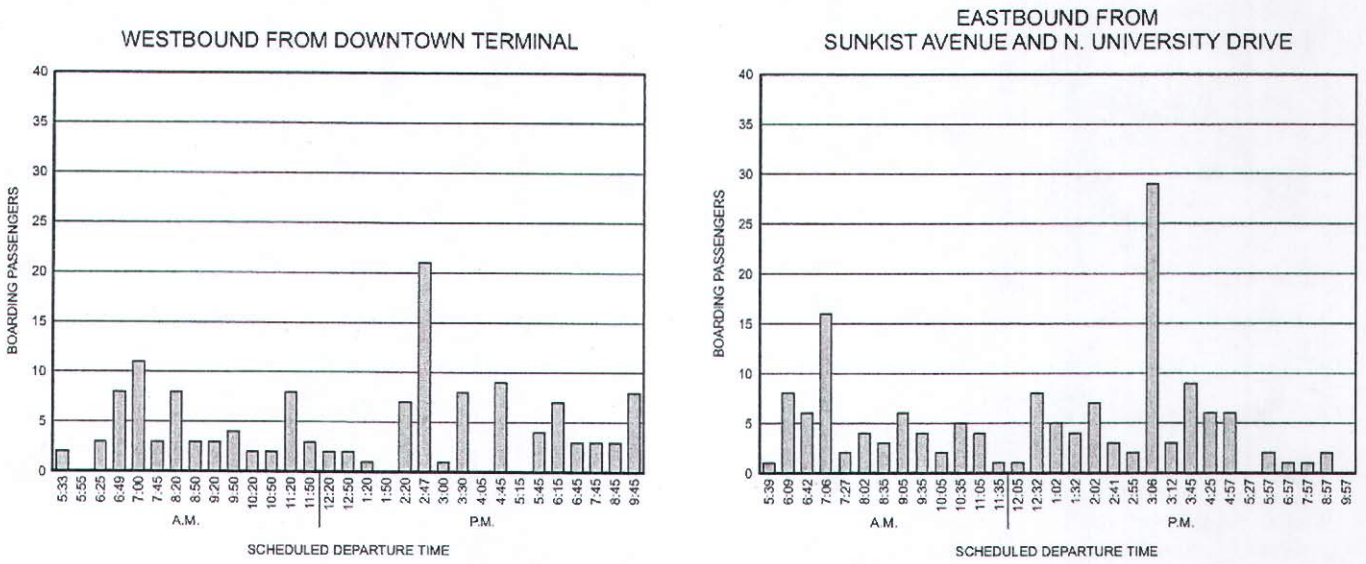
WEEKDAY BOARDING PASSENGERS ON ROUTE NO. 7



Source: Waukesha Metro Transit System and SEWRPC.

