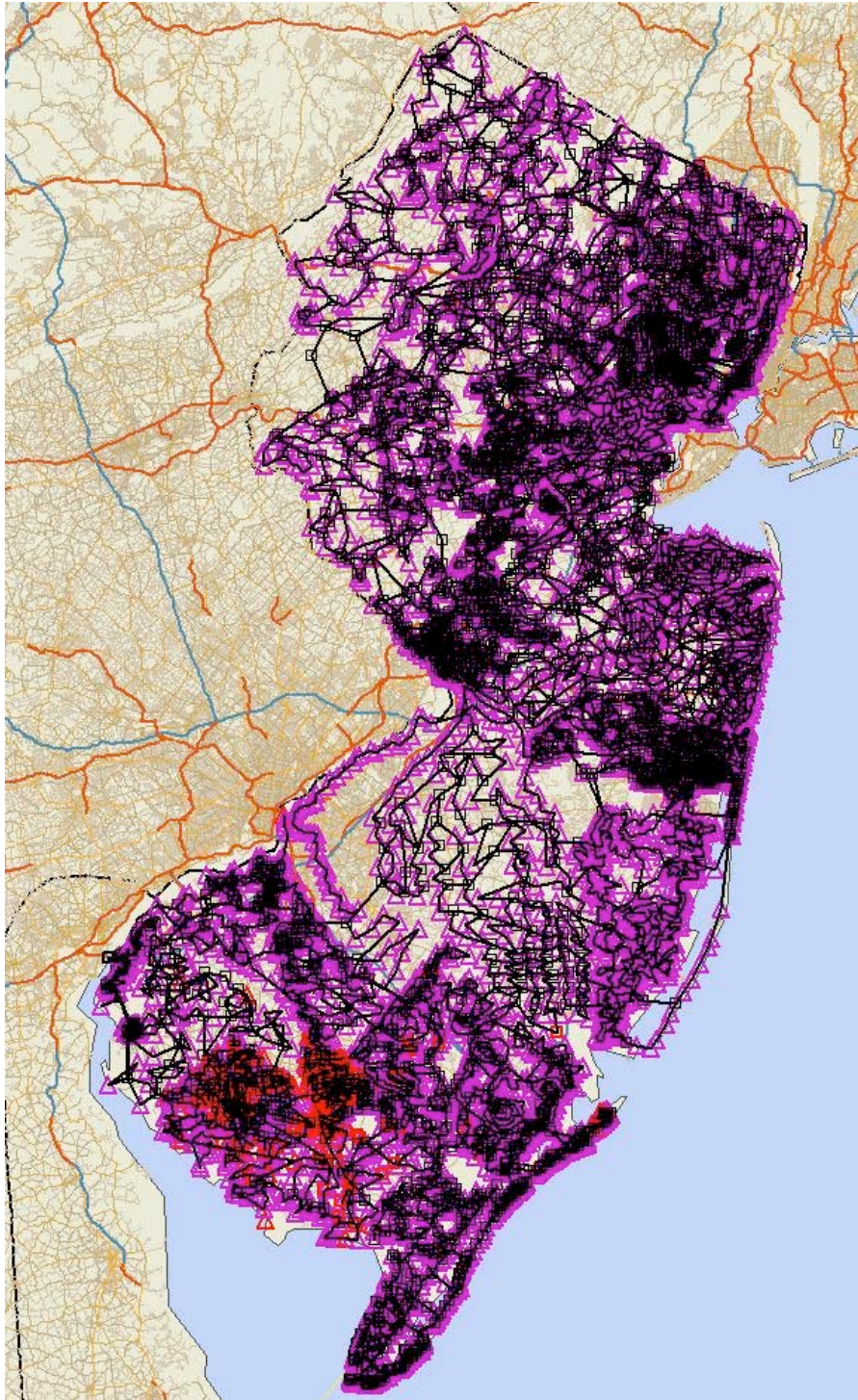


Personal Rapid Transit (PRT)

for

New Jersey



By
ORF 467 Transportation Systems Analysis, Fall 2004/05
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Executive Summary

This report is a study of the feasible implementation of a Personal Rapid Transit (PRT) system for the state of New Jersey. It was motivated in part by the shortcoming of the Route 1 Corridor Transit Study, which failed to consider PRT as an alternative, despite its ability to provide true personal mobility.

This report was the result of a term project completed by the students enrolled in the Transportation Systems Planning and Policy Analysis course (ORF467) offered by Princeton University's Operations Research and Financial Engineering Department in the fall of 2004. The study was organized by dividing the class into four sections, and assigning each group a region of contiguous counties accounting for the entire state of New Jersey. Each student was responsible for researching their county, including the current transportation system, major trip producers and attractors (residential areas, employers, etc.), general land use, and other characteristics pertinent to transportation. This research guided the creation of PRT networks for each county, with the goal of providing a "ubiquity of access" with the minimum number of stations and interchanges. The PRT-Editor, a version of the CoPilot software modified by Kate Doliwa was used to create and merge the networks.

The final network consisted of nearly 11,000 stations and about 10,000 miles of track. On the low end, estimating \$500,000 per mile of track and \$500,000 per station, the project amounts to about \$10 billion US. Since this is only a rough estimate of the cost for the network, the actual cost might vary from \$5 billion to \$30 billion. Although this number might appear large, it is a small price to pay to provide personal transportation to the entire state of New Jersey.

<u>County</u>	<u>Number of PRT Stations</u>	<u>Miles of PRT Track</u>
Atlantic	1,063	791
Bergen	396	298
Burlington	232	549
Camden	68	55
Cape May	811	488
Cumberland	1,590	609
Essex	766	327
Glauchester	448	302
Hudson	259	118
Hunterdon	353	380
Mercer	586	369
Middlesex	283	436
Monmouth	533	1,149
Morris	451	539
Ocean	1,358	974
Passaic	296	244
Salem	280	382
Somerset	564	658
Sussex	362	462
Union	252	183
Total	10,951	9,313

What is PRT?

The modern concept of Personal Rapid Transit (PRT) surfaced in the late 1960's after being introduced and endorsed in a report by Housing and Urban Development. The paper, in effect, led to several efforts in academia and both the private and public sectors that would form the quantitative framework for the PRT network of today. Collaborating with the United States, Japan, France, and West Germany also helped in developing the logistics of PRT networks. Particularly in the last decade, there has been a resurgence in both the interest and the efforts to incorporate PRT into mass transit systems in the country today.

PRT exists as a network of one-way tracks allowing passengers to commute from station to station via individual pods. Unlike the transportation systems of today, the user of PRT can individually select her destination station and be transported non-stop. Direction changes and forks in travel routes are accommodated by interchanges within the PRT track. A central computer system optimizes the flow of traffic along the track and into/out of each station. The entire network operates seamlessly to provide the passenger with efficient point to point travel access.

There exists a strong belief among many scholars, politicians, and businessmen that PRT will in the future be able to solve most transportation problems (congestion, pollution, etc) with moderate to low cost. On the other hand, some critics are quick to label any proposed PRT system as being inefficient and overly-expensive. These critics often declare the size of the PRT vehicles and system are ill-equipped to handle high density travel areas and would be difficult to either build around existing structures and facilities, or to incorporate into modern cities.



Over the last few decades, many improvements to proposed networks have dispelled fears regarding PRT and silenced disbelievers. The vast improvements of computer technology have increased the reliability of proposed systems and allowed for more detailed and intricate PRT networks. As the computing power of microchips has increased exponentially since the 1960's, the cost of these microchips has also decreased exponentially due to private competition and the general availability of materials. Simple changes like automated fare collection and GPS have now greatly reduced labor cost, dropping the long-term marginal cost of PRT operation to nearly zero. With this in mind, PRT has been transformed into a realistic and efficient method of transportation.

Some believe that PRT would be unable to legitimately compete with traditional forms of mass transit. On the contrary, PRT exists as an on-demand service and would provide a more efficient method of transportation than do the busses, trains, and subways of today. The on-demand nature of PRT prevents the gathering of large groups in stations, the largest bottleneck in today's mass transit systems. Since PRT stations will be spaced from five to ten miles apart on average, passengers will be afforded several departure and arrival locations for each trip. Most important, however, is the fact that PRT is not subject to traffic, weather, peak hours, or accidents.

History of PRT

“One after another, the various federally funded PRT showcases either fizzled or bombed terribly, exceeding budgets, and exhibiting an array of unforeseen technical problems – some of which seemed to be inherent in the concept.” (Light Rail Now! Publication Team) In the late 1970s, West Virginia University at Morgantown constructed a PRT system with 8.7 miles or roadway and 5 stations for \$126 million, about \$319 million today adjusted for inflation. This figure of about \$89 million per-route mile did not include costs that would be seen in an urban situation such as real estate acquisition, environmental mitigation. After this project, federal interest in PRT waned due to the seeming infeasible utilization of this technology in a non-academic setting.

Twenty years later, PRT enthusiast J. Edward Anderson convinced a major military hardware contractor, Raytheon, to invest in the idea. Soon after, the Northeastern Illinois Regional Transportation Authority bought heavily into a proposed 3.5 mile triple-looping layout with about 8 stations and 40 cars. In 1998, however, problems began to surface as costs began to soar above the initial estimates of \$23 million/mile. The RTA quickly put the project on hold and eventually scratched the idea completely. Luckily, PRT proponents would get another chance to study the proposed effectiveness of PRT six years later.



In October of 2004, a bill was passed in the state of New Jersey to appropriate \$75,000 for a feasibility study of the PRT system as a supplement to rail transportation and to alleviate congestion. Although this appropriation seems modest, it does show that the state government is interested in investigating alternative transportation options. The legislature recognizes that the transportation system of New Jersey is both crucial and fundamental to the long term economic success of the state. In the past, New Jersey has benefited from being an early adopter of new technologies by implementing a combination of public and user-fee funded roads and an extensive bus system. Accordingly, the State finds it necessary to continue to investigate new types of service that have the potential to provide a fast, inexpensive travel option and reduce pollution from motor vehicle travel.

The System

The proposed PRT networks of today must be controlled by a central computer system that is specifically designed to handle a large number of passengers while preventing congestion at interchanges and merge points. Most transit systems' effectiveness is measured in terms of train availability and accuracy of schedule. Dr. Anderson, founder of Skyweb Express, remarks that dependability, rather than availability, is a more meaningful measure of value because it indicates the number of person-hours not delayed due to operation failures. When analyzing a PRT system, there should exist at most 3 undependable hours per 1000 person-hours of operation in order for the system to be considered. This number is easily attainable through PRT's sophisticated communication implementation. If there is a problem ahead in the track, for example, the vehicles behind the problem can be commanded to slow down. The central computer can detect vehicles that have stopped through GPS and reroute accordingly.



The Trip

The trip experience for a passenger is efficient and convenient. The entire PRT process is automated, allowing for almost zero labor cost in stations. In PRT travel, a passenger enters the station, chooses her destination from a computer, pays a fee, and receives a ticket. After she enters the first open car, the central computer examines the flow of the passing cars for an opening. When appropriate, the car is given the command to accelerate. At interchanges, the computer selects the optimal route and instructs the car. When the car finally comes to a complete stop at the destination station, the doors unlock and the passenger is allowed to exit.



A PRT Network in New Jersey

Is PRT feasible for the state of New Jersey? In an attempt to answer this question, our class has generated a vast network of stations and interchanges that serve approximately 90% of all destinations in the state. This simulation will paint a picture as to the scale of a project that would dramatically change the way people are moved through the state.

New Jersey Coastline

The Eastern Coast of New Jersey is composed of several counties including, Burlington, Ocean, and Monmouth Counties. These counties are the 1st, 2nd, and 6th largest counties in New Jersey, respectively. In particular, Monmouth and Ocean County accounted for 20% of the growth in New Jersey from 1990-2000. Combined, the three counties take up approximately 1,239,549 acres of land and have a population of 1,575,311 persons. Monmouth is composed of densely populated areas, but a good portion of its land is dedicated to farmland, 10% of the land is undeveloped public open space, and there are 27 miles of pristine beaches. Most of Ocean County's land is used for resorts and large attractions, such as amusement parks and army bases. Burlington's land use is principally limited to agriculture. Blueberries, cranberries, and timber are among the produce of the county.

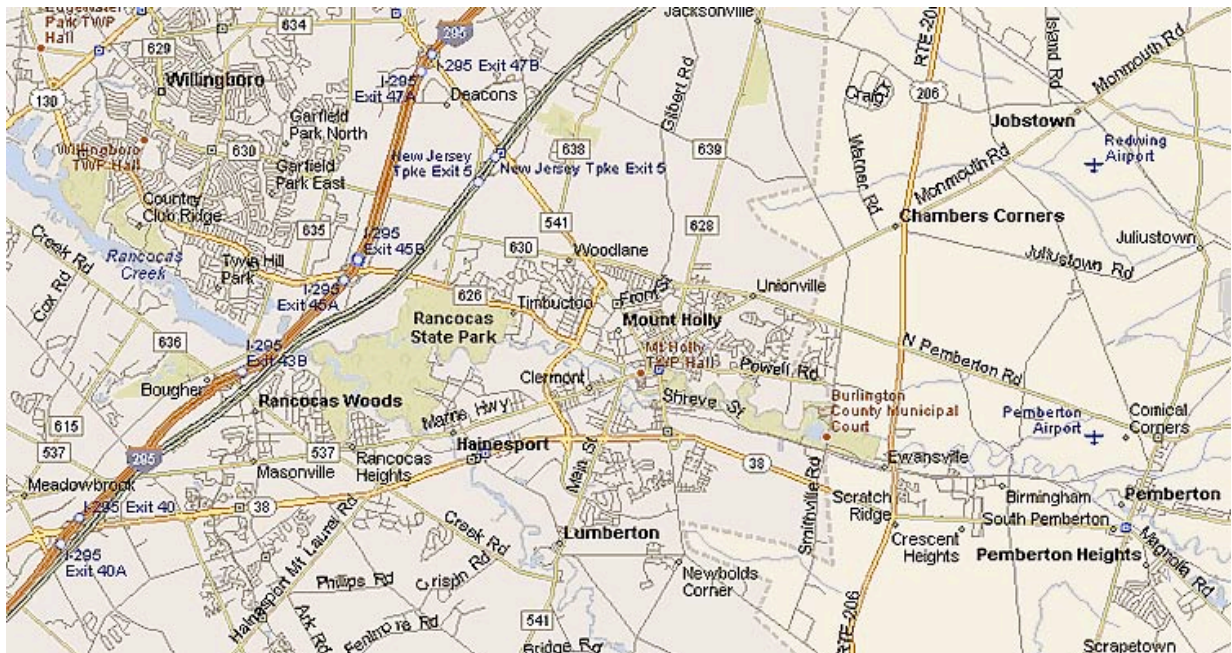


Even though these three counties have varying populations and land uses, their main mode of transportation remains the automobile. Ocean County relies heavily on its network of motor vehicle highways for transportation. Its public transportation system is very limited and all tourists and visitors are advised to rent a car. Monmouth and Ocean County, because of their recent sudden increase in population growth, are investing in the MOM Rail Service, which is a network of railways that would provide direct connection to the dense areas of the counties, as opposed to the current railway that just lies along the perimeters of the county, but this system may prove to be inefficient. Eighty percent of all commuting in Burlington is by automobile. It is evident that this region is in need of a change in local transportation means in order to maintain a comfortable quality of life for its residents and visitors.

In the last decade, PRT has been increasingly considered as a solution to mass transit problems today. Especially for a region like Monmouth and Ocean counties where 20% of the state's growth has occurred in 14.7% of the land area of the state, traffic congestion is becoming an increasingly pressing issue. Because the system is controlled by computers, PRT is easily adaptable to fluxes in demand and increases in population. The mean travel time has increased

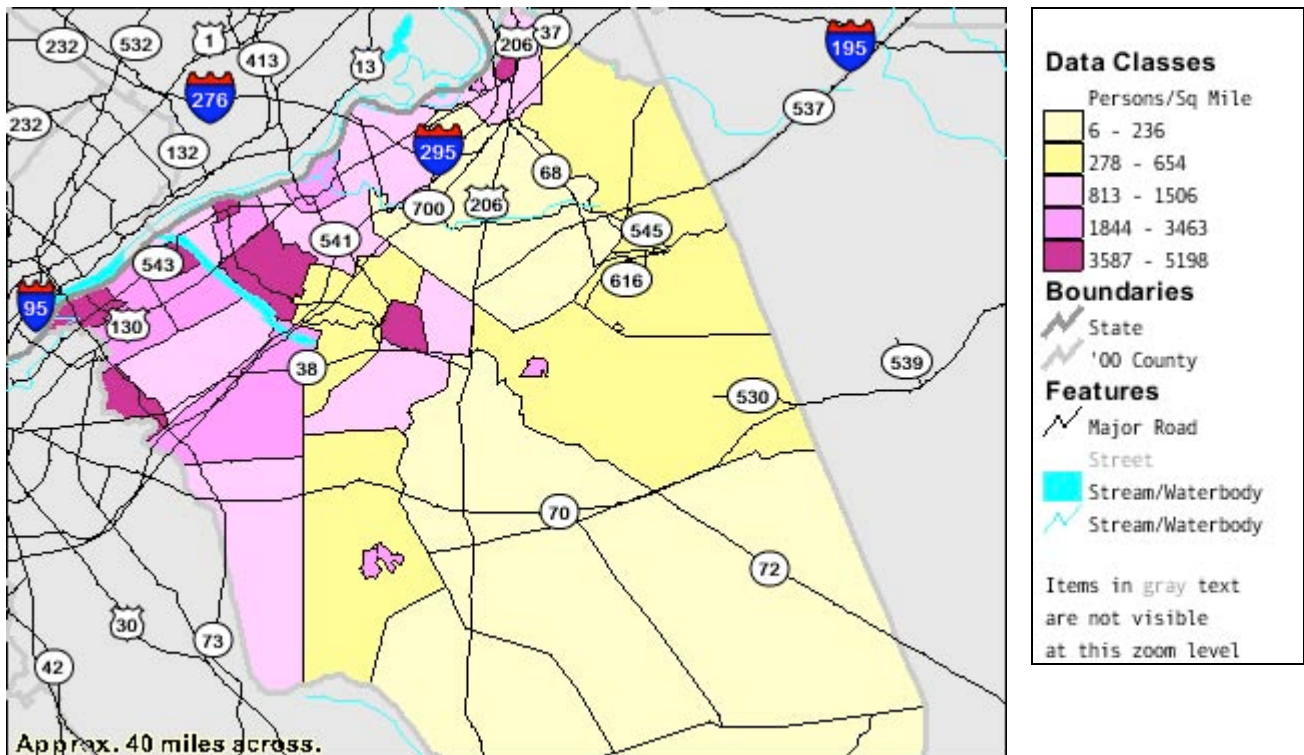
by six minutes for commuters in Ocean County alone in the past 10 years. Since middle New Jersey is seen as an increasingly attractive place to live for commuters to New York and parts of upper New Jersey, the transportation problems will just compound. New Jersey Transit is proposing a new rail line for Middlesex, Ocean, and Monmouth counties in an effort to accommodate travelers, but this new rail line is only a temporary and partial solution. Over 75 % of travelers ride alone to work in a car as opposed to taking public transportation or car pooling. Because PRT gives the feeling of a personal ride to work, it will be seen as appealing to these workers and also solve the congestion problems of the region. Also, implementing PRT in the region will solve air quality problems, making the quality of life for this region higher. While the Burlington, Ocean, and Monmouth county region already attracts more and more residents each year, PRT would alleviate traffic issues which over half of surveyed residents in the counties indicated were of either the primary or secondary concern to them for their county's future.

Burlington County



Land Use in Burlington County

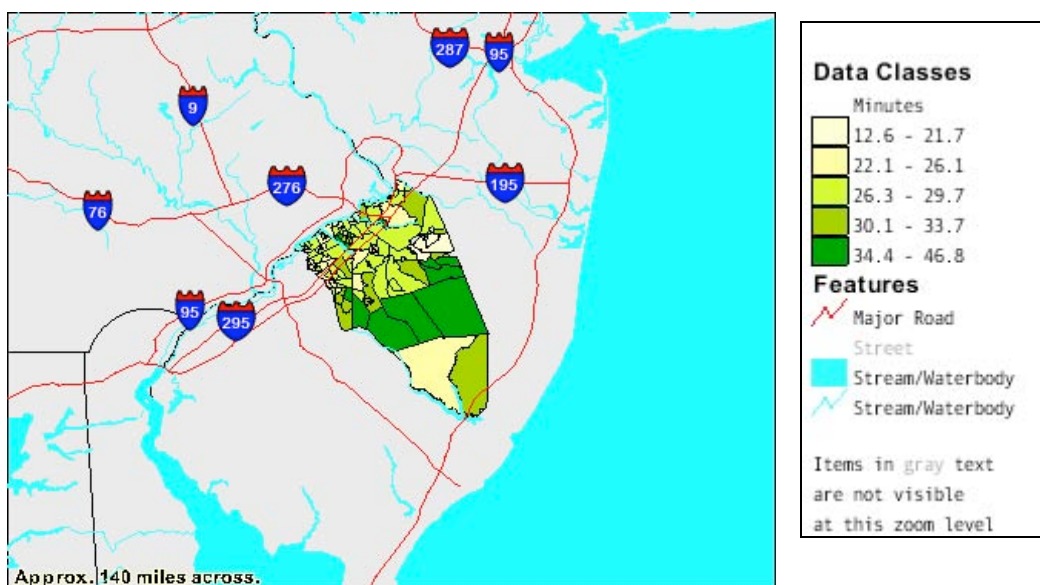
Burlington County is the largest county in New Jersey, extending 827 square miles or 524,160 acres. It is composed of forty political subdivisions – three cities, six boroughs, and thirty-one townships. In the year 2001 census data showed about 432,000 residents living in Burlington County. The population distribution is shown below:



Burlington is known for its extensive forests, wildlife, and other natural attractions. Its main economic production is cranberries. Extensive amounts of land are used for farming and produce purposes and cranberry production. Burlington has the largest number of acres devoted to farming and produces the second largest number of cranberries in the nation. The largest blueberries in the world are also grown here.

Description of Existing Transit Service

The present transit situation of Burlington County does not boast much serviceability. Eighty-one percent of the residents use car travel, while four percent use the bus system, eleven percent carpool, and two percent have the good fortune to work at home. The map below shows the mean travel times of different regions within Burlington County.



Though Burlington does have close access to the major I-295 and I-95 highways, this is not enough to comfortably deal with the Burlington traffic. Numerous traffic construction projects are in order for the Burlington County area.

Date	Construction Projects
Thru December 2004	NJ Turnpike @ area between Interchange 3 and Interchange 4 – Sound wall construction with three lanes open at 45 mph.
Thru December 2004	Routes 30, 38, 70, 73, and I-295 – various intersecting streets in various townships – ongoing traffic signal work with lane closures.
Thru December 2004	Bridgeboro Road (CR 613) @ Creek Road – Delran Township – One lane alternating traffic for intersection improvements.
Thru December 2004	Marne Highway (CR 573) @ area between Hartford Road and Larchmont Blvd – Mount Laurel Township – Road closures and delays to replace bridge.
Thru December 2004	Race Street @ Rancocas Creek – Southampton Township – Bridge work.
Thru December 2004	I-295/N&SB @ Route 38 to Route 561 – Lane closures for road work land shifts.
Thru January 2005	Route 9 @ Garden State Parkway to W. Greenbush Road – Bass River Township – Bridge work.
Thru January 2005	Evesboro-Medford Road (CR 618) @ area from Greentree Road to quarter-mile east to Troth Road – Evesham Township – Road widening and drainage improvements.
12/20/09 – 12/24/04	Rt. 130/SB @ Dultys Lane – Burlington Township – Single lane closure and SB Ramp closure 9am-3:30pm for pavement repair.
12/20/04 – 12/24/04	I-295/N&SB @ Exit 34 to Exit 40 – Mount Laurel Township – Single lane closure 8pm-6am for ongoing construction.

Hypothetically it would cost about the same amount of money to implement a new PRT system. The Burlington County Transit Service prides itself on meager bus system that offers free bus travel to senior citizens and disabled residents. They receive their funds from Casino, State, and Federal grants as well as county revenue. A light-rail system, Riverline, also provides many residents with an easier commute to Trenton and the greater NJ Transit railroad system.

Proposed PRT Network in Burlington

Size and coverage of the network

The PRT network we created for Burlington County has 300 stations and 300 intersections. Looking at the population density map, it is easy to see where the PRT stations will be more densely located. Our system will also service rural areas with many station locations; we feel this is important because farming is such a large part of the Burlington County culture. Burlington is an interesting county in its extensive farm culture so we expect more people in rural areas to demand the use of the PRT network. Unlike other counties like Ocean County to the east, which did not make rural areas as much of a priority, we made sure to offer rural stations in Burlington. The stations are also efficiently connected by one-way tracks in various directions to permit a constant high volume of flow and to also service as many stations as effectively as possible.

Service to Employment

For employment purposes the PRT network in Burlington can be used for transfer from rural areas to city centers and vice versa. Burlington experienced a large growth period in the 1980s when the number of jobs within the county increased a dramatic 54% in the trade industry and a 90% increase in service sector jobs. There will be a huge flow of residents to the service

and trade jobs within the county. Overall, about 180,000 people are employed within Burlington County. Some major employers within Burlington County are Lockheed Martin in Moorestown and Cendant Mortgage in Mt. Laurel. Also, Burlington is in close proximity of the Trenton area that attracts Burlington residents with its greater job opportunities.

Service to Shopping

Burlington shopping attractions vary throughout the county. Most shopping is concentrated in larger cities rather than the townships. The PRT network we have will provide the transport necessary to bring people from their township residences to the larger cities for shopping attractions, and then back home again. Some major shopping attractions are the Burlington Center Mall in Burlington, NJ, the Moorestown Mall in Moorestown, NJ, and the Columbus Mart, a three-story antique mall.

Service to Recreation

Burlington County, known for its wildlife, has many recreational attractions in unpopulated areas. Families and friends are constantly traveling to more rural areas to camp, fish, canoe, hike, or swim. This is another reason for our choosing to place stations in rural as well as suburban and urban areas.

Service to Education

By placing stations near schools we have also made the Burlington County PRT network an effective substitution for the school bus system. Parents should feel comfortable sending their children on the PRT system for school commute. This will limit the number of two-way commutes that parents make every morning and afternoon for their children, thereby reducing the amount of traffic on the road during rush hour times.

Service to Housing

Burlington County has many large and small areas that have residential communities. We have placed PRT stations in all of these areas so there can be effective travel to and from the communities as well as between.

Value of PRT to Burlington County's Future

PRT will connect all areas and all people to every location in Burlington County as well as across New Jersey. Now the Burlington County Transit System only services malls on Wednesdays and doctor's offices and hospitals on Mondays, Tuesdays, and Fridays between 10 am and 2 pm (reservations are recommended). These limiting times hinder the population, especially the elderly who rely heavily on BCTS for transport in place of driving themselves. Rather than servicing only certain areas on specific days, our PRT system will serve 90% of Burlington County every day of the week. The entire population will benefit from the dramatic increase in public transportation services.

Monmouth County

Overview

Monmouth County was recently picked as the "Third Best Place to Live" by *Money Magazine* out of 300 national communities. Additionally, the county's attention to economic health has helped it earn a Triple A rating from Moody's & Fitch and Standard and Poor's. These two honors reflect the kind of lifestyle Monmouth County has to offer.

Monmouth County has turned into one of the nation's most attractive locations to live. Tourism was one of the county's original business sectors and continues to be a critical part of the county's great economic strength, but with the arrival of a wealthy and well educated population, professional sectors and commerce have grown drastically. The county is now very strong in the computer sciences, telecommunications, biotechnology and finance.

In order to retain its rural essence while growing, the county has also preserved nearly 20,000 acres of farmland and open space and is continuing to add to that acreage. The following tables summarize Monmouth County's land usage.

Public Open Space

Total Land Area

Area (mi ²)	471.57 (301,805 acres)
Rank in NJ	6 th
Percent of NJ	6.2%

Federal (acres)	1,668
State (acres)	12,843
County (acres)	19,200
Municipal (acres)	8,400
Total acreage	42,111 (13.95% of county)

Public Transit Services

New Jersey Transit's North Jersey Coast line provides passenger rail provides daily service from 13 locations in Monmouth County to Newark and Manhattan as well as a connection to Amtrak rail services.

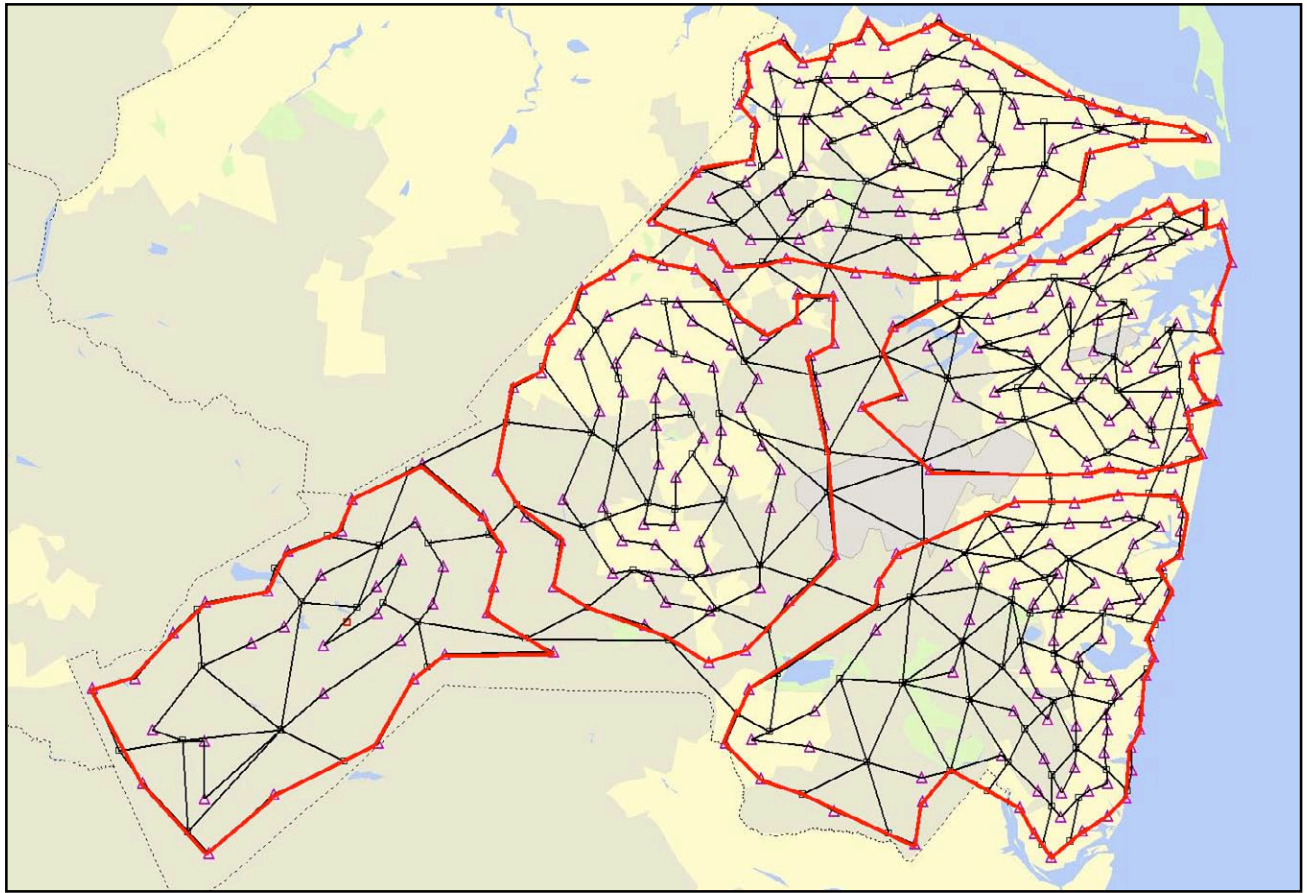


In addition, New Jersey Transit provides bus service from Monmouth County to other major employment centers in New Jersey and New York. Suburban and Academy busses also provide daily service to Jersey City and midtown Manhattan. A local bus service is available for transit throughout the county.

