



New Jersey's Long-Range Transportation Plan

For Public Discussion
September 2008

URBAN SUPPLEMENT REPORT

City of New Brunswick

Prepared for
**NEW JERSEY DEPARTMENT
OF TRANSPORTATION and
NJ TRANSIT**

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INTRODUCTION

State law requires the New Jersey Department of Transportation (NJDOT), in conjunction with NJ TRANSIT, to prepare and submit to the legislature an Urban Transportation Supplement to the state's Long-Range Transportation Plan. The state requires that the Urban Supplement identify and address the transportation needs of the state's seven largest cities: Atlantic City, Camden, Elizabeth, Jersey City, Newark, Paterson, and Trenton. Because the State Development and Redevelopment Plan (State Plan) recognizes New Brunswick as an eighth urban center, this long-range plan includes the first Urban Supplement report for New Brunswick. The Urban Supplement must outline means of improving access to these major urban centers, emphasizing the transportation needs of city residents who are employed or seeking employment in suburban locations.

The State Plan recognizes the importance of cities to future development in the state, and it proposes to target infrastructure investments to urban areas to support urban development and redevelopment. In recent years, cities have begun to experience modest to substantial gains in new development, and projections and plans indicate that urban development is likely to continue.

The transportation needs of the major cities can be summarized follows:

- ◆ Diverse populations, including low-income, minority, and elderly citizens, many of whom depend on public transportation
- ◆ A need to serve both increasing development and redevelopment
- ◆ An aging infrastructure that must be maintained and rehabilitated
- ◆ A mismatch between the locations of housing and jobs

NJDOT intends for this document to be a user-friendly guide to inform its planning and capital programming processes, and those of the counties and municipalities involved, particularly to support local economic development and land use objectives.

This report for the city of New Brunswick provides background data on transportation and demographic conditions, and it assesses transportation system issues and needs, especially in terms of meeting existing demands and accommodating new development and redevelopment. The report also identifies current and proposed transportation investments and their status, and it proposes means of advancing key projects.

The study process involved interviews with representatives of several agencies including NJDOT Local Aid, NJ TRANSIT, the North Jersey Transportation Planning Authority (NJTPA), the City of New Brunswick Department of Planning, Community and Economic Development, the city's Engineering Department, the Middlesex County Workforce Investment Board, the county Planning Board, the county Department of Transportation, Rutgers University Parking and Transportation Services, and the Keep Middlesex Moving TMA.

The process also involved reviewing reports, information, and data from several agencies, including the US Census, NJ Department of Labor, NJDOT, NJ TRANSIT, NJTPA, and Rutgers University. Key local planning documents reviewed include the city's Master Plan, the county's Comprehensive Transportation Plan, and the university's Physical Master Plan.

I. TRANSPORTATION AND DEMOGRAPHIC CONDITIONS

A. EXISTING TRANSPORTATION NETWORK

1. Roads

Regional/State Roads

The major regional or state roads serving New Brunswick are the New Jersey Turnpike, I-287, US 1, Route 18, and Route 27 (see Map 1). The following is a brief summary of the key roads that run near or through New Brunswick:

- ◆ The New Jersey Turnpike runs just to the south of the city. Exit 9 of the Turnpike provides access to and from the city via Route 18.
- ◆ I-287 runs just to the north of the city. Exit 9, River Road in Piscataway, and Exit 10, Easton Avenue in Franklin, provide access to and from the city.
- ◆ US 1 is a north-south arterial which runs as a six-lane limited access roadway 1.3 miles through the eastern arm of the city. This road has an interchange with Route 18 within the city, and other interchanges just south of the city provide additional access points to and from the city.
- ◆ Route 18 is an urban principal arterial which serves both regional and local traffic. It provides connections to I-287 to the north and the Turnpike to the south.
- ◆ Route 27 (Somerset Street, French Street, and Albany Street) runs east-west through the city. In the downtown area, the road is under county jurisdiction.
- ◆ Route 26 (Livingston Avenue) runs between George Street and US 1 south of the city. Between George Street and Nassau Street it is a county and municipal street, and between Nassau Street and US 1 it is a state road.
- ◆ Route 91 (Jersey Avenue) runs between Route 27 (French Street) and US 1 south of the city. Between French Street and Van Dyke Avenue it is a county road, and between Van Dyke Avenue and US 1 it is a state road.
- ◆ Route 171 (Georges Road and Commercial Avenue) connects the city with US 1 in North Brunswick just south of the city.
- ◆ Route 172 is a short roadway segment connecting the south end of George Street with Route 18.

County Roads

The local roadway network includes several roads under county jurisdiction, including Route 514 (Easton Avenue and Hamilton Avenue), Route 527 (George Street and Easton Avenue), Route 609 (Landing Lane), Route 617 (Ryders Lane), and Route 680 (Hows Lane).

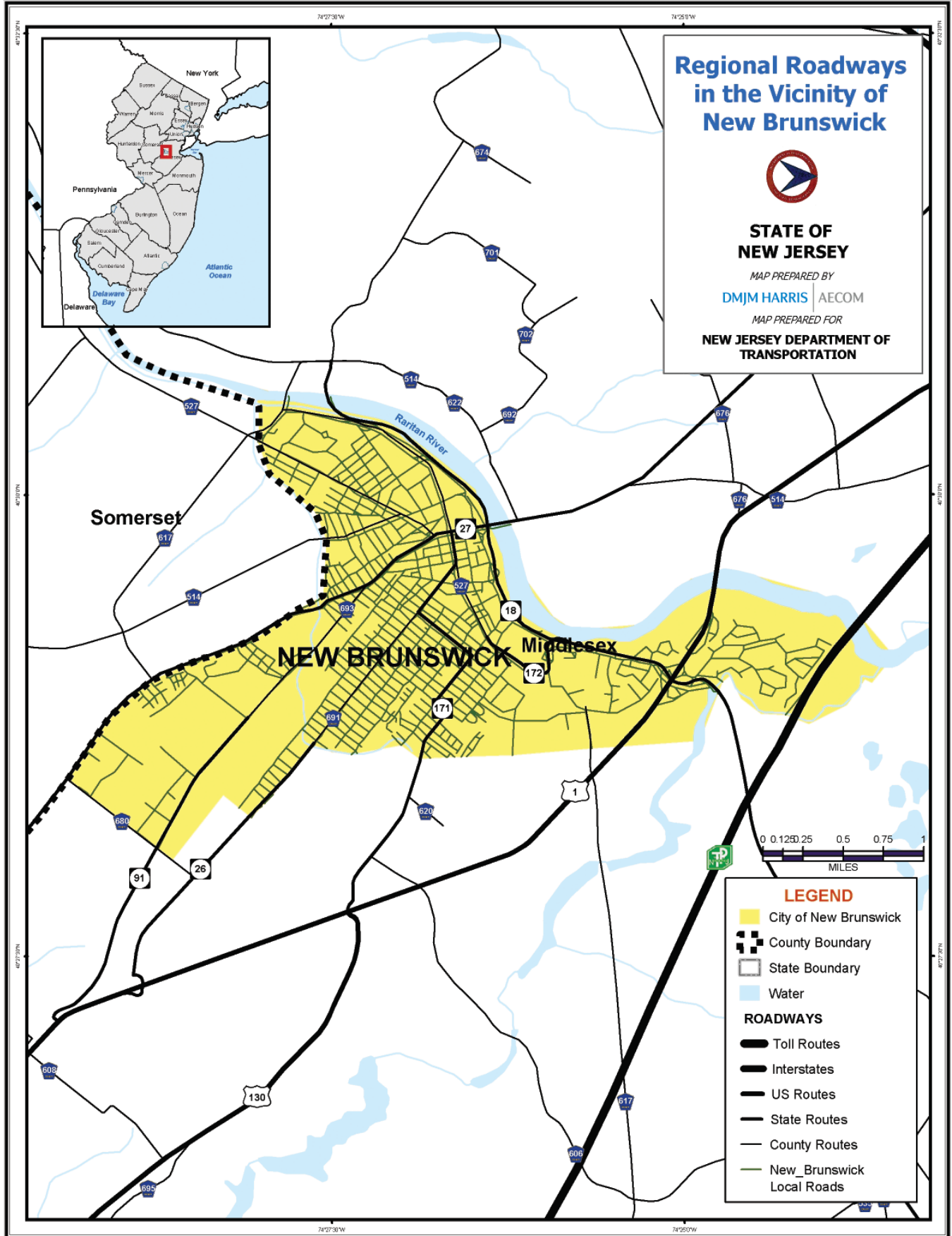
Municipal Streets

Major municipal streets within the city include Neilson Street, College Avenue, New Street, Somerset Street, Remsen Avenue, and Hamilton Street (between George Street and Easton Avenue).

Bridges

Four bridges cross the Raritan River at New Brunswick. These bridges are the US 1 bridge, Route 27 bridge, Route 18 John Lynch Bridge, and the Landing Lane bridge. In addition, the NJ Turnpike and I-287 bridges cross the river just to the south and north of the city, respectively.

Map 1: Road Network



2. Public Transit

Rail Service

New Brunswick receives rail passenger service from Amtrak and NJ TRANSIT's Northeast Corridor line. Both services stop at the downtown New Brunswick Rail Station, built in 1903 and renovated in the mid-1980s. Four parking decks near the station provide about 750 parking spaces, but these are shared with other users. The Jersey Avenue Station receives service only from NJ TRANSIT. Four nearby lots provide a total of about 1,500 parking spaces for permit or daily parking.

Amtrak service to and from the city is very limited; it provides only one southbound and two northbound trains per weekday. Fewer than 8,000 Amtrak passengers used the New Brunswick Station in 2002.

NJ TRANSIT's Northeast Corridor line provides local service between New Brunswick and New York City to the north and Trenton to the south. Other important stops include Princeton Junction, New Brunswick, Metropark, Newark Liberty International Airport, and Newark Penn Station. Weekday boardings averaged over 5,000 in FY 2005. NJ TRANSIT recently revised the Northeast Corridor timetables to increase the frequency of service to the New Brunswick and Jersey Avenue stations during peak periods.

Regional Bus Service

Coach USA/Suburban Transit is a private carrier that provides regional bus service, focused on commuter service to New York City. The main route is Line 100, which runs between Princeton and New Brunswick along Route 27, then on to East Brunswick and the NJ Turnpike and New York City at the Port Authority Bus Terminal. In addition, the Crosstown Commuter provides three morning peak hour runs from the carrier's park-and-ride location in the city to downtown and to East Brunswick and New York City, with five return trips in the evening, and Line 600 provides two inbound morning runs. Line 400 runs from East Brunswick to New York City. This carrier also makes three runs daily between New Brunswick and Atlantic City.

Local Bus Service

NJ TRANSIT contracts with Academy Express to provide several fixed-route bus services (810, 811, 814, 815, and 818) serving New Brunswick and the surrounding area (see Map 2). These routes provide about 200 trips per weekday. They operate generally at 60-minute headways (the 814 Route operates at 30-minute frequency), mostly running between 6 AM and 10 PM, with some weekend service.

Rutgers Bus System

The Rutgers University bus system is the largest bus system in the city, and it is the second largest campus bus system in the nation. The university contracts with Academy Bus Lines to provide this service, which is available free to all members of the university community. It provides service along ten routes, including two express routes. The system carries 45,000 riders daily during the school year, and annual ridership was over six million in 2002.

Other Services

City residents have several other transit options, including NJ TRANSIT's Access Link program, which provides paratransit service comparable to local bus service to persons with disabilities. The origin and destination of each trip must be within $\frac{3}{4}$ mile of a local bus route. Also, NJ TRANSIT administers the 980 WHEELS route, which provides weekday service between the New Brunswick Rail Station and employment sites in Piscataway. Coach USA, Suburban

Management Corporation, operates the service, which provides three runs outbound and one inbound in the morning peak, and two runs outbound and three runs inbound during the afternoon peak.

The university provides several shuttle services, including the following:

- ◆ Knight Mover – Late night/early morning on-demand response service
- ◆ Paratransit service – Van transport to/from classes for students with disabilities
- ◆ Library Shuttles – Shuttle service for the Library of Science and Medicine (Busch) and the Mabel Smith Douglass Library (Douglass)

Also, the university is collaborating with the city and the New Brunswick Parking Authority (with funding from NJ TRANSIT) to provide the free New BrunsQuick shuttle service, which runs along a fixed-route loop between the train station, the 5th and 6th Wards, and the College Avenue campus.

The county's Middlesex County Area Transit (MCAT) program operates the Exit 8A Shuttle, running between downtown and employment sites in the area of Turnpike Exit 8A. In 2005, the county expanded this service to connect with Perth Amboy and to provide increased service to the 8A area. MCAT also runs a Jersey Avenue Shuttle, which provides weekday and Saturday service between downtown and Jersey Avenue. Somerset County operates the DASH shuttle service, which provides two routes. The SC-2 route runs between Bound Brook, the Davidson Avenue area of Franklin, and the New Brunswick Train Station.

Also, the county and city are administering the HUB City Local, a free shuttle for city residents, which operates during daytime hours on Monday through Saturday. This service connects residents with shopping areas, medical services, and social services.

The city also provides a "dial-a-ride" paratransit service for disabled residents to medical and social service locations and a senior citizen van service, which provides access between residences and the Senior Resource Center.