Figure C-9

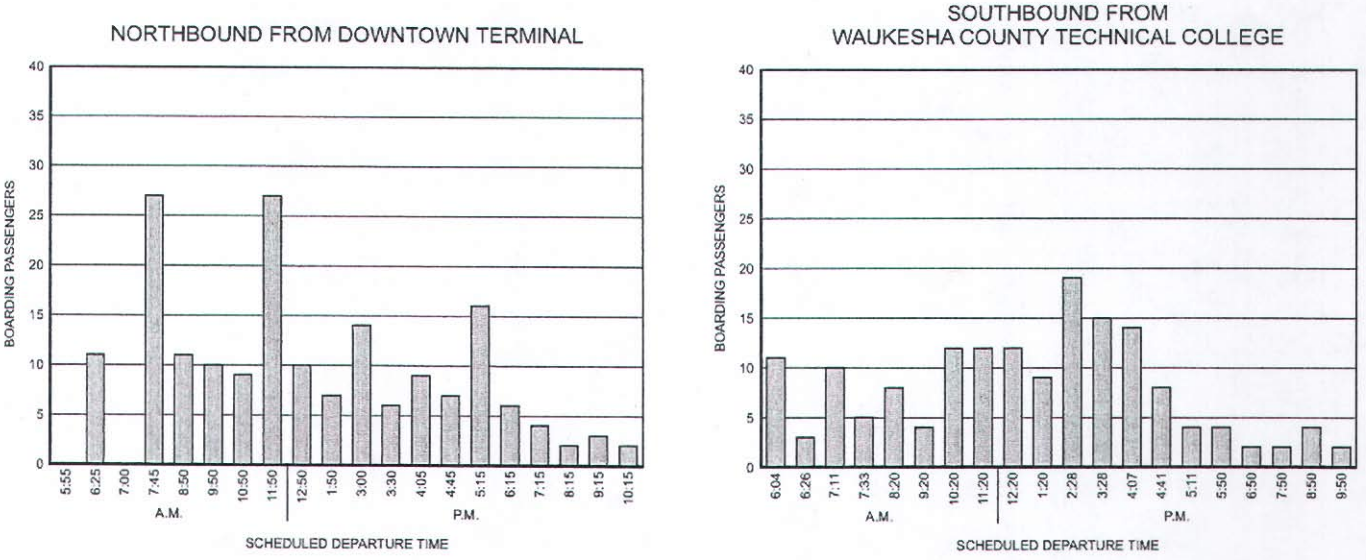
WEEKDAY BOARDING PASSENGERS ON ROUTE NO. 8



Source: Waukesha Metro Transit System and SEWRPC.

Figure C-10

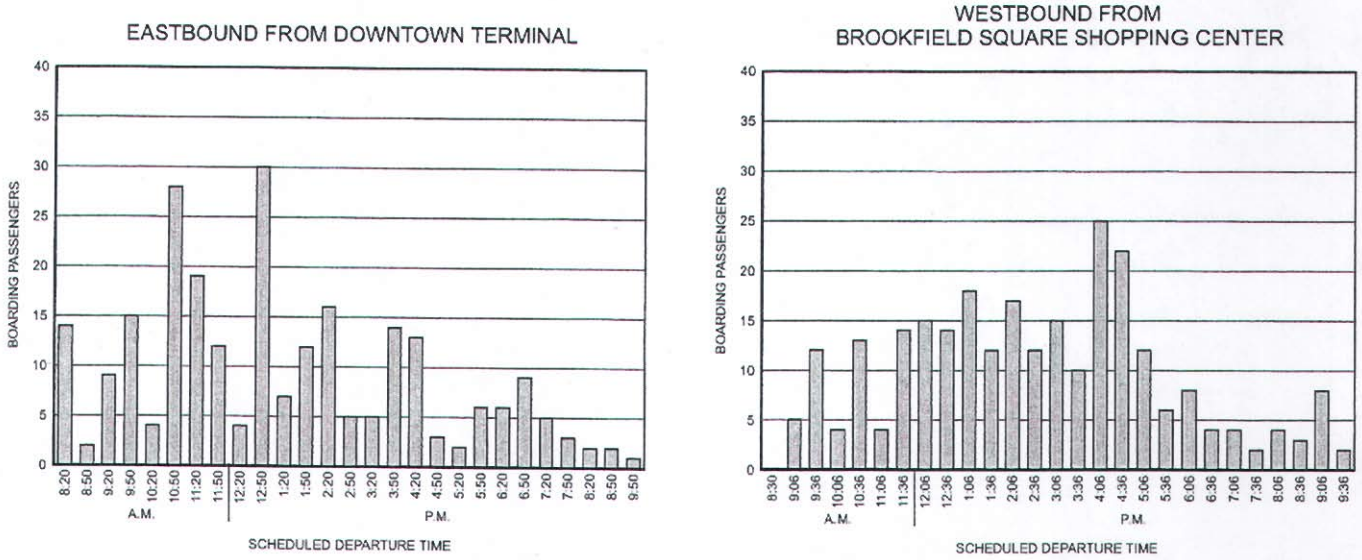
WEEKDAY BOARDING PASSENGERS ON ROUTE NO. 9



Source: Waukesha Metro Transit System and SEWRPC.