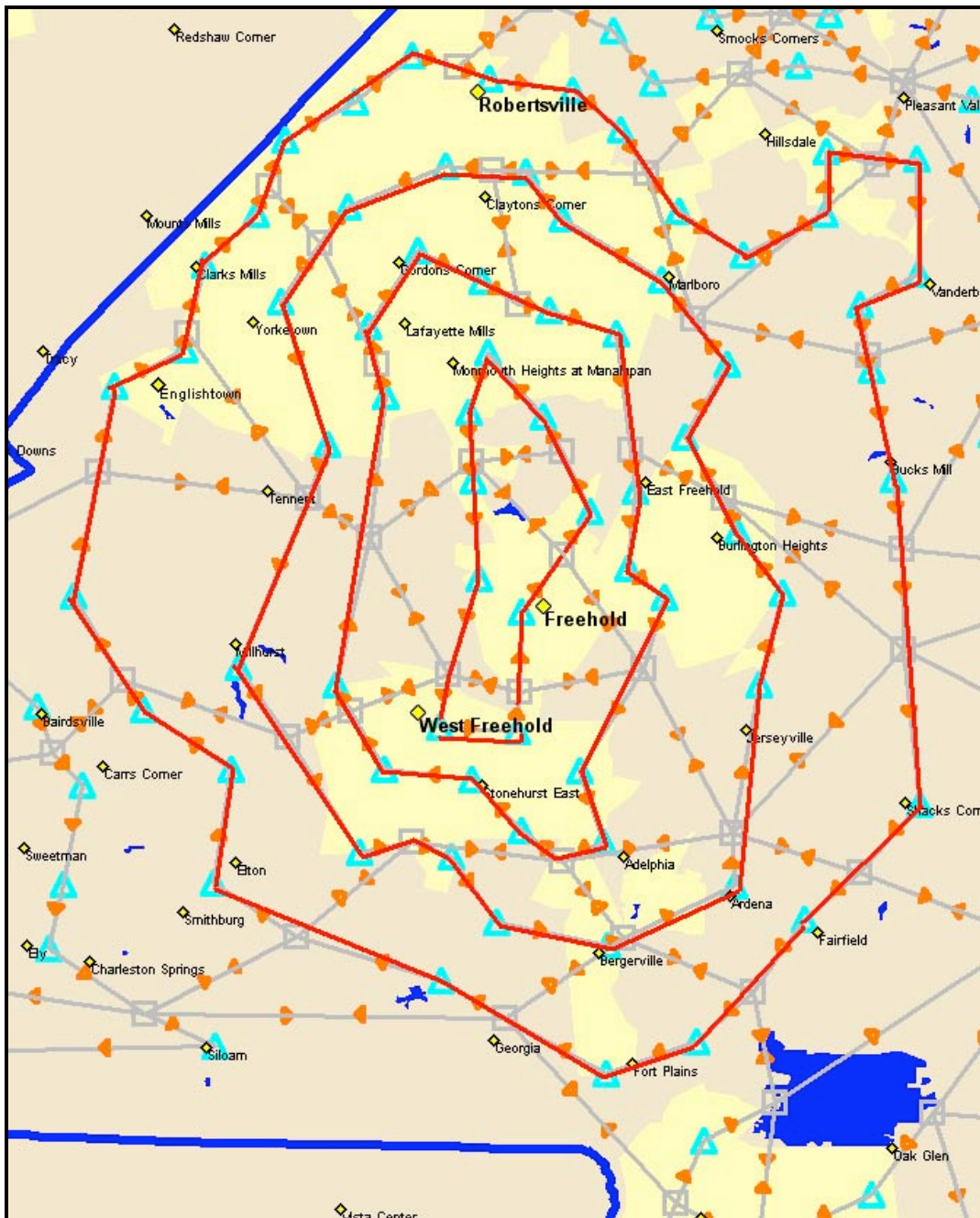
The Monmouth County Special Citizen's Area Transportation (S.C.A.T.) offers transportation throughout the Monmouth County area for Senior citizens and residents with special needs.

Another option for those traveling between Monmouth County and New York are the ferry services operating between Highlands, Atlantic Highlands, Keyport and Manhattan.

Size and Coverage of PRT Network for Monmouth County



Shown on the next page is a close up of the region roughly in the middle of the county with its four directionally alternating concentric paths once again highlighted in red.



Once again, you see how the paths change directions, making it much more efficient to travel across. In total, the PRT network has 348 stations connected by 195 interchanges and 976 links servicing about 90% of the estimated 632,000 residents of Monmouth County.

PRT Service to Housing

The PRT network serves approximately 90% of the residents in Monmouth County. The ten highest populated cities in Monmouth County are given in the following table along with the number of stations in each city and the population per station.

City Service	Population	# Stations	Avg./Station
1. Middletown	66,783	15	4452
2. Freehold	51,023	29	1759
3. Howell	50,237	12	4186
4. Marlboro	39,525	10	3953
5. Neptune	33,768	16	2111
6. Long Branch	31,548	9	3505
7. Hazlet	21,364	6	3561
8. Asbury Park	16,901	11	1536
9. Holmdel	16,877	15	1125
10. Tinton Falls	15,951	6	2659

The average population per station for the ten largest cities is 2,885. If you compare that to the average population per station for the ten smallest cities, you would expect it to be much larger. The average population per station is 736 for the ten smallest cities listed below.

City Service	Population	# Stations	Avg./Station
1. Allenhurst	718	2	359
2. Roosevelt	936	1	936
3. Deal	1,056	2	528
4. Shrewsbury	1,098	2	549
5. Farmingdale	1,592	4	398
6. Englishtown	1,820	3	607
7. Allentown	1,882	4	471
8. Sea Girt	2,114	4	529
9. Avon-By-The-Sea	2,242	2	1121
10. Monmouth Beach	3,724	2	1862

PRT Service to Employment

The top ten employers in the region are all serviced by the PRT network and employ over 34,000 people. The following table lists the top ten employers in Monmouth County.

Employer	Number of Employees
1. Meridian Health System	7,500
2. AT&T	5,900
3. U.S. Army Communications	5,462
4. County of Monmouth Hall of Records	3,564
5. Foodarama Supermarkets Inc.	2,418
6. CentraState Healthcare Systems	2,100
7. Monmouth Medical Center	2,061
8. Lucent Technologies	1,806
9. Bayshore Community Health Service	1,700
10. Naval Weapons Station Earle	1,500

There is clearly a sufficient need of PRT access to these areas of employment as seen by the numbers above. Monmouth County has a total civilian labor force of 306,052 of which 288,171 are employed, giving the county an unemployment rate of 5.8%.

PRT Service to Recreation

Monmouth County has 27 miles of beautiful beaches for swimming and surf fishing and its bays, lagoons, and inland waterways are ideal for recreational boating, most of which are serviced directly by the PRT network.

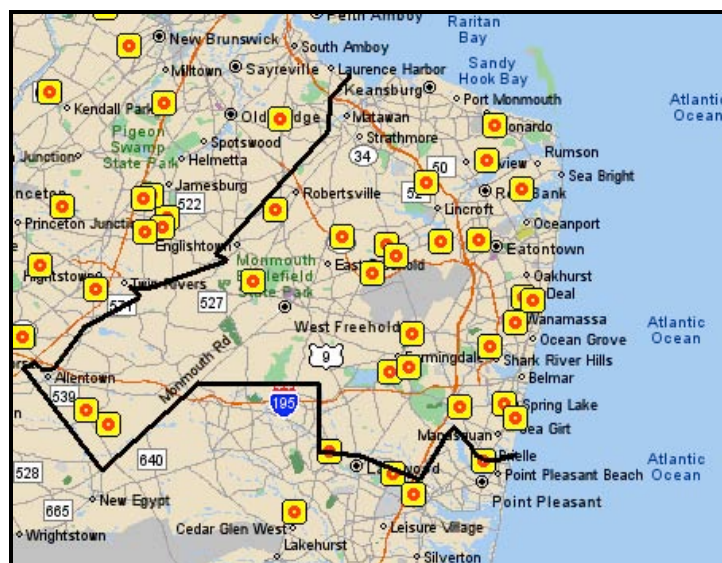
The Monmouth County Park System, boasting 12,000 acres of parkland, offers some sort of outdoor activity for everyone. The park system with 36 different park areas open to the public offer opportunities for fishing, watching, swimming, hiking etc. work as a model for county parks nationwide. In addition to county parks, Monmouth County has national and state parks including Allaire State Park, Gateway National Recreation Area, Monmouth Battlefield State Park, and Telegraph Hill State Park which include wildlife refuges.

Monmouth County is also the county in New Jersey with the largest population of horses, devoting approximately 19,000 acres to equine activities. Accordingly, competitive horse racing is very prominent in Monmouth County's Freehold Raceway and Monmouth Park Racetrack. Other popular attractions include drag racing at Raceway Park in Englishtown as well as stock car races at Wall Stadium.

Monmouth County also has numerous movie theaters. Below is a mapping of the county's 8 movie theater locations, all of which are serviced through the PRT network.



There are also 16 public golf courses in Monmouth County, including 6 operated by the Monmouth County Park System. Two of the golf courses are even ranked among the top 50 in the nation. In addition, there are also several private courses. The locations of the Golf courses serviced are shown on the following county map.



What's more, there is no need in having to find a ride home after having a little too much to drink at one of Monmouth County's many nightclubs; you can get home safe and sound

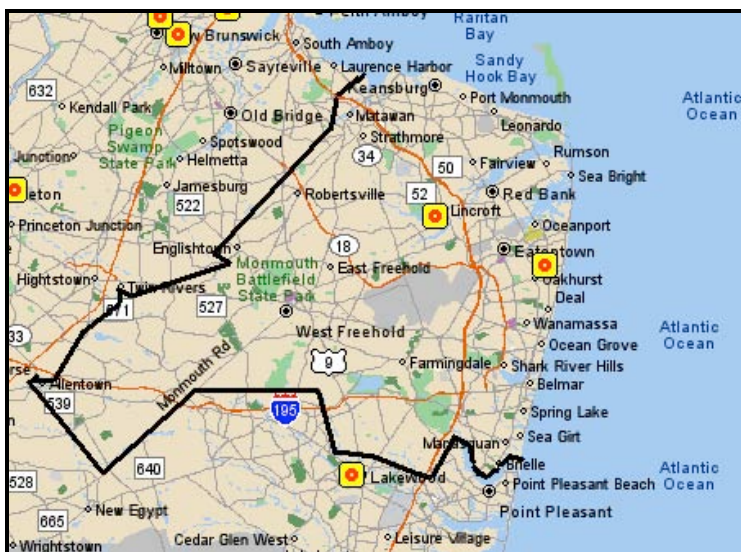
through the PRT network. The PRT network also serves a number of museums, spas, and sporting venues so there is something for everyone in Monmouth County.

PRT Service to Education

Monmouth County's public school system along with parochial and private facilities include 167 elementary, middle, and high schools, 11 vocational schools, and two charter schools. Almost every school is directly serviced by a PRT station, so students in all Monmouth County schools can be confident that educational resources will be available to them.

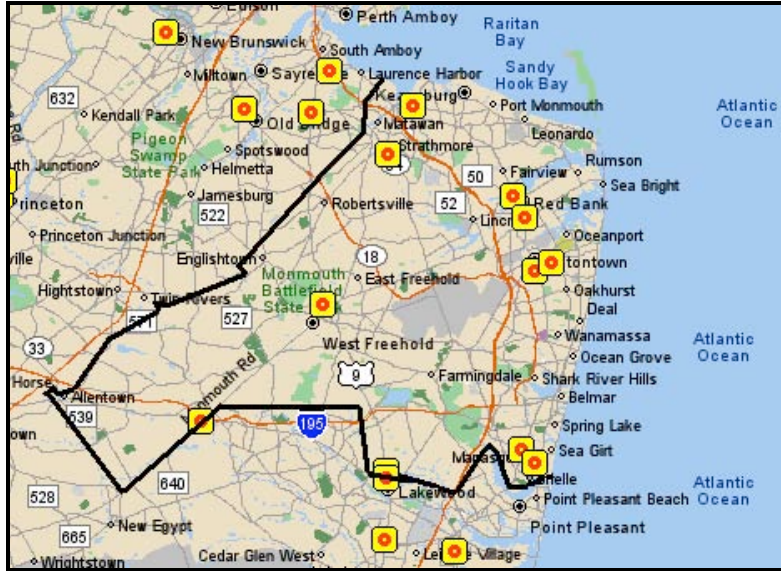
In 1967 The Monmouth County Board of Chosen Freeholders founded Brookdale Community College. Brookdale Community College, located in Lincroft, offers associate degrees in over 50 programs as well as noncredit classes in many areas of interest. It is fully accredited by the commission on higher Education.

Monmouth County has one major university. Monmouth University, founded in 1933, is a private and coeducational institution of higher learning. Located within walking distance of the Atlantic Ocean in West Long Branch, New Jersey, the 153-acre campus features 53 buildings, including historic landmarks and state-of-the-art facilities. Monmouth University offers more than 50 undergraduate and graduate degree programs to more than 6,300 total students, with over 4,000 of them being full time undergraduates. Since only 1750 students reside on campus, the remaining students need could use the PRT network for transit into school. The location of the 2 universities that are serviced by the PRT network is shown on the map below.



PRT Service to Shopping

If you like to shop, then Monmouth Counties PRT network has you covered. It serves all the major shopping areas and malls. The locations of Monmouth County's malls are shown on the following map.



Value of PRT to the future evolution and vitality of the County

Monmouth County is currently ranked 10th out of the top 200 markets in the nation for job creation and is growing twice as fast in key employment sectors. This high level of growth has made Monmouth County one of the most desirable places in the nation to live and invest in. This level of growth would only be helped by introducing a large scale PRT service in the county. It would make it a more attractive place to live, and easy access to businesses would make property value increase tremendously. There is clearly a market for the PRT network, and it would make transit around Monmouth County much more enjoyable.

Although Monmouth County's professional sector and commerce are growing, tourism remains a large part of Monmouth County's economy as seen from the following table.

Visitor Spending

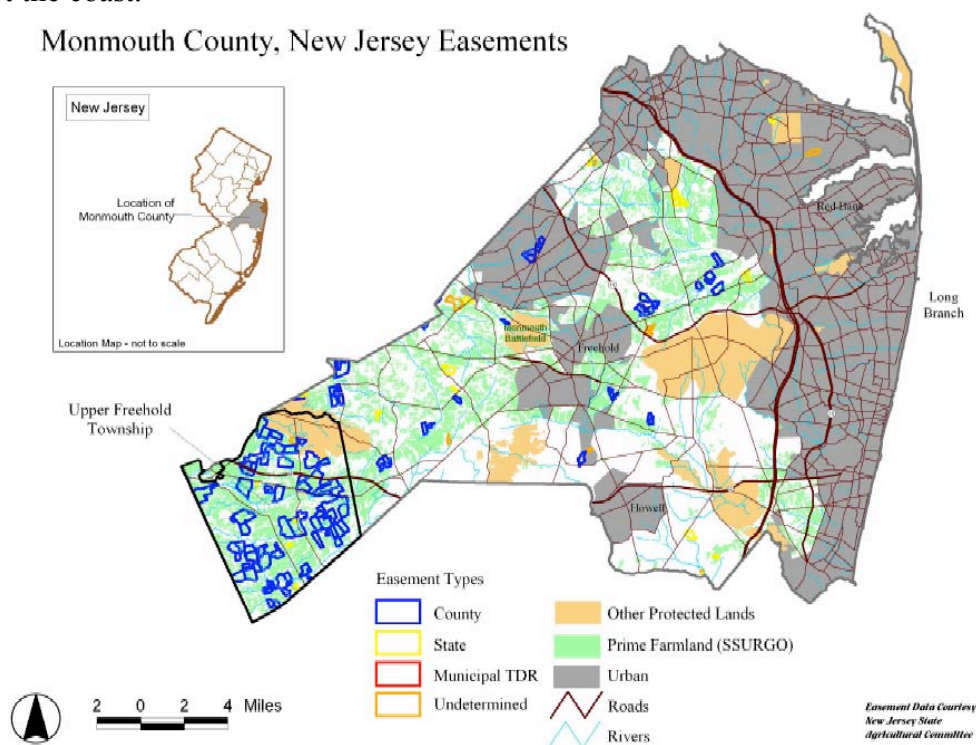
Total visitor spending (billions)	\$1.79
Restaurant (millions)	\$559
Lodging (millions)	\$118
Automobile (millions)	\$263
Recreation (millions)	\$146
Transportation (millions)	\$12
Retail (millions)	\$577
Jobs created (thousands)	45.2

This PRT network would only make Monmouth County an even more attractive place for tourists to come and visit. They could come to Monmouth County and not have to worry about how to get to the local attractions, just worry about what they want to see.

Land Use in Monmouth County

Located on the east coast of central New Jersey, Monmouth County is the sixth largest county in the state. With a land area of 301,805 acres (471.57 square miles), Monmouth County makes up approximately 6.2% of New Jersey. The coastal and northern parts of the county are the most densely populated while more than 80 percent of the agricultural land in the county is located in one municipality—Upper Freehold Township—in the southwest part of the county. Public open space comprises 10.63% of the county (32,111 acres). Monmouth County shares county lines with Middlesex County to the north and Ocean County to the south. To the east, the county has fifty-three miles of bay and ocean shoreline. Also a part of the county, eight small islands dot the coast.

Monmouth County, New Jersey Easements



Number of Municipalities	53
Cities	2
Townships	15
Boroughs	35
Villages	1

Description of Transit Service

Currently Monmouth County's public transportation system includes passenger rail services, intrastate bus services, metro-area bus services, senior transportation, and ferry services. Monmouth County is served by the North Jersey Coast Line rail of the New Jersey

Transit rail system. The railway provides service to Newark, Newark International Airport, and Manhattan's Penn Station from 13 locations in the county. Amtrak's services are available from the Newark station. New Jersey Transit also provides bus services to major employment centers in northern New Jersey and New York. Commuters can take New Jersey Transit, Suburban, or Academy buses to access Newark, Jersey City, and Manhattan's Port Authority Bus Terminal and Wall Street via the Route 9 corridor. Academy Bus Lines provides bus service to Wall Street or the Port Authority Bus Terminal from the PNC Bank Arts Center park/ride facilities and other park/ride facilities along the Garden State Parkway. New Jersey Transit offers limited bus service to New York from Englishtown, Manalapan, Marlboro, Matawan, Aberdeen, and Freehold. Local bus service throughout the county is available, and limited bus service is available from certain areas to Philadelphia, Pennsylvania. As an additional option for transportation to New York, a ferry service operates between Highlands, Atlantic Highlands, and Manhattan daily. Monmouth County offers Special Citizen's Area Transportation (S.C.A.T.) to senior citizens and residents with special needs for transportation to medical appointments, area stores, or other locations.

Currently, New Jersey Transit is in the process of planning a new passenger rail system to better serve Middlesex, Monmouth, and Ocean County. Though the New Jersey Coast Line rail provides service to these counties, the service is limited to the coastline and inconvenient for potential passengers that live more centrally in these counties. Currently authorities are evaluating the environmental impact of the three proposed rail routes. The preferred alternative, the Lakehurst to Monmouth Junction alignment, would connect with then Northeast Corridor and serve the fasted growing sections of Monmouth County.



In 2003, McLaughlin & Associates, a national survey research firm, conducted a survey of people in the tri-country area to learn more about the residents' attitudes toward the proposed Monmouth-Ocean-Middlesex (MOM) rail passenger project. Nearly 2/3 of the respondents placed reducing traffic, improving mass transit, or managing growth as the most or second most important issue facing their county, and 89% said that road and traffic congestion is a problem for their area. Over half of the people surveyed responded that someone in their house would be likely to take this new rail service and would like a station located near their home. Three-fourths of the respondents agreed that something needs to be done to manage area growth and congestion.

Description of the PRT network

As Monmouth County is close to the large job market in New York City and Northern New Jersey, the county has been cited as one of the most desirable areas to live for commuters. Unfortunately, because of the large population increases, current transportation services have proved to be entirely inadequate. Proposed increases in New Jersey Transit rail services, such as the MOM project, would alleviate some traffic congestion, but these projects present only a short term solution to a long-term problem. Because the MOM survey indicates the concern that residents have for ways to reduce traffic congestion and manage growth, the Personal Rapid Transit (PRT) system for inter- and intra-county travel would most likely be well received. PRT would provide personal transportation for commuters, schoolchildren, shoppers, and others without congestion. As the population grows, PRT can expand its services accordingly without the increased congestion that occurs on roads or the crowding on rail services.

Size and coverage of the network

The proposed PRT network for Monmouth County would provide service to the 615,301 residents. The stations are arranged to give the most coverage in the most densely populated areas; however, even in the more rural areas of the county, PRT stations still provide service. Approximately 95% of the counties residents should have a PRT station within ½ mile of their home. PRT stations are located at the entrance to subdivisions or neighborhoods if possible to avoid creating PRT tracks through houses whenever feasible in an effort to preserve the local character of neighborhoods. The distance to each station might be a bit longer, but the longer distance comes with a trade-off of not having a PRT station and tracks in front of houses. For much of the county, the PRT tracks are arranged in interconnecting loops (as seen below), so that passengers do not have to travel an enormous distance out of the way to reach a station that is located upstream from their station along the one-way guideway.



Service to Employment

Approximately 66.1% of the residents age 16 or older in Monmouth County 311,406 of 471,156) are in the labor force. According to a 2003 survey, the county ranks 10th of the top 200 markets in the nation for job creation and is growing more than twice as fast in key employment sectors. Therefore, it is even more important to develop an efficient and comprehensive system that provides service to all parts of the county. Approximately 65% of the work commuters work inside the county, so the PRT network must provide transportation to the major employers in the county as well as connections to other counties for people who work outside the county. Because of its comprehensive service in business districts, PRT provides service to all of the major employers in Monmouth County (listed below), and the PRT system for New Jersey provides interconnected service throughout the state.

1. U.S. Army Communications-Electronics Command and Fort Monmouth	6,000
2. Meridian Health System (Riverview and Jersey Shore Medical Centers)	5,300
3. AT&T	4,900
4. Lucent Technologies	4,800
5. County of Monmouth Hall of Records	3,310
6. Monmouth Medical Center	2,392
7. Naval Weapons Station	3,200
8. CentraState Healthcare System	1,800
9. Foodarama Supermarkets Inc.	1,550
10. Bayshore Community Health Service	1,400

The breakdown of jobs by industry for the civilian citizen population of the county is listed below.

Agriculture, forestry, fishing and hunting, and mining	1,104
Construction	19,046
Manufacturing	24,325
Wholesale trade	11,102
Retail trade	35,372
Transportation and warehousing and utilities	15,835
Information	15,320
Financing, insurance, real estate, and rental and leasing	32,448
Professional, scientific, management, administrative, and waste management services	35,865
Educational, health and social services	57,326
Arts, entertainment, recreation, accommodation and food services	18,865
Other services	12,113
Public Administration	15,901

Service to Shopping

According to New Jersey Travel and Tourism Data in 1997, visitors to Monmouth County spent a total of \$1.68 billion dollars on lodging, restaurants, automobiles, recreation, transportation, and retail. In that year, approximately \$577 million was spent in retail alone. These numbers have undoubtedly increased in the past eight years as the county faces an ever-growing demand from its increasing population. It is important to preserve the vitality of

businesses in the county as spending in the county has provided jobs and funds (from taxes collected on purchases) for the local area.

Impact of Visitor Spending in 1997

Jobs (thousands)	45.2
Payroll (millions)	\$781.0
State taxes (millions)	\$224.5
Local taxes (millions)	\$82.0

The proposed PRT for Monmouth County provides service to shopping centers, both enclosed malls, every borough, and all the coastal developments to ensure that residential and tourist spending will continue to support a vibrant economy.

Service to Recreation

Monmouth County offers a range of opportunities for recreational activities. The 27 miles of beaches offer more than enough opportunity for swimming and fishing, and the bays, lagoons, and inland waterways offer opportunities for boating as well. The Atlantic Highland Municipal Marina, the largest municipally own marina in the state, offers convenient mooring space for the county. Sandy Hook, part of Gateway National Park, has beaches, one of the remaining marine forests, and a historical treasure trove. The Monmouth County Park System operates six golf courses in addition to several private courses. Also 36 different park areas (more than 11,000 acres) offer places for fishing, birding, swimming, and passive recreation.

For other entertainment, Monmouth County supports stock car races at Wall Stadium, drag racing at Raceway Park and competitive horse racing at Freehold Raceway and Monmouth Park Racetrack. Historic sites such as the Historic Allaire Village, Longstreet Farm, and The Galleria also attract tourists. The Monmouth Arts Center and Count Basie Theatre, the Algonquin Arts Theatre, the Lumia Theater, the PNC Bank Arts Center, and numerous other local stages bring in music, drama, and comedy entertainment throughout the year.

The PRT system for Monmouth County takes into consideration the recreational needs of the residents and tourists. It provides service out to the beaches for summer excursions as well as stations close to other attractions such as golf courses and concert venues.

Service to Education

Monmouth County has 63 public schools for the 135,557 children that are enrolled in preschool through high school in the county. Also, 30,358 student residents in the county attend either college or graduate school.

Nursery School, Preschool	15,179
Kindergarten	9,864
Elementary School	76,252
High School	34,262
College or Graduate School	30,358

The proposed PRT transportation would eliminate the need for bus transportation to schools because there is a PRT station located at or near every school in the district. The PRT system could be programmed to recognize the days that school is in session and equip the station with extra transport cars at dismissal time for children to take home. Though it might not

accommodate every child trying to leave at exactly the same time, children leave in shifts much like schools do now with first load and second load buses. Though the children would be unaccompanied, it would be safe because the transport vehicles would take children straight from school to a station near their home, much like a bus stop. This system would be extremely efficient and reliable and allow the school district to allocate its busing funds toward educational tools.

Service to Housing

Out of 300 national communities, Monmouth County was selected as the third best place to live by Money Magazine. As such, it has become an increasingly popular place to live and together with Ocean County accounted for 20 % of the total population growth in New Jersey in the 1990s. Monmouth County has 224,236 households total, an average household size of 2.70, and an average family size of 3.24. The breakdown of households by type is listed below.

Family households (families)	160,233
With own children under 18 years	79,538
Married-couple family	130,550
With own children under 18 years	65,422
Female householder, no husband present	22,456
With own children under 18 years	11,273
Non-family households	64,003
Householder living alone	53,456
Householder 65 years and over	21,449

Assuming that 95% of the households are served by the proposed Monmouth County PRT system, 213,024 households can access a PRT station within ½ mile of residence. However, the number of households served is probably much higher because the stations are located more frequently in the more densely populated areas than in the areas with less housing. Some stations might be a bit farther away that would otherwise be desired, but stations were located on the outskirts of the neighborhoods as much as possible so as not to disturb the integrity of the neighborhoods.

Value of PRT to the future evolution and vitality of the County

As Monmouth County is one of the fastest growing counties in New Jersey, transportation is becoming a major issue for the county. Already congestion has become a problem for commuters as more than ¾ of commuters drive to work alone. The existing infrastructures cannot support the kind of growth that the county is experiencing which is why a system like PRT would be an extremely attractive option for the county. PRT would give the personalized comfort of a car to work but without the hassle of driving on evermore congested roadways. The operation of a comprehensive PRT system would not have nearly the detrimental impact on the environment that a new rail line and new roads would have on the community.

Hunterdon County

Hunterdon County is the 8th largest county in New Jersey in terms of land area. It occupies 430 square miles and is home to over 40,000 households. However, its population in

the 2000 Census was only 122,000, making it the 3rd least dense county in New Jersey. It is a primarily rural county, consisting of 14 townships and 10 boros (See Figure 1HT).



Figure HT1: Township Map

Land Use Description

Hunterdon County is one of the most rural parts of New Jersey, but it is also one of the fastest growing counties. In 1972, 4.5% of the county was developed. In 1995, this number increased to 22%. This increase is dramatic; however, much of the land is still undeveloped and has a large growth potential.

Most of the rural areas are located toward the southern sections of the county. The suburban areas (with high density commercial and residential) are located mostly in the central region, namely in the Flemington area and in the Route 78/202 corridors as shown in Figure HT2. Most commercial and corporate offices are located in these suburban centers off of the highways. Other residential developments (not in suburban areas) tend to be relatively isolated from one another and from shopping, other businesses, and schools.

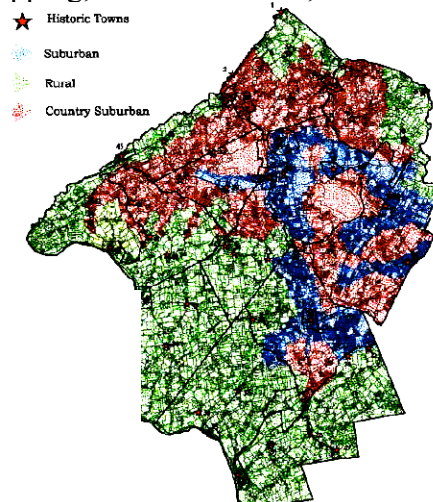


Figure HT2: Land Use Map

The isolation of most residential areas creates a drastic need for an effective transportation network. The existing transportation network in Hunterdon County seeks to satisfy this need in a variety of different ways.

Current Transit Service in the County

Although other transportation options exist, most people in Hunterdon County travel by automobile. Hunterdon County has an intricate system of roads to accommodate the automobile traffic. Total roadway miles equal 1,653 (as shown in

Type	Mileage
County Roadways	242
US Roadways	53
Interstate Roadways	44
State Roadways	98
Municipal Roadways	1,103
Privately-Owned Roads	113
Total	1,653

Table HT1), but only 242 of these are under the counties jurisdiction. I-78 and US 202 are both major highways that pass through Hunterdon County.

Other transportation options include bus and rail service. The bus service in Hunterdon County is referred to as “The Link”. Originally designed for senior citizens and for teenagers not quite old enough to drive, the system now serves all county residents. Discounts are offered to senior citizens and others for transportation to medical appointments, nutrition sites, and places of employment.

The Link currently consists of 30 vehicles (buses, see Figure HT3) traveling 19 routes for a total of 700 trips/day. These

Table HT1: County Roads

19 routes are variations of two main lines, one running N-S, the other running E-W through the county (Figure HT4 and HT5).



Figure HT3: Link Vehicle



Figure HT4: N-S Main Line



Figure HT5: E-W Main Line

The Link system runs Monday to Friday from 7am to 11pm. Fares for the general public are 10¢ per zone mile with a one way trip minimum of 75¢. Students pay \$1.50 round trip maximum amount. As mentioned earlier, additional discounts apply for seniors, people with disabilities, and predetermined income eligible citizens. The Link also offers a Flemington Shuffle service. This is a route that runs from one end of Flemington to the other servicing various retail and commercial businesses. The cost for the Flemington Shuffle is \$1.00 per round-trip.

The passenger rail service in Hunterdon County consists of the New Jersey Transit Raritan Valley Line. The line runs from High Bridge to Newark stopping in Hunterdon County with the High Bridge, Annandale, Lebanon, and Whitehouse stations as shown in Figure HT6. Few people actually use the service due to the sparse train scheduling. Only four eastbound trains run in the morning, and only one runs in the afternoon.