3. Bicycle and Pedestrian

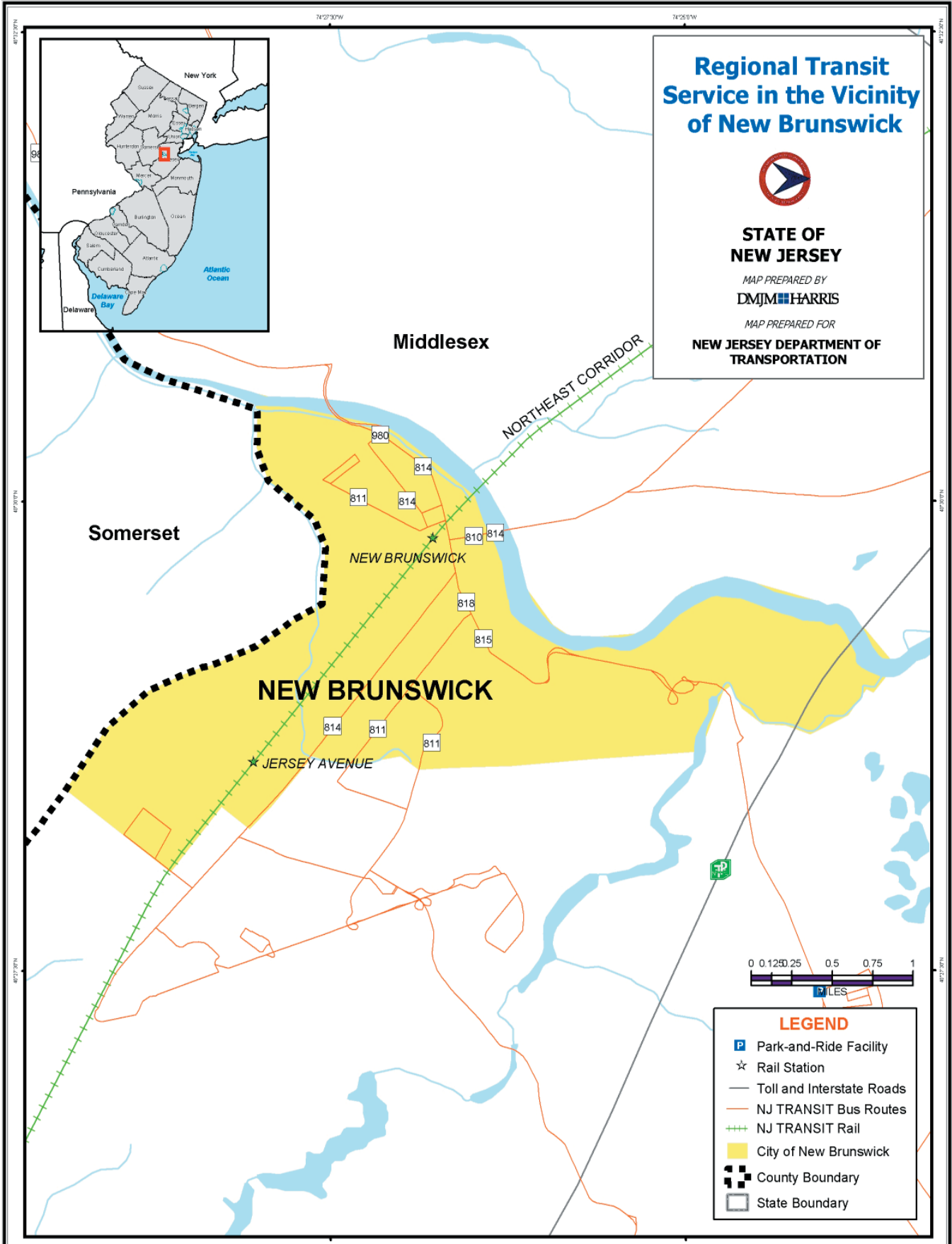
Some trails are available for pedestrian and bicycle use, including the following:

- ◆ The Delaware and Raritan Canal State Park includes the towpath of the old canal, which provides a trail that begins and ends at Landing Lane in the city.
- ◆ The Route 18 "Trench" Path runs from the Route 18 bridge to the Route 27 bridge.
- ◆ Boyd Park includes a 0.75-mile trail that runs along the riverfront.
- ◆ The recent Route 18 project included a new trail/bridge crossing the river adjacent to the Lynch Bridge.

4. Goods Movement

The New Jersey Turnpike and I-287 on the National Network for truck routes. Conrail provides limited local freight service along Amtrak's Northeast Corridor between Newark and Trenton.

Map 2: Public Transit Network



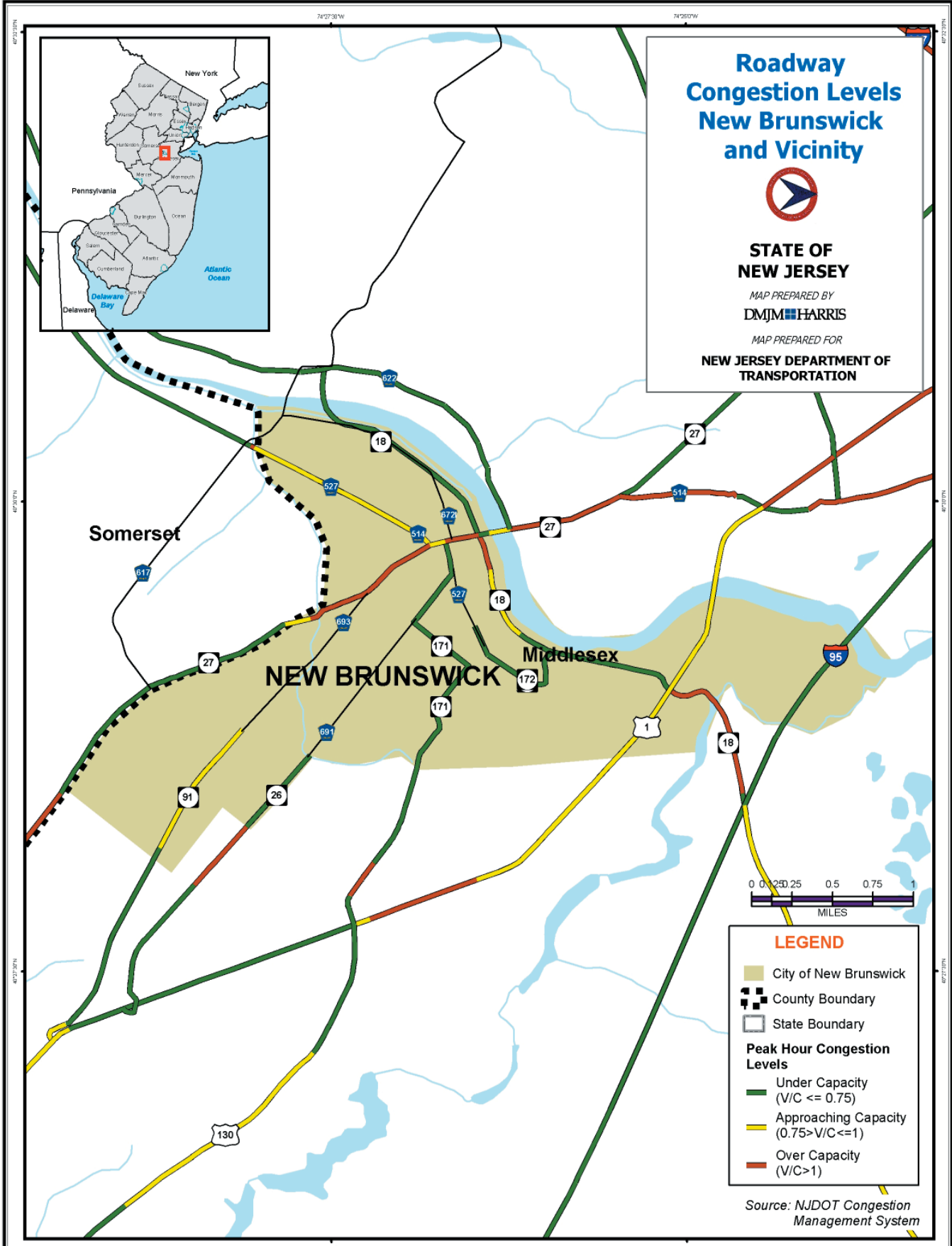
B. SYSTEM PERFORMANCE

1. Roadway Congestion

Congestion Management System

NJDOT's Congestion Management System (CMS) is a primary source of information on roadway congestion. The CMS measures congestion based upon a volume-to-capacity (v/c) ratio. Roadways operating below a 0.75 v/c ratio operate well and have the capacity to accommodate growth. On the other hand, roadways approaching a 1.0 v/c ratio have little ability to accept additional growth, and a v/c over 1.0 suggests that traffic is moving very slowly and there is no capacity for added traffic. Map 3 shows the 2005 v/c ratios for New Brunswick and the immediately surrounding area. Currently congested segments include most of Route 27 through the city and segments of Route 18 below Route 27 and below US 1.

Map 3: Current Congestion Levels



2. Pavement Conditions

NJDOT maintains a Pavement Management System (PMS) database with information on pavement conditions. The PMS includes all interstate, toll, state and US highways, plus significant 500- and 600-level county roads and some local routes of regional significance. The rating system is based primarily on two criteria: ride quality and surface distress. The Ride Quality Index (RQI) describes the comfort level by measuring roughness, and the Surface Distress Index (SDI) compiles and measures the severity of surface distresses such as cracking, patching, shoulder condition, shoulder drop, faulting, and joints. A final pavement rating is calculated from RQI and SDI to determine pavement quality. These ratings, in conjunction with roadway types, are used to determine priorities for resurfacing projects throughout the state. Table 1 shows the pavement condition of state roads in New Brunswick, rated by the SDI in 2004. The data show that most roads have fair or better conditions.

Table 1: New Brunswick Pavement Condition Summary by SDI

Facility	Total Pavement Miles (Both Directions)	Very Good SDI > 4	Good SDI >3	Fair SDI >2	Poor SDI > 1	Very Poor SDI <1
1	2.6	0.1	0.3	0.8	1.4	0.0
18	6.6	3.6	0.7	2.2	0.0	0.1
27	0.6	0.2	0.2	0.1	0.1	0.0
91	2.2	0.8	0.9	0.5	0.0	0.0
172	1.6	1.0	0.3	0.1	0.2	0.0
Total	13.6	5.7	2.4	3.7	1.7	0.1
%	100%	41.9%	17.6%	27.2%	12.5%	0.7%

Source: NJDOT. Pavement Management System.
 Note: Percentages do not add to 100% due to rounding.

In terms of roughness or ride quality, the International Roughness Index (IRI) reflects only the amount of existing surface irregularities that cause a vehicle to lose contact with the surface (measured as the amount of suspension over distance). As a more single dimension measurement, deficiencies are more striking but treatment may be less costly in terms of overlays, rather than rehabilitation or reconstruction that may be the treatment for SDI-indicated problems. Table 2 shows that over 60 percent of the state roadways within New Brunswick had deficient pavement conditions in 2004.

Table 2: New Brunswick Pavement Condition Summary by IRI

Facility	Total Pavement Miles (Both Directions)	Good	Fair	Deficient
1	2.6	0.3	1.3	1.0
18	6.6	0.3	2.4	3.9
27	0.6	0.2	0.0	0.4
91	2.2	0.0	0.2	2.0
172	1.6	0.0	0.6	1.0
Total	13.6	0.8	4.5	8.3
%	100%	5.9%	33.1%	61.0%

Source: NJDOT. Pavement Management System.

3. Bridge Conditions

NJDOT employs a Bridge Management System (BMS) to maintain an inventory of all bridges with spans over 20 feet, listing the physical characteristics, condition and ownership of the bridge. The bridges are rated for their structural condition as well as functional characteristics. Information on structural condition is also combined with bridge size and roadway type to help determine priorities for bridge improvement projects.

Table 3 shows the condition of bridges in New Brunswick compared with statewide data in 2005. Nearly one half (8 of 17) of the city's bridges have substandard conditions.

Table 3: Bridges with Substandard Conditions

Location	Total Bridges in BMS	Structurally deficient	%	Functionally obsolete	%
New Brunswick	17	2	12%	6	35%
State	6,415	779	12%	1,459	23%

Source: NJDOT. Bridge Management System.

4. Safety Conditions

NJDOT's Bureau of Safety Programs produces an annual report of motor vehicle crash rates (per one million vehicle miles traveled) for roads under NJDOT jurisdiction. Table 4 shows the state road segments in New Brunswick with the highest crash rates in 2004.

Table 4: State Road Segments with Highest Crash Rates – New Brunswick, 2004

Road	Location	Length (mi)	Crashes	Rate
Route 27	Near Mile Run Brook	0.02	4	24.23
Route 18	North of US 1	0.17	69	17.06

Source: NJDOT, Bureau of Safety Programs. Summary of Crash Rates on State and Interstate Highways in Route and Milepost Order for 2004.

C. DEMOGRAPHIC PROFILE

This section provides a summary of the demographic characteristics for the city. It examines trends over the past 10 years and compares trends for the city, county, and state.

1. Population

Between 1990 and 2000, the city's population substantially increased; the rate of increase was higher than that of the county and state (see Table 5).

Table 5: Total Population – New Brunswick, Middlesex County, New Jersey, 1990 – 2000

	1990	2000	Change	
			Number	Percent
New Brunswick	41,711	48,573	6,862	16.5%
Middlesex County	671,780	750,162	78,382	11.7%
New Jersey	7,730,188	8,414,350	684,162	8.9%

Source: U.S. Department of Commerce, Bureau of Census, 1990 and 2000.

2. Age Distribution

The age distribution of the city's population is slightly different from that of the county and state (see Table 6). The city has a somewhat higher percentage of population in age groups under 65 and a somewhat lower percentage over the age of 65. Due to the city's large college student population, it has a much lower median age than does the county or state.

Table 6: Age Profile of the Population – New Brunswick, Middlesex County, New Jersey, 1990-2000

	1990	2000
<5 Years		
New Brunswick	5.6%	7.0%
Middlesex County	6.7%	6.6%
New Jersey	6.9%	6.7%
5-19 Years		
New Brunswick	21.3%	21.8%
Middlesex County	18.1%	19.9%
New Jersey	19.1%	20.4%
20-64 Years		
New Brunswick	63.7%	64.8%
Middlesex County	63.5%	61.3%
New Jersey	60.6%	59.7%
Over 65 Years		
New Brunswick	9.3%	6.5%
Middlesex County	11.7%	12.4%
New Jersey	13.4%	13.2%
Median Age		
New Brunswick	NA	23.6
Middlesex County	NA	35.7
New Jersey	34.4	36.7

Source: U.S. Department of Commerce, Bureau of Census, 1990 and 2000.

3. Racial and Ethnic Composition

The city experienced a shift in racial and ethnic composition during the 1990s (see Tables 7 and 8). The percentage of non-white population increased from 43% to 51% in 2000, and the percentage of Hispanic population had a major increase, from 19% to 39% in 2000. By comparison, the county has 32% non-white and 14% Hispanic population, and the state has 27% non-white and 13% Hispanic population.