Figure C-11

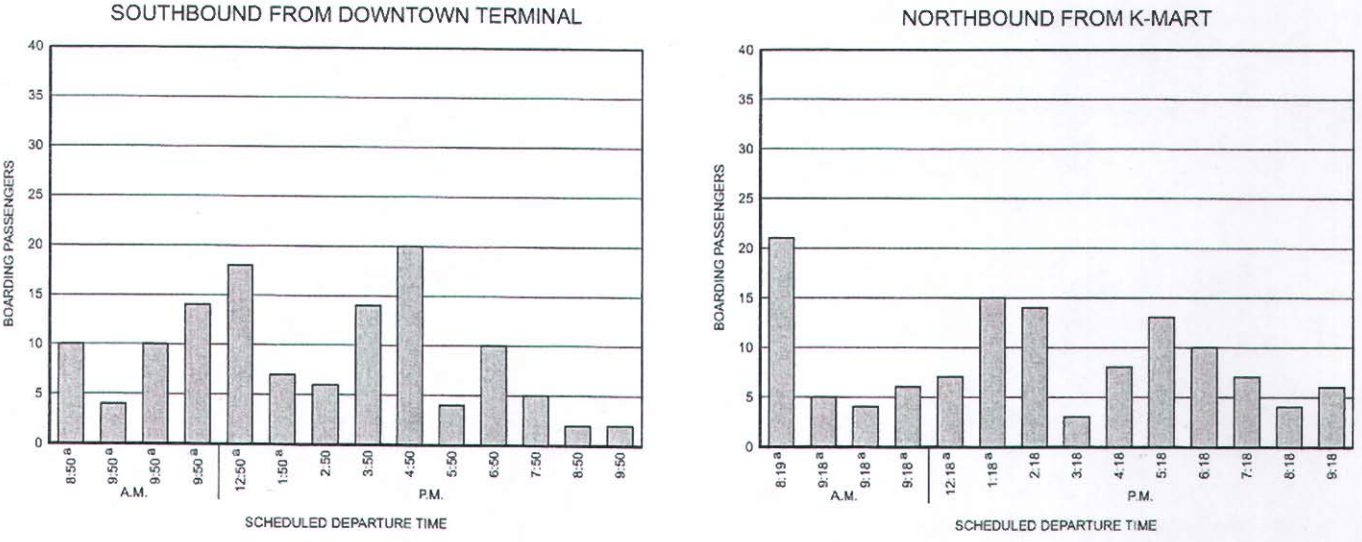
SATURDAY BOARDING PASSENGERS ON ROUTE NO. 1



Source: Waukesha Metro Transit System and SEWRPC.