Figure HT6: Raritan Valley Line

Description of Personal Rapid Transit Network in Hunterdon County

A proposed transportation system, Personal Rapid Transit (PRT), will help connect the isolated regions of Hunterdon County and serve the already developed regions more efficiently than the automobile. The PRT network for Hunterdon County will service most of the population of 130,000 with 191 stations. In highly populated areas such as High Bridge, Lambertville, and Flemington, stations are only a mere 3/8 mile walk away. One can hop on main tracks from these off-line stations and go anywhere in the state at any time. But large cities aren't the only ones represented. Small towns throughout the county such as Mechlings Corner and Milford also have sufficient service.

The 191 stations are joined by one-way guideway designed to connect in a network for maximum rider convenience. Even though the system is one-way, hundreds of loops are incorporated into the system to prevent traveling out of one's way to reach a destination. For example, in order to get to Clinton from Flemington, one will not have to follow a one-way track all the way through Frenchtown.



Most stations in Hunterdon County are one-way stations as shown to the left. The station is located off-line in order to avoid interruption of the main route.

However, in order to prevent the problem of excess travel time, 11 two-way stations were created. A two-way station is a station which one line services one side of the station and another line services the opposite side. These lines are headed in opposite directions. Two-way stops create shorter loops at a relatively small cost to increase the benefit of the system to all riders.

Most of the PRT stations (one-way and two-way) are located in the developed northern and eastern parts of the county, and the stations are sparser near the rural south. The system is designed for the current population; however, more stations can be added in the south (or elsewhere) as development occurs in the future. With the current PRT station layout, most daily trips around the county will be accommodated. Employment, shopping, recreation, and school trips can all be undertaken without the standard traffic delays present with automobiles.

Service to Employment

In Hunterdon County, only 41% of the county's labor force works within the county according to the 2000 U.S. Census. Adequate transportation between counties is a must, especially for Hunterdon County residents. PRT is planned to connect the entire state of New Jersey in order to support employment trips. Currently the average travel time to work is 33.5 minutes, three minutes higher than the state average. With incorporation of a state-wide PRT network, both the Hunterdon County average and the state average will go down.

Of the 41% that work in Hunterdon County, most people work for small businesses. Very few large companies reside in this rural county. Two of the largest companies include Foster Wheeler, Inc. and Merck & Co., both of which are serviced by the PRT network. A list of all of the major employers of Hunterdon County in 2001, along with location, number of employees, and proximity to PRT is shown in Table HT2 on the next page. Employers located outside of Hunterdon County or employers whose locations could not be determined are listed as unknown. As shown in Table HT2, most major businesses located in Hunterdon County will be serviced by PRT.

Service to Shopping

PRT serves all major shopping districts in the county. The densest retail shopping district is in Flemington and the Raritan Township area. Six stations service downtown Flemington for shops such as Flemington Floral, Gift Pac, Thrift Drug, and NoLoes Music Box. The Flemington Mall can also be accessed by PRT. The only other major shopping district in Hunterdon County is in Lambertville. Table HT3 shows a list of companies serviced in Lambertville along with more companies serviced in Flemington.

Flemington			Lambertville	
American Tire	Gift Pac	Ramada Inn	Delvue Cleaners	National Auto Supply
Circle Diner	Healthcare	Star Ledger	Hood Floors	River Horse Brewing Co.
Clothing Mansion	Kries Jewelry	Stryker Paints	J Finkle & Son Hardware	The Station
Dansk Outlet	Minicheck 5& 10	The Ark	Lambertville Ceramics	
Flemington Mall	Noloes Music Box	Thrift Drug	McDonald Kitchen & Bath	

Table HT3: Shopping Districts

Employer	Municipality	# of Employees	PRT Service?
3M	Raritan Twp.	170	Unknown
A.M. Best	Tewksbury Twp.	250-500	Yes
ADP	Clinton Twp.	100-249	Unknown
Atlantic Spring	Raritan Twp.	100-249	Yes
Bemis Co.	Flemington	100-249	Yes
BOC, Inc.	Lebanon	250-499	Unknown
Burlington Coat Factory	Flemington	100-249	Yes
ChubbInsurance Co.	Readington	1,500	Yes
Curtis Specialty Papers	Milford	100-249	Closed, 2003
ExxonMobil Research & Eng.	Clinton Twp.	500-999	No
Fibermark Inc.	Milford	100-249	Yes
Flemington Car & Truck	Raritan Twp.	293	Yes
Flemington Dept. Store	Raritan Twp.	100-249	Yes
Foster Wheeler	Union Twp.	>1500	Yes
Georgia Pacific	Milford	100-249	Unknown
Hitran Corp.	Raritan Twp.	130	Yes
Hunterdon Care Center	Raritan Twp.	175	No
Hunterdon County	Flemington	500-999	Yes
Hunterdon Hills Playhouse	Union Twp.	100-249	No
Hunterdon Medical Center	Raritan Twp.	1600	Yes
Ingersoll Rand Tool & Hoist Div.	Clinton Twp.	150	Yes
Ino Therapeutics	Union Twp.	100-249	Unknown
Interstate Iron Works	Readington Twp.	100-249	Yes
Johanna Foods	Raritan Twp.	250-499	Yes
Kitchen Magic	Bloomsbury	100-249	Unknown
Kullman Industries	Clinton Twp.	250-499	Yes
Lambertville Station	Lambertville	100-249	Yes
Magnesium Elektron Inc.	Kingwood Twp.	120	No
Merck & Co.	Readington Twp.	1800	Yes
New York Life	Clinton Twp.	400	Unknown
Quik Chek	Readington Twp.	n/a	Unknown
Raritan Valley Disposal	Raritan Twp.	100-249	Unknown
Readington Farms	Readington Twp.	100-249	Yes
Shop-Rite of Hunterdon	Clinton & Raritan Twps.	440	Yes
Smurfit-Stone Container	Kingwood Twp.	125	Unknown
Sprint	Clinton Twp.	148	Yes
Tekni-Plex Inc.	Flemington	100-249	Unknown
WalMart	Franklin Twp.	200	Yes
Wedco	Bethlehem Twp.	250-499	Unknown

Table HT2: PRT Service to Large Businesses

Source: Hunterdon Economic Partnership

Service to Recreation

Hunterdon County is home to over 6,400 acres of county parks. There are 22 Parks with approximately 20 additional preserves, areas, trails and other properties owned by the County and opened to the public for use. Five of these are state parks, and three of them are all serviced by PRT. Round Valley, Spruce Run, and Vorhees State Parks are at least close (<3/8 mile) to one PRT station.

Besides state parks, Hunterdon County also offers other alternatives for recreation. Several wineries and golf courses exist in the rural southern part of the county. Unionville and Alba Vineyards are both serviced by PRT stations. Hunterdon County is home to five golf courses, of which three are close to PRT (Olde York Country Club, Copper Hill Country Club, and Oak Hill Golf Club).

Service to Education

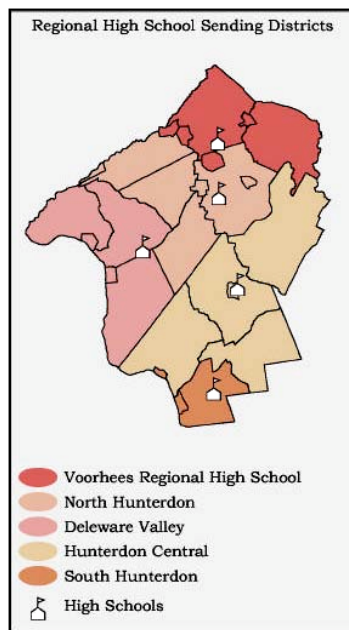
A new transportation network must be able to transport children to schools across the county. Hunterdon County has approximately 35,000 school-age children, as shown below in Table HT4.

Type	Preschool	Kindergarten	Elementary	High School	College
Enrollment	3,190	1,676	15,233	6,587	4,876

Data per 2000 U.S. Census

Table HT4: School Enrollment

The 15,000 elementary school students attend 42 different elementary schools in the county. Many of these students can take PRT to school since many of these learning places are within walking distance of a station. Lambertville Public, Milford Boro, and Barley Sheaf are only a few examples of the many institutions served.



Five different high schools house thousands of Hunterdon County students. All of these high schools except South Hunterdon have direct PRT station access. South Hunterdon, however, is a small school located in a rural area with few students (See Table HT 5)

School	Enrollment
Delaware Valley	813
Hunterdon Central	2,326
Hunterdon North and Vorhees Regional	2,250
Hunterdon South	382

Table HT5: High School Enrollment

Township	Population
Clinton	12,957
Raritan	19,809
Readington	15,803

Service to Housing

Approximately 45,000 total households reside in Hunterdon County, with many of them residing in one of the three large residential areas. Clinton, Raritan, and Readington Township each have dense residential areas to house the 2.62 average county household size in 2000.

Several PRT stations have been located within the many subdivisions of these townships to ensure equal access to the transportation system. Apartment complexes are also serviced in dense and not-as-dense regions. For example, both the Hurst and Kirschner Apartments in Lambertville are located within walking distance of a PRT station. In such a rural county, it is hard to ensure PRT service to everyone. The residents are so spread out in the rural areas that some grouping must be done in order to be cost-effective.

Value of PRT to Future Evolution of the County

In a rural county, an effective transportation system is necessary to connect the undeveloped with the developed regions and to provide a degree of continuity to the area. PRT offers several advantages and can be just as efficient as (if not more than) the automobile. In Hunterdon County, PRT will be more effective than the current Bus Transit System, The Link. The Link system is set to a schedule, while PRT conforms to the rider's schedule. Also, The Link is only available within Hunterdon County. A state-wide PRT system gives options to the 59% that commute to work in other counties. Although small in population, Hunterdon County is growing, and its transportation system needs to grow with it. Already, the average household makes 10 trips per day, and only four of those are for work purposes. The convenience of PRT will make a major impact upon implementation and will continue to have this effect in the future.

Mercer County



Land Use

Mercer County encompasses the City of Trenton, Townships of East Windsor, Ewing, Hamilton, Hopewell, Lawrence, Princeton, Washington, and West Windsor, and the Boroughs of Hightstown, Hopewell, Pennington, and Princeton. Mercer County is home to 350,761 (as of 2000) people. 41.71% of Mercer County's 146,426 acres is currently developed with 31,816 acres being used for agriculture and more than 8,400 acres is designated for recreational use. It has 3 airfields and 3,202 hotel, motel and resort rooms.

Description of Current County Transit Service

For public transportation Mercer County depends mostly on New Jersey Transit (NJT). NJT provides bus, rail and light rail services accommodating over 725,500 daily trips on 237 bus routes, two light rail lines and 11 commuter rail lines. It has 161 rail stations, 28 light rail stations and more than 17,000 bus stops. NJT operates 2,027 buses, 711 trains and 45 light rail vehicles. NJT provides nearly 223 million passenger trips each year. Of the 237 bus routes only 13 routes service Mercer County and only the Northeast Corridor and Princeton Branch of NJT's rail provide service to Mercer County.



Here's a chart that shows the current transit use by workers 16 years of age and older and commute times (as you can see the current transit system is hardly used):

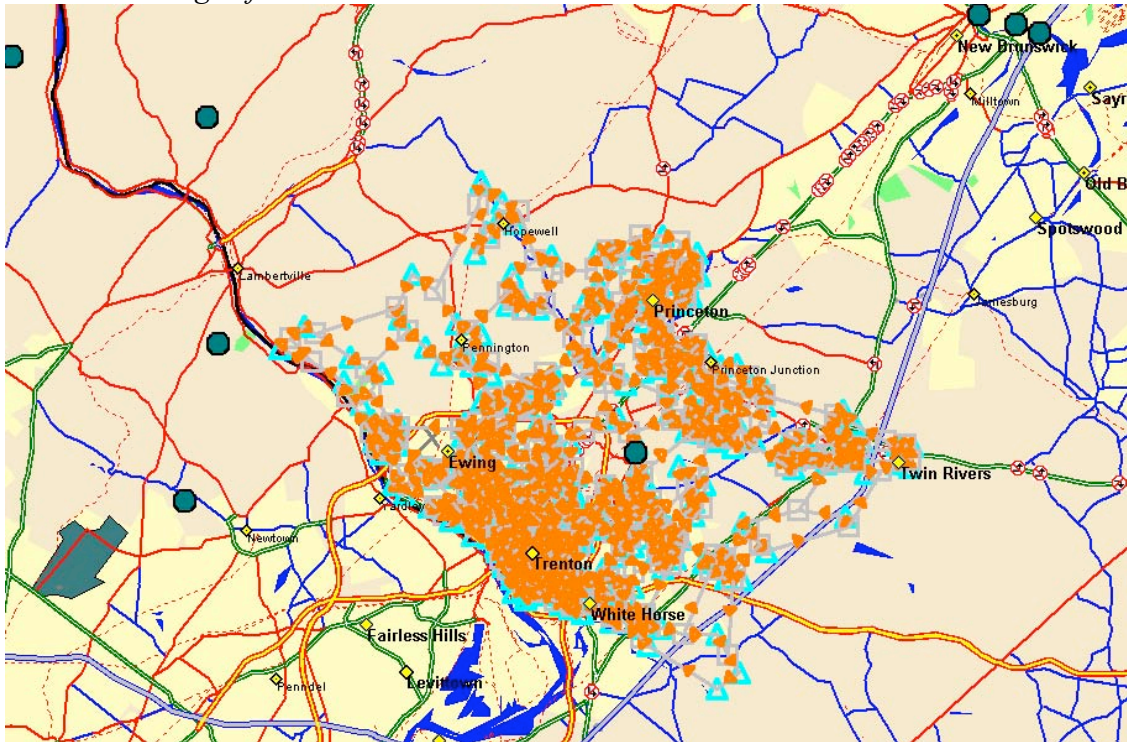
	Mercer County NJ			US
Transportation to work	Number			
Workers 16 and over	163,300			
	Number	Pct	Pct	Pct
Public transportation	11,000	7	10	5
Car, truck, van or motorcycle	138,000	84	84	88
Walk	7,300	5	3	3
Work at home	5,200	3	3	3
Commuting Time	Number	Number Number		

Average travel time to work (minutes)	27	30	26
Average travel time to work using public transportation	68	57	48
Average travel time to work using other transportation	24	27	24

Other transportation options are SEPTA (if you're trying to get from/ to Trenton to/from Philadelphia), Local commuter shuttles and the Camden/Trenton River LINE light rail.

Description of the PRT network in the County

4. Size and coverage of the network



The Mercer County PRT network would cover all of Mercer County major cities and most small towns. More stations will be placed in heavily populated areas in order to increase serviceability and less stations will be placed in sparsely populated areas in order to reduce the number of empty or unused PRT vehicles, though, as the network becomes widely used, more stations in rural areas could be built. The current network has 319 stations with 369 miles of track. I estimate that the current PRT network would service 85 to 90% of the Mercer County population.

2. Service to Employment



Historically, Mercer was an industrial based economy, leading to the slogan, “Trenton Makes, The World Takes”. Currently, Mercer County employs 176,351 people. With most of the employment opportunities coming from companies in manufacturing, wholesale trade, retail trade, health care and social assistance and professional, scientific and technical services. Companies such as Merrill Lynch, Sarnoff, and Bristol-Myers are located in Mercer County. In fact, Mercer County is home to more “dot com” companies than Silicon Valley. With this in mind the Mercer County PRT network has most of it’s stations located in and around all major metropolitan areas where most job opportunities originate. Using this strategy of placing stations near major metropolitan areas, the Mercer County PRT system will be able to service many if not all of the major business that call Mercer County home.

3. *Service to Shopping*



Mercer County major shopping centers include: Quakerbridge Mall, the Princeton Market Fair, Mercer Mall, Capital Plaza, Independence Mall, Twin Rivers Shopping Center, Lawrence Shopping Center, Palmer Square and the Princeton Shopping Center. In additions to these shopping centers, many of the townships have “main street” shopping as found on Princeton’s Nassau Street, or in Hightstown, Hopewell and Pennington. The proposed PRT network will serve all major shopping centers with stations near or even inside each center and have stations on or near the “main street[s]” of all major cities.

5. *Service to Recreation*



Mercer County has four public golf courses, five ice hockey rinks, four tennis facilities, and the Delaware River, Carnegie Lake, Mercer County Park Marina and D&R Canal system offer boating and leisurely strolling opportunities. Belle Mountain is the site of winter skiing. There are a plethora of museums in Mercer County including: the NJ State Museum, Ellarslie, Princeton University Art Museum, Hopewell Museum, Howell Living Farm, Kuser Farm Museum, Morven, Bainbridge House and The Old Barracks. There's the newly renovated War Memorial, home of The Greater Trenton Symphony, features music, drama and dance. The McCarter Theatre, Mill Hill Playhouse, Washington Crossing Open Air Theater and Hopewell Dinner Theatre have outstanding performances. There's also Waterfront Stadium, home of the Trenton Thunder, and Sovereign Bank Arena. Because of the strategic location of the PRT stations, most if not all of Mercer County's great recreational opportunities will be serviced by a PRT station within walking distance.

6. Service to Education

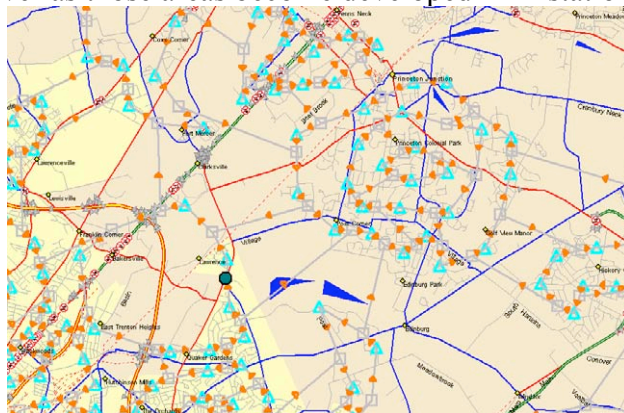


Mercer County is home to nine public school districts that house 94 schools, employ 3,597 teachers and have 50,029 students. Mercer County also has 21 private school and six colleges and/or universities, including TCNJ, Rider University and Princeton University. The Mercer County PRT network will definitely service all schools by having stations either within walking distance or right on campus.

7. Service to Housing

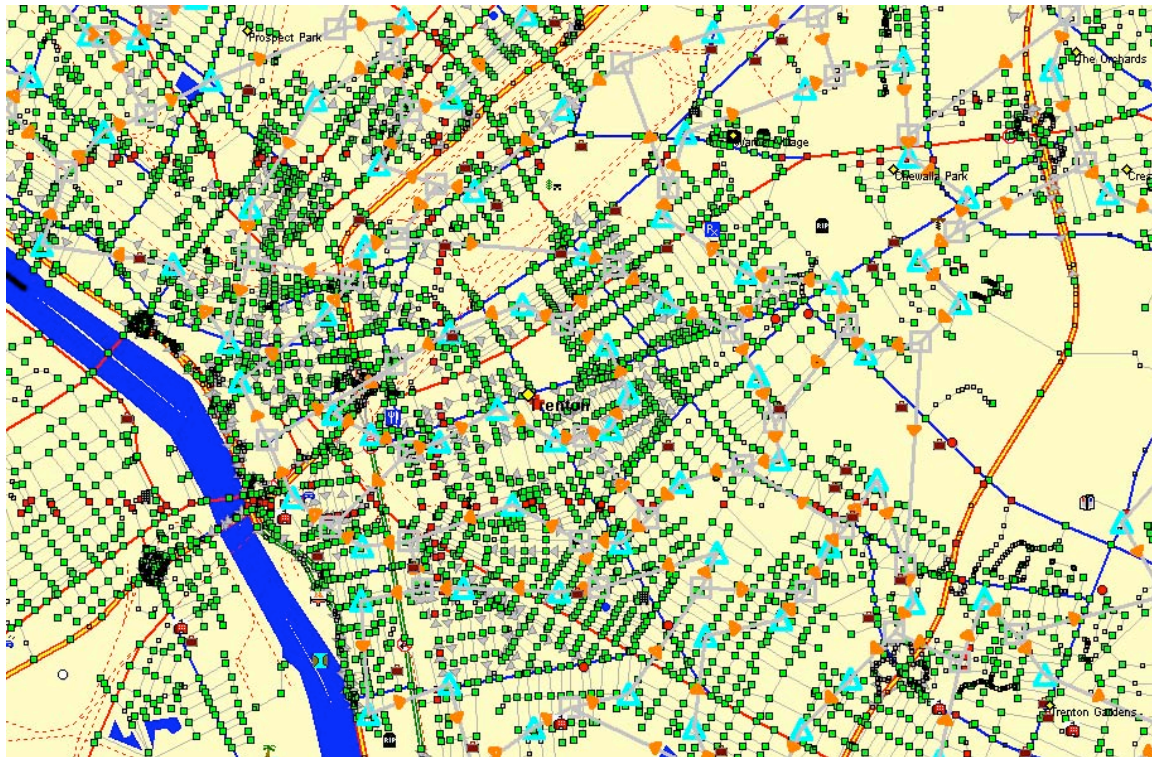


Mercer County is home to 350,761 people and has 136,986 housing units with 125,111 actually occupying the housing units. The way the Mercer County PRT network is set up, it would service as many residents as possible. Each station is placed roughly a half a mile apart giving each station a quarter mile radius of serviceability. That way people would at most have to travel a quarter of a mile to reach the station closest to them. The rural areas of Mercer County aren't serviced as much, however as those areas become developed PRT stations could be added.



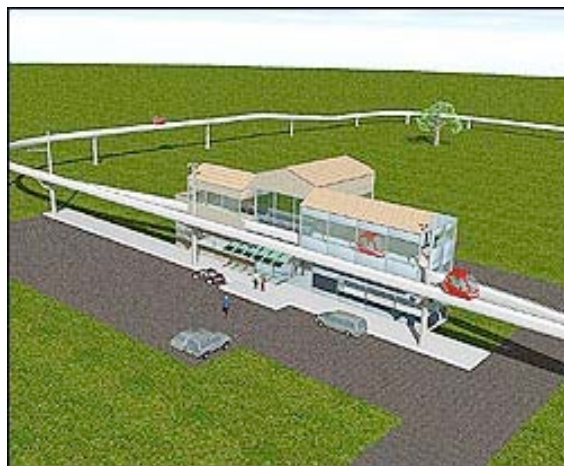
What the PRT system would look like in Trenton

On the next page is an example of the Mercer County PRT network I set up. It shows that residential communities, businesses offices, educational buildings and recreational centers can all be efficiently serviced by a PRT system.



In this image, one can see how stations placed roughly a half a mile apart create an intricate web of serviceability, which reaches out to most if not all major and minor points of interest in Trenton. No current type of public transportation in Mercer County comes close to providing as much service as a PRT network would provide.

Value of PRT to the future evolution and vitality of the County



The Mercer County PRT network would greatly influence the future evolution and vitality of the county. The PRT network would alleviate many of the traffic problems plaguing

this great county and also cut down on pollution. This PRT network could allow one to traverse Mercer County effortlessly, smoothly and safely. With a PRT network one doesn't have to deal with other passengers, like in a crowded bus or train, they can simply choose to travel alone or with people they know. A PRT vehicle would allow people to do work on their way to work. No more accidents from people trying to talk on your cell phone and drive at the same time or from people spilling in the car. No more waiting hours for a delayed train or broken down bus. Ideally, this PRT network would operate so efficiently that it would make cars obsolete. The PRT network will be affordable for everyone. A Mercer County PRT network would propel Mercer County public transportation into the future and give the residents of Mercer County efficient and reliable service.

Union County

Union County New Jersey was established in 1857 and was the last of all New Jersey counties to be created. Union is situated along the eastern coast of the United States south of New York. The Arthur Kill waterway separates the southern half of Union County from Staten Island, New York while Newark Bay separates the northern half of Union County from Hudson County New Jersey. Close to 70% of the land is used for commercial, residential, and industrial purposes while the other 30% is either undeveloped or recreational. Union County is the second smallest county in New Jersey larger only than the neighboring Hudson County. Even though it is the 2nd largest county in New Jersey having only 103.4 square miles, Union has the 6th highest population for the state, which explains why Union almost has the highest population density for the state. This makes one what modes of transportation people are using to travel through such a densely populated region of New Jersey?

Union County currently has an extensive transportation network for such a small county consisting of a world-renowned cargo port, an international airport, highway systems, major rail lines and bus routes, but there is always room for

COMMUTING TO WORK		
Workers 16 years and over	238,606	100.0
Car, truck, or van - - drove alone	169,325	71.0
Car, truck, or van - - carpooled	27,686	11.6
Public transportation (including taxicab)	25,294	10.6
Walked	7,729	3.2
Other means	2,880	1.2
Worked at home	5,692	2.4
Mean travel time to work (minutes) ¹	28.7	(X)

improvement. Highways that are currently in operation are the NJ Turnpike, Garden State Parkway, and Routes 1, 9, 22, 24, and 78. The three major rail lines being used by Union are the Northeast Corridor, the North Jersey Line, and the Raritan Valley Line. Linden Airport is located in Linden, New Jersey, which is located in the southeastern half of Union County. In 2003 there were 29 million passengers that traveled in and out of Newark Liberty International Airport.¹ These passengers either traveled on one of the three rail lines in Union or drove on one of the many major highways crossing the county to reach the airport. However, when one takes into account that each year approximately 213 million vehicles travel on the NJ Turnpike² traffic problems will surely arise. But where is the alternative for people who don't want to travel on these busy roads? The only alternative existing today are three rail lines and bus routes. However, these rail lines only hit the major cities in Union and do not offer the preciseness of

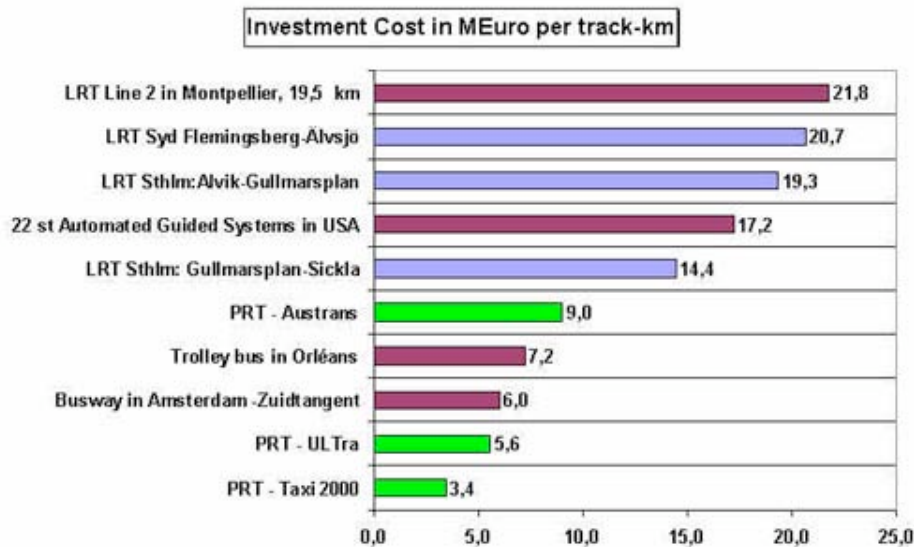
¹ Port Authority of NY and NJ

² New Jersey Turnpike Authority

origin and destination travel that cars allow. The Northeast Corridor Line only offers service to 3 out of the 21 municipalities in Union County. Buses are somewhere in between car and rail travel, because they offer more stops and travel to more destinations than trains, however the travel times are slower than travel by car and rail because buses must stop at every stop while simultaneously having to deal with the same road conditions as cars. So, roads offer complete access to any origin destination in Union County but traffic problems arise rapidly increasing driving risks and travel delays. Trains allow for safe and fast travel, but do not even come close to giving transportation access to the entire Union County population. Buses allow for more detailed access than trains, but travel times are vastly inferior to the other two modes of transportation.

There is a way to get the best of all three modes of transportation.

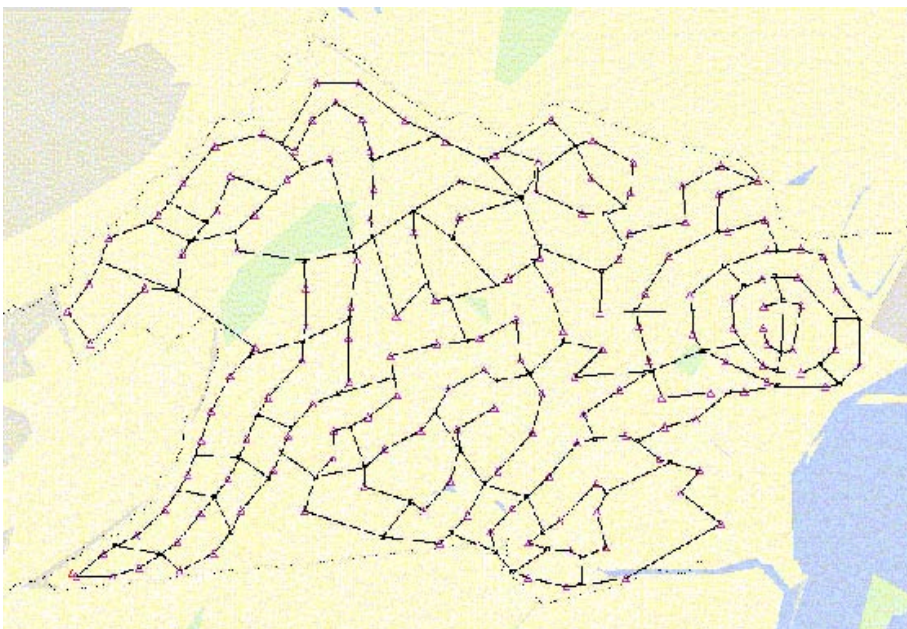
Personal Rapid Transit (PRT) combines the advantages of bus, train, and car without any of their disadvantages. It is an alternative mode of transportation that allows people to travel non-stop from origin to destination without traffic or accessibility problems. PRT can service the entire population of Union allowing for any origin/destination



combination. The system consists of mid-sized vehicles traveling on one-way tracks that service off-line stations. These offline stations allow for other vehicles to pass the station while passengers are being picked up at that station. One of the main differences between PRT and train and bus travel is that PRT vehicles are on demand rather than on fixed schedules. PRT can service all of the airports, schools, recreational facilities, large corporations, and retail areas in

Union County more efficiently than cars, buses, or trains.

Union County should adopt PRT for a variety of reasons. PRT optimizes transportation planning in that it combines the positive characteristics of other modes of transportation while minimizing their respective negative characteristics. Buses take too long because of all the stops they



make and they still have to cope with the same road conditions and traffic that cars do. Cars aren't as safe and are continuously exposed to traffic delays and accidents. Trains can only take you near where you want to go. A PRT system allows for faster travel times because of its non-stop travel on elevated one-way tracks. The PRT network covers the entire county meaning that all county inhabitants have access within a 3/8 mile walk from their residence. Once they arrive at the station, they pay a small fee and get in one of the automated PRT vehicles waiting for them. After they enter in their destination and leave the offline station, the trip is non-stop from origin to destination. The benefit of offline stations is that they do not require traffic to stop when other passengers are being loaded in at stations; passing vehicles simply pass by them.