Table 7: Racial Composition of Population, 1990-2000

	1990	2000
White		
New Brunswick	57.4%	48.8%
Middlesex County	81.9%	68.4%
New Jersey	79.3%	72.6%
Black		
New Brunswick	29.6%	23.0%
Middlesex County	8.0%	9.1%
New Jersey	13.4%	13.6%
Other*		
New Brunswick	13.0%	28.2%
Middlesex County	10.1%	22.5%
New Jersey	7.3%	13.8%

Source: U.S. Department of Commerce, Bureau of Census, 1990 and 2000.

* "Other Races" include Asian, Pacific Islander, American Indian, & Alaska Native. Also, in 2000, it includes persons who have identified themselves as belonging to "Two or more races." Thus, the change in the racial classification between 1990 and 2000 may be partly attributable to this factor. Hispanic origin is not a race and therefore, persons of Hispanic origin may be included in any of the race categories.

Table 8: Percentage of Hispanic Population, 1990-2000

	1990	2000
New Brunswick	19%	39%
Middlesex County	9%	14%
New Jersey	10%	13%

Source: U.S. Department of Commerce, Bureau of Census, 1990 and 2000.

4. Income & Poverty

The median household income in New Brunswick increased by 28% in the 1990s, but this rate was a lower than that for the county and state, and the city's 2000 median income remains well below that of the county and state (see Table 9). Also, the percentage of persons below the poverty level increased during the 1990s, and the city's poverty rate is much higher than that of the county or state.

Table 9: Income and Poverty, 1989-1999

	1989	1999	Change 1989-1999	
			Number	Percent
Median Household Income				
New Brunswick	\$28,289	\$36,080	\$7,791	27.5%
Middlesex County	\$45,623	\$61,446	\$15,823	34.7%
New Jersey	\$40,927	\$55,146	\$14,219	34.7%
% Individuals Below Poverty Level				
New Brunswick	22.0%	27.0%		
Middlesex County	5.1%	6.6%		
New Jersey	7.6%	8.7%		

Source: U.S. Department of Commerce, Bureau of Census, 1990 and 2000.

5. Automobile Ownership

The rate of household vehicle ownership decreased slightly between 1990 and 2000, and it remains well below the rate for the county and state (see Table 10). For the city, 65% of households have one or no vehicles, compared to a statewide average of 48%.

Table 10: Percentage of Households with a Vehicle, 1990-2000

	1990	2000
New Brunswick	77.7	76.1
Middlesex County	92.2	91.4
New Jersey	87.1	87.3

Source: U.S. Department of Commerce, Bureau of Census, 1990 and 2000.

6. Labor Force

Unlike the county and state, the city had a substantial increase in the number of employed residents between 1990 and 2000 (see Table 11). This increase reflects an increase in the total number of persons aged 16 and over and an increase in the labor force participation rate, which more than offset an increase in the unemployment rate.

Table 11: Employed Residents, 1990 – 2000

	1990	2000	Percent Employed	Change 1990-2000	
				Number	Percent
New Brunswick	20,422	23,832	49.5%	3,410	16.7%
Middlesex County	360,509	370,817	59.5%	10,308	2.9%
New Jersey	3,868,698	3,950,029	64.2%	81,331	2.1%

Source: U.S. Department of Commerce, Bureau of Census, 1990 and 2000.

7. Unemployment

The civilian resident unemployment rate for New Brunswick increased somewhat between 1990 and 2000, and it remains well above that for the county and state (see Table 12).

Table 12: Resident Unemployment Rate, 1990-2000

	1990 Percent	2000 Percent
New Brunswick	8.9	10.6
Middlesex County	5.0	5.2
New Jersey	5.7	5.8

Source: U.S. Department of Commerce, Bureau of Census, 1990 and 2000.

8. Employed Residents by Industry

Table 13 shows the number of employed city residents who work in different industrial sectors. Most of the labor force works in service industries; only 19% work in manufacturing or construction.

Table 13: Resident Employment by Industrial Sector – New Brunswick, 2000

Sector	Number	Percent
Agriculture, forestry, fishing and hunting, and mining	77	0.3
Construction	838	3.5
Manufacturing	3,606	15.1
Wholesale trade	1,020	4.3
Retail trade	2,787	11.7
Transportation and warehousing, and utilities	1,032	4.3
Information	950	4.0
Finance, insurance, real estate, and rental and leasing	1,198	5.0
Professional, scientific, management, administrative, and waste management services	2,948	12.4
Educational, health and social services	5,134	21.5
Arts, entertainment, recreation, accommodation and food services	2,869	12.0
Other services (except public administration)	741	3.1
Public administration	632	2.7

Source: U.S. Department of Commerce, Bureau of Census, 2000.

9. Employed Residents by Occupation

Table 14 shows the number of employed residents who hold different occupations. The percentage of city workers in "Management, Professional, and Related Occupations" (25%) is considerably less than for the county (41%) or state (38%).

Table 14: Resident Employment by Occupation – New Brunswick, 2000

Occupation	Number	Percent
Management, professional, and related occupations	5,929	24.9
Service occupations	5,327	22.4
Sales and office occupations	6,307	26.5
Farming, fishing, and forestry occupations	108	0.5
Construction, extraction, and maintenance occupations	1,099	4.6
Production, transportation, and material moving occupations	5,062	21.2

Source: U.S. Department of Commerce, Bureau of Census, 2000.

10. Journey to Work – Resident Labor Force

In 2000, the percentage of the city's resident labor force that worked in the city was 29% (a decrease from 35% in 1990), and over 16,000 city residents work in locations outside the city (see Table 15). Approximately 72% of city residents work within the county. Other current significant employment locations for city residents are Somerset County, Mercer County, and New York County, NY (Manhattan).

Table 15: Location of Employment – New Brunswick Residents, 2000

County	Municipality	Number	Percent	Number	Percent
Middlesex		16,705	72%		
	New Brunswick			6,673	29%
	Edison			1,894	8%
	Piscataway			1,830	8%
	North Brunswick			1,263	6%
	South Brunswick			1,140	5%
	East Brunswick			904	4%
	Other			3,001	13%
Somerset		2,148	9%		
	Franklin			1,104	5%
	Other			1,044	4%
Mercer		635	3%		
New York, NY		635	3%		
Other		3,001	13%		

Source: U.S. Department of Commerce, Bureau of Census, 2000.

In 2000, over one-half of resident workers used modes other than single-occupancy vehicles as their primary commute mode, compared to 26% in the county and 27% for the state. The share of commuters using public transit as their preferred mode was 11%, compared to 9% for the county and 10% for the state. The average commute time for all workers who do not work at home was 23 minutes.

11. Employment

Total covered employment in New Brunswick (including private-sector, federal government, and local government jobs) in 2000 was 33,527, an increase of 16% from 1998. The leading industries in the city are health care and social assistance, manufacturing, local government, and administrative and waste services. Manufacturing, construction, and utilities account for only 15% of private sector jobs in the city (see Table 16).

Table 16: Covered Employment by Sector – New Brunswick, 2003

Industry	Number
Utilities	.
Construction	488
Manufacturing	4,582
Wholesale trade	1,555
Retail trade	1,144
Transportation and warehousing	794
Information	293
Finance and insurance	422
Real estate and rental and leasing	212
Professional and technical services	1,159
Management of companies and enterprises	.
Administrative and waste services	4,414
Educational services	236
Health care and social assistance	8,807
Arts, entertainment, and recreation	185
Accommodation and food services	2,134
Other services, except public administration	776
Unclassified entities	74
Private Sector Total	28,865
Federal Government Total	174
Local Government Total	4,488

Source: NJ Department of Labor. NJ Employment and Wages: 2003 Annual Report, Municipalities by Industry.

Data represent the annual average for 2003. Covered employment refers to all jobs covered by unemployment insurance. Private sector total does not match sum of individual industries because NJDOL suppresses data for industries with few units (businesses) or where one employer is a significant percentage of employment or wages of the industry.

12. Journey to Work – Employees in the City

The 2000 US Census found that only about 19% of the city's employment live in the city, while 60% live in Middlesex County. Thus, 40% of the city's employment lives in locations outside the county (see Table 17).

Table 17: Location of Residence – New Brunswick Employees, 2000

County	Municipality	Number	Percent	Number	Percent
Middlesex		21,317	60.0		
	New Brunswick			6,673	18.8
	North Brunswick			2,357	6.6
	East Brunswick			1,567	4.4
	Edison			1,540	4.3
	Piscataway			1,333	3.8
	South Brunswick			1,113	3.1
	Highland Park			1,103	3.1
	Other			5,631	15.9
Somerset		4,141	11.7		
	Franklin			2,398	6.8
	Other			1,743	4.9
Monmouth		2,025	5.7		
	Union	1,507	4.2		
	Mercer	1,467	4.1		
	Other	5,066	14.3		

Source: U.S. Department of Commerce, Bureau of Census, 2000.

D. FUTURE CONDITIONS

1. Population and Employment Projections

NJTPA issues population and employment projections for its region, which includes Middlesex County. These projections indicate that the city's population will increase by over 40% between 2000 and 2030 (see Table 18). Maps 4 and 5 show the current (2000) and projected (2030) population density for the city. According to NJTPA, the city also will experience a large increase in employment (over 8,000 jobs) between 2000 and 2030 (see Table 19). Maps 6 and 7 show the current (2000) and projected (2030) employment density for the city.

Table 18: Population Projections – New Brunswick, Middlesex County, 2000-2030

	2000	2005	2010	2015	2020	2025	2030	Percent Change 2000-2030
New Brunswick	48,590	51,480	55,310	58,160	61,910	64,850	68,250	40.4%
Middlesex Co.	750,200	785,600	819,700	854,000	893,200	926,700	958,900	27.8%

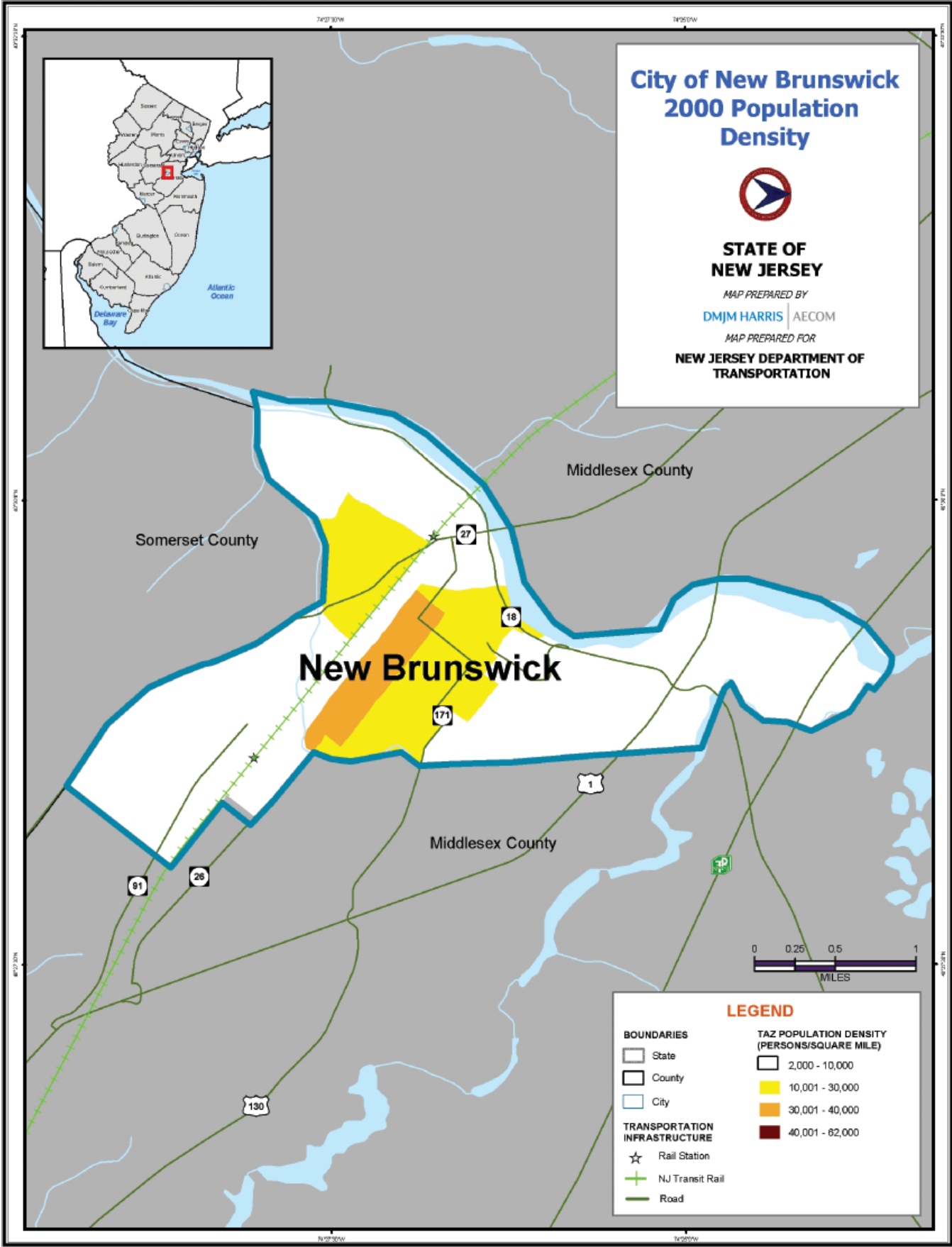
Source: NJTPA. Approved Demographic and Economic Forecasts. 5/23/05.