Figure C-12

SATURDAY BOARDING PASSENGERS ON ROUTE NO. 2

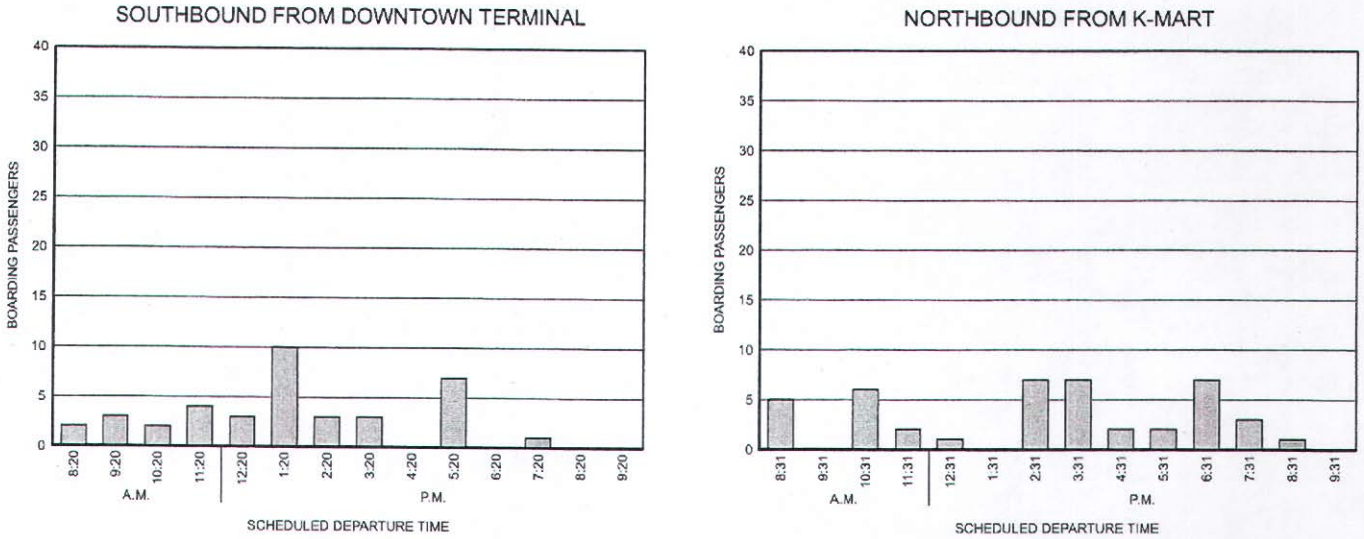


[a] *Survey conducted on a different day than the remaining surveys for that route.*

Source: Waukesha Metro Transit System and SEWRPC.

Figure C-13

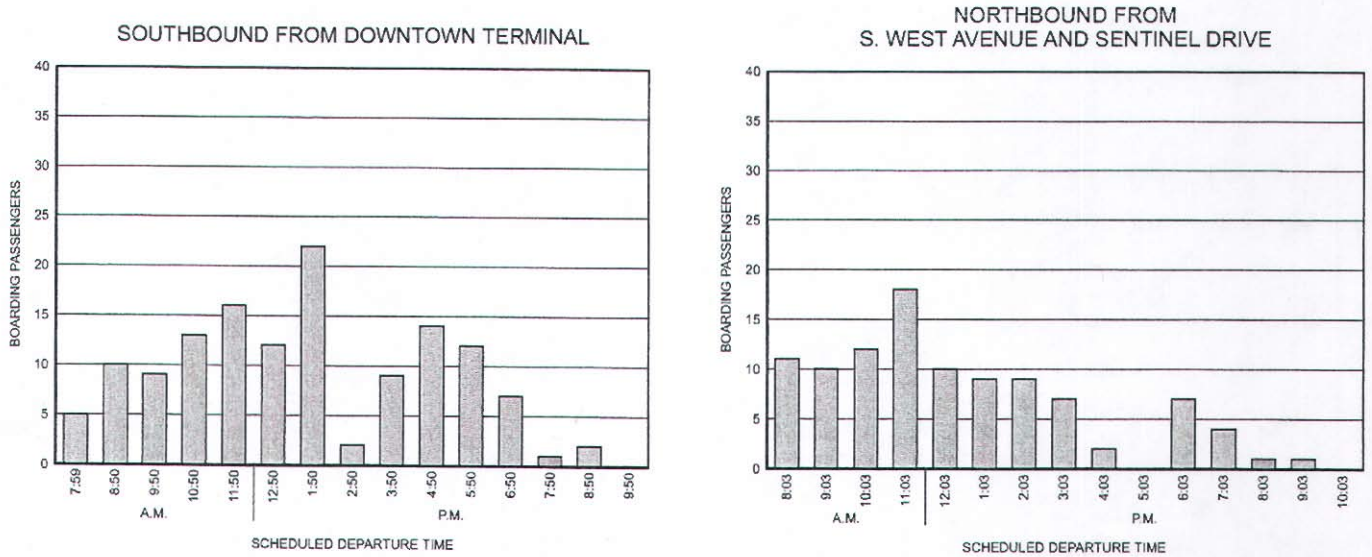
SATURDAY BOARDING PASSENGERS ON ROUTE NO. 3



Source: Waukesha Metro Transit System and SEWRPC.