After they arrive at their destination they realize that their ride took much less time than it would have via car, bus, or train. In Union County, 238,606 people travel to work each day and the average intra-county travel time to work is approximately 28.7 minutes.³ To understand how slow that is, imagine a worst-case scenario, which is that you have to travel from the top right corner of Union to the bottom left corner of Union by car (we will approximate Union County to be a square box 10mi. by 10mi., diagonal is 14mi.). If you traveled 14 miles in 28.7 minutes, you would be averaging a speed of almost 30 miles per hour. PRT networks can achieve speeds higher without the hassle of traffic lights, traffic jams, and accidents that might otherwise occur on the road. On top of having quicker travel times PRT networks are very flexible in terms of construction. It is simple to integrate the network into existing infrastructure because the network can blend into its surroundings. The nature of a PRT network allows additions at any time without impeding current network flow. PRT networks are an extremely inexpensive investment compared to that of other modes of transportation. On top of all of these benefits, PRT is environmentally friendly. The electrically powered vehicles cause no pollution or noise and are much more efficient and quieter than fuel powered cars or buses. Currently 82.6% of working Union residents commute to work via car.⁴ In high population densities like Union County a PRT system could drastically reduce street traffic volumes to tolerable levels.

The PRT proposal for Union County consists of a series of concentric circular paths around the largest municipalities that are connected together through smaller towns by increasingly linear pathways. As population density decreases from east to west, the concentric grids are abandoned for a more linear network. The reason for this change is that there are fewer stations per unit area the further west you go resulting in longer paths that are needed to connect each station. Circular tracks aren't as reasonable in low population density areas as in high population density areas because there is no need for the addition mobility received from circular tracks.

What follows from the east to west track patten is a change in mobility. The further south and east you go, the more mobility and freedom you encounter. Even though this pattern exists, all patrons can still be served and all locations are accessible within a 3/8-mile radius. Approximately 470,000 Union County residents will have access to 162 stations scattered throughout the county. The highest concentration of stations is in Elizabeth because it is the largest city in Union County. This municipality has 31 stations with an average of 3,968 passengers per day. The next highest concentration of stations is in the Rahway and Linden regions of southeastern Union County. This region has 17 stations with an average of 3,888 passengers per day. The remaining PRT stations are uniformly distributed throughout the rest of

³ U.S. Census Bureau

⁴ U.S. Census Bureau

the county and each station serves close to 2,500 people per day. There are 90 interchanges that serve as connections to other parts of the PRT network. This proposed PRT network would serve all residential, commercial, retail, and recreational sites in Union.

Union County is a very commercially active county. It is home to many of our country's major corporations. Due to the fact that there are over 70,000 people or approximately 39.8% of the work force⁵ employed in pharmaceuticals and medical research, many people must travel to Merck & Co. every day because it has its headquarters in Rahway, one of Union's twenty-one main municipalities. Schering-Plough another major pharmaceutical company has its headquarters in Kenilworth, New Jersey. These two pharmaceutical powerhouses alone generate thousands of trip productions each day that add to the clutter of the roadways. Over 75,000 people work in the information and technology industry within Union⁶. Many trips are created every day to and from Lucent Technologies a major telecommunications corporation who has their headquarters in Murray Hill, NJ. In Linden, General Motors has an automobile assembly plant. Food services and retail trade are another major industry within Union County accounting for about 16% of Union employees. Major companies in this industry include Wakefern Food Corp located in Elizabeth, Deep Foods Inc., and Fass Food Ingredients LLC. PRT could significantly decrease traffic congestion and aid in the mass amount of home-based work trips generated each day.

There are also thousands of home-based recreation trips generated each day in Union. In Union County, there are three golf courses and over 30 parks to visit. Union County Arts Center is a multi-purpose venue for the performing arts located in Rahway. The Arts Center attracts a variety of people from Union and the surrounding counties because of the diverse selection of viewing material. Events like viewings of the movie "Bridge of the River Kwai" all the way to

SCHOOL ENROLLMENT		
Population 3 years and over enrolled in school.....	136,230	100.0
Nursery school, preschool.....	11,242	8.3
Kindergarten.....	7,787	5.7
Elementary school (grades 1-8).....	60,223	44.2
High school (grades 9-12).....	28,762	21.1
College or graduate school.....	28,216	20.7

performances from comedian Colin Quinn can be seen. The Trailside Nature and Science Center is located in the Watchung Reservation. It is home to New Jersey's first natural history museum, and it hosts family workshops and

summer camps. Jersey Garden's Outlet Mall has over 170 stores and is New Jersey's largest outlet mall containing major brand names including Nike, Guess, Gap, Nautical, Ralph Lauren, Tommy Hilfiger, and Victoria's Secret. Large malls like Jersey Gardens are ideal locations for large PRT stations because there is a passenger demand and can easily be integrated into the large building structures.

Union County has over 136,000 of its citizens over the age of three enrolled in school.⁷ This accounts for hundreds of thousands of home-based school trips generated each day. Union has 160 schools



⁵ U.S. Census Bureau

⁶ U.S. Census Bureau

⁷ U.S. Census Bureau

that serve approximately 78,000 students from nursery school through the eighth grade. At this age, most children are driven to school by their parents and after they drop their kids off, the mother or father drives home alone resulting in only one truly productive trip. PRT would eliminate unproductive trips by allowing the children to be transported directly to school in a safe vehicle that only stops at their desired destination. In Union County alone there are 28,216 students enrolled in college or graduate school. Kean University is the college for 13,000 undergraduates in Union. Of those 13,000 undergraduates, only 9.2% of the undergraduate population lives on campus while the remaining 11,800 students travel to Kean from off-campus locations.⁸ Union County College is a community college that serves 10,000 students in locations across the county. The main campuses are located in Cranford, Plainfield, Scotch Plains, and Elizabeth. Due to the fact that there are college campuses scattered all over Union county, and that drinking and driving occurs a majority of the time with college students, PRT offers a safe transportation alternative for all college students. Also, students that aren't fortunate enough to have cars are at the mercy of bus schedules that often inconvenience passengers. PRT will allow students to safely travel when and exactly where they desire.

Union County contains 192,945 housing units with an average family size of approximately 3.28 people.⁹ A PRT network would be a great amenity to all of the households because almost 260,000 people travel to work each day. PRT would service all housing units in Union County with less than a 3/8-mile walk to the closest station.

Union County needs PRT because as the county grows and its population density continuously increases people will need an alternative source of transportation. PRT is inexpensive, efficient, safe, clean, and most importantly it helps to decrease current roadway congestion allowing for faster travel times on the road and on the PRT network. The fact that PRT can service everyone in the county should be enough, but when you combine all of the other advantages and benefits associated with PRT there is no reason not to adopt this proposal.

Cape May County

Cape May County supports only a population of 105,000 people out of New Jersey's total population of 8,640,000. Although much of the northern and western areas of the county contain large stretches of wilderness and open space, the eastern coast has a relatively high population density, especially in the areas of Ocean City, Wildwood, and Cape May (see Figure 1 and Figure 2.) The county represents only approximately 1% of the total population, however, Cape May County is the second most popular tourist destination in New Jersey based upon revenue produced from tourism (Cape May County Department of Tourism.) This alone makes it an area for which it is essential to have a transportation network to provide access not only to everyday attractions (work, school, recreational locales, etc.) for the residents of the county but for visitors from all over the state.

In terms of existing undeveloped systems for the county, Cape May lacks strong options for consumers of public transportation. New Jersey Transit does serve the region with buses to other parts of the state, however it does not provide the region with railroad service. While buses do provide a public alternative to travel by car, they may be overlooked by travelers who would prefer not to travel on the same roads as cars in a much less personal environment than cars. The Cape May Seashore Lines, which travel from Cape May Point, at the southern tip of the county

⁸ www.Kean.edu

⁹ U.S. Census Bureau

to Tuckahoe, at the Northern end of the county, do provide Cape May County with some railroad service. The problem with the Cape May Seashore Lines is that they provide only limited access to the people of Cape May. The tracks only provide a route directly through the center of Cape May County. They do not serve the eastern coastal areas, which are densely populated and littered with attractive destinations for travelers. Even for those whose destinations lie along this track, most residents of the county would be forced to drive to get anywhere near this railroad line. The lack of viable and extensive public transportation options in the Cape May County region calls for a new system, such as PRT, to fill the gap in the transportation market.

The PRT network for Cape May County is designed to make areas with high population densities and/or large numbers of attractions easy to navigate in that the network allows for quick changes of direction in these areas and enough stops to satisfy the people who frequent these areas. In less populated areas, the emphasis is on being able to reach a direct route to other areas of the county. These “highways,” many of which mimic the routes of existing roads, allows for quick travel between large distances. In this way, if a user from a rural town decides to take a trip across the county or to a popular attraction such as the Wildwood area, he or she might only have to suffer a minor detour in the first mile of the trip and then would reach a stretch of the PRT system that is relatively direct between a large number of points in the county. The PRT system for Cape May County is not designed for a person who wants to travel a distance of about a mile unless it is within an area with a large number of attractions.

While the population of Cape May County in terms of permanent, all-year residents, Cape May County’s population during the summer months is much higher – nearly six times as much (Figure 3.) This suggests that, during the summer months, not only will a significant amount of people need to reach Cape May, but they will most likely make frequent trips to tourist or recreational attractions such as the shore. With the problems of parking a car over the summer months, PRT provides an attractive solution to seasonal traveling. For the tourism industry alone, PRT allows for easy access to densely visited areas at the peak of the tourist season.

In terms of more everyday transportation, the Cape May PRT network is just as useable. The county’s number one private employer, the Burdette Tomlin Memorial Hospital (see Figure 4,) located in Middle Township, is easily accessed through the county PRT network and lies within $\frac{1}{4}$ of a mile – a very feasible walking distance – from the nearest PRT station. The Cape May County Courthouse nearby lies within $\frac{1}{5}$ of a mile from the nearest PRT station. Barring areas of the county that are almost completely undeveloped and unvisited, such as Great Cedar Swamp and Timber and Beaver Swamp in the central area of the county, the PRT network for Cape May County has stations within $\frac{3}{8}$ of a mile from virtually every origin and destination. The accessibility of the system is significantly greater in urban locales and places with large number of attractions. Figure 5 provides rough estimates of the average population served by each station in the towns of Wildwood, Cape May, and Villas, as well as estimated numbers of non-home trip attractions per day for these locations. In Villas, a predominately residential town with relatively few attractions to non-residents, the average population of the town served by PRT stations is relatively high, while the number of non-home trip attractions per day is relatively low. By contrast, Wildwood and Cape May serve a smaller population at each station while they produce many more non-home trip attractions. Even though more of Villas’ population has to use fewer stations, one has to take into consideration that in areas like Cape May and Wildwood, where people come from significant distances to see the attractions, the volume of people served by attractions far outweighs the population in these towns. The

convenience to these tourists of these intricate systems in attractive areas will pay for itself by putting money into the PRT system and the individual towns themselves.

Cape May County enrolls roughly 4,650 children in secondary schools (see Figure 6.) With a total of 516 stations in the county, the average number of secondary school children per station is only nine. Similarly the 10,900 children enrolled in primary schools in Cape May County (Figure 6) correspond to an average of twenty-one children per station. When one considers that rides to school through the PRT system could be shared among two, three, or even four children at their most convenient station, the number of rides per station needed to satisfy this demand is relatively low.

The PRT network for Cape May County presents a new option for commuters to work in a market that is almost exclusively dominated by commuters who drive themselves to work. A total of 80% of commuters in the county drive themselves to work, 9% drive in carpool, and only 2% use public transportation as a means to travel to work on a regular basis (Figure 7.) In this market, the PRT system proposes an quick, efficient means of transportation sharing benefits both of cars and of public transportation. PRT provides a personal vehicle to the consumer while providing him or her with the benefits of automation and trips without traffic or stops. Commuters could relax or focus on their work while traveling. They would not have to deal with the hassle of driving themselves or with the inconvenience and inflexibility of existing public transportation. Figure 8 lists mean time it takes for commuters to reach their workplaces in each municipality of the county, citing the average for the entire county as 23.2 minutes. Without stopping or any traffic jams, the PRT system could most likely improve on this time. With the current use of public transportation options in Cape May being so minimal, this PRT network would provide consumers with a better, more comprehensive public option.

The PRT network for Cape May County provides a new alternative for those seeking a viable public transportation option as well as a more efficient means of transport than car use throughout the county, especially during the busy summer months.

Figure 1



Map of Cape May County showing municipalities
Courtesy of Cape May County Planning Department

Figure 2

	1920	1930	1940	1950	1960	1970	1980	1990	2000	% of Change Since 1990
Avalon	197	343	313	428	695	1,283	2,162	1,809	2,143	18.5%
Cape May	2,999	2,637	2,583	3,607	4,477	4,392	4,853	4,668	4,034	-13.6%
Cape May Point	121	104	126	198	263	204	255	248	241	-2.8%
Dennis Township	1,639	1,615	1,877	1,981	2,327	2,635	3,989	5,574	6,492	16.5%
Lower Township	1,106	1,455	1,705	2,737	6,332	10,154	17,105	20,820	22,945	10.2%
Middle Township	2,760	3,430	3,889	4,599	6,718	8,725	11,373	14,771	16,405	11.1%
North Wildwood	807	2,049	1,921	3,158	3,598	3,914	4,714	5,017	4,935	-1.6%
Ocean City	2,512	5,525	4,672	6,040	7,618	10,575	13,949	15,512	15,378	-0.9%
Sea Isle City	564	850	773	993	1,393	1,712	2,644	2,692	2,835	5.3%
Stone Harbor	159	363	383	670	834	1,089	1,187	1,025	1,128	10.0%
Upper Township	1,272	1,657	1,675	1,922	2,539	3,413	6,713	10,681	12,115	13.4%
West Cape May	967	1,048	943	897	1,030	1,005	1,091	1,026	1,095	6.7%
West Wildwood	0	178	146	237	207	235	360	453	448	-1.1%
Wildwood	2,790	5,330	5,150	5,475	4,690	4,110	4,913	4,484	5,436	21.2%
Wildwood Crest	161	738	661	1,772	3,011	3,483	4,149	3,631	3,980	9.6%
Woodbine	1,406	2,164	2,111	2,417	2,623	2,625	2,809	2,678	2,716	1.4%
County Total	19,460	29,486	28,928	37,131	48,555	59,554	82,266	95,089	102,326	7.6%

Courtesy of Cape May County Planning Department

Figure 3

Population

	Winter	Summer
1980	82,068	545,600
1990	95,089	624,000
2002	104,000	619,329
2003	104,837	624,397

Population of Cape May in winter vs. summer (all-year population vs. summer population)
 Courtesy of Cape May County Chamber of Commerce

Figure 4

Cape May County 10 Largest Private Employers

Burdette Tomlin Memorial Hospital	1,100
Acme Markets	600
Cold Spring Fish & Supply	500
WAWA	485
Holy Redeemer Visiting Nurse	250
Super Fresh	250
Shop Rite	200
Victoria Manor Nursing Center	170
Lutheran Home at Ocean View	145
Snow's Doxsee Inc.	140

Courtesy of Cape May County Chamber of Commerce

Figure 5

	Estimated Population Served at Each Station	Estimated Non-Home Trip Attractions per Day per Station
Cape May	70	2000
Wildwood	80	2500
Villas	450	600

Estimation of residential population served by each station versus estimation of non-home trip attractions per day per station for selected towns.

Figure 6

School Enrollments

• **Public**

	Elementary	Secondary
1980	4,689	7,138
1990	9,436	3,407
2000	10,141	4,761

2003	9,580	4,240
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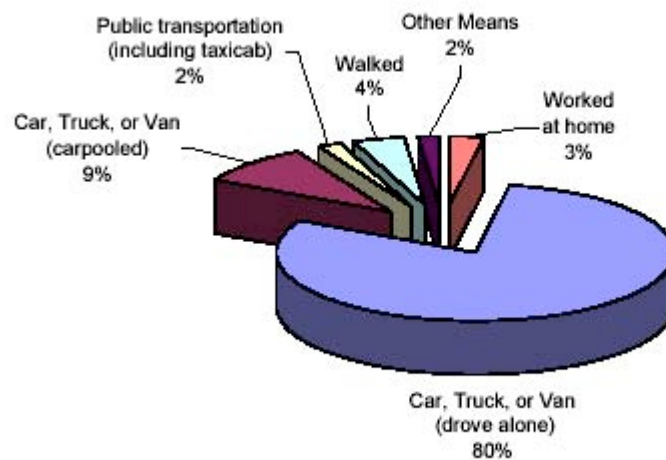
● **Non-Public**

	Elementary	Secondary
1980	539	1,418
1990	1,485	303
2000	1,304	415
2002	1,321	396
2003	1,333	404

Home schooling enrollment is not included in the above figures.

School enrollment in Cape May County
Courtesy of Cape May County Chamber of Commerce

Figure 7



Means of traveling to work in Cape May County
Courtesy of Cape May County Planning Department

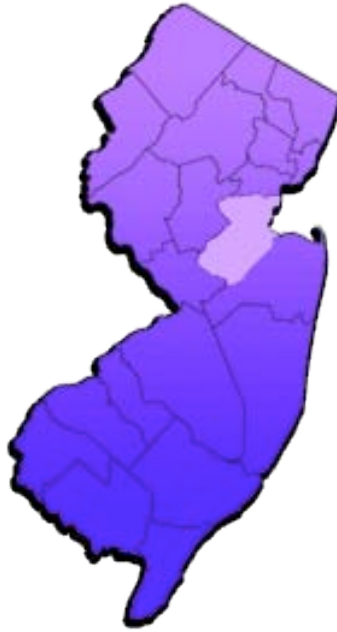
Figure 8

<i>Municipality</i>	<i>Mean Travel Time (Minutes)</i>
Avalon	28.7
Cape May	17.4
Cape May Point	24.1
Dennis Township	23.2
Lower Township	23.5
Middle Township	21.1
North Wildwood	20.8
Ocean City	26.2
Sea Isle City	22.0
Stone Harbor	24.6
Upper Township	25.6
West Cape May	22.9
West Wildwood	25.3
Wildwood	21.5
Wildwood Crest	20.9
Woodbine	18.3
<i>County Total</i>	23.2

MIDDLESEX COUNTY

Land Use

Location: Middlesex County is located in the heart of New Jersey and stretches from the Rahway River south to Mercer and Monmouth Counties and from Raritan Bay on the Atlantic Ocean west to Somerset County. The county is 374 square miles in size, encompasses 25 municipalities and includes extensive industrial, office, and residential areas.



Municipality	Square Miles	% of County
Carteret	4.9	1.5
Cranbury	13.5	4.2
Dunellen	1.0	0.3
East Brunswick	22.5	7.0
Edison	30.4	9.6
Helmetta	0.9	0.3
Highland Park	1.9	0.6
Jamesburg	0.9	0.3
Metuchen	2.8	0.9
Middlesex	3.5	1.1
Milltown	1.6	0.5
Monroe	42.2	13.3
New Brunswick	5.6	1.8
North Brunswick	12.1	3.8
Old Bridge	39.1	12.3
Perth Amboy	6.0	1.9
Piscataway	19.1	6.0
Plainsboro	12.0	3.8
Sayreville	17.1	5.3
South Amboy	1.8	0.6
South Brunswick	41.1	12.9
South Plainsfield	8.3	2.6
South River	2.9	0.9
Spotswood	2.4	0.8
Woodbridge	24.5	7.7

Educational Facilities: 175 public schools, five county vocational-technical schools, and over 70 parochial and private schools serve the approximately 100,000 primary and secondary school students. Post secondary institutions include:

- DeVry University (North Brunswick): offering career-oriented undergraduate programs
- Middlesex County College (Edison): a two year education center for academic and technical training
- Rutgers, The State University (New Brunswick, Piscataway): offering graduate level studies
- The New Jersey Agricultural Experiment Station (New Brunswick): a nationally recognized research center
- The Forrestal Campus of Princeton University (Plainsboro)
- University of Medicine and Dentistry of New Jersey (New Brunswick)

Housing and Population: Middlesex County has been one of the fastest growing counties in the state, growing from 629,982 in 1970 to 717,949 in 1999. This close to 14% increase in population is evident in the 45.7% increase in housing units from 1970 including new homes and apartments. As of 1990, the county has approximately 250,174 housing units for an average of 784 units per square mile.

Medical Centers: Middlesex County has five major hospitals with a total bed space of 1,900. They include:

- JFK Medical Center (Edison)
- Raritan Bay Medical Center (Old Bridge)
- Raritan Bay Medical Center (Perth Amboy)
- Robert Wood Johnson University Hospital (New Brunswick)
- St. Peters University Hospital (New Brunswick)

Recreation: The Middlesex County Department of Parks and Recreation operates 18 county parks encompassing 6,600 acres. Of these parks, thirteen contain active recreational facilities and five others are conservation areas or are being held for future recreational development. Through the Open Space Trust Fund, 5,000 acres of open space has been acquired and 3,400 acres of farmland have been preserved. Middlesex County has three golfing facilities operated by the Middlesex County Improvement Authority. They include the:

- Tamarack Golf Course (East Brunswick)
- Meadows At Middlesex (Plainsboro)
- Raritan Landing Gold Course (Piscataway)

County parks offer a wide range of facilities, such as East Jersey Olde Towne, a collection of restored, reconstructed and replica buildings from the 18th and 19th centuries located in Johnson Park, and Plays in the Park, held at the Stepehn J. Capestro Theater in Roosevelt Park. The County also has numerous private recreational complexes.

Shopping: Middlesex County boasts over 75 shopping centers and two major malls; the Menlo Park Mall and the Woodbridge Center.

Land Use Description	Square Miles	% of County
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Residential – Low Density	7.8	2.31
Residential – Moderate Density	65.12	19.28
Residential – High Density	7.73	2.29
Residential – Total	80.65	23.88
Commercial – Urban	9.61	2.85
Commercial – Suburban	3.92	1.16
Commercial – Total	13.53	4.01
Industrial	21.26	6.29
Recreational	27.31	8.09
Agricultural	41.88	12.40
Forested	82.85	24.53
Wetlands	70.28	20.81
Land Area – Total	337.76	90.25
County Area – Total	374.25	100.00
Developed Land – Total	179.25	47.90
Undeveloped Land – Total	195.00	52.10

Existing Transit Service

NJ Transit Train: Operates the state’s commuter rail network. Features 11 lines in three divisions with the ability to transfer between all lines except for between the Atlantic City Rail Line. The divisions include the:

- Hoboken Division: includes service on the Morris & Essex and Montclair-Boonton lines to and from Penn Station New York and lines operating to and from Hoboken Terminal on the Morris & Essex, Main/Bergen, Pascack Valley and Montclair-Boonton lines
- Newark Division: includes the Northeast Corridor, North Jersey Coast, and Raritan Valley lines operating to and from Newark Penn Station, Hoboken Terminal, and Penn Station New York
- Atlantic City Rail Line: operates between the seaside resort city and Philadelphia, serving points in between

PATH (Port Authority Trans-Hudson): Rail service across the Hudson River into New York.

Amtrak: Fast interstate train service.

NJ Transit Bus: Close to 1000 bus routes servicing all major areas; residential, commercial, recreational and industrial.

Seastreak Ferry: Year-round weekday and weekend fast passenger ferry service to Wall Street and East 34th Street in Manhattan.

Commuter Shuttles: Four separate dedicated commuter shuttle lines servicing New Brunswick, North Brunswick, South Brunswick, Cranbury, Metuchen and Edison.

Suburban Bus Transit: Aims to satisfy the transportation needs for the growing motor coach industry and is one of the largest bus companies in the United States. They transport over ten million passengers per year stressing their first-class safety standards and provide:

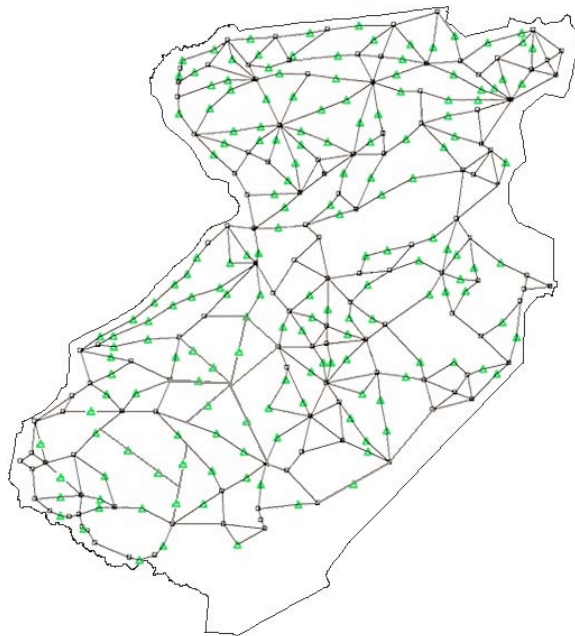
- Commuter service from central New Jersey to Manhattan
- Shuttle Bus Service
- Daily Service to Atlantic City Casino and Hotels
- Charter services

Academy Motor Coach: The largest privately owned transportation company in the United States. Tailored service for events such as:

- Conventions
- Corporate transfers
- Sports teams
- Parades
- Major sporting events
- Private charters

PRT Network

Size and Coverage: The goal of the design of the network was to achieve total county coverage with no user being further than a quarter-mile from a PRT station. The network spans the entire 318 square miles of the county and reaches every residential, commercial, educational, recreational and industrial area in the county. With one-way direction track it was important to create a network in which no unnecessary circuitous paths would be needed for a user to get from any one station to another. The resulting network consists of various small loops connected by interchanges which should alleviate any unnecessarily long routes. The network consists of 269 stations, 117 interchanges and represents approximately 435 miles of guideway.

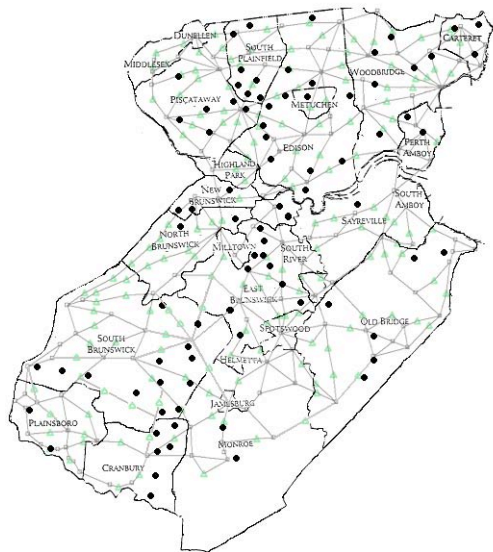


Service to Employment: With total county coverage the PRT network is able to bring service from the user's resident to their place of employment.

Top Ten Major Employers:

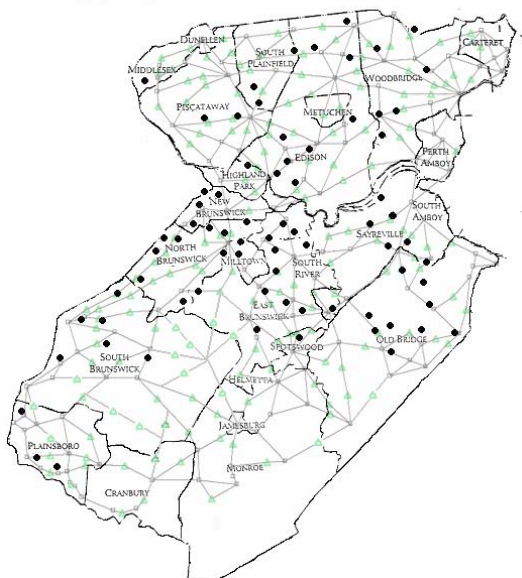
Company	Number of Employees
Bristol-Myers Squibb	3,200-3,499
Merrill Lynch & Company	3,250-3,499
Telcordia Technology	3,000-3,249
Prudential Insurance Company	2,750-2,999
Robert Wood Johnson University Hospital	2,750-2,999
Johnson & Johnson	2,500-2,749
JFK Medical Center	2,500-2,749
Silverline Building Products	2,500-2,749
Raritan Bay Medical Center	2,250-2,499
St. Peter's University Hospital	2,250-2,499

**Map of Middlesex County
Industrial Parks**



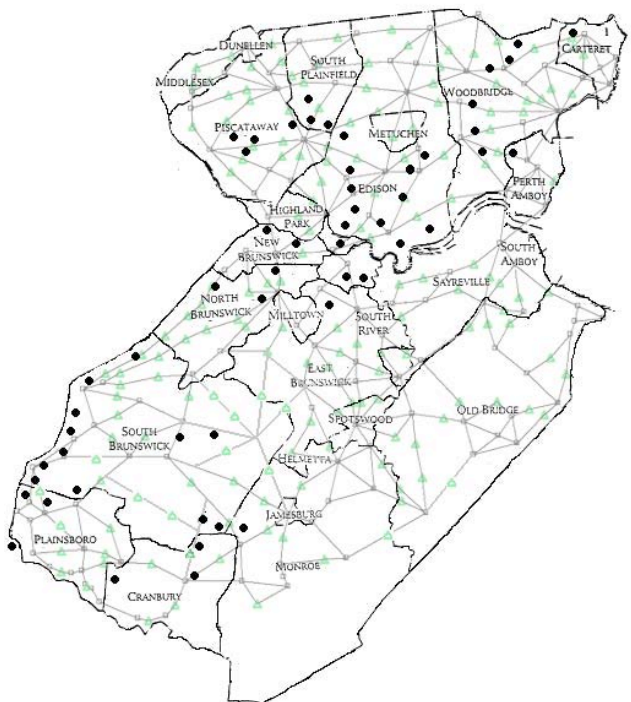
Service to Shopping:

Map of Middlesex County Shopping Centers



Service to Hotels and Conference Centers:

Map of Middlesex County Hotels and Conference Centers



Transport to Work:

Car, Truck or Van	85.5%
Drove Alone	75.40%
Car Pooled	11.10%
Public Transit	8.70%
Bus or Trolley Bus	3.60%
Streetcar/Trolley	0.00%
Subway/Elevated	0.30%
Railroad	4.40%
Ferryboat	0.00%
Taxi Cab	0.30%
Motorcycle	0.00%
Bicycle	0.20%
Walked	2.80%
Other Means	0.60%
Worked at Home	2.10%

Travel Time to Work:

< 5 Minutes	11.40%
10-14 Minutes	12.90%
15-19 Minutes	13.30%
20-24 Minutes	12.30%
25-29 Minutes	5.20%
30-34 Minutes	1.70%
35-44 Minutes	7.30%
45-59 Minutes	9.60%
60-89 Minutes	9.50%
> 90 Minutes	16.80%

Value of the PRT System: Taking a look at the available data, it becomes clear that the automobile would be the PRT System's greatest competition for users. A large portion of the PRT System's usage would home-based work trips and the vast majority of the population not only takes personal automobiles into work but mostly travels alone. An effective PRT System would combine the convenience and privacy of the automobile with the speed and ease of light rail travel. Congestion on the county's motorways is becoming a more serious problem which the current public transit services are not adequately handling. Being one of the fastest growing counties in the State, Middlesex County will feel the extra burden of an increased population more than most. A PRT System will go a long way in alleviating the existing, and future, load on the motorways and help sustain the rapid and exciting growth the County has benefited from.

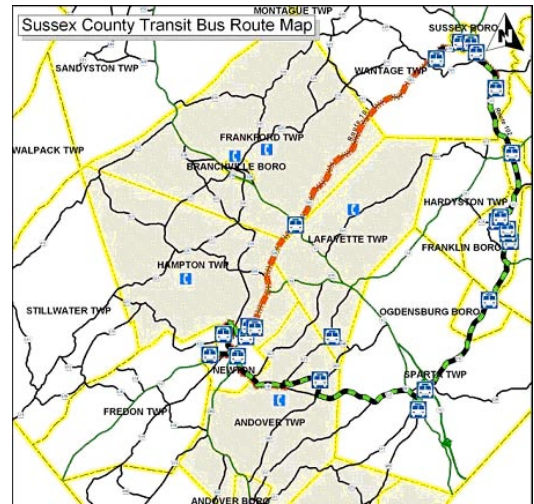
Sussex County

1. Land Use Description

Sussex County is situated at the extreme top of New Jersey and has not become very industrialized due to its geographic location, climate and rugged landscape. The Kittatinny Mountains span its entire northwest edge and the heavily-wooded New Jersey Highlands dominate the eastern part of the county. The hilly aspect of the county encourages vacationing rather than permanent settlement. Throughout the 521 square miles of the county, there are 144,000 people (40,600 students) in 50,800 households. Sussex has thousands of acres devoted to State parks. Rock strewn hills make farming very difficult and explain the higher number of dairy cattle.