Table 19: Employment Projections – New Brunswick, Middlesex County, 2000-2030

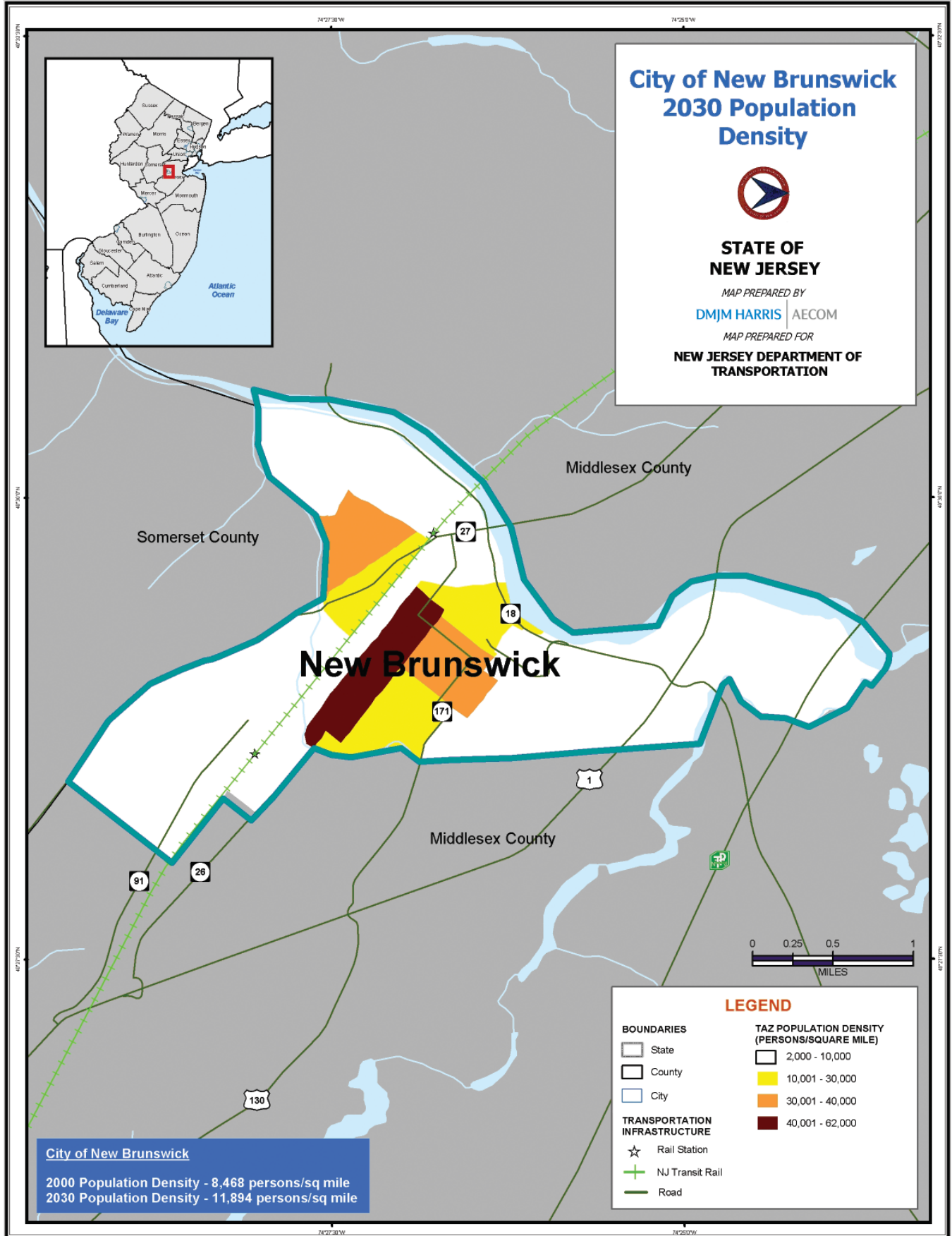
	2000	2005	2010	2015	2020	2025	2030	Percent Change 2000-2030
New Brunswick	25,730	26,540	27,440	28,840	30,730	32,200	33,780	31.2%
Middlesex Co.	406,200	428,900	452,100	477,900	507,900	524,600	553,900	36.3%

Source: NJTPA. Approved Demographic and Economic Forecasts. 5/23/05.

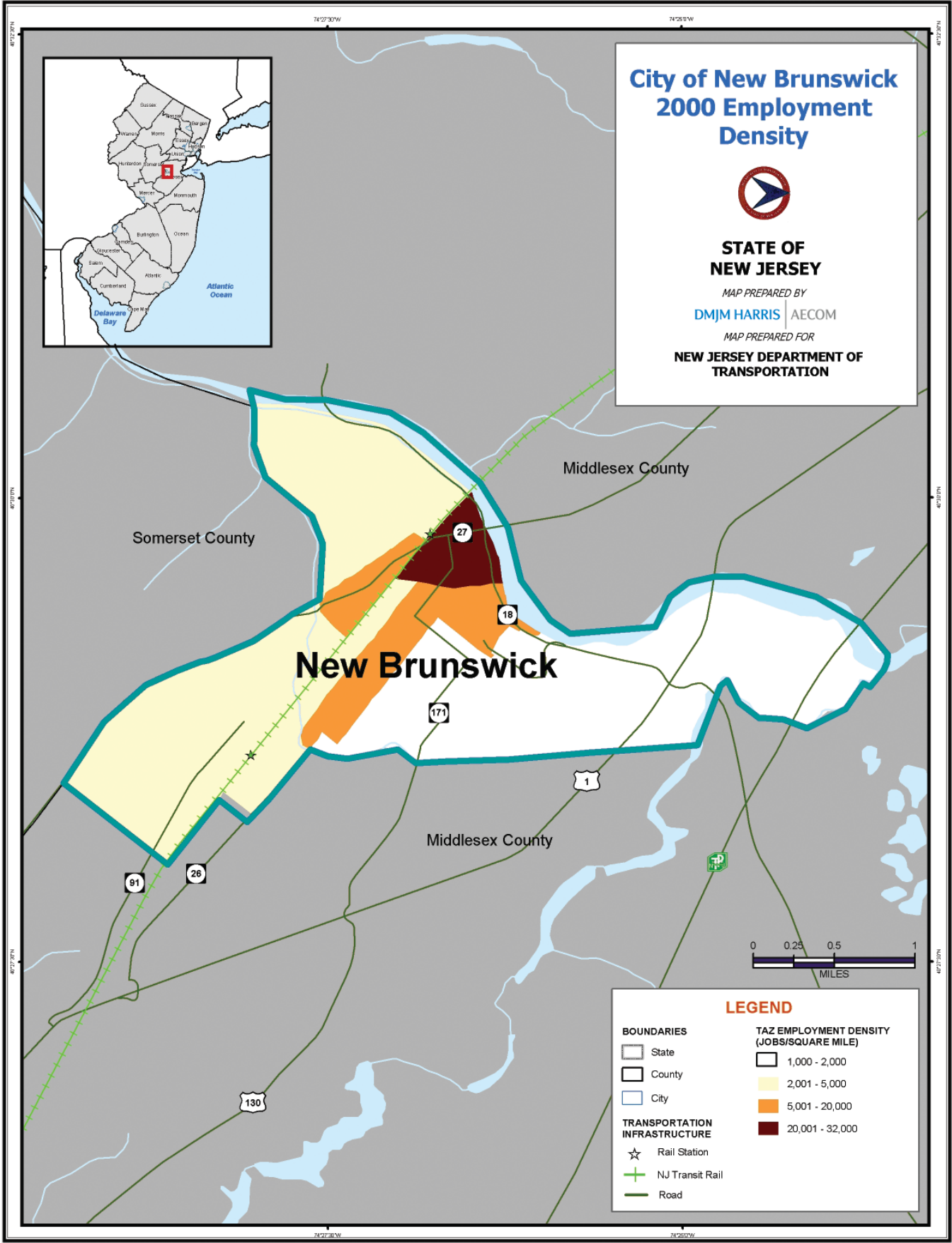
Map 4: 2000 Population Density



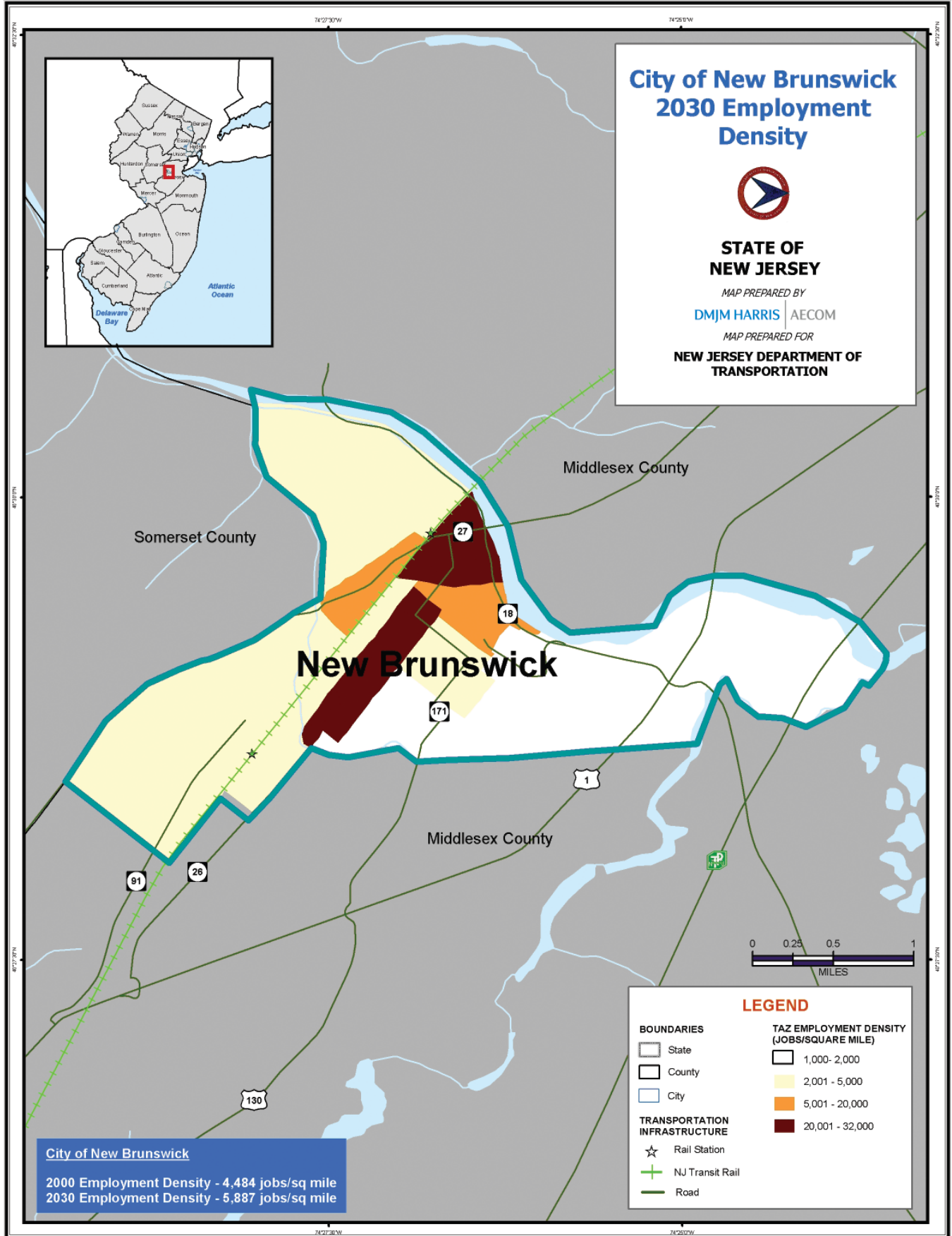
Map 5: 2030 Population Density



Map 6: 2000 Employment Density



Map 7: 2030 Employment Density



2. Transportation Conditions

Regional transportation models enable analysis of current and future travel conditions based upon various assumptions about land use and transportation system capacity. The model output can be used to prepare “travel time contour” maps, which show how far a motorist could travel between a specific point (e.g., the center of a city) and other points on the surrounding roadway system within given time frames. These maps reflect the impact of roadway congestion upon travel time.

The work on the New Jersey Long-Range Transportation Plan included analyzing and preparing travel time contour maps for existing conditions (2005) and the 2030 Plan. These maps cover the surrounding roadway network that lies within the NJTPA region. The calculations are based upon evening peak hour traffic volumes, and they are based upon traffic heading both to and from the central point.

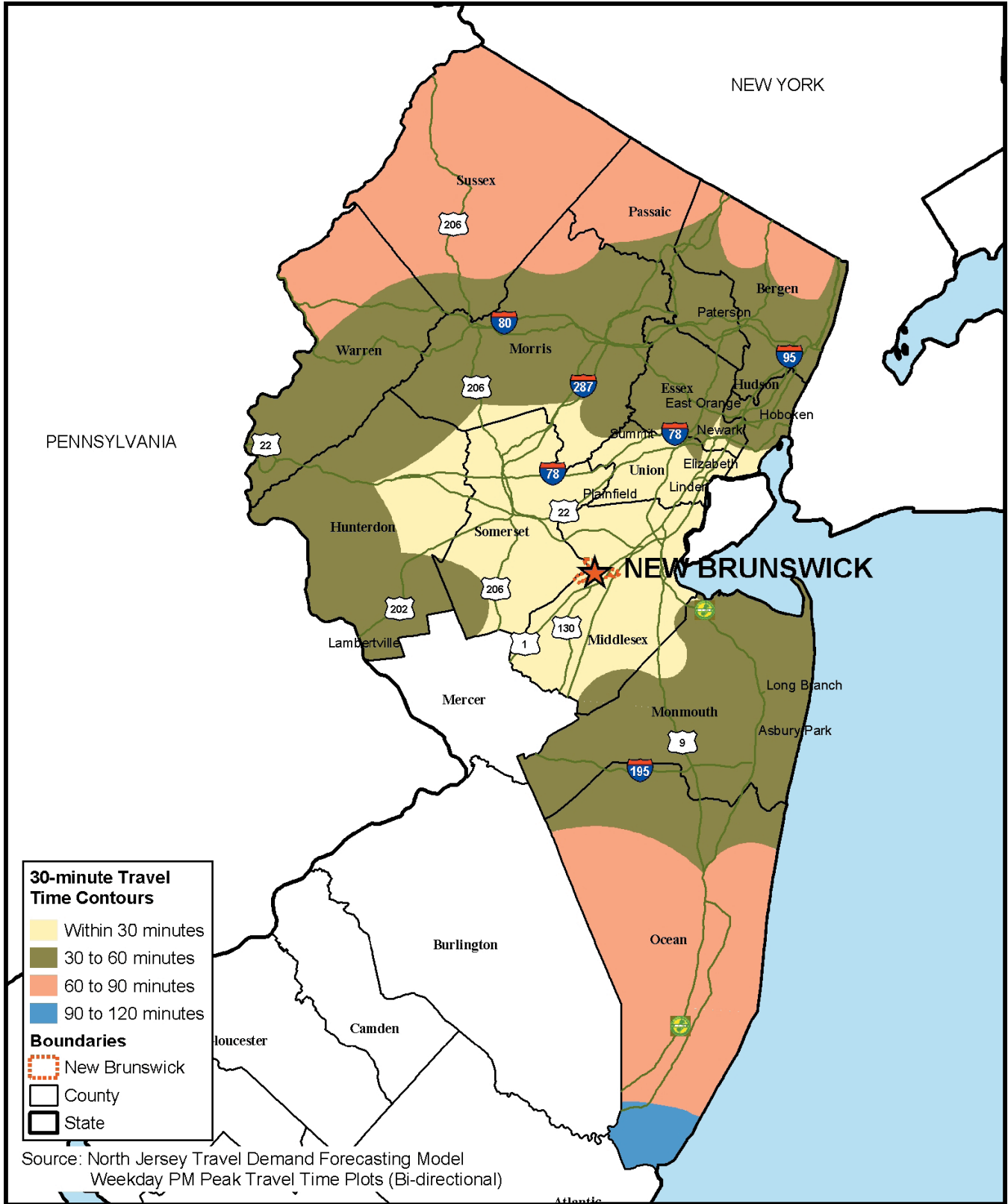
The 2005 existing condition map shows the current travel time limits (see Map 8).