Figure C-14

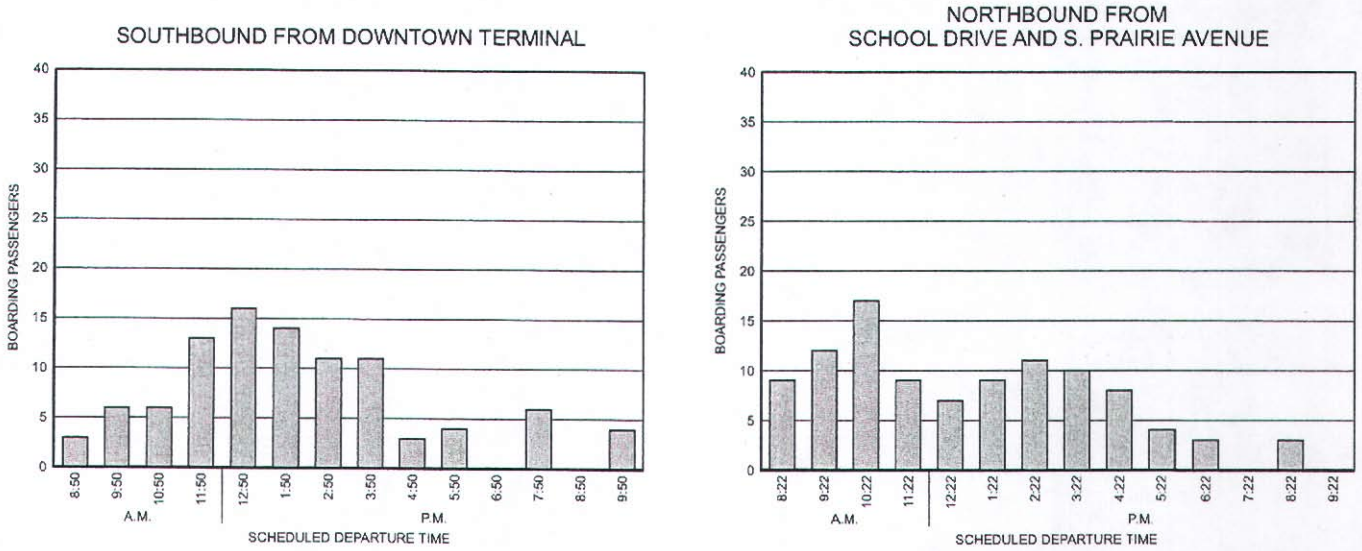
SATURDAY BOARDING PASSENGERS ON ROUTE NO. 4



Source: Waukesha Metro Transit System and SEWRPC.