2. Description of the Transit Service in the County

New Jersey Transit does not have a rail line that extends into Sussex County. However, there is a small bus line that serves the more heavily populated area of the county. As the picture to the right shows, the bus line travels through the boroughs of Newtown, Sparta, Andover, Lafayette and Franklin where a large portion of the county's population resides. This bus line stops at major attractions such as shopping districts, the Sussex County Community College, the Newton Hospital and, of course, Wal-Mart.

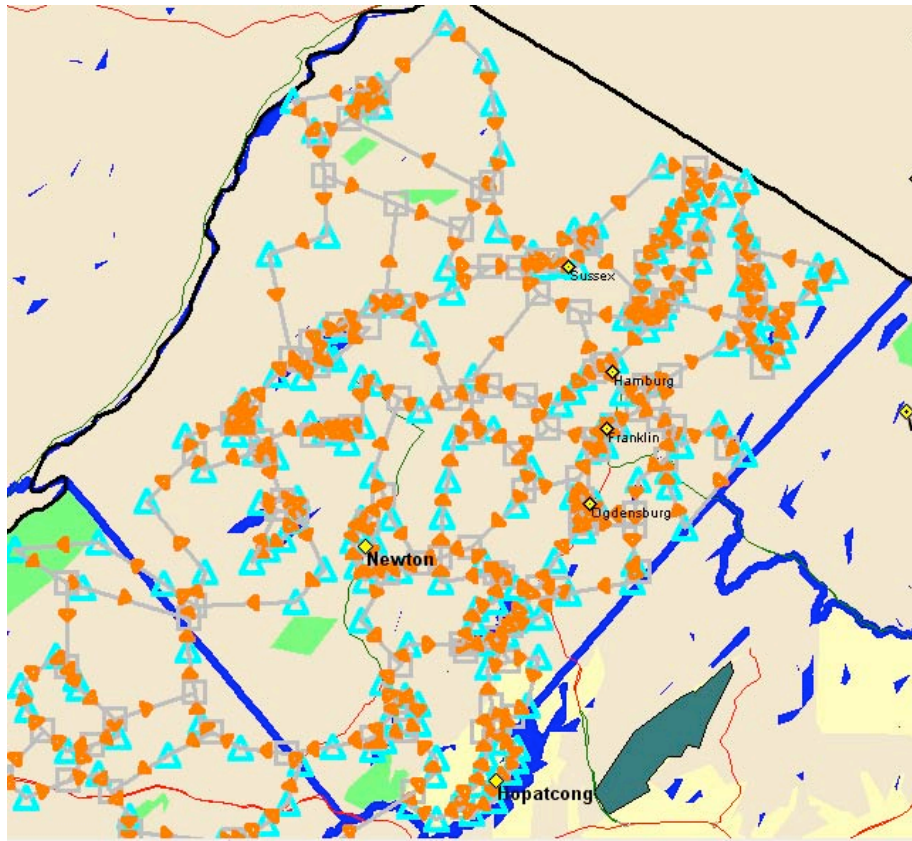


3. Description of the PRT Network in the County

a. Size and Coverage of the Network

Because of the rural nature of the county, significantly populated areas are few and far between. Therefore, the ratio of track length to number of stations might be higher than many other counties. The goal of the network is to have roughly 90% of all destinations in the county be within a 3/8 mile radius of a station. To accomplish this task, 174 stations were necessary with most placed in the boroughs of the major townships.

Another major goal is to connect these stations in such a way as to attempt to minimize the length of track while keeping the travel time low between stations that are relatively close. This is best accomplished by creating loops in the system and connecting smaller loops to each other through a network of larger loops. In total, 104 interchanges are sufficient to create an effective network. The figure below shows the entire PRT system for Sussex County. Triangles represent stations and squares are interchanges. The line connecting them is a one-way guideway with traffic flowing in the direction of the orange arrow.



b. Service to Employment

Detailed information about the commerce of Sussex County was not readily available on the Internet. However, due to the nature of the county, it is apparent that the majority of the industry occurs within the major townships, as a large proportion of the land is undeveloped. Another significant section of the economy of the county is in tourism with skiing and vacationing resorts two popular attractions. Sections of the economy that also fall within other categories of this report, such as recreation, education, and shopping, will be explored in greater detail in those respective sections. Newton Memorial Hospital is the only hospital in the county and therefore one of the major employers. The picture below is a computer drawing of the hospital with a PRT station adjacent to the front entrance.



c. Service to Shopping

As with the employment centers, the major commercial areas are also within the borders of the towns in Sussex County. An effective PRT system throughout this area would have stations within close distance to the most frequented shopping areas. An online visitor's guide for the county revealed that the most visited commercial centers were as follows:

Shopping Area	Town
Menlo Park Mall	Edison
Olde Lafayette Village	Lafayette
Extreme Paintballz	Vernon
McAfee Ski & Snowboard	Vernon
North Country Outfitters	Lafayette
The Lafayette Mill Antiques Center	Lafayette
Lafayette Clayworks	Branchville
Sparta Shopping District	Sparta
Sussex Shopping District	Sussex
Newton Shopping District	Newton
Franklin Wal-Mart	Franklin

Each of these places has a PRT station located within walking distance that connects to the main grid, easily transporting shoppers from their neighborhoods to these locations.

d. Service to Recreation

The landscape of Sussex County lends itself to being a fantastic area for outdoor recreation. A large ski resort and a handful of beautiful golf courses attract visitors from

New Jersey, Pennsylvania and New York. There is even a professional minor league baseball team to entertain local residents and visitors. For those who prefer indoors, there are museums and a theater in various towns. The table below summarizes these attractions:

Recreational Area	Town
Mountain Creek Ski Resort	Vernon
Space Farms Zoo and Museum	Sussex
Sterling Hill Mining Museum	Ogdensburg
Franklin Mineral Museum	Franklin
New Jersey Cardinals Baseball	Augusta
Skylands Ice World	Stockholm
Wild West City	Netcong
Hidden Valley Resort	Vernon
Tri-State Actors Theater	Branchville
Waterloo Village	Stanhope
Ballyowen Golf Club	Hardyston
Bear Brook Golf Club	Newton
Crystal Springs Resort	Vernon
Lake Mohawk Golf Club	Sparta
Newton Country Club	Newton
Rolling Greens Golf	Newton

Once again, PRT stations are strategically located close to these major attractions.

e. Service to Education

Big yellow school busses may become obsolete in Sussex County. Throughout the towns and boroughs of the county there are twenty-five educational institutions with student enrollments of over 400. One of these is Sussex County Community College in Newton with a full-time enrollment of 1300 and a part-time enrollment of almost 2000. An informational website about primary and secondary schools called GreatSchools.net provided enrollment information for all schools in the county. The larger ones are listed on the table below:

School Name	Town	Enrollment
Kittatinny Reg High School	Newton	1302
Newton High School	Newton	810
Halsted St.	Newton	400
Florence M. Burd	Newton	431
Marian Mc Keown	Newton	469
Merriam Ave.	Newton	479
Durban Ave	Hopatcong	436
Ellen T Briggs	Hopatcong	394
Hudson Maxin	Hopatcong	407
Tulsa Trail Elementary School	Hopatcong	432
Hopatcong Middle School	Hopatcong	668
Hopatcong Middle School	Hopatcong	836
Sussex Middle School	Sussex	659
High Point Regional High School	Sussex	1234
Wallkill Valley Reg. High School	Hamburg	841
Franklin Elementary School	Franklin	575
Hardyston Township	Franklin	778
Ogdensburg	Ogdensburg	396
Frankford Township	Branchville	744
Helen Morgan	Sparta	690

While exact data about student's home locations cannot be obtained, reasonable assumptions about district regions were made to assure that the homes of all students are within walking distance to a station with a timely path to their school.

f. Service to Housing

Perhaps the most important station placements are those to the residential districts. If PRT was incorporated on such a large scale, other forms of transportation would undoubtedly shrink in usage considerably. It is in the county's best interest to build stations such that the largest amount of its citizens have walking access from their homes. In some extreme cases it might not be economically feasible to place a station near a home if there are not many other destinations nearby so the goal is to reach approximately 90% of the county's 50,800 housing units. The U.S. Census Data from 2000 listed the top townships in the county by the number of households. The ten largest towns are listed below:

Township	Total Housing Units
Franklin Borough	1997
Hamburg Borough	1233
Highland Lake	2283
Hopatcong Borough	6190
Lake Mohawk	3940
Newton Town	3425

Stanhope Borough	1419
Sussex Borough	961
Ogdensburg Borough	903
Vernon Valley	560

The number of stations placed in each of these townships is a function of the total population as well as how densely packed these housing units are. PRT stations are connected in such a way that the a large residential district with multiple stations is linked in a small loop which is then connected to the surrounding attractions.

4. Value of PRT to the future evolution and vitality of Sussex County

The Sussex County Chamber of Commerce reports that approximately 60% of the workforce in the county commutes to growing commercial and industrial centers outside of the county. Their vision is to bring more businesses into the county to increase its vitality. PRT in Sussex County would help make this vision a reality.

A major reason that there are not many businesses in the county is accessibility. There is not much of a public transportation system in the county, nor are there major highways. The construction of a PRT system would represent an opportunity for growth and restructuring of the Sussex County economy. New commercial and industrial (and residential) centers could be planned concurrently with the planning of the PRT. Stations could be strategically placed in currently underdeveloped locations with great growth potential. Businesses would be very tempted to relocate there due to the ideal location with respect to the new PRT stations.

Another major effect that PRT will have on this region is to change a region that was previously unable to be developed and transform it into an area with great potential. With so great a proportion of the county rugged and mountainous, accessibility has always been an issue holding back development. Elevated guideways with a very small physical connection to the ground below can more easily and cheaply traverse this type of terrain, granting fast-flowing access to virtually any part of the county.

This greater access does come with a price, however. Many of the current residents choose to live in Sussex County due to its rural, natural environment. Having PRT guideways spanning across all parts of the county will give rise to much objection from environmentalists and current residents. Much more planning and forecasting would have to be done to determine the most effective way to utilize the new PRT technology in such a manner as to jumpstart the economy of the county yet at the same time maintain its beautiful landscapes.

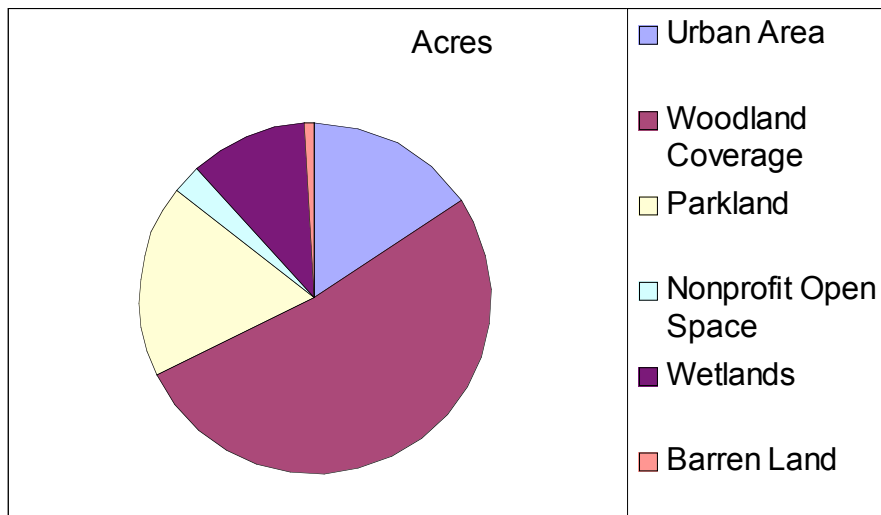
Warren County

Land Use Description:

The County of Warren occupies an area of 365 square miles, is 32 miles long with an average width of 13 miles, and ranks ninth in size among the state's twenty-one counties. Within the County is some of the most undeveloped, rugged terrain in New Jersey. The landscape is characterized by a series of ridges and valleys, ranging from 100 to 1,600 feet above sea level. Mountain ranges and ridges, which divide fertile river valleys, include Kittatinny Mountain, Jenny Jump Mountain, Scott's Mountain and Pohatcong Mountain. Fertile valleys have enabled the county to become an important agricultural district in the Garden State. Over 50% of the county is undeveloped woodland, with wetlands comprising another 25%. Warren County land

use is primarily agricultural with very few urban areas. However, the Warren County chamber of commerce has zoned certain districts for the following purposes: urban enterprise, business improvement districts, and educational zones (including a 2 and 4 year college and public and private secondary schools). The growing workforce has brought about recent changes to Warren County, creating more commercial development. To further diversify its economy, the Phillipsburg Redevelopment Agency has retained a private developer with plans to redevelop vacant brown fields into a modern industrial park, fully integrated with the downtown and riverfront, which boasts a new boat ramp and parking facilities

Land Use Summary



Description of Existing Transit Systems:

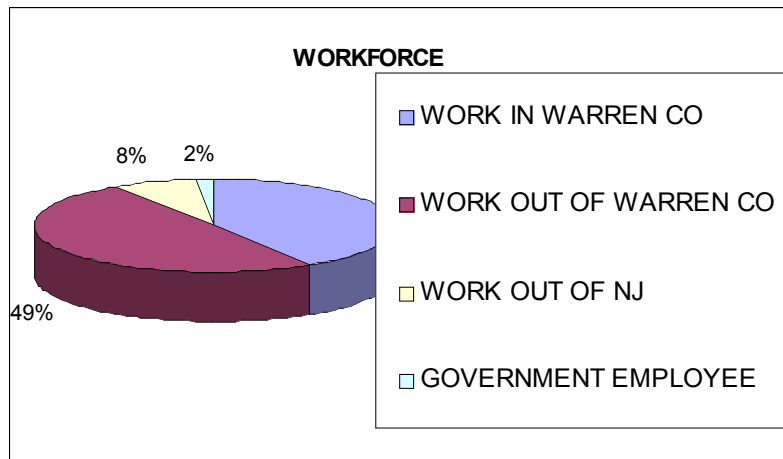
Transportation has played an important role in the development of the county since its beginning. The first road which was constructed in 1960 from Pahaquarry to Kingston, N.Y., over which they transported the proceeds of their mining ventures. This road, the first commercial highway built in the United States, is still in existence today. It traverses through the Delaware National Water Gap. Transportation continues to play an important role in the county's evolution. Interstate highways I-78 and I-80 cross the county, opening the area to many new residents who commute daily to their jobs in metropolitan New Jersey. Meanwhile, commercial and industrial areas are being created along the highway corridors, as Warren County's proximity to New York, Philadelphia and New Jersey's most heavily populated areas, along with the quality of life the county offers, make it an attractive area for homes and businesses.

Overview of PRT in Warren County

Warren County has a current population of 102,766. Being one of the smallest counties in New Jersey, Warren has a unique transportation demand. The projected growth, however, for over the next 15 years, predicts a 25% rise in the population. Accommodating for this increase is an important part of land use planning. The Warren County Personal Rapid Transit system is designed with growth in mind. By improving the transportation in the area, it is an investment for the future economic and residential development of county municipalities.

Warren County Townships	Total Housing Units
Allamuchy township	1,774
Blairstown township	2,136
Greenwich township	1,477
Independence township	2,210
Knowlton township	1,135
Lopatcong township	2,429
Mansfield township	2,415
Pohatcong township	1,411
Washington township	2,174
White township	1,770

The Distribution of 50 Residential PRT Stations serves the 10 Residential Townships with service with ¼ mile of a Station. More rural areas will not have the same access to PRT stations. However, 65% of the counties population lives within dense enough township areas to be conveniently served by residential PRT Stations.



Manufacturing Firms	168
Farms	730
Labor Force	55,100

Major Employers	Town
Warren Hospital	Phillipsburg
Hackettstown Community Hospital	Hackettstown
M&M Mars Inc.	Hackettstown
Warren County Community College	Washington

Farm and Manufacturing labor comprise the majority of the needs for PRT Service to employment. The Warren County PRT Systems serves 155 of the 168 manufacturing firms and provides access to all farms above 500 acres with a workforce greater than 75. Considering that almost half of Warren County's workforce commutes out of county it is exceedingly important to coordinate and connect well with other counties and provide comprehensive residential PRT service.

Service to educational facilities is the second greatest objective in PRT Service. Warren county is home to two colleges and 35 public schools, all of which are serviced by PRT. The goal of PRT for Warren County is to remove all vehicular traffic to and from school. Listed below are the major school facilities and their enrollment.

School	Township	Enrollment
Belvidere High School	Belvidere	568
Blairstown Elementary School	Blairstown	755
Franklin Township Consolidated	Washington	357
Great Meadows Reg. Middle School	Great Meadows	494
Independence Township Central	Great Meadows	350
Stewartsville Elementary School	Stewartsville	454
The Greenwich School	Stewartsville	447
Hackettstown Middle School	Hackettstown	402
Hackettstown High School	Hackettstown	921
Knowlton Township Elementary School	Delaware	364
Lopatcong Elementary School	Phillipsburg	737
Mansfield Township Elementary School	Port Murray	746
N. Warren Reg. High School	Blairstown	998
Oxford Central	Oxford	356
Green Street	Phillipsburg	624
Phillipsburg Middle School	Phillipsburg	690
Phillipsburg High School	Phillipsburg	1475
Pohatcong Township Elementary School	Phillipsburg	389
Warren Hills Reg. Middle School	Washington	752
Warren Hills Reg. High School	Washington	1340
Washington Memorial Elementary School	Washington	383
Brass Castle	Washington	401
White Township Cons.	Belvidere	444
Warren County Community College	Washington	2400

Commercial and Recreational PRT Service was designed using target locations. All malls, shopping centers, and recreational attractions with over 500 trips per day have a PRT station dedicated for that purpose. Listed below are the most locations of PRT Stations for the largest commercial developments and recreational sites.

RECREATION:

Attraction	Town
Well-Sweep Herb Farm	Port Murray
Phillipsburg River Outpost	Phillipsburg
Land of Make Believe Theme Park	Hope
King's Road Vineyard and Winery	Asbury
Brass Rode Spa and Salon	Blairstown
Alba Vineyard & Winery	Milford
Apple Mountain Golf & Country Club	Oxford
Hawk Pointe Golf Club	Washington
Double D Guest Ranch	Blairstown
Shippen Manor Museum	Oxford

COMMERCIAL ZONES:

Shopping

Phillipsburg Mall
Millbrook Village
Phillipsburg Shopping District
NJ Antique Barn
Belvidere Shopping District
Downtown Hackettstown
Albanese Sports Gallery
Marshall's Farm Market

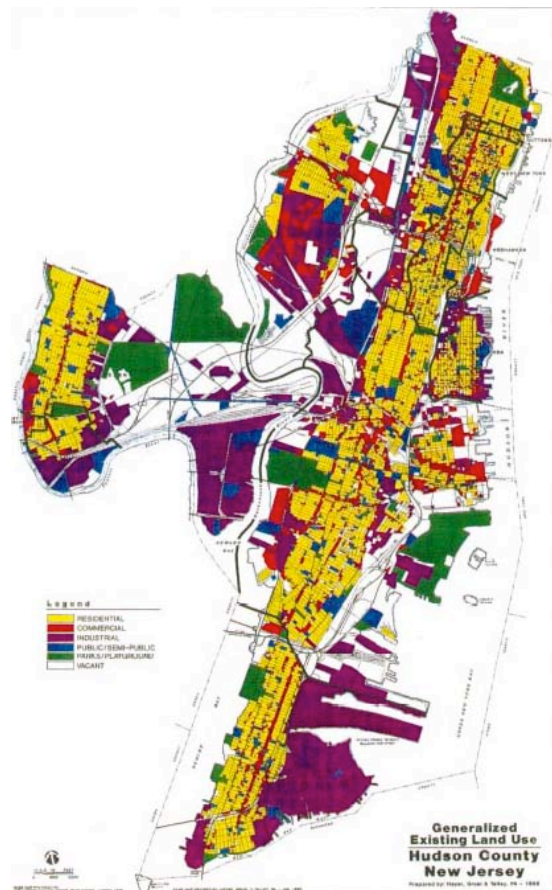
Town

Phillipsburg
Blairstown
Phillipsburg
Hope
Belvidere
Hackettstown
Belvidere
Delaware

Hudson County

Land Use

Transportation planning in Hudson County has always been a challenge because there is a wide range of land use patterns. In Jersey City, there are heavy downtown urban areas, mixed use areas along the Hudson River and dense residential areas along the Palisades. Hudson County also serves as a gateway between New Jersey and New York City. The diagram below shows land use patterns.



Hudson County has addressed the reliance on public transportation by continuing to improve their system and recently has made efforts to integrate different forms of transportation into a network. However, the situation could be improved with a countywide PRT network.

Table II-3
Population Density, 2000
Hudson County Municipalities,
Northeast Urban Counties and New Jersey

Geographic Area	Population	<i>Land Area Density</i>	
		<i>(sq. miles)</i>	<i>(persons/sq.mile)</i>
Bayonne	61,842	5.6	11,004
East Newark	2,377	0.1	23,770
Guttenberg	10,807	0.2	56,879
Harrison	14,424	1.2	11,823
Hoboken	38,577	1.3	30,376
Jersey City	240,055	14.8	16,144
Kearny	40,513	9.1	4,432
North Bergen	58,092	5.2	11,193
Secaucus	15,931	5.9	2,705
Union City	67,088	1.3	52,825
Weehawken	13,501	0.8	15,883
West New York	45,768	1.0	44,870
Hudson County	608,975	46.6	13,068
Bergen County	884,118	234.1	3,776
Essex County	793,633	126.2	6,286
Passaic County	489,049	185.0	2,643
Union County	522,541	103.2	5,060
State of New Jersey	8,414,350	7,416.9	1,134

Source: U.S. Bureau of the Census, 2000

Current Transit Service in Hudson County

Currently, Hudson County is served by the Hudson-Bergen Light Rail Transit System. This is shown on the next page.



The HBLRT system provides the backbone for transportation in Hudson County. It is a 20.6 mile light rail line through Hudson County that provides a link between the southern end of Bayonne, the Jersey City waterfront and the Vince Lombardi Park and Ride on the New Jersey Turnpike. It provides accessibility to current and future employment and population centers along the Hudson River Waterfront, Hoboken, Jersey City and Bayonne, as well as redevelopment projects throughout the county. It provides access to retail centers such as Bergenline Avenue and Newport Center. It is integrated with other forms of transportation such as bus routes and park and ride lots.

The county is also served by the NJ Transit Midtown Direct commuter trains, NJ Transit and private buses (shown in diagram below), the Port Authority Trans-Hudson rapid transit system and the cross-Hudson ferry/water taxi system. These transportation systems are represented in the diagrams below. This first diagram shows the rail lines. Only three NJ

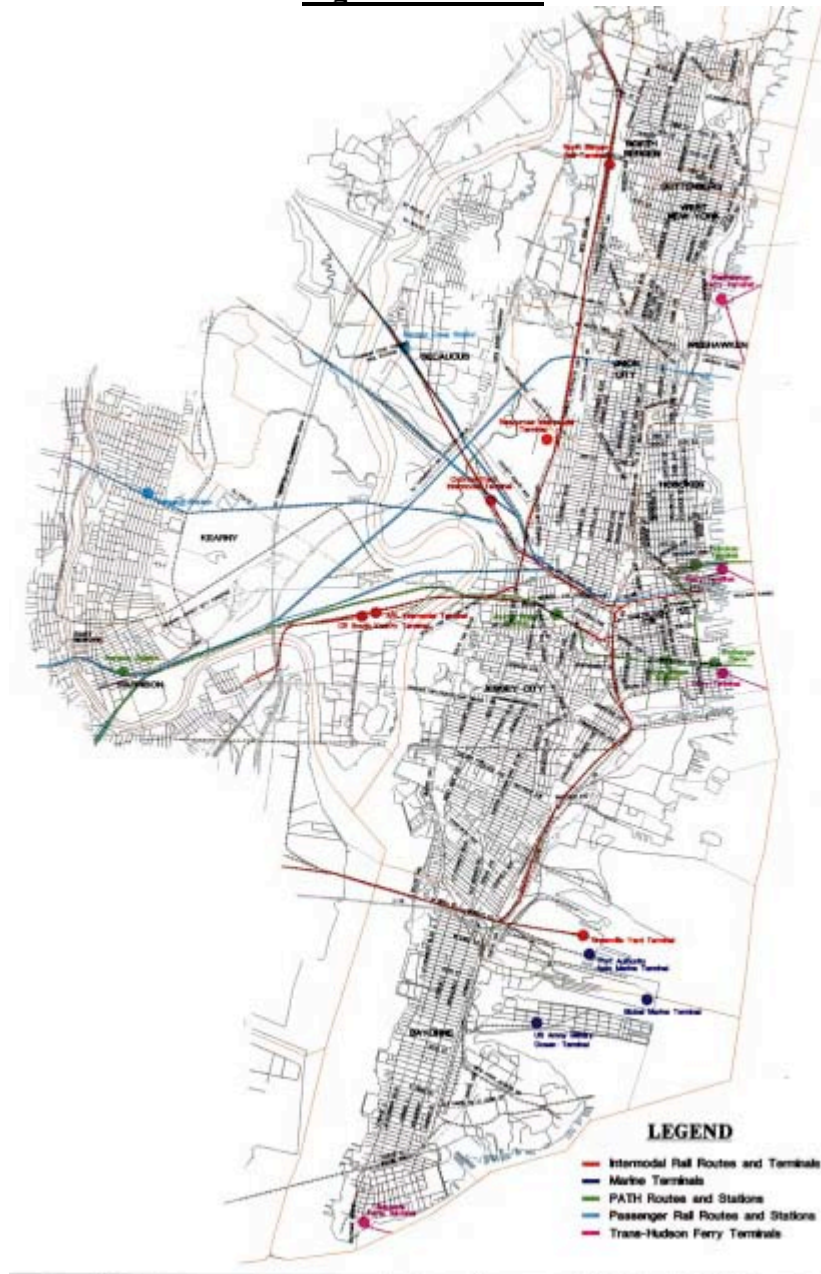
Transit commuter stations are located in Hudson County – the Arlington Station, the Harmon Cove Station and the Hoboken Terminal. The majority of commuters to and from Manhattan use the PATH rapid transit system. The PATH system consists of four lines through Hudson County, each of which is also served by NJ Transit bus lines. The HBLRT connects to trans-Hudson services via the PATH line and by bus, thereby increasing access between Hudson County and New York City.

These efforts have improved transportation throughout Hudson County, but a PRT network would offer an improvement since it would not have the integration problems that still plague the current system. This system was built over time with new additions being added periodically. Integrating light rail trains, for example, with buses and commuter lines has been difficult, and requires various transfers. A PRT network would be an affordable and efficient solution to this problem. The cost would compare favorably to current plans. The total cost for the HBLRT and related improvements has reached over \$1 billion dollars. A PRT network on the other hand can be built for a few million dollars per mile. A more precise cost would need to be determined based on the density of the stations.

Bus Routes



Light Rail Routes



Work is under way to integrate all modes of transportation into a coordinated network in an effort to promote economic growth and minimize congestion.

There is also an extensive network of highway and local roads throughout Hudson County. The network of highways, freeways, principal and minor arteries is shown below.



The PRT network would serve to reduce pollution and accidents due to vehicular traffic. Both are problems due to the congestion that exists on Hudson County roads. A major congestion problem exists due to through traffic to New York City. Major highways that pass through Hudson include the NJ Turnpike, This has the effect of increasing commute and delivery times as well as reduced productivity and decreased quality of life for residents. Efforts have

been made to increase the number of park and ride lots, but the potential for this type of approach is questionable. A PRT network would undoubtedly reduce congestion.