The 2030 Plan map illustrates travel time with the package of transportation system investments contained in the 2030 Plan (see Map 9). The statewide long-range transportation plan, Transportation Choices 2030, contains specific information on these investments, and the plan is available on the internet at www.njchoices.com, the website for the statewide long-range transportation plan. The 2030 Plan recognizes the importance of completing key transit projects, and it envisions a significant infusion of additional funds for transit-related projects and bringing transportation infrastructure to a state of good repair. The 2030 Plan also assumes reducing some auto trips by more aggressive travel demand management measures and adopting smart growth measures for new development and redevelopment.

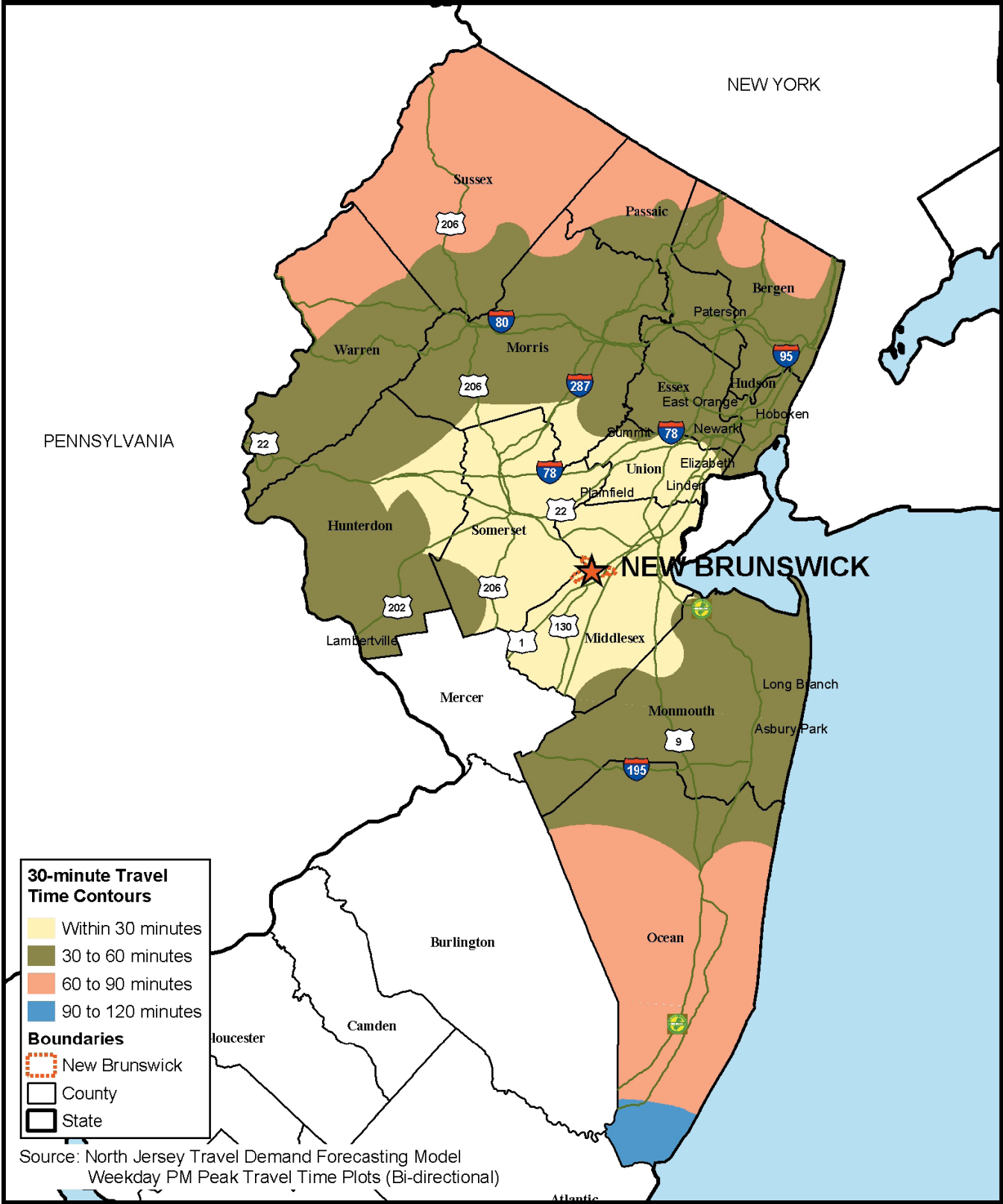
As a contrast, Map 10 shows anticipated travel time limits in 2030 without the level of investments that are contained in the 2030 Plan.

It is important to understand that these maps do not reflect public transit travel times. Public transit provides significant levels of access and mobility for the state's largest cities, and increases in transit service would be expected to increase these levels of access and mobility.

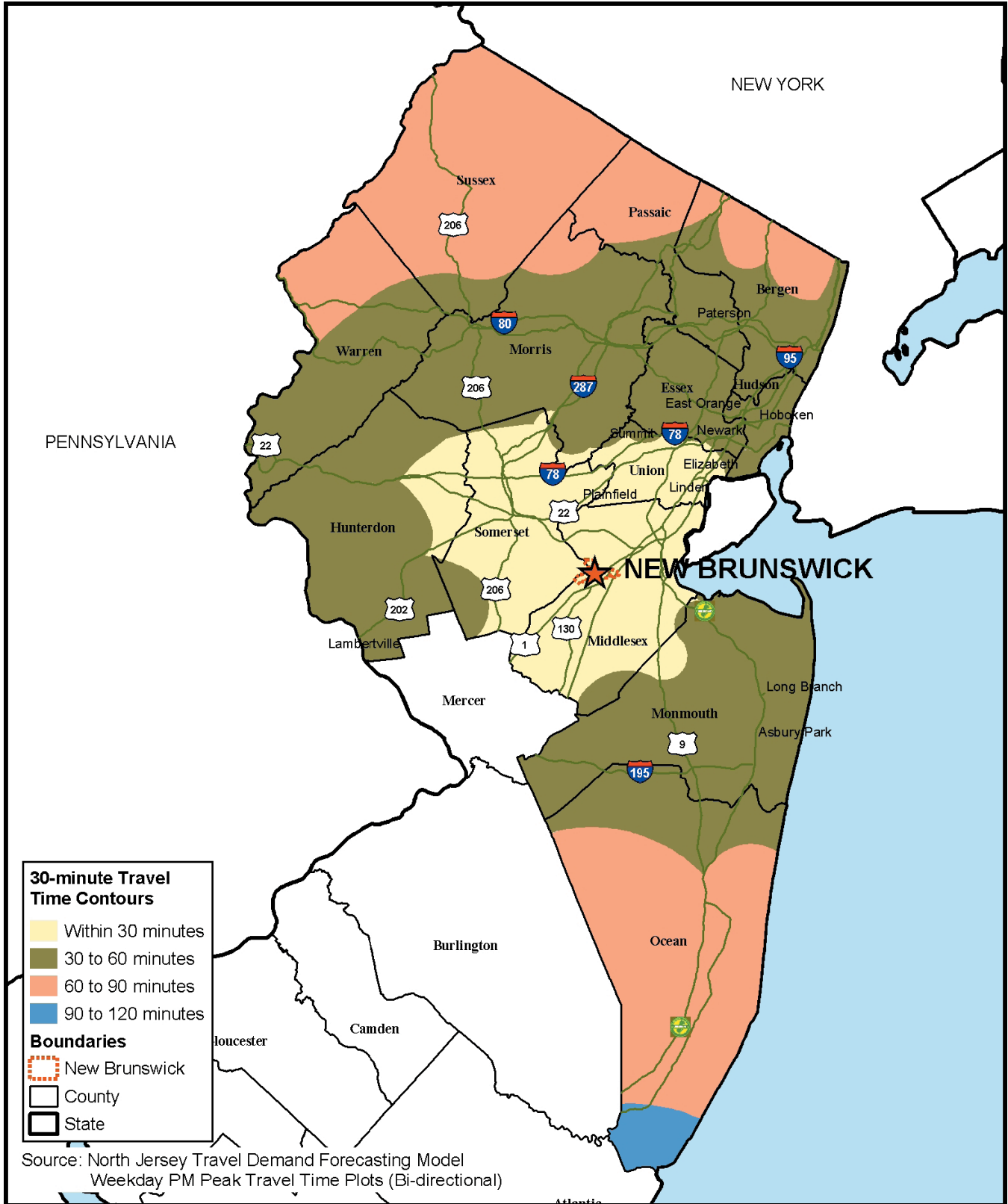
Map 8: Travel Time Contours, New Brunswick, 2005



Map 9: Travel Time Contours, New Brunswick, 2030 – Plan



Map 10: Travel Time Contours, New Brunswick, 2030 – without Plan



E. CURRENT AND FUTURE DEVELOPMENT

This section provides a summary of current and future development potential in New Brunswick and the surrounding area, focusing on employment.

1. City

Existing Development

Health Care

Some refer to New Brunswick as the “Health Care City.” The city has the country’s largest medical school, two academic hospitals, the country’s largest public health sciences university, and a nationally accredited cancer care center. The combined campuses of Robert Wood Johnson University Hospital and the University of Medicine and Dentistry’s (UMDNJ) Robert Wood Johnson Medical School are located adjacent to the downtown area. The hospital, which employs over 2,700 persons, has several specialty centers and is the principal hospital for the medical school, an academic unit of UMDNJ, the state’s university of health sciences.

This campus has been steadily expanding over the last decade; it includes the following other facilities: UMDNJ Clinical Academic Building (1995), which houses the state’s largest physician’s group practice; the Cancer Institute of New Jersey (1996), one of only 16 nationally certified cancer research and treatment facilities in the United States; the Bristol Myers-Squibb Children’s Hospital (2001), New Jersey’s only free-standing hospital devoted to children; and The Cancer Hospital of New Jersey (2001), a 90-room hospital devoted to cancer treatment and affiliated with the Cancer Institute. The most recent addition came in September 2005, with the opening of The Child Health Institute, a nationally recognized clinical research center for children’s diseases. Also, the Liberty Plaza building in downtown houses the UMDNJ administrative headquarters, along with ground-floor retail and restaurant uses.

In addition, nearby St. Peter’s University Hospital is a 422-bed teaching hospital, which provides a broad range of medical services. This hospital employs 2,800 health care professionals and support personnel; it treats more than 30,000 inpatients and more than 200,000 outpatients annually.

Higher Education

The major employer in the city is Rutgers, the State University of New Jersey. The New Brunswick campus of Rutgers comprises five campuses in and near the city. The College Avenue Campus is next to downtown, and the Cook/Douglass campuses are in the southern part of the city, while the Busch and Livingston campuses are across the river in Piscataway. Total full-time enrollment on these campuses in Fall 2004 was 28,407, with part-time enrollment of 6,289. Total full-time faculty was 1,967, and full-time staff was 5,156. There are 642 buildings, and resident halls house over 13,000 students. In addition, campus activities and events generate a significant number of visitors to the university and city.

Corporate Headquarters

The world headquarters of Johnson & Johnson, an international pharmaceutical and medical devices manufacturer, is located in downtown New Brunswick. In 1983, the company opened its current facility, comprising eight buildings with over 400,000 square feet housing about 800 employees on a 20-acre site. Related to this headquarters site, a Hyatt Hotel opened across the street in 1982. Johnson & Johnson now owns this hotel, which has 258 rooms.

Local Government

New Brunswick is the county seat of Middlesex County, and the city has several county and city office buildings, including the following:

- ◆ The County Administration Building anchors the Civic Square district in the downtown area.
- ◆ The Civic Square Public Safety Building houses the city police, city courts, and county prosecutor's offices.
- ◆ The Family Courthouse Building holds the county family courts, the city parking authority, and community college space.
- ◆ Skyline Tower, the former county administration building, has been renovated and now provides three floors for use by the Middlesex County courts and 70 rental units on the upper floors.

Other Downtown Office and Retail

The downtown area has several large office/retail complexes, including the Golden Triangle Plaza, Albany Street Plaza, and Kilmer Plaza. George Street is the main retail corridor in the downtown area. In addition, a cultural district is located along Livingston Avenue near George Street. This area includes the State Theatre, Crossroads Theatre, and George Street Playhouse, which combined sell over 400,000 tickets annually. Nearby is Civic Square I, which provides 160,000 square feet of building space for the Rutgers planning and arts schools.

Industrial/Manufacturing

Some manufacturing and light industry occurs in the Jersey Avenue corridor, which has about 50 businesses.

Future Development

New Brunswick is widely acknowledged as a leader in redevelopment planning. The city adopted the first redevelopment plan for the downtown area in 1977, and it currently has 13 redevelopment areas. The following is a summary of key planned or proposed development and redevelopment projects.

Health Care

Several planned projects will expand the medical care campus, further strengthening the city's concentration in the health care industry. These projects include the Children's Specialized Hospital, which will deal with rehabilitation needs for children, a 20,000 square foot commercial office building, and the Cardiovascular Institute and Hotel. Also, Rutgers is planning a Health Sciences Center to serve the College of Nursing and to provide space for units associated with the school of pharmacy and the school of applied and professional psychology.