Figure C-15

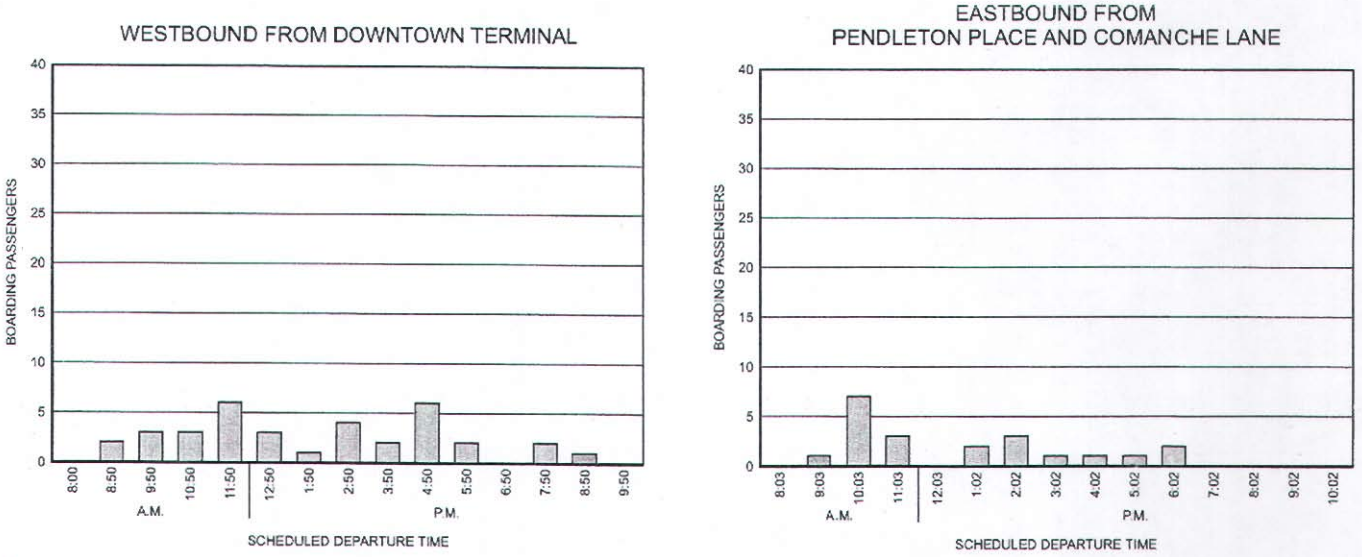
SATURDAY BOARDING PASSENGERS ON ROUTE NO. 5/6



Source: Waukesha Metro Transit System and SEWRPC.

Figure C-16

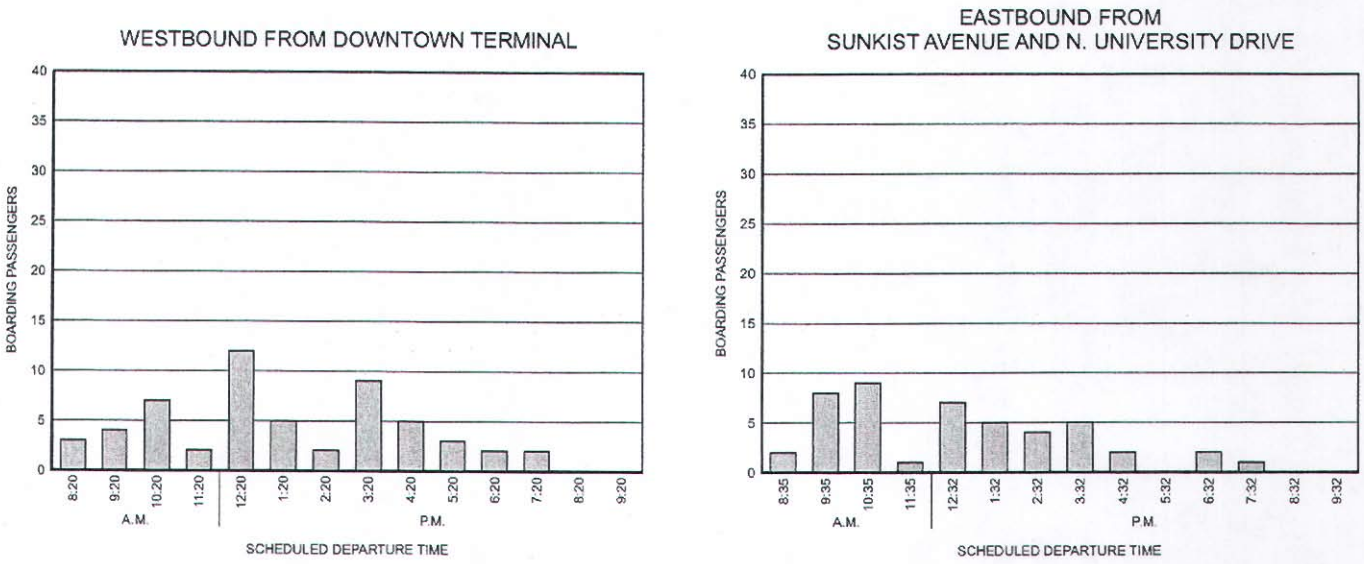
SATURDAY BOARDING PASSENGERS ON ROUTE NO. 7



Source: Waukesha Metro Transit System and SEWRPC.