Average Daily Traffic Volumes

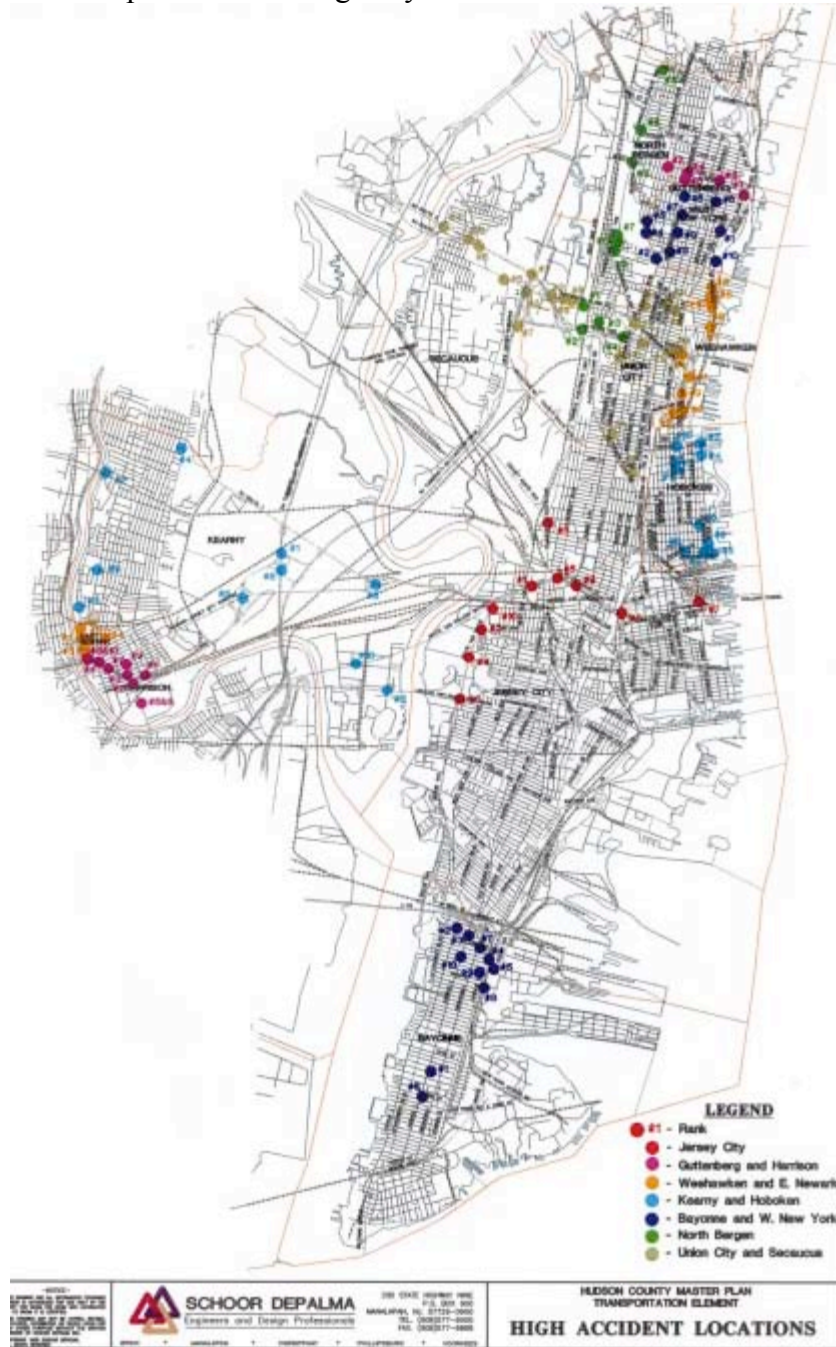
Table IV-2
Existing Average Daily Traffic Volumes
Hudson County

Roadway	Section	ADT	Year
NJ Rt. 3	Btn. Meadowlands Pkwy & Paterson Plank Rd.	138,000	1995
I-95 NJ Tpk. (West)	Btn. Exit 15E & 15W	120,300	1989
NJ Rt. 495	Btn. NJ Rt. 1 & 9 & Lincoln Tunnel	117,000	1978
NJ Rt. 495	Lincoln Tunnel	109,800	1995
NJ Rt. 3	Btn. County Line & NJ Tpk.	108,300	1985
I-95 NJ Tpk. (East)	Btn. Exit 16E & 17E	102,700	1995
I-95 NJ Tpk. (West)	Btn. Exit 15W & 16W	98,900	1995
NJ Rt. 3	Btn. NJ Tpk. & NJ 495	89,400	1983
I-280	Btn. Exits 15 & 16	87,800	1993
I-95 NJ Tpk. (East)	Btn. Exit 15E & 16E	84,600	1989
NJ Rt. 139	Holland Tunnel	76,000	1987
I-95 NJ Tpk. (East)	Just South of County Line	66,700	1995
Paterson-Plank Rd.	Btn. Terminal Rd. (Park Pl.) & West Side Ave.	65,100	1995
NJ Rt. 1 & 9	North of Pulaski Skyway	63,700	1992
NJ Rt. 1 & 9	Tonnelle Ave. Btn. NJ 495 & CR681	53,700	1988
NJ Rt. 440	Btn. CR 602 & NJ Tpk. Rt. 1 & 9	48,200	1985
I-78 Turnpike Ext.	Btn. Exit 14A & 14B	46,500	1995
NJ Rt. 1 & 9	Tonnelle Ave. Btn. CR 653 & NJ 495	45,800	1993
I-78 Turnpike Ext.	Btn. Exit 14B & Rt. 139	43,900	1995
NJ Truck Rt. 1 & 9	Btn. Communipaw Ave. & NJ Rt. 139	39,800	1995
JFK Blvd.	Btn. Winkle & St. Pauls Ave.	38,600	1995
Jersey City Tpk.	Btn. NJ Tpk. & Belleville Tpk.	37,600	1995
JFK Blvd.	Within the Lincoln Tunnel loop	37,000	1995
NJ Rt. 1 & 9	Tonnelle Ave. Btn. 70th & 71st Sts.	36,300	1991
NJ Truck Rt. 1 & 9	Btn. Tpk & Communipaw Ave.	33,800	1985
JFK Blvd.	Btn. 55th & 57th St.	30,700	1995
NJ Rt. 440	Btn. I-78 & CR 602	30,200	1991
JFK Blvd.	Btn. I-78 & West 63rd St.	29,700	1995
NJ Rt. 7	Btn. NJ 139 & Newark Tpk.	29,200	1979
JFK Blvd.	Btn. 20th & 21st St.	28,000	1995
Observer Hwy.	Btn. Newark Ave. & Willow Ave.	27,100	1995
JFK Blvd.	Btn. Bowers & Lincoln Sts.	27,000	1995
County Ave.	Btn. NJT exit & Dorigo Ln.	26,100	1995
Park Ave.	Btn. 18th & the RR	26,000	1995
JFK Blvd.	Btn. Lexington & Glendenny Ave.	25,700	1995
Willow St.	Btn. 18th & the RR	24,500	1995
Newark Ave.	Btn. Waldo Ave. & I-78/RR	24,100	1995
Garfield Ave.	Btn. Caven Pt. & Bay View Ave.	21,700	1995
JFK Blvd.	Btn. 85th & 87th Sts.	21,200	1995
JFK Blvd.	Btn. 55th & 56th St.	20,900	1995
Paterson-Plank Rd.	At River View Park (So. of Bowers St.)	20,100	1995
JFK Blvd.	Btn. 51st & 54th St.	18,900	1995
Viaduct	Btn. Manhattan Ave. & Madison St.	18,400	1995
Ocean Ave.	Btn. Myrtle & Claremont Ave.	17,700	1995
Paterson-Plank Rd.	Btn. Columbia Ave. & the RR	17,000	1995
Pennsylvania Ave.	East of Central Ave.	16,300	1995
County Rd.	Btn. Rt. 1&9 & I-95 East	15,400	1995
NJ Rt. 7	Btn. Newark Tpk. & County Line	14,400	1988
Route 440	At the Bayonne Bridge	14,300	1995
Bergenline Ave.	Btn. 48th & 50th St.	13,500	1995
Palisade Ave.	Btn. 18th Ave. & Washington Ave.	11,900	1995
Hillside Rd.	East of JFK Blvd.	11,400	1995
Paterson-Plank Rd.	At Washington Park (So. of 2nd St)	11,200	1995
JFK Blvd.	Btn. Wall St. & Bulls Ferry Rd.	10,700	1995
Secaucus Rd.	Btn. 16th St. & Michael Dermott Pl.	10,700	1995
JFK Blvd.	Btn. North & Linden St.	8,900	1995
Washington Ave.	Btn. 8th & 9th St.	8,600	1995
Hackensack-Plank Rd.	Just south of Approach Rd. to Lincoln Tn.	5,800	1995
Communipaw St.	Btn. Monitor St. & the RR	1,500	1995
Pershing Rd.	South of JFK Blvd. East	1,300	1995

High Accident Areas

By decreasing the traffic congestion, the problem of traffic accidents would be alleviated. As shown in the map of traffic accidents below, there is a high concentration of accidents in East Newark, Guttenberg and Harrison. These accidents are commonly caused by the proximity to

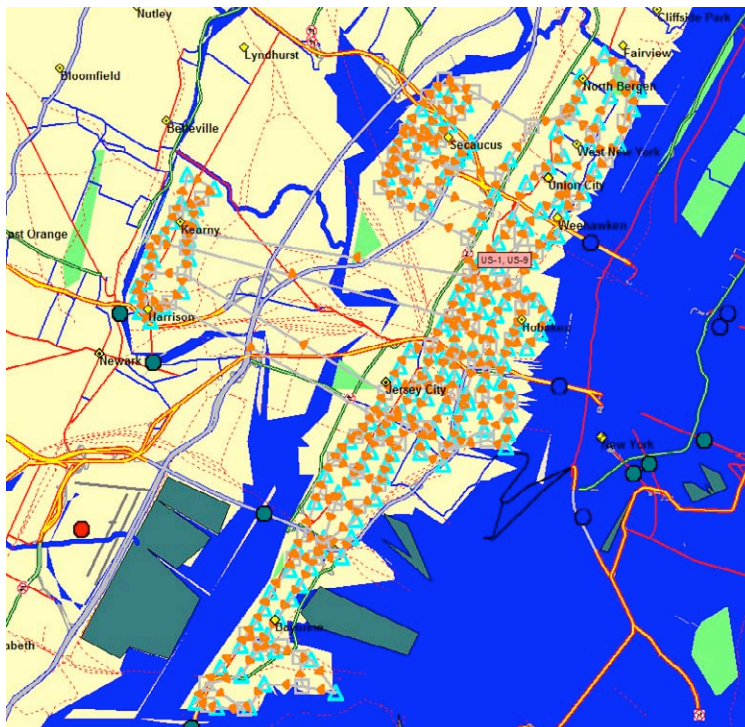
highways. For example, I-280 passes through Harrison and numerous accidents are directly caused by the traffic and passes on this highway.



Description of PRT network in County **Size and coverage of the network**

The Hudson County PRT network consists of 140 stations and will have 118.45 miles of guide way. The generally follow a grid like pattern to improve the accessibility of the network between the infinite origin and destination pairs that can exist. Ideally, each point on the network should be accessible by every other point and convenient forward and return routes for

each origin and destination pair should exist. By using a grid pattern, route distances and occurrences of backtracking are minimized. The network is shown below.



Service to Employment and Shopping

In Hudson County, 271,770 people are employed. Of these, 55% drive to work while 33.6% use public transportation. The mean travel time to work is 32.6 minutes. With a PRT network, commute times will be improved

EMPLOYMENT STATUS		
Population 16 years and over	486,268	100.0
In labor force	297,702	61.2
Civilian labor force	297,531	61.2
Employed	271,770	55.9
Unemployed	25,761	5.3
Percent of civilian labor force	8.7	(X)
Armed Forces	171	-
Not in labor force	188,566	38.8
Females 16 years and over	250,754	100.0
In labor force	137,278	54.7
Civilian labor force	137,227	54.7
Employed	124,430	49.6
Own children under 6 years	42,833	100.0
All parents in family in labor force	22,872	53.4
COMMUTING TO WORK		
Workers 16 years and over	264,544	100.0
Car, truck, or van -- drove alone	111,109	42.0
Car, truck, or van -- carpooled	34,519	13.0
Public transportation (including taxicab)	88,926	33.6
Walked	22,637	8.6
Other means	2,709	1.0
Worked at home	4,644	1.8
Mean travel time to work (minutes) ¹	32.6	(X)

The network has seamless coverage to all of the major employers shown below. The flow of PRT cars will be set up such that demands for transportation during the afternoon rush hour are met. We will use the employment numbers at each place of business to determine with precision exactly how many cars will be needed and at what time.

**Table V-4
Major Private Sector Employers, 1999
Hudson County**

Employer	Number of Employees	Location
UPS	2,200	Secaucus
ADP Brokerage Service Division	2,000	Jersey City
Donaldson Lufkin & Jenrette Pershing Division	2,000	Jersey City
Jean Nicole, Inc.	2,000	Secaucus
Liz Claiborne, Inc.	1,800	North Bergen
Jersey City Medical Center	1,770	Jersey City
APA Transport Corp.	1,500	North Bergen
Lehman Brothers, Accounts Payable	1,400	Jersey City
Local 2 - 406 PACE	1,385	Bayonne
APA Turck Leasing Corp.	1,300	North Bergen
Bayonne Hospital	1,200	Bayonne
St. Mary Hospital	1,200	Hoboken

Source: Hudson County Economic Development Corporation, November 1999

In addition to the largest employers listed above, there are numerous other employers and retail establishments. These are listed in their entirety at (<http://www.hudsonedc.org/hudson-employers.pdf>). A brief excerpt of this list is shown below. The PRT network will provide service with large employers and retailers as the highest priority. Cars serving retailers will be designed with increased cargo space for carrying purchased items and other cargo.

Detailed Employer and Number of Employees for Each City

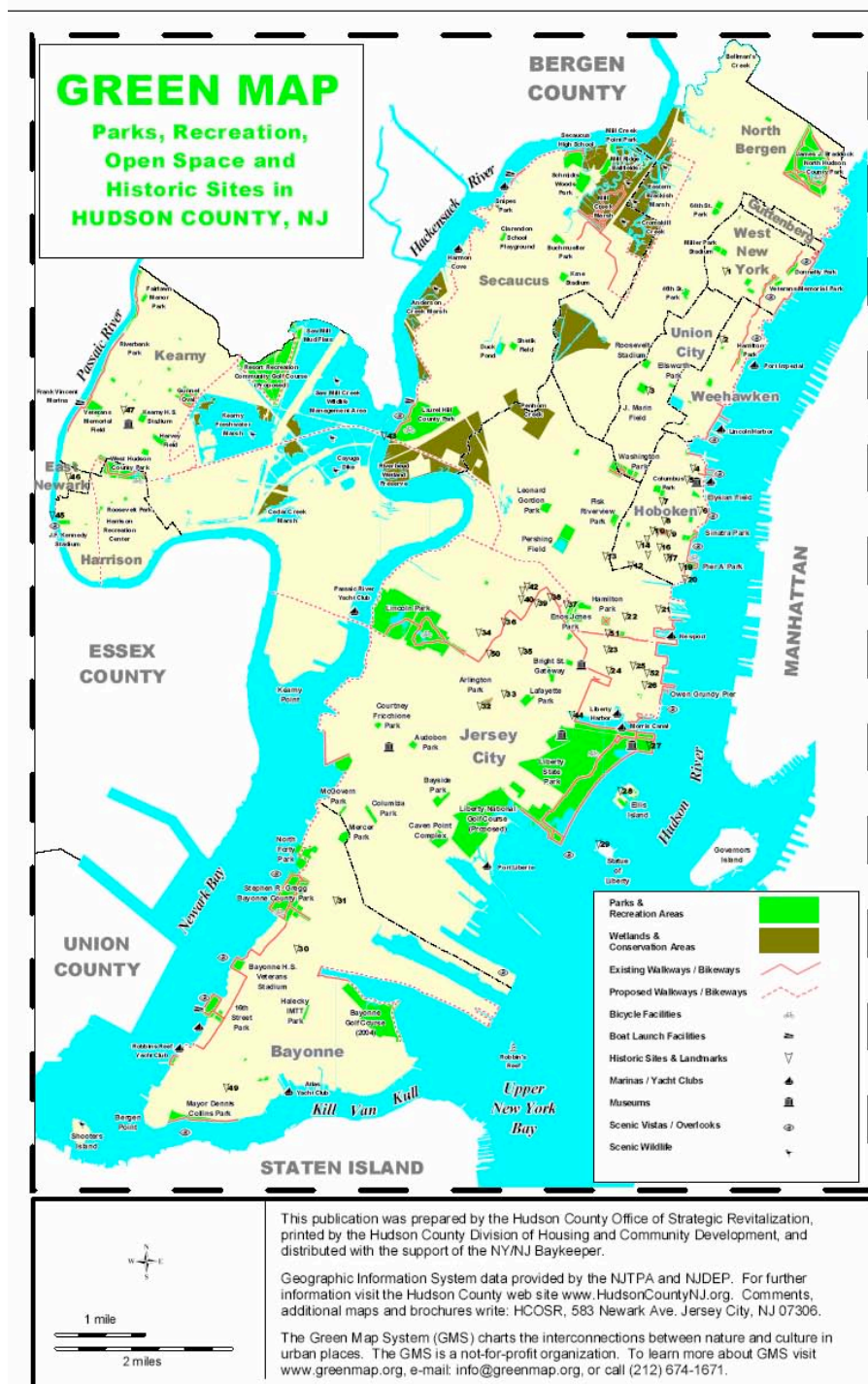
BAYONNE, NJ 07002			
Company Name and Address	Phone	Sic Code	# Emp
American Clothing Enterprises LTD 885 Broadway	(201) 395-0888	5932	150
ASAHI GLASS FLUOROPOLYMERS USA INC. 229 E. 22 ND Street	(201) 858-8900	2821	150
Bayonne Hospital 29 TH Street Ave E	(201) 858-5000	8062	1164
Bookazine Co. Inc(Del CORP) 75 Hook Road	(201) 339-7777	5192,2741	180
CASCHEM INC. 40 Ave A	(201) 858-7900	2869	135
Clark Stek-O Corp 148 5 TH Street	(201) 437-0770	2891	100
Dynamic Handling Corp. 150 Pulaski Street	(201) 963-3535	4225	126
Flortek Corp. 39 W 55 TH Street	(201) 436-7700	2273,2752,2782	100
Gel Spice Company Inc. 48 Hook Rd	(201) 339-0700	2099,5149,5145	120
Goodtimes Entertainment Limited 59 E 1 ST Street	(201) 436-0050	3695	400
Gordon Terminal Service Co. of PA. 2 HOOK ROAD	(201) 437-8300	4225,7389	100
The Great Atlantic & Pacific Tea Co Inc. 175 Ave. A & W 6 TH Street	(201) 823-0202	5411	120
The Haddad Apparel Group Ltd. 90 E 5 TH Street	(201) 339-8883	5136,5137	200
Harry J. Rashti & Co., Inc. 74 Lexington Ave.	(201) 858-8111	2369	135
Ideal Window Manufacturing Inc. 27 Kennedy Blvd	(201) 437-4300	3089,3442	127
Imperial Bag & Paper Co. Inc. 59 Hook Road	(201) 437-7440	5087, 5113	100
Inserra Inc. 583 Avenue C	(201) 437-6000	5411	220
International Matex Tank Terminals 250 E 22 ND Street	(201) 437-2200	4226	120
Killer Films Inc. North Bldg 82 RR 440	(201) 243-1950	7812	300
Maidenform Inc. 154 Avenue E	(201) 436-9200	2341,2342,4225	600
Muralo Company Inc. 148 E. 5 TH Street	(201) 437-0770	5198	180
NCC Industries Inc. DE 154 Avenue E.	(201) 436-9200	2342,2341	346
NAVY Exchange Service Command 32 Constitution Road	(201) 437-8497	5399,9711	120
The Wats Room 285 Broadway FL 2	(201) 823-3949	8732	110
Unilever Bestfoods Foodservice 99 Avenue A	(201) 339-6800	2035	175

GUTTENBERG, NJ 07093			
Company Name and Address	Phone	Sic Code	# Emp
Palisade Operations LLC 6819 Boulevard E.	(201) 868-3600	8051	100
HARRISON, NJ 07029			
Company Name and Address	Phone	Sic Code	# Emp
CS Osborne Company Inc. 125 Joseph Street	(973) 483-3232	5085	200
Campbell Foundry Co. 800 Bergen Street	(973) 483-5480	3321,	100
Citicorp North America Inc. 450 Manarneck Ave	(914) 899-7000	6021	700
Engelhard Corporation 1 W Central Ave.	(973) 268-7800	3339	102
H J Heinz Company 257 Essex Street	(973) 484-8810	4225	155
Inner Secrets Inc. 1000 1 st Street	(973) 485-0500	2342,2341	200
M Tucker Co. Inc. 900 S 2 nd Street	(973) 484-1200	5046,5113	120
HOBOKEN, NJ 07030			
Company Name and Address	Phone	Sic Code	# Emp.
ACADEMY BUS TOURS INC 1515 Jefferson St	(201) 420-7000	4142-01 4131-01	250
Applied Housing Management Co. Inc. 1228 Washington St.	(201) 420-0157	6531	130
CIBER INC. 5 Marine View Plaza	(201) 795-3601	7379-0200	195
CITY OF HOBOKEN 94 Washington St.	(201) 420-2027	9121-04	145
GRAY LINE INTL., HUDSON TRANSIT 1500 Clinton St.	(201) 714-9445	4131-9901	250
HENKEL CORP 1301 Jefferson St	(201) 659-1200	2844-05, 5169-16	100
HOBOKEN FREE PUBLIC LIBRARY 500 Park Avenue	(201) 420-2346	8231-0000	150
HOBOKEN BOARD OF EDUCATION 1115 Clinton Street	(201) 420-2162	8211-03 9411-0000	120
HOPES 124 Grand St.	(201) 656-3711	8399-0101	113
HUDSON SEWING INC. (VISION TEXTILES) 1500 Hudson Street	(201) 795-5200	2253	300
JOHN WILEY & SONS INC. Waterfront Corporate Ctr.	(201) 748-6147	2731-2721	100
MIZUHO SECURITIES USA INC. 111 River Street	(201) 626-1000	6211-6021	180
NJ TRANSIT CORP. 1 Hudson Pl.	(201) 714-2746	4013-9904	700
SHIPCO TRANSPORT INC. 80 Washington Street	(201) 216-1500	4731-8742	100
ST MARY HOSPITAL 308 Willow Ave	(201) 714-8900	8062-02, 8011-01	1200
STEVENS INSTITUTE OF TECHNOLOGY 1 Castle Point Terr.	(201) 216-5000	8221-01	500

HOBOKEN, NJ 07030			
Company Name and Address	Phone	Sic Code	# Emp.
SUMITOMO TRUST & BANKING CO. USA 111 River Street	(201) 420-9470	6021	112
TTI TEAM TELECOM INTERNATIONAL 2 Hudson Street	(201) 795-3883	4813-4812	400
UNIPOWER SYSTEMS USA CORP. 129 Washington St.	(201) 963-6844	7371-0300	100
UNIVERSAL FOLDING BOX CO. 551 13 th ST.	(201) 659-7373	2652-01, 2653-01	140
JERSEY CITY, NJ 07097			
Company Name and Address	Phone	Sic Code	# Emp.
Garban LLC 545 Washington Blvd	(201) 369-5658	6211	200
United States Postal Service 80 County Rd	(201) 714- 6390	4311	3,500
Port Jersey Distribution Service 2 Colony Rd	(732) 274- 9371	4226	120
JERSEY CITY, NJ 07302			
Company Name and Address	Phone	Sic Code	# Emp.
21st Century Rail Inc. 150 Warren St	(201) 324-1800	8741	100
Aegis Insurance Company 10 Exchange Place	(201) 521- 1200	6411	158
Alger Fund 30 Montgomery St	(201) 547- 3650	6211	200
American Express Banking Corp. 90 Hudson Street	(201) 209-5600	6082,6021,6099	400
American Family Enterprises 10 Exchange Pl.	(201) 369- 4860	5963	105
Anthem Worldwide Lines LTD 30 Montgomery St	(201) 324- 1166	4513	175
Associated Electric & Gas 10 Exchange PL	(201) 521-4524	6399	160
BJ's Wholesale Club, Inc 396 Marin Blvd.	(201) 798-0500	5399	150
BTM Information Service, Inc 34 Exchange Pl.	(201) 413-6330	8741	400
Bank of Tokyo- Mitsubishi Trust Company 34 Exchange Pl.		6022	400
Bon Secours New Jersey Health System, Inc 25 McWilliams Pl.	(201) 418-1000	8741	579
Cable & Wireless Internet Service Inc. 1 Evertrust Pl., 32 Exchange Pl.	(201) 633-3300 (201) 220-5538	4813	200
Check Free Service Corp 10 Exchange Pl.	(201) 332-0202	7374	300
Control Associates, LP 10 Exchange Pl.	(201) 451-6510	8742	200
Coop Rabobank Center Raiff 10 Exchange Pl.	(201) 499- 5200	6081	200
DB Capital Markets Corp. 10 Exchange Pl.	(201) 946-2200	6211	340
DAI- ICHI KANGO Bank LTD 95 Christopher Columbus D	(212) 466-5200	6099	180

Service to Recreation

PRT network recreation area coverage throughout Hudson county will be designed such that the majority of areas of parks and open spaces are covered. The cars that cover these areas will be specially equipped with retractable windows so that passengers can ride through the park in an open air setting.



Service to Education

The PRT network will also serve the majority of schools throughout Hudson County. The cars that are primarily used to bring children to school will be specially equipped with numerous safety features to ensure their security. The school system is described in the statistics below.

SCHOOL ENROLLMENT		
Population 3 years and over		
enrolled in school.....	157,624	100.0
Nursery school, preschool.....	9,743	6.2
Kindergarten.....	8,251	5.2
Elementary school (grades 1-8).....	64,475	40.9
High school (grades 9-12).....	33,724	21.4
College or graduate school.....	41,431	26.3

Education

- 77 Public Elementary Schools
- 6 Middle Schools
- 18 High Schools
- 39 Elementary Parochial Schools
- 11 Secondary Parochial Schools
- Non Public Schools:
 - 9 Kindergarten - 8th Grade
 - 2 9th-12th Grade
 - 6 Kindergarten - 12th Grade
- 11 Charter Schools
- 1 Regional Day School (7th and 8th Grade Special Needs)
- 3 Vocational & Technical Schools

Source: Hudson County Superintendent of Schools, August 2001

Institutes of Higher Education

- **Hudson County Community College:**
Jersey City and West New York.
Associate degree programs.
- **New Jersey City University:** Jersey City.
Undergraduate and graduate degree programs.
- **Stevens Institute of Technology:** Hoboken
Undergraduate and graduate degree programs.
- **Saint Peter's College:** Jersey City.
Undergraduate and graduate degree programs.

Service to Hospitals

The network will also cover the numerous hospitals throughout the region. There will be special cars equipped to handle medical emergencies. These cars will be able to respond to calls almost immediately and will be able to shuttle patients quickly to hospitals.

HOSPITALS		
There are eleven hospitals in Hudson County.		
Christ Hospital	201-795-0200	176 Palisade Avenue Jersey City, NJ 07306
Bayonne Hospital	201-858-5000	29 East 29 th Street Bayonne, NJ 07002
Greenville Hospital	201-547-5100	1025 Kennedy Blvd. Jersey City, NJ 07305
Jersey City Medical Center	201-915-2000	355 Grand Street Jersey City, NJ 07302
Meadowlands Medical Center	201-392-3100	55 Meadowland Pkwy Secaucus, NJ 07094
Meadowview Hospital	201-319-3500	595 County Road Secaucus, NJ 07094
Palisades Medical Center	201-854-5000	7600 River Road North Bergen, NJ 07047
St. Francis Hospital Emergency Room Services Only	201-418-1000	25 McWilliams Place Jersey City, NJ 07302
St. Mary's Hospital	201-418-1000	308 Willow Avenue Hoboken, NJ 07030
West Hudson Hospital	201-955-7000	200 Bergen Avenue Kearny, NJ 07032

Morris County

Land Use

Because Land Use determines the design of the PRT Network, it is important to first understand the different land uses and zoning restrictions of Morris County. Most of Morris County's agricultural acres and protected farms are located in one township-Washington in the southwestern part of the county, which contains about one-third of the remaining farmland in the county. Total farmland is 66,000 acres. There are several large blocks of easements in this area. Eastern and central sections of the county are heavily urbanized. 23 million square feet of office space and 39 million square feet of industrial space in Corporate and Industrial sites throughout the urbanized parts of the country compose the majority of the county's employment.

Existing Transportation Management and Systems

The Division of Transportation Management of Morris County oversees all methods of transportation including bus, rail, vehicle, air traffic, bicycle and pedestrian, and carpooling. The county encourages ridership of its bus fleet making stops frequently; however, the inability of the bus to maintain its schedule has been the most common complaint. Riders would rather have the convenience of a reliable schedule than an over-abundance of routes and stopping points. PRT would be able to solve some of the scheduling problems, by being able to predict with relative certainty the waiting time at any given station. Morris County does provide interactive bus scheduling online, but when the schedule is unreliable the efficiency is lost. PRT allows commuters to make real time decisions about location and time of arrival. Two main commuter rail systems operate in Morris Co. Three NJ TRANSIT rail lines serve the entire county. The Morristown Line and Gladstone Branch both have service to New York's Penn Station, Newark-Broad Street Station, and Hoboken. The Boonton Line provides service to Hoboken and with the addition of connections to New York, Newark, and Montclair, commuter rail travel has increased by thirty percent. The PATH system operates 24 hours a day between Newark, Jersey City, Hoboken, and Manhattan. Freight Rail is an important to not only the industrial sector, but also alleviates freight traffic on the roadways. The Morristown & Erie Railway, Norfolk Southern Railway, and the New York, Susquehanna, and Western Railway all provide service to Morris County based manufactures. The Morristown & Erie Railway provides service throughout most of Morris County and served the county for over 100 years, proving to be one of the most successful freight lines in New Jersey. There are a total of 9 freight lines in the county.

In order to encourage alternate modes of transportation and alleviate the pressure on the roads, In 1998 Morris CO Division of Transportation launched the Bicycle and Pedestrian Element of the Morris County Master Plan to improve conditions for bicyclists and pedestrians. The plan, advanced by the Bicycle and Pedestrian Public Advisory Committee and other community representatives. Their objectives are to develop an integrated system/ network of bicycle and pedestrian facilities for commuting purposes, increase the safety of these modes, and encourage and promote bicycling and walking as viable alternatives to driving. In addition, Morris Co. has implemented a program to assisted disabled person with county-wide transportation. MAPS is a special transportation service in Morris County for senior citizens and persons with disabilities. MAPS uses small buses, vans, and station wagons to provide transportation to medical facilities, education or employment sites, adult day care centers, and other locations. Most MAPS vehicles are equipped to accommodate wheelchairs. Morristown Airport is located in Hanover Township and is used as a private airport for corporate and

personal aircraft and is the county's largest airport. It serves 54 of the nation's Fortune 500 companies.

Morris County DOT has several systems to help alleviate traffic congestion and educate and alert vehicular commuters. TransOptions is a non-profit Transportation Management Association (TMA) whose mission is to reduce traffic congestion, improve air quality, and provide commuter services and options for northwestern New Jersey, including not only Morris county but Sussex, Warren, Passaic, suburban Essex, and Union counties. Metrocommute, a private corporation subsidized by the county, provides customized real-time traffic and transit reports through its web site, and via e-mail and text alerts to subscribers' desktops, pagers, and mobile phones. By defining a travel profile, users can quickly obtain the information they need. The Morris County Employee Vanpool Program is a service available to county government employees and its agencies. There are a number of routes available which all end at the courthouse in Morristown. The most comprehensive resource for travel information is the Morris County Transit Guide Online.

Morris County PRT Plan

Morris County has seen a sharp increase in growth rates by the time of the 2000 Census. Morris County is one of the nation's most wealthy counties. It is one of the fastest growing counties in the New York metropolitan region with an area of 469 square miles and according to the U.S. Census Bureau a year 2000 population of 470,212, comprising about 6 percent of the population of the state and making it the 10th most populated state. However, with the sudden increase in residential population, the County has seen considerable development in the economic sector. With the addition of new companies and the growth of old, Morris County's transportation systems have faced strain. The urban and residential development has grown faster than the transportation infrastructure supporting it. The proposed Personal Rapid Transit System would service all major employers both public and private, commercial developments, educational zones, and recreational districts. The transit system would be able to cover 90% of all county-wide and state-wide (with the cooperation of other County PRT Developers) point to point travel. The system is designed to provide on demand service to any point on the network with a maximum than a five minute waiting period in non peak hours and ten minutes during peak rush hours.

A total of 240 stations would service each of the 39 municipalities. The distribution of these stations is contingent upon the residential population, employment density, commercial floor space, education, and recreational venues. This region has enough population density and attraction locations to justify an extensive county wide PRT network, excluding no area more than 3 square miles. Personal Rapid Transit would integrate well with the existing transportation infrastructure while bringing substantial improvement to the quality of personal travel throughout the county.

PRT Service Areas

The largest contingent of PRT Travel in Morris County will be the service to Employment. Morris County has a blend of corporate headquarters, office/business parks, and firms involved in research and development. The county contains headquarters and major employment sites (over 100 employees per site) for 54 of the nation's Fortune 500 companies and 8 Global 500. Each one of these employment sites has a designated PRT Station. These stations alone comprise 40% of the county's PRT stations. Service to Industrial Sites and Distribution Companies are also included in the PRT network. Over 75 % of all commuter

traffic can be accommodated by the network because of proximity to workplace. Commercial districts, providing employment and both shopping destinations and attractions, are another area of the PRT development. A table of major employment centers and commercial districts is provided below with data concerning travel distributions and PRT station information.