In addition, as part of New Jersey's stem cell research initiative, the state has approved funding for a new facility, the Stem Cell Institute of New Jersey, which UMDNJ and Rutgers will operate. The institute would comprise labs for basic research, facilities to produce stem cells for treatment, and outpatient facilities so doctors can chart the progress of stem cell recipients.

Higher Education

Rutgers University adopted a new physical master plan in 2003. This plan calls for adding 2.6 million square feet of building floor space to the New Brunswick/Piscataway campuses by 2012. In addition, the university has current projects in the downtown area, including a new Public Safety Building and the Heldrich Center, which will include the Rutgers Heldrich Center for Workforce Development, a hotel and conference center, 28 condominiums, and 15,000 square feet of retail space.

In 2005, Rutgers announced plans for a major initiative to redesign and redevelop the College Avenue Campus. The preliminary plans include a major new academic building at the corner of College and Hamilton avenues, renovating or re-building dormitories along the river, and closing College Avenue to create a central greenspace.

Also, the university is collaborating with DEVCO in the Gateway Center project, a 330-foot tower with office space, a new bookstore, 200 condominiums, and a 565-space parking deck, along with a transit hub. The new building will face toward the campus and connect with the train station. This project is part of a redevelopment zone for the Somerset Street/Easton Avenue area.

Downtown

The major current downtown redevelopment initiative is the CORE (Commercial, Office, Retail, Entertainment) Vision, introduced in April 2002. This plan provides concepts for downtown development comprising office, retail, and laboratory space. The initial plan proposes 1.5 million square feet of office space, 450,000 square feet of laboratory space, and 250,000 square feet of retail space, along with a net increase of 6,500 parking spaces. As part of this plan, the city hopes to attract the headquarters of a major biotechnical or pharmaceutical firm.

The key current project in the downtown area is the Spring Street Tower, a mixed-use project comprising 121 condominiums, 35,000 square feet of office space, and 6,500 square feet of retail, along with a 425-car parking structure. The 25-story tower will become the city's tallest building when completed.

Next to the Heldrich Center, the Plaza Redevelopment Project has been underway since 2001. The first phase of this project, the Highlands, was completed in 2004. It comprises more than 400 residential units, new retail stores, parking, and pocket parks. The second phase, scheduled for completion in 2006, is the Metropolitan, which features 350 units of upscale rental housing. This project also will include renovating office buildings currently occupying the site, street-level retail, and a new 1,100-space parking garage.

Brunswick Landing

This waterfront project will provide new residential and retail development, linked to new floating docks and a pedestrian bridge.

Raritan Heights

A developer has proposed a project for 400 luxury condominiums and 40,000 square feet of retail space adjacent to the Loews Theatres along US 1 southbound.

Renaissance 2000

Another key redevelopment area is Renaissance 2000, a community development initiative that focuses on a neighborhood along the Route 27 corridor, which covers both New Brunswick and neighboring Franklin. Upcoming projects include rehabilitating 124 condominiums at Hampton Club, safety and beautification improvements to Route 27, light industrial development, and a new New Brunswick High School, scheduled to open in 2008-09. The new high school will be one of six statewide demonstration projects that incorporate community design features and neighborhood revitalization elements.

French Street

The French Street neighborhood is the target area for the city's Neighborhood Preservation Program. French Street's retail sector will be expanding through the development of a 75,000 square foot shopping center. In addition, the city recently approved a major redevelopment project, involving constructing two large mixed-use towers, which will provide a mix of office, retail, and residential uses.

Jersey Avenue

New Brunswick is seeking to expand light industrial, office, and retail development in this corridor. The city recently changed the Jersey Handy Redevelopment Zone from industrial to mixed-use retail and residential, which will allow townhouses, as well as restaurants, banks, offices, hotels and schools.

Schools

In addition to the new high school, the city has planned nine other major school construction and renovation projects including building three kindergarten centers and rebuilding or renovating six elementary schools.

Neighborhood/Residential

The city has several other development or redevelopment projects for neighborhoods or corridors including the following: Lower George Street area, Rutgers 6th Ward, Mt. Zion Remsen, and Georges Road Gateway.

2. Suburbs

Section C.10 provides data on the main employment locations for city residents. The following is a summary of key suburban employment areas.

- ◆ The US 1 corridor north of the city, including Edison and Woodbridge, is a major growth area, with a mix of retail and commercial, office, and other businesses. One major employment location is Raritan Center, a large business/industrial park located in Edison. It has more than 100 buildings with over 13 million square feet, housing more than 350 companies with over 13,000 employees. The nearby Heller Industrial Park has 8 million square feet of space. Farther north along US 1, the Menlo Park Mall (1.3 million square feet) and Woodbridge Center (1.5 million square feet) are major regional shopping centers.
- ◆ Piscataway has a diverse mix of office, light industrial, and retail employment centers, particularly in its northern section, along the Hoes Lane and Centennial Drive corridors. Key employers include Telcordia Technologies, Colgate Palmolive Technology Center, MCI International, and Johnson & Johnson Health Systems.
- ◆ The northern section of Franklin near I-287 has a concentration of office and light industrial parks. The major employment locations are along Worlds Fair Drive, Davidson Avenue, Belmont Drive, and Cottontail Lane. A recent report noted 1.5 million square feet of vacancy in two large office complexes in this area.

- ◆ The US 1 and US 130 corridors south of the city, including North Brunswick and South Brunswick, have a mix of retail, office, and warehouse/distribution employment centers. The Exit 8A area of the New Jersey Turnpike, in South Brunswick, Cranbury, and Monroe, is a major regional center for warehousing and distribution. This area has over 50 million square feet of industrial space. In 2004, three large centers totaling nearly four million square feet were built, and new construction continued in 2005. In addition, the South Brunswick/Plainsboro area has several major employers, including Dow Jones, Merrill-Lynch, Bristol Myers-Squibb, and Forrestal Center. One key potential location for future employment growth along the US 1 corridor is the site of the old Johnson & Johnson plant in North Brunswick.
- ◆ The Route 18 corridor in East Brunswick is another current and potential employment corridor for city residents. This corridor includes a mix of office and retail uses. The corridor has over three million square feet of retail space, including the Brunswick Square and Mid-State malls, and the township is planning for additional commercial development in this area.

The employment projections of the North Jersey Transportation Planning Authority (NJTPA) show that employment in the above suburban municipalities will increase substantially between 2000 and 2030 (see Table 20). These data suggest that these towns will remain, and perhaps increase, in significance as employment destinations for New Brunswick residents.

**Table 20: Current and Projected Employment
in Major Suburban Employment Locations Near New Brunswick**

Town	2000	2030	Increase	
			Number	Percent
Edison	72,290	91,440	19,150	26%
Piscataway	44,150	63,230	19,080	43%
North Brunswick	22,630	27,460	4,830	21%
South Brunswick	28,000	43,300	15,300	55%
Franklin	44,360	66,780	22,420	51%
East Brunswick	21,950	32,110	10,160	46%
Total	235,380	326,350	90,940	39%

Source: NJTPA. Approved Demographic and Economic Forecasts. 5/23/05.

F. TRANSPORTATION SYSTEM ISSUES

This section assesses the operation and performance of existing transportation facilities and services. The objective is to identify critical transportation issues, needs, and recommendations to support the city's land use and development objectives.

1. Roads

Regional / State Roads

Congestion and Access

In general, increasing development in the city and surrounding area has increased traffic, which has increased congestion on the regional roadway network and local roadway system. Section B.1 provides data on congestion levels for roadways in NJDOT's congestion management system. This information shows congestion along Route 27 and Route 18 within the city and several roadway segments just outside the city, including Route 27, Route 18, US 1, Route 26 (Livingston Avenue), and Route 171 (Georges Road). This congestion may detract from the attractiveness of the city as a location for economic development. In addition, NJDOT recently initiated work on a major reconstruction project for Route 18 (see Chapter II), and this project is likely to increase traffic delays during construction, which is estimated to extend until 2009.

Pavement and Bridge Conditions

Section B also provides summary information on pavement and bridge conditions in the city. The data show that the pavement condition of most state roads is "good" to "very good," but the condition of most of US 1 in the city is only "fair" to "poor." Also, nearly one-half (8 of 17) of the bridges on the NJDOT bridge management system are structurally deficient or functionally obsolete. For example, the US 1 bridge over the old Raritan River Railroad line in North Brunswick, just south of the city, is in need of replacement.

Local Roads

Congestion

Previous studies have identified problems along the local roadway network, including congestion, physical deterioration, and safety concerns. The county's transportation plan has identified several congested county roadway corridors, including Route 27 (within the city) and Routes 527, 609, 672, and 680 (How Lane). Evening peak hour congestion along How Lane reportedly begins as early as 3 PM. The NJDOT congestion management system identifies Route 527 near Franklin Boulevard, just outside the city, as a congested location. Another location that experiences traffic delays on the local street network is along South George Street.

Circulation Issues

Many local circulation problems occur due to substandard designs, layouts, and controls at signalized intersections, which leads to queuing and delays. One example is the intersection of Route 27, Jersey Avenue, Handy, and Alexander streets. Another constraint is roadway bottlenecks such as narrow underpasses, which create congestion and safety problems. One such location is the George Street underpass under the NEC rail line. Other local circulation issues include regional traffic on local roads (cut-through) and conflicts between automobile passenger traffic and truck freight traffic.

Parking

New Brunswick has several parking issues, including the ongoing need for more parking in and around the central business district. Related issues include peak period parking demands, need for wayfinding, needs of different users such as short-term and long-term parking, and safety. Also, the city has parking needs and issues in other commercial districts, notably along Easton Avenue and French Street, and in residential neighborhoods, especially in areas with high student populations.

Rutgers University also has various parking issues which relate to circulation within and between its campuses and which affect the city-wide transportation network. These issues include heavy parking demand, parking shortages, and illegal parking. The university is unable to schedule some conferences and events due to parking limitations.

2. Public Transit

Commuter Rail

The New Brunswick Station has some issues relating to bus, pedestrian, and bicycle access to and from the station. These issues include the following:

- ◆ Insufficient vehicle parking capacity/park-and-ride locations
- ◆ Inadequate directional signage/access to the NJ TRANSIT bus stop at the intersection of Somerset and George Streets
- ◆ Safety concerns for pedestrians crossing the Albany Street and Easton Avenue intersection in front of the station. This intersection has a high volume of pedestrian crossings, but the signal does not have a dedicated phase for pedestrians. This area also has many mid-block crossings and high truck volumes.
- ◆ Need for more bicycle parking/storage

The Jersey Avenue Station currently provides only limited service because of its physical design; no boarding or alighting occurs on the northbound side of the tracks. Also, no local bus routes serve the station, except the HUB City local shuttle service, and there may be a demand for additional parking.

Bus Service – Job Access/Reverse Commute

Recent studies have identified various issues and needs relating to the level of local bus service in New Brunswick and the surrounding area. The 2003 County Comprehensive Transportation Study found that key transportation needs are unmet and there are inefficiencies with existing services. The report identified the following key issues:

- ◆ Access between the city and outlying areas is a clear gap in service, especially for the second and third shifts
- ◆ Fragmented resources and a lack of coordination in providing transit services
- ◆ Need for shuttles from other train stations, e.g., Metropark
- ◆ Limited transit access to worksites in the county

The city's Master Plan finds that the current service span and frequency of service limits the ability of transit to meet demand, particularly for workers on the second and third shifts. The recent I-287 Mobility Plan identifies some unserved trip generators, including office park/hotel corridors such as the Cottontail Lane/Elizabeth Avenue/Campus Drive area south of I-287 Exit 12 in Franklin.

Section C.10 identifies the top suburban employment locations. The following is a brief assessment of the level of current local bus service between the city and these areas:

- ◆ US 1 corridor north of the city – Limited local bus service is available in this corridor. The 810 Route provides hourly service on weekdays and weekends between New Brunswick and Woodbridge, serving both the Menlo Park Mall and Woodbridge Center. The last evening run to New Brunswick leaves at 10 PM. Very limited weekday service via the 814 Route exists between the city and Heller Industrial Park. This route provides two morning trips to the park and three afternoon trips, with the last trip leaving at 6:05 PM. Workers traveling between the city and Raritan Center must transfer between the 810 and 813 routes in Metuchen. These routes provide hourly service, with the last run leaving Raritan Center at 10:08 PM. The 813 Route does not operate on Sundays.
- ◆ Piscataway – The NJ TRANSIT 980 Route provides weekday peak hour service between the New Brunswick Rail Station and Piscataway. This service provides three morning trips to Piscataway and three afternoon trips to New Brunswick, with the last trip for the city leaving at 5:01 PM.
- ◆ Franklin – The Somerset County DASH route provides weekday peak hour service between the New Brunswick Rail Station and Franklin. This service provides two morning runs and three afternoon runs; the last run for the city leaves at 5:38 PM.
- ◆ US 1/US 130 corridors south of city – The 814 Route provides service, except on Sunday, between the city and several locations in North Brunswick, including the New Jersey Technology Centre, DeVry University, and nearby shopping centers. The last run to the city is at 10:00 PM. No local bus routes operate south of this area. Middlesex County's 8A shuttle route provides hourly weekday service between the city and the Exit 8A area, with the last run leaving for New Brunswick at 4:50 PM.
- ◆ Route 18 corridor in East Brunswick – Three routes provide service along this corridor. The 818 Route provides hourly service to several locations, including the Brunswick Square Mall and the Mid-State Mall. The last evening run from these sites to New Brunswick is at 9:55 PM. The 815 Route provides service along the corridor to locations including the Mid-State Mall; the last run from the mall to the city is at 11:05 PM. The 811 Route provides weekday service between the city and the Brunswick Square Mall; the last run from the mall to the city is at 5:43 PM.

Another related issue is that these routes largely serve the city's downtown area; potential patrons may need access from residential neighborhoods to downtown bus stops. \

Bus System Facilities

Additional bus system needs include improved facilities and amenities for bus users, e.g., bicycle storage facilities at transit stops and information about bus routes and schedules in languages other than English. NJ TRANSIT does maintain a telephone translation service that provides transit information in over 150 languages.