Figure C-17

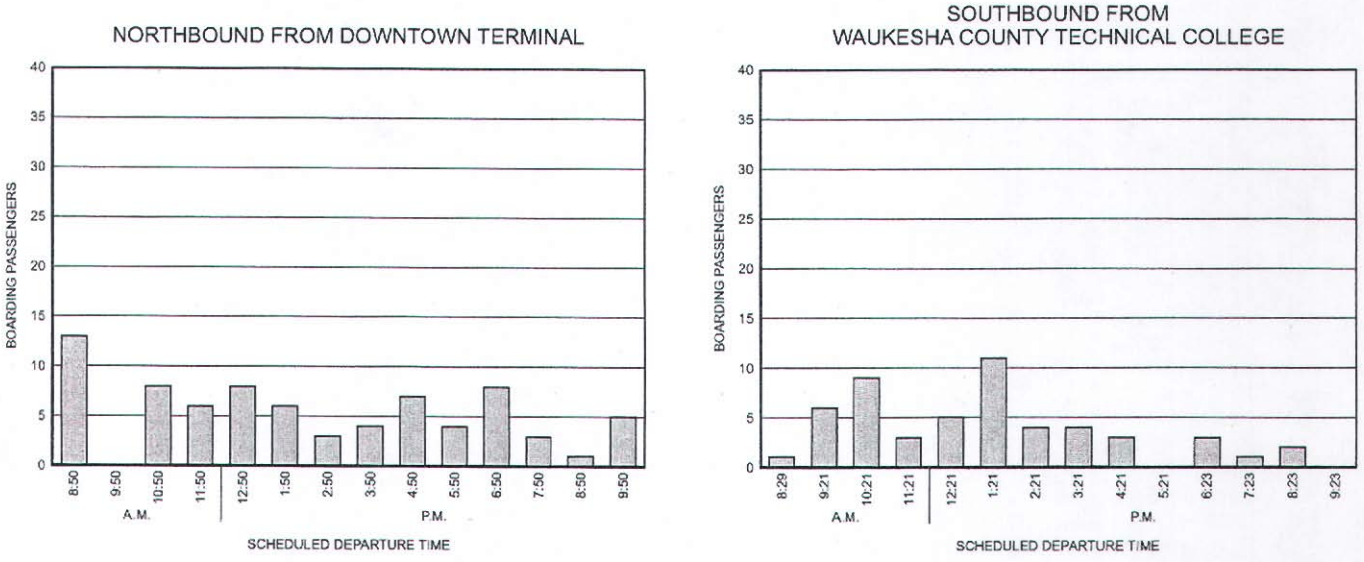
SATURDAY BOARDING PASSENGERS ON ROUTE NO. 8



Source: Waukesha Metro Transit System and SEWRPC.

Figure C-18

SATURDAY BOARDING PASSENGERS ON ROUTE NO. 9



Source: Waukesha Metro Transit System and SEWRPC.

(This page intentionally left blank)

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION STAFF

Philip C. Evenson, AICP ..... Executive Director

Kenneth R. Yunker, PE ..... Assistant Director

Nancy M. Anderson, AICP ..... Chief Community Assistance Planner

Robert E. Beglinger ..... Chief Transportation Engineer

Robert P. Biebel, PE, PH ..... Chief Environmental Engineer

Leland H. Kreblin, RLS ..... Chief Planning Illustrator

Elizabeth A. Larsen ..... Business Manager

John G. McDougall ..... Geographic Information Systems Manager

John R. Meland ..... Chief Economic Development Planner

Dr. Donald M. Reed ..... Chief Biologist

William J. Stauber, AICP ..... Chief Land Use Planner

Special acknowledgment is due Mr. Albert A. Beck, SEWRPC Principal Planner, and Mr. Patrick A. Pittenger, SEWRPC Senior Planner, for their contributions to the preparation of this report.