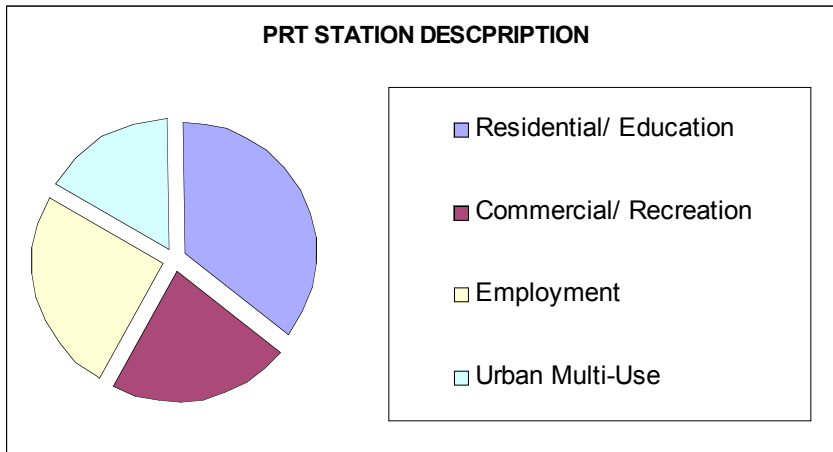
PRT Stations will be located within half of a mile of 20 out of the 28 Parks in Morris County, which is over 13,000 acres of Park Land accessible by PRT. Other recreational areas indirectly serviced by PRT are movie theatres and amusement parks. Mostly located near all shopping malls and commercial centers, these recreational sites are inextricably intertwined with the PRT commercial service network. All public county meeting areas for each of the 39 municipalities are located within 1/3 mile of a PRT station. Morris county as 122,655 enrolled students over the age of 3: 16% Kindergarten and Pre-K, 64% Grades 1-12, and 20% College. The goal of the PRT network is to necessarily serve every school, currently the design accommodates 80% of all schools within 1/4 mile. All colleges and all secondary schools with an enrollment over 500 have convenient PRT station proximity. Some of the smaller rural community schools may be up to a mile away from the nearest station. Tables of Major Education facilities and related PRT service information are provided below.

Finally, the most important component of PRT is the residential service. Without convenient access from the residential communities the PRT system would necessarily fail. It is the backbone of the PRT Network. Over 50% of the stations in Morris County are located primarily for residential proximity. Due to the rural nature of certain parts of the county, not all areas are serviceable within 1/4 mile of a station, but at least 90% of the county residence are a maximum of 1/2 mile from a PRT station. The majority of residences however are in dense enough areas to be serviced by PRT to any possible employment, commercial, educational, and residential destination with 1/4 mile. Residential stations range from service of 800 possible passengers to 1,200 within a 1/4 to 1/2 mile of the station, depending on density of the municipality.

Residential Municipalities and PRT Stations

Mountain Lakes	4,305	2
Netcong	2,589	2
Parsippany	45,389	21
MUNICIPALITY	Population	# STATIONS
Pompton Plains	13,449	8
Boonton	12,496	7
Riverdale	2,392	3
Brookside	2,400	2
Randolph	24,193	10
Budd Lake	798	5
Rockaway	23,447	13
Butler	7,420	5
Springtown	5,392	4
Chatham	18,564	15
Stirling	4,392	3
Chester	9,245	6
Washington	17,592	12
Denville	15,824	9
Wharton	3,382	4
Dover	18,188	7
Whippany	7,492	6
East Hanover	11,393	5
Flanders	14,300	9
Florham Park	8,857	4
Gillette	5,362	4
Jacksonville	2,384	1
Lake Hiawatha	793	2
Lake Hopatcong	698	1
Landing	2,374	2
Ledgewood	1,239	1
Lincoln Park	10,980	4
Long Valley	2,777	2

PRT Station Location and Uses



Major Employment Centers of Morris County

8. Mack-Cali Business Campus, Parsippany & Hanover Townships

Tenants: Deloitte & Touche, Sanyko, Prudential, Cendant, Kraft Foods

Serviced by Morris PRT Station No. 71, Estimated 2,000 trips/day

2. Morris Corporate Center, Parsippany

Tenants: AT&T, Aventis, Oracle, Mercedes Benz, AIG Insurance, DeGussa Corp

Serviced by Morris PRT Station No. 59, Estimated 2,500 trips/day

9. Park Avenue at Morris County, Florham Park

Tenants: Pricewaterhouse Coopers, Merrill Lynch, Accenture, McKinsey & C0

Serviced by Morris PRT Station S38, Estimated 3,000 trips/day

10. Center at Morris County, Parsippany

Tenants: The Gale Company, JP Morgan Investments

Service by Morris PRT Station S61, Estimated 800 trips/day

5. Giralda Farms, Madison/ Chatham

Tenants: Schering-Plough, Wyeth, Maersk, Atlantic Mutual

Served by Morris PRT Stations S31 and S19, Estimated 800 trips/day per local

11. Montville Business Center, Montille

Tenants: Amerisource, MCI, Savin, Einstein Moomjy, US JVC Corp

Served by Morris PRT Station S89, Estimated 1,000 trips/ day

12. International Trade Center, Mount Olive

Tenants: BASF, UPS, Federal Express, Seiko, BMW

Served by Morris PRT Station S233 and S232, Estimated 2,500 trips/day

Education Statistics

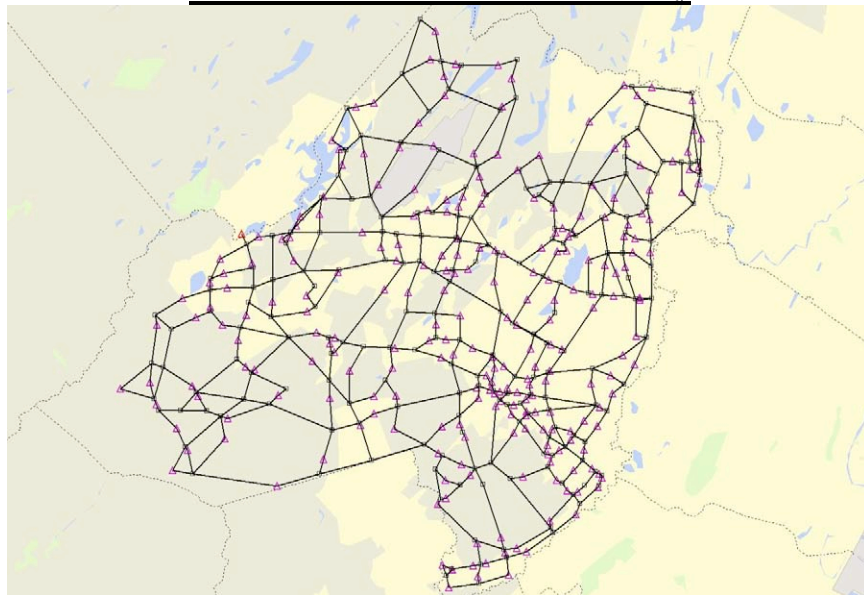
COLLEGES	Enrollment	PRT STATION
County College of Morris	8,590	S71
Drew University	1,558	S207
Fairleigh Dickinson Univ	2,690	S108
College of St. Elizabeth	1,337	S42

Secondary Education:

MUNICIPALITY	No Of Students Enrolled
Boontown	616
Brookside	556
Budd Lake	734
Butler	784
Chatham	715
Chester	586
Denville	935
Dover	564
East Hanover	962
Flanders	935
Florham Park	564
Gillette	656
Jacksonville	962
Landing	683
Ledgewood	788
Lincoln Park	1239
Long Valley	789

Lyonsville	983
Madison	1295
Mendham	1099
Mill Brook	943
Millington	1136
Montville	1452
Morris Plains	973
Morristown	1452
Mount Arlington	672
Mountain Lakes	593
Netcong	782
Parsippany	1139
Pompton Plains	1452
Riverdale	1347
Randolph	1423
Rockaway	1192
Washington	1019
TOTAL	122,248 Students

The future of PRT in Morris County



As the Base Model for the Morris County Model is Established, Growth can be easily accommodated through the expansion of the network. Foreseeable developments because of PRT in Morris County are decreased community times, increases in sales revenue at commercial and recreational venues due to increased accessibility.

Atlantic County

In Atlantic County, we have a bold vision for the future of transportation. With our strong tourism and recreational draw, Atlantic county is a perfect place to utilize the mass transit possibilities of Personal Rapid Transit. PRT will give unparalleled mobility to over a quarter of a million Atlantic County residents, as well as the 35 million vacationers and leisure seekers. In

Atlantic County, a huge number of people will be able to utilize the dynamic network of PRT tracks providing access to all of our various recreational attractions, from our world famous boardwalk and Casinos to the our first class golf courses and beautiful national parks.



Atlantic County encompasses 561 square miles has a diverse mix of industries. Employing 119,759 in a variety of industries, most notably casino and resort services, but also in manufacturing and agricultural sectors.

ROAD MILEAGE:

State: 6,671 miles

County: 373.23 miles

Garden State Parkway (toll road): 31 miles

Atlantic City Expressway (toll road): 29 miles

Atlantic County has over 7,000 miles of road, with two major toll roads. 791 miles of PRT track would provide access to the same area, a considerable decrease in miles needed. With over 95,004 households, a very large number of home-school, home-work, and home-shopping trips will occur everyday, most likely around a million a day.

Atlantic County has paltry public transportation options. The only universal option is the Atlantic City Line of the New Jersey Transit train system, and this offers no connectivity with New Jersey, going into Pennsylvania before it intersects another transit method. Atlantic County is ripe for PRT, having a large number of visitors from other counties who travel into and out of the county for recreational purposes at an incredibly large rate. For the incredible number of visitors Atlantic County, it is hard to believe that the only method of gaining entrance from New Jersey is taking transit to a different state. Adding the connectivity of PRT with surrounding counties would open up the recreational opportunities of Atlantic County to all of New Jersey.

Our PRT network in Atlantic County had two main focuses in design. The first is our residential areas, with a concentric connected circle layout for tracks. The concentric circles connect to others through in going and outgoing links joining different sized circles and the networks that connect to other circular networks.



Stations are placed with an emphasis on destinations needed by those who are either very young or very old, with an emphasis on schools, hospitals, and shopping areas.

HOSPITALS:

Atlantic City Medical Center, Atlantic City
Atlantic City Medical Center, Mainland Division
Kessler Memorial Hospital, Hammonton
Shore Memorial Hospital, Somers Point
Betty Bacharach Rehabilitation Hospital, Pomona
Children's Seashore House, Atlantic City

COLLEGES:

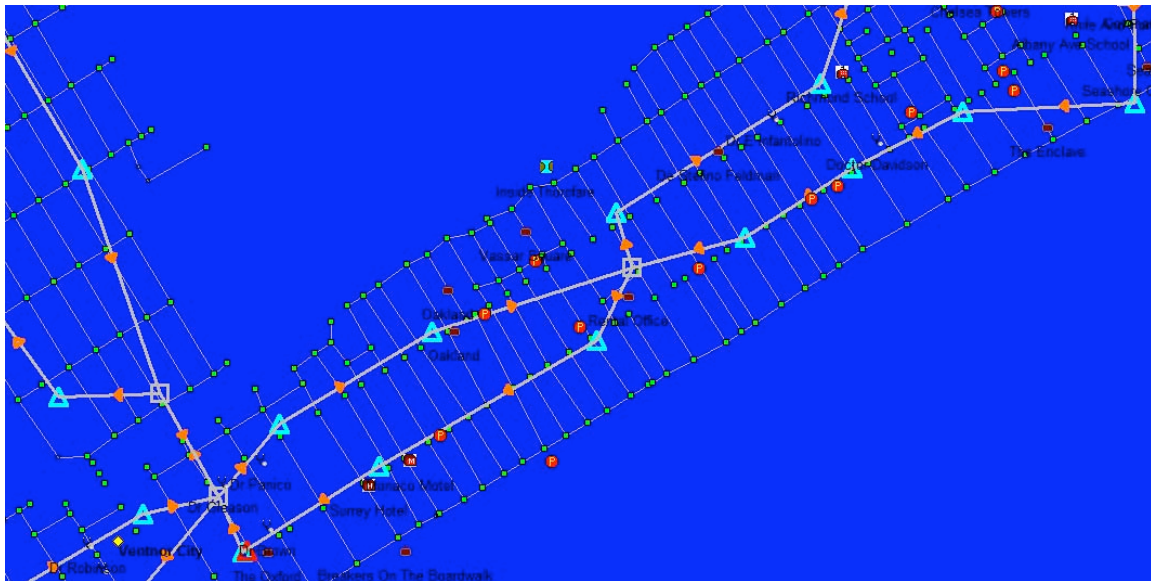
Richard Stockton College, Pomona
Atlantic Cape Community College, Mays Landing

In dense areas, there is always a station $\frac{1}{4}$ of a mile away. In less dense areas, the station placement can be as far as $\frac{1}{2}$ mile. This network design helps facilitate the movement in a particular township, and between townships.

The second was for Atlantic City itself. Atlantic City is connected through a two pearl necklace strands that are interlinked every few blocks. The PRT network runs in Parallel paths that move in different directions. These paths come together at transfer points where the PRT vehicle can either continue on its path or turn around and go back on the other way. It operates rather like a freeway or expressway that you may have to turn around if your destination is on the other side of the road.

Our selection of stops in Atlantic City included all of the normal destinations that would be necessary in a residential setting, but also including stops along the boardwalk at the various

Casinos and Resorts. Wherever possible, the PRT network is placed on the inland side of a resort to preserve ocean views.

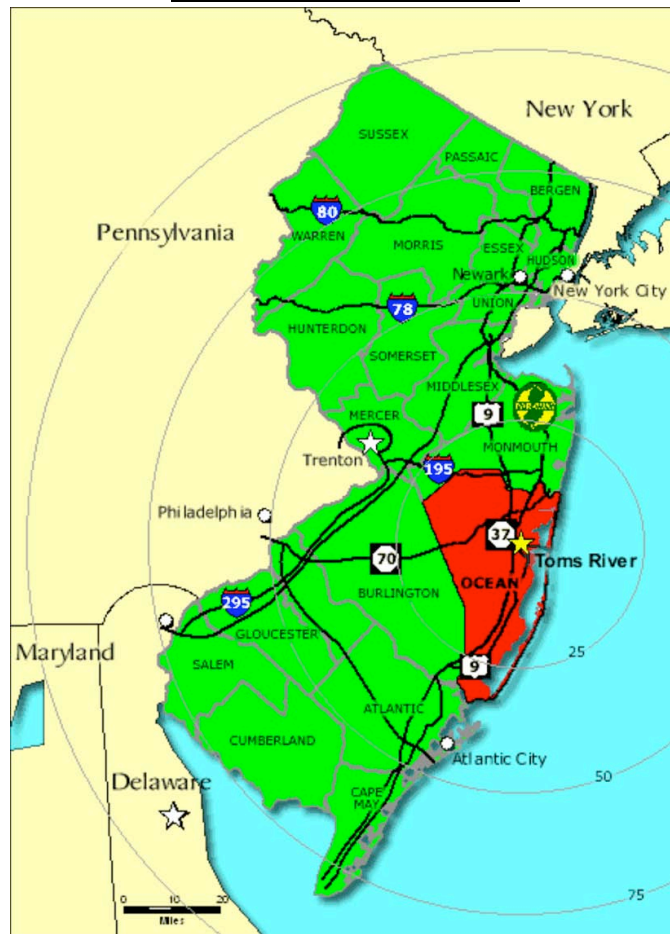


Because of the large number of vacationers coming into Atlantic City, the demand for PRT vehicles will be no higher than in other counties. The extra needed cars that will be needed come from outlying counties, and stay in the city as long as the vacationer does, which is often only for the day. The system works perfectly for Atlantic County, because the county does not need extra vehicle even though it benefits from an incredible increase in accessibility.

As Atlantic County, and Atlantic City tries to reinvent itself as a premiere vacation place, providing an alternative mode of transportation is so important. To increase the number of guests without having to install additional parking, accommodate more day trippers, and make Atlantic City a more easily accessible location for all of New Jersey, PRT is a necessity. In the face of no available public transportation available aside from traveling to Philadelphia, it is difficult to imagine the number of visitors to Atlantic City to increase by a large percentage. Anyone who has been caught in the traffic on the Atlantic City Expressway knows the dire need of Alternative transportation other than a crowded in and outgoing road.

PRT in Atlantic County, when used in conjunction with other county PRT networks, promises to be a boom for the county and a boom for New Jersey as a whole.

OCEAN COUNTY



Land Use

Ocean County is the second largest county in the state of New Jersey. Formerly part of Monmouth County before it was divided into two sections, over the past century Ocean County has developed into a resort county but still has charming maritime villages like Tuckerton Seaport. It also houses some of the major New Jersey attractions, including the major army base of Fort Dix, Six Flags, Wildlife Safari (a drive-thru animal park), Hurricane Harbor Water Park, and the minor league baseball team of the Lakewood Blueclaws. Today's population is a little over 500,000 in the 33 municipalities. The following chart provides an accurate census taken by the Ocean County government.

POPULATION – Census 2000

Total	510,916
Male	242,596
Female	268,320
Median Age	41
Persons per Household	2.55
2000 Density (Population /Sq. Mi.)	800.68

U.S. Census 2002 Population Estimate	537,065
U.S. Census 2003 Population Estimate	546,081

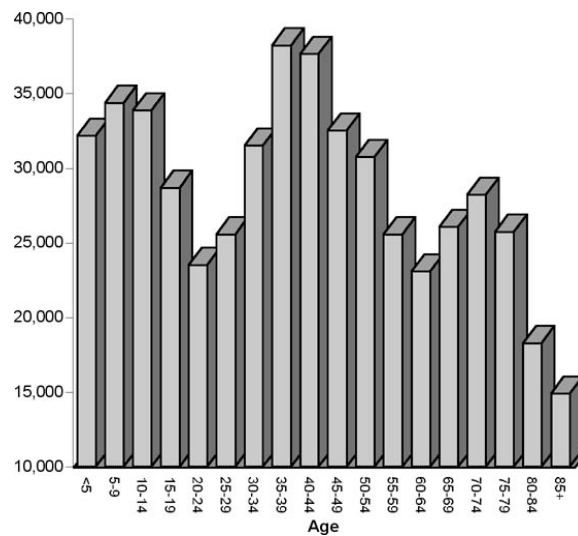
The 500,000 people include younger citizens that enjoy the close proximity to the nearby urban centers of New York and Philadelphia for their daily commutes. The total number of working citizens is as follows:

***EMPLOYMENT-NJ Department of Labor,
2004***

2003 Potential Labor Force	241,166
2003 Actual No. Residents Employed	227,426
2003 Unemployment Rate	5.7%

This census shows that a majority of the work-eligible residents do have jobs. This is the reason for a large number of commuters traveling to their job on a daily basis; to have almost half of the population traveling daily can create large traffic problems. The other citizens are either students or elderly citizens. The chart below shows the distribution of the population by age.

2000 Population by Age

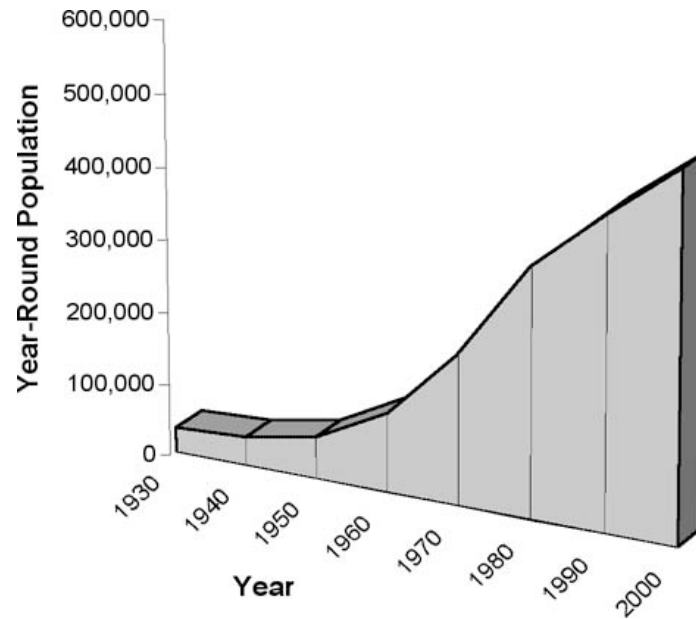


The county retirees looking to nearby cities and relaxed beach culture.

also attracts elderly escape the crowded enjoy New Jersey's more

Ocean County has not always been a popular county. It was not until the suburbanization of the 1950s that its population dramatically increased. The following chart portrays the huge influx of permanent residents into Ocean County.

Population Growth 1930 – 2000



Development of Ocean County first started along the coastal areas and through the corridor of the Garden State Parkway, which runs along the east edge of the county. Major county highways have created some development on east-west corridors from the Garden State Parkway, such as County Highways 526 and 528. The accelerated growth of the population was too fast for the county to match in public transit and road development and construction. Traffic is a huge issue for Ocean County. Our PRT system hopes to solve this problem.



The increased population has not lead to the very devastating affects of fast development. State forests and parks protect huge tracts of land. This will ensure good land development in the future by limiting over-development. The Forsythe National Wildlife Refuge is also located in Ocean County, encompassing 21,000 acres of land. The total 23 county parks include 4600 acres.

The overall land use of Ocean County can be summarized by the following table from the Ocean County Government website.

LAND USE (Parcels):	1994	2004
Vacant	52,687	36,513
Residential	191,608	224,167
Farm Regular	288	265
Farm Qualified	468	501
Commercial	5,817	6,160
Industrial	456	406
Apartment	378	373
Communications Equipment	n/a	41
Exempt total	18,859	15,782
Total Ratables & Exempt	270,561	284,208

From this it is obvious that a large portion of the land is residential; thus, Ocean County has plenty of residents that must travel on a daily basis, whether to work, shopping, recreational activities, or any other attractions.

Description of Transit Service in the County

Ocean County relies almost completely on its extensive system of motor vehicle highways to transport visitors and residents throughout the county. It is not known for its public

transport system. In fact, when visitors look into going to Ocean County they are always told to have a car or rent one because public transportation is so limited. Ocean County is also a major proponent of MOM Rail Service, a new project underway to serve Monmouth, Ocean, and Middlesex Counties. These three counties, labeled the tri-county area, have all experienced incredible increases in their populations in the last 30 years. However, they are poorly located for commuter travel to New York and Philadelphia. Located in a hole in the NJ Transit system, residents cannot make use of any of the major rail lines. And the bus and highway system are inefficient for the large numbers of commuters traveling outside their home county. MOM is a mass transit system that has multiple rail routes to provide transportation along heavily trafficked corridors and popular commute routes to both job and entertainment attractions such as parks and malls.

Description of PRT Network in Ocean County

Size and coverage of the network

The PRT network we created for Ocean County services all residential and business areas, from the beach resorts on the east to Fort Dix and other less densely populated communities on the west. We have made sure that within each community the PRT network stations are within a quarter of a mile of every potential trip production and attraction. For example, Point Pleasant Beach is a resort community; however, besides having hotels along the beach, there are also amusement parks, restaurants, museums, galleries, shops, hospitals, and schools that need to be served by a transport network. At the moment the hotels along the beach offer complimentary shuttle services to transport its visitors from the beach to the downtown area. Obviously, there already exists a need for a transportation service throughout Pt. Pleasant Beach for its visitors. If our PRT network were included in the Pt. Pleasant Beach community, both residents and visitors would be served. It could replace alternative transport systems that take people from the beach to downtown and vice versa.

Service to Employment

Most residents of Ocean County travel outside of the region for work. The table below shows the number of Ocean County residents that travel to work in 2000 and the distribution of their travel times.

Not only has the number of working residents increased in the last ten years (as shown in the graph of population growth over time) but also the mean travel time to work has increased by about six minutes since 1990 (shown in the right-hand column of the above table). Ocean County residents need a more efficient mode of transportation to work.

The MOM passenger rail service that Ocean is looking to install is all a part of the huge transportation initiative Ocean County has started. The two local areas of attraction for job opportunities are Trenton to the west and Monmouth County to the northeast. There is also a huge movement of Ocean County residents to New York and Philadelphia. The MOM rail service looks to provide transport to the NJ Transit Northeast Corridor line to expedite this process. Job opportunities within the county have also been increasing dramatically within the last decade. For example, with the influx of residents the health care industry has matched the demand, thus providing more jobs with its own growth.

A PRT network could satisfy both transit sectors unlike the MOM passenger rail, which would only provide efficient long distance service, not local service. With the one-way tracks our PRT network efficiently moves users to their destination. Although it may appear to have

circuitous routes, the travel time is much less with its diverse number of routes and computer-operated pods.

Service to Shopping

As stated above, a majority of the shopping in Ocean County is not located right on the beach where most people visit. There is a great need for east-west movement of those busy shoppers. In our PRT network we have created multiple east-west routes that effectively transfer the population between the two areas. Also, there are not as many large settlements in the western or southern areas of Ocean County because of state forests and farming and such. People who live in those areas want to go to larger city centers for their shopping needs. The PRT network services these people, as well, moving them along fairly direct routes from rural to more suburban areas.

Service to Recreation

Ocean County has multiple recreational attractions, from small minigolf courses along the beach to large amusement parks like Six Flags in the west, state parks, water sport attractions, and multiple other recreational venues. People of all ages want to experience various recreational activities, and they would like to get there quickly and easily. The PRT network we created has service to specific recreational attractions or station locations very near. Visitors to the attractions would not be disappointed by travel time or long pedestrian commutes. By locating our stations effectively and by hand we have eliminated long pedestrian commutes.

Service to Education

We did not create the Ocean County PRT system purely for visitor use. Our main focus was on those that live there permanently. By servicing the local permanent resident households we also have to service numerous school children. All of the schools within Ocean County are conveniently located near a PRT station. We felt that it was crucial to limit the walking time of students from the PRT stations for safety and security purposes, as well as overall convenience. Parents should feel comfortable allowing their children to use the PRT system for school commutes in place of the traditional bus. This will also limit the travel time of the adults. Instead of making the two-way journey to school and back twice a day, their child now can make that journey only once a day.

Service to Housing

The PRT network for Ocean County has stations located in or near residential communities. Some houses had to be left out of the network, as in they are not within walking distance, but they are still nearby PRT stations and can be easily accessed by car. We chose to eliminate some areas because it would not be cost-effective to put stations there. The PRT network still serves a majority of the population even though it may not be all of Ocean County. Most homeowners will be satisfied by the transit system. It can effectively take them to other housing areas, the beach, shopping, and other trip attractions.

Summary of PRT Network for Ocean County

Size and coverage of the network

The PRT network for Ocean County services most trip productions and attractions with 1000 stations and 1000 railway intersections. The total track for Ocean County is about 500 miles. We estimate that our PRT system can serve about ninety percent of the population. We believe that with our system we can take passengers from any origin to any destination.

POSSIBLE ATTRACTIONS in OCEAN COUNTY

Albert Music Hall	Lakehurst Naval Air Warfare Center
Barnegat Bay Decoy & Baymen's Museum, Inc.	Navy Lakehurst Historical Society
Barnegat Light House	Ocean County Artist Guild
Black Beard's Cave	Ocean County Carousel of Music
Black Whale Cruises	Ocean County College
Blast Fun Park	Ocean County Historical Society
Brick Township History	Ocean County Historical Society at Monmouth Collage
Brookville Boy Scout Camp	Point Pleasant History Site
Casino Pier and Waterworks	Popcorn Park Zoo
Cooper Environmental Center	The River Lady, Riverboat Tours
Fantasy Island Amusement Park	Robert J. Novins Planetarium
Forked River Mountains Coalition	Six Flags Great Adventure
Fun Town Pier	Strand Theater
Garden State Philharmonic Orchestra	Surflight Theatre
Gateway to the Jacques Cousteau National Estuarine Research Reserve	Toms River Seaport Society
Georgian Court College	Tuckerton Seaport
Island Beach State Park	Wells Mills County Park
Jenkinson's Aquarium & Boardwalk	

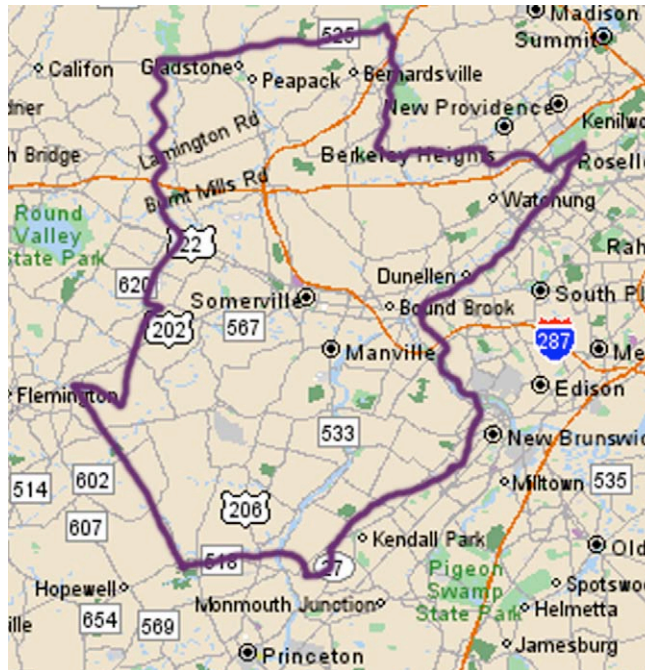
Somerset County

Somerset County, New Jersey ([21 Subdivisions](#))

Population:	297,490	Land Area:	304.69 miles ²
Housing Units:	112,023	Water Area:	0.36 miles ²
State:	New Jersey	Total Area:	305.05 miles ²
		Population Density:	976.38 *
		Housing Density:	367.67 *

Overview

As one of the oldest counties in New Jersey, Somerset is found in the center of New Jersey and its diverse geographical, developmental, and social qualities act like a hub for the rest of the state. Established in 1688, the historical significance can be found in many towns, and as a result the county draws a large number of visitors from surrounding locations.



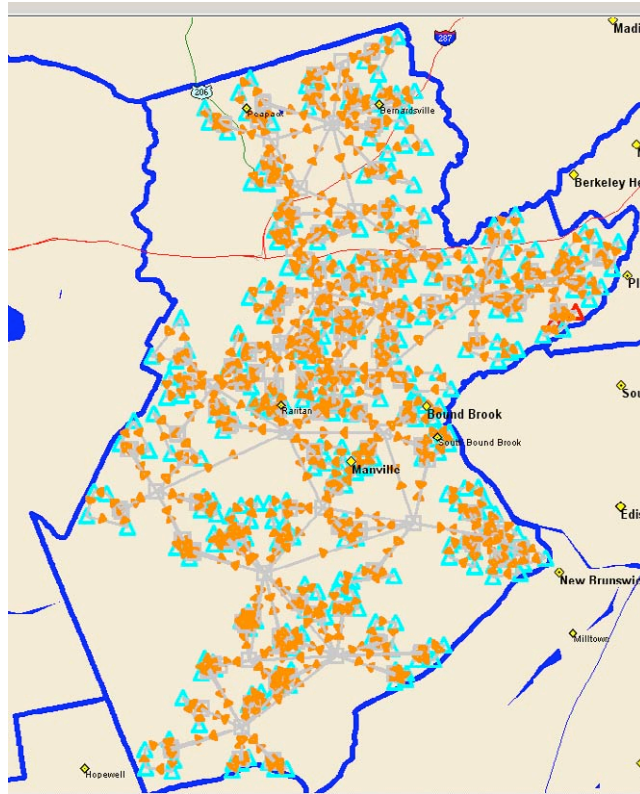
The county has an estimated population of slightly over 300,000, and is divided into 21 municipalities. Somerset is especially noted for its “fine residential communities, beautiful parks, excellent shopping areas, extensive farmlands, numerous historic sites and outstanding business and industry,” causing it to be one of the fastest growing counties in the state. Somerset balances a mix of urban/suburban communities and rural landscapes which creates varied educational, commercial, and recreational opportunities. Through its Agricultural Development Program, the county has preserved more than 20,000 acres of farmland and open space, and holds environmental preservation as one of its top priorities.