University Bus System

Looking at the Rutgers bus system, a previous study by the university found that many students do not view campus buses as a viable alternative to driving. They see the system as difficult to understand and use. Despite recent efforts by the university to enhance and promote the bus system, it is still difficult to attract some students to use it. Part of the problem is that the buses are hampered by traffic congestion in the downtown area, particularly along South George Street, so the system may provide minimal time savings to its riders. Also, the university has identified the need to improve bus stop location, design, and signage.

Jitneys

Local officials have expressed concerns about unlicensed jitneys, most of which transport workers between downtown and jobs in the Exit 8A area. These vans may be overcrowded and unsafe. They do not stop at designated locations, and drivers may not be licensed. This situation highlights the reverse commute issue. The jitneys provide transportation for people without cars, many of them recent immigrants. According to Keep Middlesex Moving (KMM), 56% of the people in its database do not have access to an automobile. The city has a large Hispanic population, which provides many day laborers, and these workers may have difficulty accessing regular bus service.

3. Bicycle and Pedestrian

Greenway/Trail Network

The city does not have an integrated greenway or trail network, including a continuous riverfront trail. This issue is especially important because a riverfront trail is a link in the proposed East Coast Greenway. Coming from the north, the Delaware & Raritan Canal State Park towpath trail officially ends at Landing Lane. A path continues to link the outlet locks, but this path is not a strong feature.

Beyond this point, just north of the Route 18 John Lynch Bridge, starts the “Trench” trail, which runs south to Route 27, but this trail has security and safety issues that deter its usage. These issues include the need for better visibility from outside the trail, better lighting, a wider path, and improved and additional access points. The trail continues south and becomes part of Boyd Park, but it then terminates at the Rutgers Boathouse.

In addition, access between the riverfront trail and Boyd Park is constrained, particularly due to the presence of Route 18 near the river. Key potential access points include Commercial Avenue, Richmond Street, and New Street. Another issue is the need for improved connections with river crossings, particularly Landing Lane, Route 18, and Albany Street.

Bicycle Accommodations

Increased bicycle activity along roadways has led to an increase in accidents and safety concerns. Many workers at restaurants and diners use bicycles to commute. Several areas lack good bicycle facilities, and existing facilities are not continuous, forcing bicyclists onto sidewalks or streets. The lack of bicycle compatibility along roads/streets includes various design issues such as the presence of sewer grates. KMM has prepared a bicycle suitability map which rates the condition of roads for bicycle travel, and Middlesex County's Bicycle and Pedestrian Master Plan proposes reviewing the following streets for bicycle compatibility: Route 27, College Avenue, George Street, Nielson Street, Easton Avenue, Suydam Street, Louis Street, Courtland Street, Livingston Avenue, Ryders Lane, and Commercial Avenue.

The Rutgers Master Plan has identified the need to provide safe bicycle routes between the College Avenue and Cook/Douglass campuses. A recent study by the university notes the need to improve existing bikeways and links to local trails, and it identifies the need to provide a safe connection between George Street at the north end of the College Avenue Campus and the new path across the Route 18 Lynch Bridge.

Another issue is the need for bicycle storage facilities at employment centers, train stations, and other key destinations.

Pedestrian Access and Safety Issues

New Brunswick has various general needs related to pedestrian access and safety, including striped crosswalks, improved signage warning motorists of pedestrians, no right turns on red at certain intersections with high pedestrian activity, pedestrian-scale lighting, and a dedicated pedestrian signal phase at certain intersections.

One specific area of concern is the Albany Street corridor, which has a high pedestrian fatality rate. A special corridor analysis study of Albany Street in 2003 identified many issues relating to pedestrian access and safety. These issues include the need for better pedestrian crossing treatments, including curb ramps, crosswalks, pedestrian-actuated traffic signals, advanced roadway signage, and no parking near corners. The study also found issues relating to sidewalk location, design, and maintenance.

The city's Master Plan also has identified the issue of missing sidewalks. It recommends sidewalks along Van Dyke Avenue between Route 27 and the Jersey Avenue Station and along Landing Lane between the bridge and Franklin Boulevard.

One other area of concern about pedestrian safety is along US 1 between Route 18 and the Raritan River Bridge. This area has two large residential developments, along with a few retail establishments, but no designated pedestrian crossings. Despite the presence of a median barrier along the six-lane highway, many pedestrians cross the road.

The university has identified the need to improve the pedestrian environment on its campuses, especially by better concentrating academic facilities and by limiting automobile use on the campuses.

II. TRANSPORTATION PROJECTS

This section provides information on currently planned or proposed transportation improvement projects for the New Brunswick area. Programming/funding sources include the NJDOT / NJ TRANSIT Transportation Capital Program, the New Jersey Turnpike Authority, the NJDOT Local Aid Program, Middlesex County, and the city.

A. Roads

Regional / State Roads

NJDOT's current Transportation Capital Program includes the following projects:

- ◆ Route 18 between US 1 and the Northeast Corridor railroad bridge – This major reconstruction project will improve roadway operations and safety. It includes creating new outer lanes to separate local from through traffic; improvements to interchanges, ramps, and intersections; and safer pedestrian crossings, sidewalks and lighting, park access and improvements. The estimated completion date is 2009.
- ◆ Route 18 Extension to I-287 – Over the past several years, NJDOT has been working to extend Route 18 from the Raritan River to I-287 in Piscataway, largely along existing rights-of-way. A new Hoes Lane extension is complete, and a new Route 18 extension along Metlars Lane between River Road and the Hoes Lane extension was completed in 2004. This project involved re-aligning the existing road and constructing a new 4-lane, limited-access segment.

The current capital program includes design and right-of-way acquisition funding for a project to complete the final section of the Route 18 connection with I-287. This project involves rehabilitating Hoes Lane from the Hoes Lane extension to I-287. The section will remain four lanes with modified signals.

NJDOT's current Transportation Improvement Program also includes a project to improve US 1 in North Brunswick, south of the city, between Milltown Road and Ryders Lane, including replacing the bridge over the former Raritan River Railroad. Preliminary design for this project is currently underway.

The NJDOT Study and Development Program includes a feasibility assessment of improvements to the Route 27 corridor between Somerset Street and Bennett's Lane. This project would provide a center turning lane and intersection improvements to complement the Renaissance 2000 redevelopment effort. The Study and Development Program also includes a project to study possible operational improvements along Route 18 between US 1 and Edgeboro Road in East Brunswick. These improvements may include reconfiguring the ramps at the US 1 & Route 18 interchange and modifying the signalized intersections along Route 18 at Naricon Place and Edgeboro Road.

Table 21: Summary of Roadway Projects in NJDOT Capital Program Pipeline

	Capital Program	TIP	Study and Development
Route 18 Reconstruction	●	●	
Route 18 extension to I-287	●	●	
US 1 railroad bridge replacement		●	
Route 27 Renaissance 2000			●
Route 18, US 1 to Edgeboro Road			●

Source: NJDOT.

North of the city, the recent I-287 Raritan River Crossings Study identified several strategies to address congestion at the I-287 interchanges in Franklin and Piscataway. This plan includes a series of short- and long-term roadway and mobility improvements, including a wayfinder signage program and an intelligent transportation system (ITS) feasibility assessment. Such measures could help to address congestion along other roadways in the area.

Local Roads

The city has several planned or proposed local roadway improvements. In 2005, Middlesex County began a project to install new signal equipment and improve curbs and sidewalks at 17 intersections along George Street, French Street, Easton Avenue, and Livingston Avenue. Another currently planned county project is to resurface Livingston Avenue. In 2006, the city received Local Aid funding of \$254,000 for a project to improve Guilden Street, and the city has received a total of \$700,000 in state funding for improvements along the George Street corridor. The city also plans to reconfigure the Georges Road/Sanford Street/Jones Avenue intersection.

New Brunswick’s Master Plan makes several recommendations for improving circulation on the local roadway network, including the following:

- ◆ Establish computer-controlled signal systems
- ◆ Use signage to direct non-local traffic, particularly trucks, around local roads
- ◆ Consider converting George Street and Neilson Street to a one-way pair
- ◆ Consider eliminating on-street parking, adding off-street parking, and providing turning lanes along French Street

In February 2005, Rutgers University announced plans to close College Avenue (a city street) to vehicles to complement new development plans for the College Avenue Campus. In the first phase, the university proposes to close the street between Senior Avenue and Bishop Place. The university has indicated that it will be working with the city and county on a traffic study to assess the impacts of closing the street and to recommend improvements to the surrounding network to mitigate these impacts.

As part of the Gateway Center Redevelopment Project in the Somerset Street/Easton Avenue area, the city has proposed several changes to the local circulation network, including eliminating parking on Wall Street to allow for two-way traffic, widening the intersection, and creating drop-off and pick-up areas for rail commuters.

Parking

Several plans and projects will increase the parking supply in the city. The original CORE proposal for downtown development indicated that the parking supply would increase by

6,400 spaces. The New Brunswick Parking Authority currently is working on two new lots, Paterson Street and Upper Church Street. New development projects have been adding new parking structures and spaces.

Meanwhile, Rutgers University has been working to assess its parking needs and to refine its parking permit system. A recent study has identified several alternatives, including implementing student permit quotas for the College Avenue and Cook/Douglass campuses, increasing fines, revising the permit structure, and pursuing other measures to discourage over-reliance on short-term parking meters. In conjunction with re-designing the College Avenue campus, the university aims to provide more spaces on the perimeter of the campus.

B. Public Transit

Northeast Corridor

NJ TRANSIT has designated the Northeast Corridor (NEC) between New Brunswick and Trenton as a "Priority Transit Corridor." NJ TRANSIT plans to introduce new multi-level rail cars to the NEC in late 2006, which will increase the capacity for rail travel along the corridor. The Access to the Region's Core (ARC) project is studying the feasibility of new rail tunnels under the Hudson River, which also would increase the capacity of service along the NEC.

New Brunswick recently received state "Transit Village" designation and accompanying funding for station-area improvements. The original CORE plan intended to orient new development toward the train station and include strong pedestrian connections between residential areas and job centers. As noted in Section E, the proposed Gateway Center redevelopment project includes several elements relating to rail station access, including a public pedestrian pathway from Somerset Street to the westbound platform of the station, a new transit center at the north end of the train platform, and new drop-off and pick-up areas at the station's east parking lot and on Somerset Street, just north of the College Avenue intersection, and the pedestrian pathway.

With regard to the Jersey Avenue Station, NJ TRANSIT is considering the feasibility of expanding parking, and the city has expressed some interest in redevelopment around the station area.

Middlesex-Ocean-Monmouth (MOM) Study

This study, underway for some time, is currently considering three main alternatives for providing commuter rail service from Ocean County north to New York City. The alternative that would affect New Brunswick is the Monmouth Junction to Lakehurst alignment, which would connect with the Northeast Corridor line in South Brunswick. This alignment would make commuting by rail an alternative between the city and points to the south. Many officials and agencies, including Middlesex County, have opposed this alignment, however.

Route 18 Fixed Guideway Transit

A 2001 study assessed the feasibility for a new fixed guideway transit system to serve the city and surrounding area. The study corridor roughly paralleled Route 18 through East Brunswick and the city and the planned Route 18 extension through Piscataway. The study considered three alternative alignments, and city officials endorsed Alternative 3, which runs along George and Neilson streets in the downtown. Rutgers University has incorporated this alignment into its Campus Master Plan. NJ TRANSIT currently is planning a second phase feasibility study, which is expected to focus on the potential for utilizing bus rapid transit to improve transit services in the New Brunswick area. The proposed study will be advanced in close coordination with the City of New Brunswick, Rutgers University, and the neighboring municipalities.

US 1 Bus Rapid Transit

NJ TRANSIT recently completed an alternatives analysis for a proposed bus rapid transit (BRT) system serving the US 1 corridor in Mercer and southern Middlesex counties. Although the proposed trunk route would run north only to South Brunswick, the study proposed a system of feeder bus routes, including a route between New Brunswick and Princeton Junction.

Local Bus/Rutgers Campus Bus

A 1999 Rutgers Parking and Transportation Study proposed possible enhancements to the campus bus system and local transit network, including extending the RU bus system to the surrounding area or extending NJ TRANSIT services to the university campuses. The 2003 University Master Plan proposes several transportation improvements, many of which would serve to link the campuses, and the university is working on a new circulation plan to complement and provide further details on the concepts of the Master Plan.

In 2005, the university revised its bus system routes, along with parking permit and class schedule changes, which have combined to reduce traffic. Other potential improvements include new express routes, bus stop improvements, and a global positioning system for tracking the status of buses. The university plans to review the location and design of all bus stops and to implement crosswalks and standard signs in appropriate locations.

Also, the university is planning to construct a local transit hub on the site of the current Records Hall on the College Avenue Campus, and a regional transit hub has been proposed for near the rail station area. This hub could serve to link NEC trains, NJ TRANSIT local buses, university campus buses, other local buses, and the proposed Route 18 bus rapid transit system.

Other Bus Services

Other plans and studies have identified other possible new local bus services. For example, the US 1 collaborative study in the 1990s proposed a new bus route running along US 1 between New Brunswick and Rahway.

The recent I-287 study proposes to modify the following two shuttle routes:

- ◆ Expand service on the DASH SC-2 route between the New Brunswick Train Station and Franklin to serve three additional sites.
- ◆ Extend the NJ TRANSIT 980 Route between the train station and Piscataway to serve additional employers.

The report also proposes schedule adjustments, particularly to correspond with train arrivals and departures at New Brunswick, along with improved amenities and information.

The city is planning to add a new route to the New BrunsQuick shuttle. This route will serve the 4th Ward and parts of the 5th Ward, and it will support redevelopment in the Jersey Avenue corridor. The city has envisioned that this service eventually will serve all areas of the city.

Middlesex County plans to evaluate its community shuttle service and consider possible expansions to supplement local bus service.

The city and KMM have proposed a shuttle running along Jersey Avenue, between the train station and US 1, to serve employment sites along Jersey Avenue. In 2005, they submitted an application to NJDOT, but the service did not receive funding approval.

C. *Bicycle and Pedestrian*

Trail Network

Several planned and proposed projects would help to create a trail network serving the city. For example, the Delaware & Raritan Canal State Park plan recommends strengthening the path between Landing Lane and the outlet locks. The current Route 18 reconstruction project includes various improvements which will combine to provide a continuous trail between George Street and the Route 18 Bridge, including the following:

- ◆ Enhancing the “Trench” bike path between the Route 18 Bridge and Route 27. NJDOT’s current Study and Development Program includes this project.
- ◆ A new overpass to Boyd Park (at Richmond Street) and improved riverfront trails to the north (to the railroad bridge) and to the south (Paulus Boulevard)
- ◆ Various improvements to the south toward US 1

The city’s Master Plan also recommends establishing trails south along the Raritan River and southwest along the Lawrence Brook.

A recent transportation planning initiative by Rutgers University proposes a bicycle network, including off-road and on-road routes, to link its campuses.

Bicycle Routes

NJDOT has been working on a New Brunswick Bikeways Study, which has the objective of forming a network of bike routes to connect the downtown and the Rutgers campuses. The study is examining nine corridors for preliminary engineering and environmental assessment and will produce draft concepts for bike routes, bike lanes, etc.

The Rutgers Master Plan also includes concepts for improving bike routes, particularly between and within its campuses. In addition, the proposing closing of College Avenue would improve bicycle and pedestrian access and safety within the campus area.

Middlesex County has proposed a bicycle route along George Street between Route 27 (Albany Street) and US 1 and a route along How Lane between Livingston Avenue and Route 27, linking to a Somerset County trail.

The city’s new Master Plan also emphasizes the need to provide good bicycle and pedestrian connections to public transit facilities, especially the train stations.

Pedestrian Enhancements

Various projects have proposed pedestrian enhancements in the downtown area and other parts of the city. For example, the CORE Vision Plan recommends upgrading pedestrian facilities and amenities in the downtown area, and the Renaissance 2000 project includes upgrades to sidewalks and bike routes along the Route 27 corridor.

The 2003 federally-sponsored “Pedestrian Safety Roadshow” analysis along the Albany Street corridor provided recommendations for short-term, medium-term, and long-term pedestrian improvements, including crosswalks, curb ramps, signage, signal timing changes, and lighting. A 2003 study of the Easton Avenue corridor identifies similar concepts for streetscaping improvements and pedestrian enhancements, including lighting, signage, crosswalks and curb bump-outs, benches, and trees. In addition, the proposed Raritan Heights project would include an underpass under US 1.

Related to plans to improve waterfront access, the county started a project in 2005 to dredge the river to allow developing a waterfront facility to open the city to boat access. This facility will include two floating docks with 24 boat slips, anchored to the towpath near Boyd's Park. A pedestrian overpass at Richmond Street will provide a connection between downtown and the river. This project is the first water-related project under the county's Raritan Riverfront Strategic Plan, which includes several projects between Raritan Bay and New Brunswick.

III. RECOMMENDATIONS

Based upon the analysis and findings of this report, the following section presents recommendations for transportation improvements.

A. Roads

Improve operations of regional road network

- ◆ NJDOT should ensure that it completes the Route 18 reconstruction project and the Route 18 extension project in Piscataway in a timely manner.
- ◆ NJDOT should advance planning for the Route 27 Renaissance 2000 Project.
- ◆ NJDOT should consider intelligent transportation system (ITS) applications for its roads.

Undertake necessary pavement and bridge upgrades

- ◆ NJDOT should advance the design work for rehabilitating the US 1 railroad bridge in North Brunswick.
- ◆ NJDOT should address sub-standard pavement conditions along US 1 and additional bridge rehabilitation needs.

Improve local circulation

- ◆ The city and county should continue to identify and implement roadway/intersection improvement projects, including physical and operational improvements to traffic signals, which require NJDOT approval.
- ◆ The city should evaluate the need for circulation changes on downtown streets, including making Neilson Street and George Street a one-way pair and eliminating on-street parking and adding turning lanes along French Street. The city should coordinate this work with the county and obtain NJDOT approvals, as necessary.
- ◆ The city, county, and Rutgers University should carefully evaluate impacts and coordinate planning for the circulation elements of major proposed development and redevelopment projects, particularly the Gateway Center project and the Rutgers University College Avenue Plan. These projects also should identify and incorporate any necessary NJDOT reviews and approvals.
- ◆ The city should identify preferred truck routes and install appropriate signage and directions.

Address parking needs

- ◆ The city should prepare and implement a comprehensive parking management strategy including potential new structures; strict enforcement of short-term, on-street parking regulations; improved wayfinding signage; and potential shared parking arrangements, e.g., off-hour use of private lots for public parking

- ◆ The city and university should conduct joint neighborhood parking studies to address residential and non-residential parking needs.
- ◆ The university should continue to evaluate its parking needs and refine the parking permit system, especially to discourage student driving, encourage transit use, and improve traffic circulation throughout the city.
- ◆ The city should encourage new development projects to include parking.

B. Public Transit

Enhance commuter rail service

NJ TRANSIT should assess the potential benefits of expanding passenger rail service and determine whether to allocate limited public funding for such service.

- ◆ NJ TRANSIT should continue with overall rail system planning efforts that will increase the frequency of service along the Northeast Corridor line, based upon increasing trans-Hudson capacity. Such planning should include connecting bus or shuttle service between stations and nearby work sites.
- ◆ NJ TRANSIT and the city should maintain and strengthen efforts to use commuter rail stations to enhance residential and business opportunities in the areas surrounding the stations. The city should design new downtown development to be integrated functionally and visually with the New Brunswick Station.
- ◆ NJ TRANSIT, the county, and the city should work to enhance multi-modal access to and from the commuter rail stations. These efforts should maintain and increase the level of connecting bus or shuttle service; enhance efficient and safe pedestrian access, particularly across Albany Street; and provide amenities for bicyclists, including bike storage facilities. All public transit agencies should participate and coordinate with the city in the planning and design for the proposed Gateway Center redevelopment project, which connects with the downtown station.
- ◆ NJ TRANSIT should advance alternatives for improving the Jersey Avenue Station. It should assess the feasibility of expanding the station facilities, particularly parking, and coordinate with the city regarding potential nearby transit-oriented development.
- ◆ NJ TRANSIT should conduct the next phase of studying a potential Route 18 light rail or bus rapid transit system. It should closely coordinate this study with downtown development and redevelopment plans and Rutgers University's current facility and circulation plans.

Maintain and expand local bus service

NJ TRANSIT, the county, the city, and Rutgers University should collaborate to conduct a comprehensive bus service needs assessment. This study should evaluate the feasibility of expanded or new services and determine whether to allocate limited public funding to increase bus service.

- ◆ NJ TRANSIT should maintain and expand, as possible within funding limitations, local fixed-route bus service. It should consider revising service to provide more late evening, weekend, or express bus service to key job locations in outlying areas (as identified by reviewing current routes / schedules, employment locations, and local plans), such as Edison and East Brunswick.
- ◆ NJ TRANSIT should consider the feasibility of regional express bus service along the US 1 corridor north of the city, as the US 1 Collaborative Study recommended. Also, as part of further evaluating the feasibility of a bus rapid transit (BRT) system along US 1 in Mercer

and southern Middlesex counties, NJ TRANSIT should include a feeder service connection with New Brunswick, as the recent alternatives analysis proposed.

- ◆ NJ TRANSIT and local transit providers should work to coordinate the routes and schedules of their various services, including NJ TRANSIT buses, Rutgers Campus Bus and shuttles, Hub City Local, and the New BrunsQuick shuttle. These agencies also should work together in planning for new transit hubs in the Gateway Center redevelopment area and on the College Avenue Campus.
- ◆ NJ TRANSIT should evaluate the cost-effectiveness of expanding the existing shuttle service between the downtown train station and Piscataway, as the recent I-287 Mobility Study recommended. The Somerset County SCOOT program should evaluate the cost-effectiveness of expanding the existing service between the train station and Franklin, as the same study recommended.
- ◆ The city should implement its plans to add a new route on the New BrunsQuick shuttle, and it should advance planning for city-wide service.
- ◆ The city should continue to pursue funding for a shuttle service between the downtown area and the Jersey Avenue corridor, as it has proposed. The county should monitor the performance of its shuttle route between downtown and the Exit 8A area and pursue funding to expand this service, if appropriate.
- ◆ The city and county should explore opportunities to provide shuttle service to other areas currently not served. They also should consider alternatives for improving connecting service between residential neighborhoods and key bus and shuttle stops in the downtown area.
- ◆ Rutgers University should continue to evaluate potential revisions and expansions to its campus bus system, including express routes and service to locations in the surrounding community, e.g., residential areas of New Brunswick, Highland Park, and Edison.
- ◆ NJ TRANSIT should continue to improve amenities and information for bus riders. In particular, it should provide multi-lingual information on bus routes and schedules (as local studies have proposed), especially by promoting its telephone translation service.

C. *Bicycle and Pedestrian*

Implement a system of trails

- ◆ State and local agencies should complete planned and proposed projects to provide a trail network in the city and surrounding area. NJDOT should advance its plans for an enhanced waterfront trail accompanying the Route 18 reconstruction project. NJDOT, the county, and city should work together to provide adequate links between downtown, the riverfront trail, and river crossings.

Improve bicycle routes

- ◆ NJDOT, the county, and city should continue to work on improving bicycle accommodations along the roadway network. NJDOT should complete its Bikeways Study and work with local agencies to plan and implement the study recommendations. State and local agencies should coordinate their work with university plans and actions to improve bicycle connections between its campuses and the downtown area. The city, county, and university should work to provide adequate bicycle parking and other amenities at key destinations.

Enhance pedestrian access and safety

- ◆ NJDOT, the county, and city should coordinate to plan and implement various pedestrian enhancements in the downtown area, including sidewalks, crosswalks, curb ramps, signal timing, signs, and lighting, especially along key corridors including Albany Street, Easton Avenue, and George Street. These efforts should coordinate pedestrian enhancements with streetscaping improvements and incorporate these improvements into new development and redevelopment projects.
- ◆ The city should work with NJ TRANSIT to emphasize pedestrian access and safety to public transit service, particularly at the New Brunswick Rail Station.
- ◆ NJDOT and the city should work together to address safety issues related to pedestrians crossing US 1. The city should ensure that an underpass under US 1 is part of the work on the proposed Raritan Gardens project.

REFERENCES

- Amtrak. *Northeast Corridor, New York – Washington* schedule. December 12, 2005.
- “Business Owners Worried.” *The Home News Tribune*. January 12, 2006.
- City of New Brunswick. *City of New Brunswick Master Plan* Heyer, Gruel & Associates. November 2004.
- _____. “Traffic Signal Upgrades” Media Release. March 30, 2005
- _____. *State of City Address*. 2005.
- _____. *State of City Address*. 2006.
- Coach USA website.
- CORE Redevelopment Plan
- DEVCO website.
- Keep Middlesex Moving (KMM). *Middlesex County Transit Guide* 2002
- “Many Run Risk in Route 1 Dash.” *The Home News Tribune*. November 1, 2005.
- Middlesex County. *Middlesex County Comprehensive Transportation Study*. December 2003.
- _____. *Middlesex County Municipal Cross-acceptance Report*. November 2004. OSG website.
- Middlesex County and Rutgers University. *The Greater New Brunswick Area Corridor Study*. June 2001. Urbitran for
- Middlesex County Planning Board and Somerset County Planning Board *I-287 Mobility Plan* June 2005 Orth-Rodgers Associates.
- “New Brunswick Bikeway Study Receives Grant.” *On the Move*. KMM Fall 2004.
- “New Brunswick Infuses Music Into Curriculum.” *Home News Tribune*. 06/19/05
- New Brunswick Public Schools.
- New Brunswick Tomorrow website.
- New Jersey Department of Transportation (NJDOT). Bridge Management System.
- _____. Congestion Management System.
- _____. FY 2004 Major Project Status.
- _____. Pavement Management System.
- _____. FY 2006 Transportation Capital Program.
- _____. FY 2006-08 Statewide Transportation Improvement Program.
- _____. Straight Line Diagrams.
- _____. FY 2006-07 Study and Development Program.
- _____. Bureau of Safety Programs. *Summary of Crash Rates on State and Interstate Highways in Route and Milepost Order for 2004*.
- NJ TRANSIT. Access to the Region’s Core.
- _____. Bus Schedules
- _____. Middlesex Ocean Monmouth Study.
- _____. Rail Schedules
- _____. Rail Station Parking.
- North Jersey Transportation Planning Authority. *Access 2030*.
- _____. Demographic Projections
- _____. JARC Program.
- _____. Sub-Regional Issues
- Old New Brunswick website.
- Pedestrian Safety Roadshow.
- Rutgers, the State University of New Jersey. Campus Bus System website. <http://gobble.rutgers.edu/newpats/buses.htm> Updated 1-9-06.
- _____. College Avenue project website.
- _____. Parking and Transportation services website.
- _____. *Parking and Transportation Study*. 1999.
- _____. *2003 Physical Master Plan*.

_____. Office of Institutional Research, "Headcount Enrollment by Campus." Fall 2004.
_____. Voorhees Transportation Center. The Role of Amtrak's Intercity Passenger Rail Services in New Jersey. "Shuttle Expands Service Area." *Daily Targum*. February 17, 2006.
Venezia Associates website.

INTERVIEWS

May 19, 2005. Local planning officials.

Glenn Patterson Director, New Brunswick Department of Planning, Community and Economic Development.

George Ververides, Director of County Planning, Middlesex County.

Tony Gambilonghi, Planner, Middlesex County.

Roberta Karpinecz, Keep Middlesex Moving.

Timothy White, City Engineer, New Brunswick.

July 25, 2005. Jane Brady, Workforce Investment Board Director, Middlesex County.

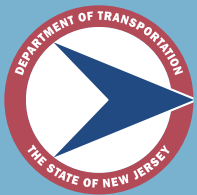
August 2, 2005. William Neary and Roberta Karpinecz, KMM.

August 2, 2005. Steven Fittante, Director of Transportation, Middlesex County.

August 5, 2005. Robert Werkmeister and Lynne Russo, NJDOT Division of Local Aid and Economic Development.

August 22, 2005. Alan Maiman, Bus Service Director, NJ TRANSIT.

October 3, 2005. Jack Molenaar, Director, Parking and Transportation Services, Rutgers, the State University of New Jersey.



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