Public Transit Services

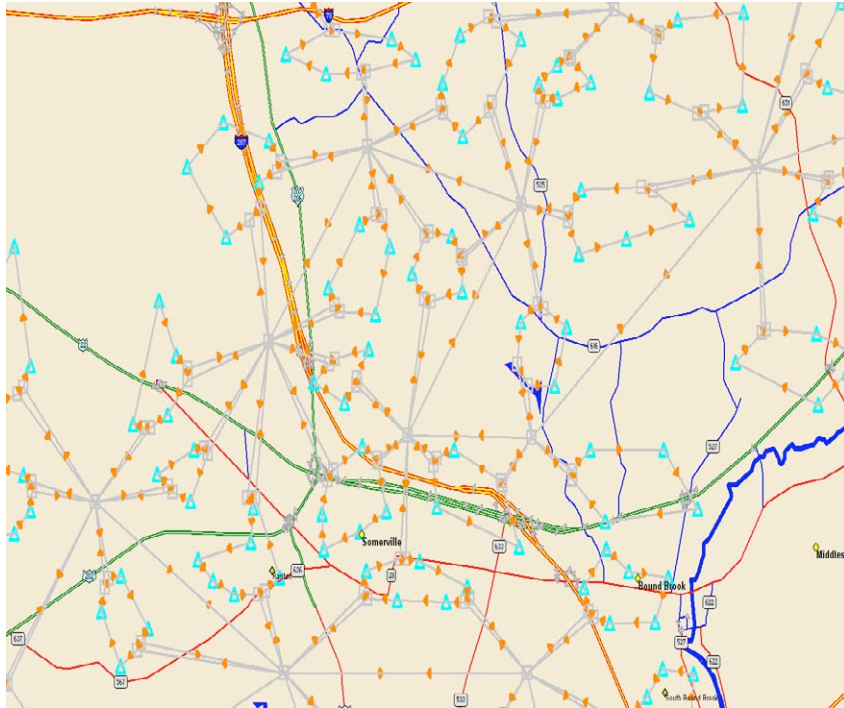


For residents of Somerset county, the average trip to work is 30.1 one minutes. Residents use a variety of means of transportation. The New Jersey Transit train system services the counties adjacent to Somerset, and an extensive network of highways and roads connect the county. In addition there are public buses which run routes throughout towns in the county that currently help local residents get from one place to another.

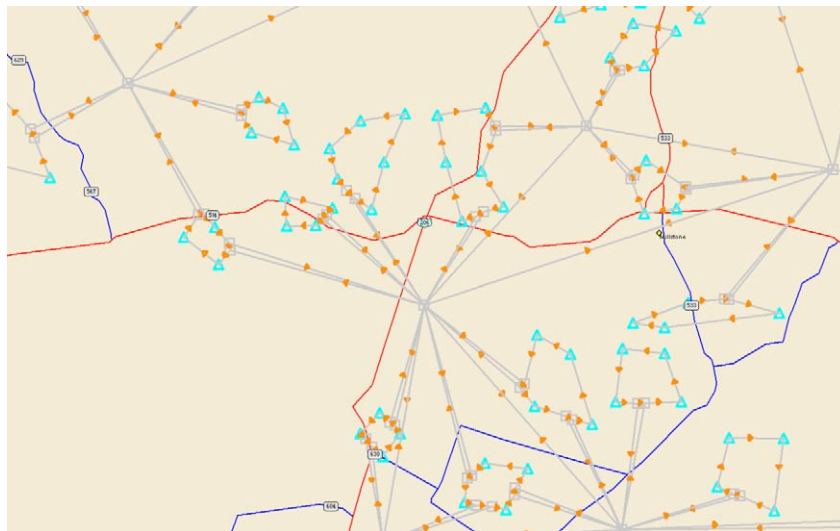
Somerset PRT Design Structure



From a geographic standpoint, Somerset is quite typical of New Jersey. The county is made up of groups of suburban areas, separated by large amounts of land in between. In my estimation, there are a variety of formats to design the PRT system based on the type of county structure. For instance, in a continuous suburban and commercial area (without large stretches of unused land), such as in southern California, a PRT system would be best set up by having a grid that allowed the user to travel to any point, without having to waste stations on unused land. Some sort of a circular network with concentric circles would probably be the best method to direct flow. In sharp contrast, a rural setting would feature spread out stations that were connected in a very large grid. This would allow users to travel between cities by the most direct route.



In Somerset, however, we face a combination of the two. We are looking at small suburban and commercial areas, separated by unused land, and thus the best method is a combination of circular networks combined with a “hub and spoke” technique. Around smaller, local towns, such as in the southern part of Somerset, we’ve created circular nodes. This allows users to travel between different locations in the town. Such a system is advantageous for people who wish to travel within the local area only, such as to run local errands. If the network were configured differently, it would be likely that someone who wished to travel a mile in one direction might have to travel several miles in the opposite direction to successfully come to the correct point. The existence of small circular networks ensures that it is easy for people to travel locally easily and quickly.



The stations within each circle are strategically located near shopping centers and in the middle of major residential areas. In general, we've tried to keep the stations from interfering with the existing infrastructure of the county, such as not placing stations where buildings are located when at all possible. In addition, the PRT exists as a competition to the existing road system, rather than replaces it. In order for a PRT system to be created, it would need to offer an alternate means of travel, still allowing individuals to use their old methods of mobility.

Connecting each of these local circles is a system of hubs and spokes. It allows the separated suburban and commercial communities to act like individual points, which can allow individuals to travel across the entire county by the quickest route, by going through the minimal number of interchanges and stations. This means that if someone in southern Somerset were trying to travel to northern Somerset, he would travel on the local circle of stations in southern Somerset until he was in a position to travel north. Then he would go from hub to hub until he arrived at the local circle in northern Somerset, at which point he could travel around the circle to a more precise station.

The hub-spoke structure also links up well with the surrounding counties. Somerset is bordered on the east by New Brunswick, which is a large city that will require a large network of stations. There will be a smooth transition between the PRT network of Somerset county and that in New Brunswick where the spoke-hub system is gradually converted into a more efficient grid for high density areas. In addition, there are many other points on the county border where the Somerset system will have to be integrated to other counties. Both the local circular networks and the hubs will interact between neighboring counties.

PRT Service to Housing

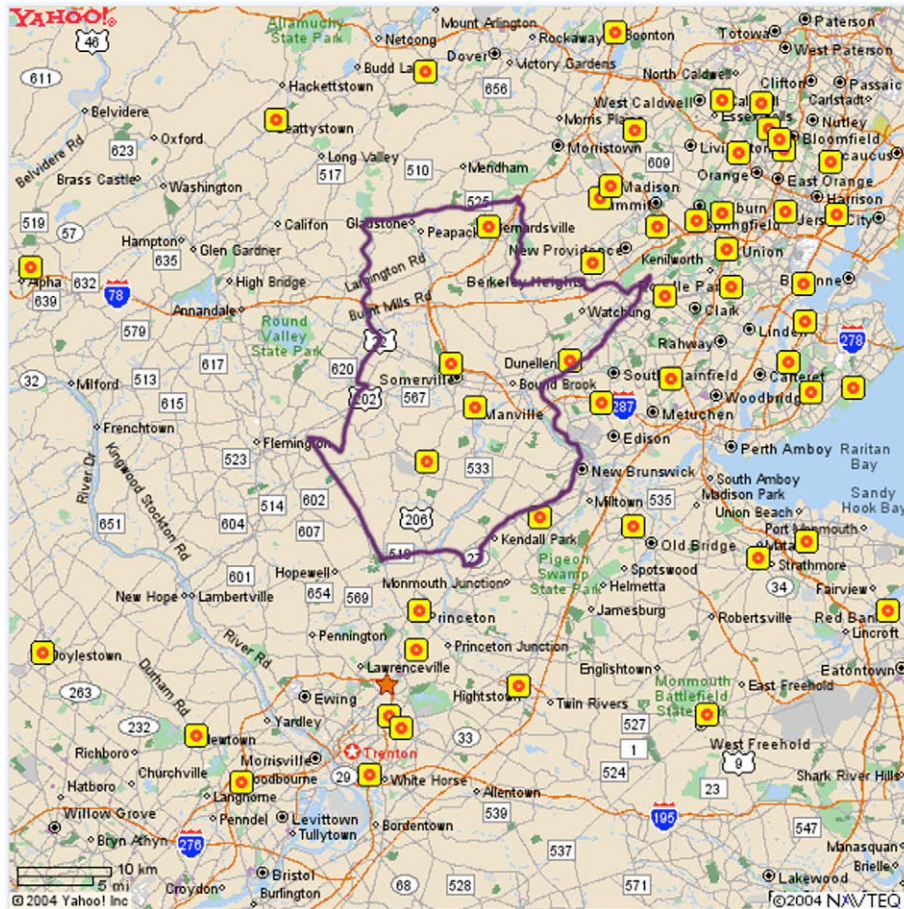
Based on population densities, we estimate that the PRT network will be able to service about 80%-95% of the residential community. More stations in the area could be constructed to fill the demand in the rural areas of Somerset, but it would be costly with little return. With 573 stations throughout the county, the average population per station is 539.3.

PRT Service to Employment

The PRT system is set up specifically to bring people from their residential communities to work every day. The spoke-hub network has been built so that the three largest working cities, Somerset, Somerville, and Bound Brook can be easily accessed by the residential areas. Specifically circular nodes have been placed surrounding the cities, which are directly linked to the local hub network.

PRT Service to Recreation

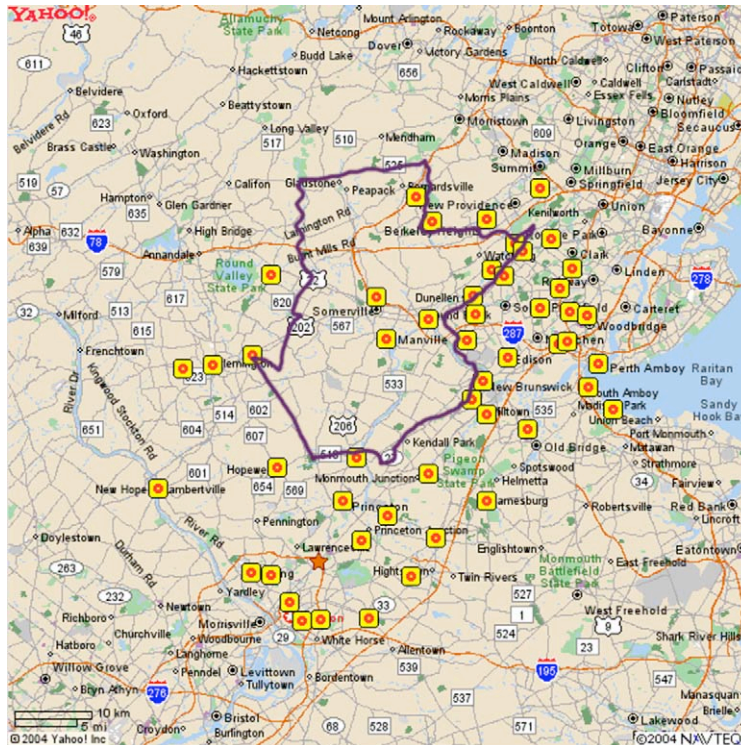
We envision that the PRT network will provide access to recreational activities throughout the county. Below is a map of the movie theatres throughout Somerset:



In addition to placing stations near movie theaters, we've also placed them in key social areas, where there is nightlife. We hope that such a system will decrease the number of drunk-driving accidents.

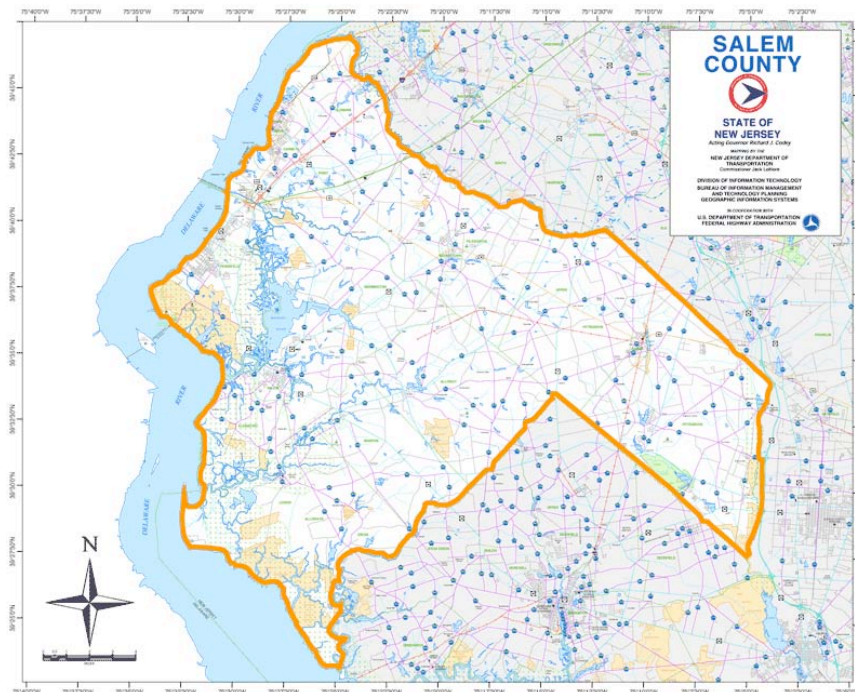
PRT Service to Education

With only one community college in the county, we've taken special care to design the PRT system to route students easily to the county college. In addition there six libraries throughout the county shown below:



The PRT system in Somerset has been designed so that stations are located next to each of these libraries, allowing users to get there with ease.

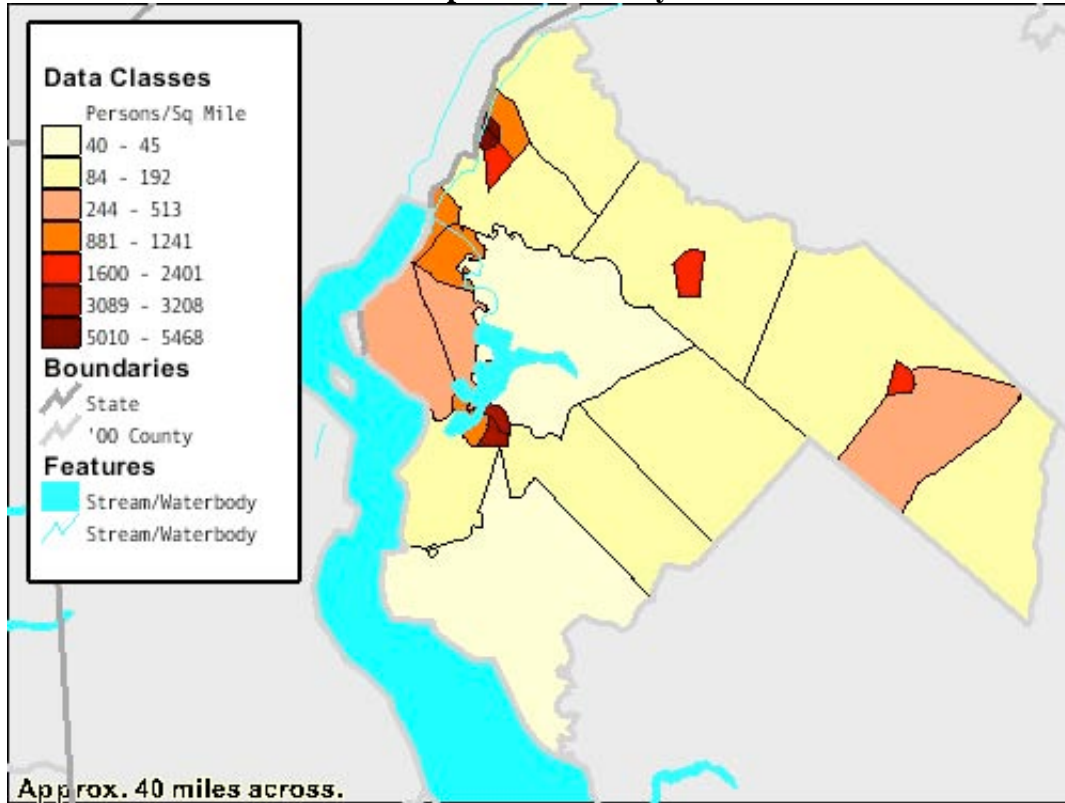
Salem County



Land Use

Salem is slightly smaller than the average county in New Jersey, encompassing 338 square miles. But, with less sixty-five thousand people, Salem is the least densely populated county in New Jersey. Consequently, the majority of Salem's South-Eastern half is rural and farmable land. The North-Western half, along the coast, is the most rural area. Wilmington, DE is less than fifteen miles away, Philadelphia, PA is within thirty-five miles and Atlantic city is sixty-five miles south. In addition, Salem is the oldest county in New Jersey, and is the home of many historical attractions.

Population Density



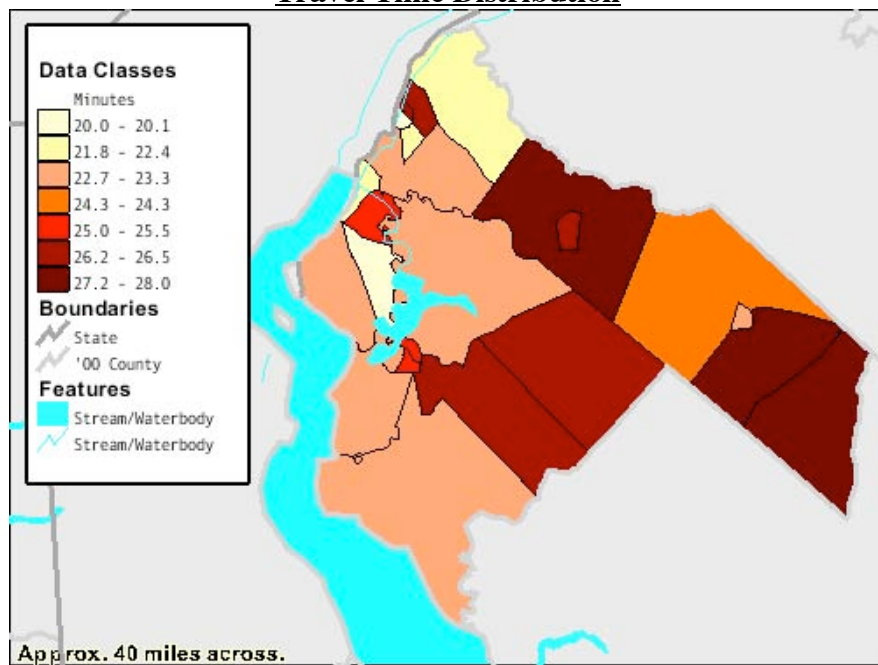
Transit System

The current transit system is very dependant on individual car travel, and the infrastructure illustrates this. This is a result of a low-density population distribution, which does not warrant profits for statewide public transportation of the traditional sort. There are only two New Jersey Transit busses that service the area (#401 & #468). The travel time distribution reflects the agrarian, farmer based employment that is the norm in the western half of the state. It is also noteworthy that a large portion of the non-farming employed work across the river in Delaware or in Philadelphia, and the majority of their commute takes place outside of Salem county.

Highway Infrastructure



Travel Time Distribution



PRT Network Coverage

The Salem PRT network consists of less than 300 stations and interchanges, reflecting the rural nature of the county. The majority of the stations are located on the west coast, in the urban areas of Salem and Pennington. Nonetheless, the spread-out network of the rural East is connected to the dense PRT network of the West so that travel across the county is extremely easy. There is also a line along the Delaware Memorial Bridge which facilitates the out of state commuters. The tracks are all one-way, in order to completely rule out traffic and congestion issues, but are nonetheless completely interconnected, allowing a traveler to get to any station from any other in the network.

Service to Employers

The PRT network services all the largest employers in Salem County. The DuPont and PSE&G power plants, as well as the Mannington Paper Mill are all easily accessible via PRT. The Memorial Hospital is also included in the network.

Major Employers

PSEG	1,965	Woodstown National Bank	130
E.I. duPont	1,450	Walt's Bus Service	130
Mannington Mills	860	PSEG Nuclear Training	114
Memorial Hospital of Salem County	800	SJ Transportation Co	80
Conectiv	529	Cumberland Dairy	80
Anchor Glass	361	Unico Services	77
SJ Hospital Systems-Elmer	350	Spark's Electric, Inc	75
The GEON Company	200	First National Bank of Elmer	69
B & B Poultry	168	PG&E Generating	66
Ganes Chemicals	155	MAC Specialty Coatings	58
Ranch Hope	145	Franklin Savings Bank	55
Wire-Pro, Inc	130		
SalemCare	130		

Service to Education

Salem County has fifteen school districts, eighteen elementary schools, five middle schools, six high schools and two colleges. The PRT network services all the high schools and the colleges. While the schools for younger students are easily accessible because of their proximity to residential areas, it is expected that the majority of youth travelers will be of high school age. For students who are not old enough to drive, but old enough to travel by public transit, this will eliminate the need for their parents to make numerous commutes every morning and afternoon.

Educational Institutions

Colleges:

Salem Community College
Salem County Technical Institute

High Schools:

Salem County Tech
Penns Grove High School
Pennsville Memorial High School
Salem High School
Schalick High School
Woodstown High School

Service to Residential Areas

Urban residents will find that the PRT network completely covers their residential areas, allowing them to walk to a nearby station and take it all the way to work, as opposed to driving to a public transportation stop, parking and driving back at night.

Service to Commercial Areas

The commercial areas of Salem County are generally located in the urban North-West. There are farmer's markets as well spread out along the country side on the East. All of these major commercial areas, from the Cowtown flea market to the Mall in Pennington are accessible via PRT. This allows residents of the rural areas to easily travel into the city, make their purchases and return home without the hassle of driving and parking a car or waiting for the infrequent busses.

Service to Recreation

The PRT network connects the vast majority of recreational areas. Some of the more prominent ones are the Fort Mott State park and the theatres of Salem County. Fort Mott State Park is 104 acres along the Delaware River, and surrounds the 100-year-old fort and Finn's Point National Cemetery is nearby. The Appel Farm and Music Center is an arts center that provider 35,000 people, adults and children alike, annually with arts education, concerts and exhibits. The Davidow Theatre at Salem County Community College hosts ballets, plays, musical and concerts as well, in addition to the Oakwood Summer Theatre which presents shows in July and august.

Major Recreational Areas

Appel Farms Arts & Music Center
Cowtown Rodeo and Cowtown Flea Market
Davidow Theater
Finns Point Lighthouse
Oakwood Summer Theater
YMCA of Salem County
Penn Bowl, Pennsville
Wood Lanes Bowling Center, Woodstown

Penn Salem Marina, Salem
Salem Boat Exchange, Salem

Golf Courses:

Centerton Golf Club
Holly Hills Golf Club
Ron Jaworski's Wild Oaks Country Club

Parks:

Camp Crocket Country Park

Marinas:

Fort Mott State Park
New Jersey Coastal Heritage Trail

Land Use

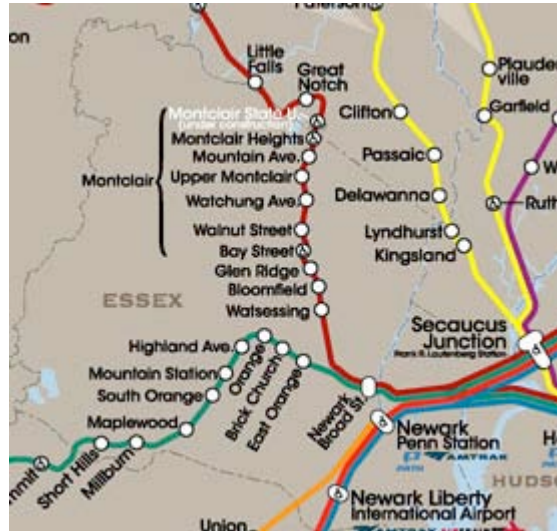
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Existing Transportation System

The primary forms of transportation in Essex and personal vehicles. NJ Transit serves Essex county with two lines – the Morristown line which travels through the southern portion of Essex county and the Montclair Boonton line which travels from the southeast to the north. However, transportation through Essex county is dominated by personal vehicles with 73.5% of the work force commuting to work by car and just 18.6% using public transportation.

NJ Transit Lines



Newark is served by a City Subway system (shown below), which links residents in the north as well as in nearby suburbs. It is centered on Newark Penn Station, which is the largest transportation terminal in the state. Other major lines in Newark include the Air Train which provides service between Newark Liberty International Airport, terminals and NJ Transit trains. There are also numerous NJ Transit bus routes throughout Newark. Newark Liberty International Airport serves 37 airlines, making 300,000 flights, which amounts to 30 million passengers a year.



Description of PRT Network **Size and Coverage of the network**

The PRT network consists of 766 stations and interchanges. The total length of the guide way is 357.52 miles. A grid like pattern was used around dense urban areas such as Newark. While a loop structure was used in less dense areas.



Service to Employment

Employers are scattered throughout Essex county and the primary form of transportation is by personal vehicle. The total work force includes 370,939 people. The mean travel time to work is 31.2 minutes. This would be significantly decreased by using a PRT network.

EMPLOYMENT STATUS		
Population 16 years and over	608,592	100.0
In labor force	370,939	61.0
Civilian labor force	370,810	60.9
Employed	336,390	55.3
Unemployed	34,420	5.7
Percent of civilian labor force	9.3	(X)
Armed Forces	129	-
Not in labor force	237,653	39.0
Females 16 years and over	326,401	100.0
In labor force	183,594	56.2
Civilian labor force	183,561	56.2
Employed	166,740	51.1
Own children under 6 years	63,704	100.0
All parents in family in labor force	37,505	58.9
COMMUTING TO WORK		
Workers 16 years and over	328,214	100.0
Car, truck, or van -- drove alone	201,772	61.5
Car, truck, or van -- carpooled	39,295	12.0
Public transportation (including taxicab)	61,185	18.6
Walked	13,922	4.2
Other means	2,934	0.9
Worked at home	9,106	2.8
Mean travel time to work (minutes) ¹	31.2	(X)

In Newark, NJ which serves as the home of numerous large corporations, the PRT network will provide seamless coverage to all of the companies with priority of service being determined by number of employees. PRT cars will be routed precisely with rush hour transportation demand being taken into account. It will be possible to have PRT service to accommodate the exact work schedule of each employee. The following is a list of major employers that will receive PRT service

Prudential Financial

Verizon

Public Service Electric & Gas Company

Horizon Blue Cross Blue Shield of New Jersey

Continental Airlines

MBNA

McCarter & English

Sills Cummis Epstein & Gross

Gibbons, Del Deo, Dolan, Griffinger & Vecchione

University Hospital

Rutgers University

University of Medicine & Dentistry of New Jersey

New Jersey Institute of Technology

Gateway Security

NJ Transit

RBP Member Directory

Service to Shopping

The PRT network will provide service to all major malls and shopping centers throughout Essex County. Coverage of shopping centers will primarily cover those with supermarkets and other high volume establishments. Major malls include the Cedar Mall Plaza and Livingston Mall, each in Livingston, as well as the Mall at Short Hills in township of Short Hills. The Mall at Short Hills is one of the most famous malls of NJ due to its wide selection of designer items and draws traffic from throughout the tri-state area. Numerous lines and cars will be allocated to serve this traffic, especially during the holiday seasons. Cars serving retailers will be designed with increased cargo space for carrying purchased items and other cargo.

Service to Recreation

PRT network recreation area coverage throughout Essex county will be designed such that the majority of areas of parks and open spaces are covered. The cars that cover these areas will be specially equipped with retractable windows so that passengers can ride through the park in an open air setting.

<u>Anderson</u>	14.85	Belleville Ave. & N. Mountain Ave., Montclair
<u>Becker</u>	147	Roseland
<u>Belleville</u>	32.70	Belleville Ave., Belleville
<u>Branch Brook</u>	359.72	Park Ave. & Lake St., Newark
<u>Brookdale</u>	121.41	Watchung Ave., Bloomfield; Grove St., Montclair

<u>Eagle Rock Reservation</u>	408.33	Prospect Ave. & Eagle Rock Ave., West Orange
<u>Francis A. Byrne Golf Course</u>	167.71	Pleasant Valley Way & Mt. Pleasant Ave., West Orange
<u>Glenfield</u>	20.01	Bloomfield Ave. & Maple Ave., Montclair
<u>Grover Cleveland</u>	41.61	Brookside Ave. & Runnymede Rd., Essex Fells
<u>Hendricks Field Golf Course</u>	124.99	Franklin Ave. & Belleville Ave., Belleville
<u>Independence</u>	12.69	Van Buren St. & Walnut St., Newark
<u>Irvington</u>	24.38	Grove St. & Lyons Ave., Irvington
<u>Ivy Hill</u>	19.96	Mt. Vernon Pl. & Seton Hall University, Newark
<u>Mills Reservation</u>	157.19	Normal Ave. & Reservoir Dr., Cedar Grove
<u>Orange</u>	47.63	Center St. & Harrison St., Orange
<u>Riker Hill Art Park</u>	204.68	Beaufort Ave., Livingston
<u>Riverbank</u>	10.77	Market St. & Van Buren St., Newark
<u>South Mountain Reservation</u>	2047.14	So. Orange Ave. & Cherry Lane, West Orange
<u>Vailsburg</u>	30.32	So. Orange Ave. & Oraton Pkwy., Newark
<u>Verona</u>	54.32	Bloomfield Ave. & Lakeside Ave., Verona
<u>Walter Kidde Dinosaur</u>	16	Livingston, Roseland
<u>Watsessing</u>	69.67	Bloomfield Ave. & Conger St., Bloomfield
<u>Weequahic</u>	311.33	Elizabeth Ave. & Meeker Ave., Newark
<u>West Essex</u>	1361.33	Eagle Rock Ave., & Passaic River
<u>West Essex Trail</u>	23.35	Fairview Ave., near Verona High School, Verona
<u>West Side</u>	31.36	So. 13 th St. & 18 th Ave., Newark

The PRT network will also provide service to within a quarter mile to numerous popular restaurants as listed below.

Adega Grill

Newark

Aldo's Cucina

Wayne

American Bistro

Nutley

The Appian Way

Orange

Arthur's Downtown

Newark

Bacchus Chop House and Wine Bar

Fairfield

Blue Sky American Bistro & Café

Montclair

Bruschetta Restaurant

Fairfield

Cabrina's Fine Italian Food

Nutley

Chelsea Grille

Montclair

The Cloverleaf Tavern

Caldwell

Corso 98

Montclair

Desert Moon Fresh Mexican Grill

West Caldwell

Essex House Restaurant

West Orange

Evergreen Restaurant

Montclair

Highlawn Pavilion

West Orange

Huddle Inn

Fairfield

Il Tulipano

Cedar Grove

Liberté Restaurant

Montclair

MaizeRestaurant – Robert Treat

Hotel

Newark

The Manor

West Orange

Nanina's in the Park

Belleville

The Newark Club

Newark

Palazzo

Montclair

The Park Pub

Nutley

Piccola Italia

Orange

Seabra's Marisqueira

Newark

Taro Restaurant

Montclair

Terrazza Ristorante

Nutley

Top Notch Restaurant

Montclair

Vinnie's Pizzeria & Restaurant

Bloomfield

Wok N Grill

West Orange

Service to Education

Currently transportation service for K-12 schools is provided by school buses and personal vehicles. The PRT network will reduce the need for these forms of transportation and will therefore decrease pollution and congestion. The cars that are primarily used to bring children to school will be specially equipped with numerous safety features to ensure their security. The school system is described in the statistics below.

SCHOOL ENROLLMENT		
Population 3 years and over enrolled in school.....	221,424	100.0
Nursery school, preschool.....	18,361	8.3
Kindergarten.....	12,044	5.4
Elementary school (grades 1-8).....	95,942	43.3
High school (grades 9-12).....	47,393	21.4
College or graduate school.....	47,684	21.5

The PRT network in Newark will serve all major colleges as listed below.

- Rutgers, The State University; Newark
- Rutgers University - School of Law; Newark
- Essex County College; Newark
- New Jersey Institute of Technology; Newark
- New Jersey College of Medicine and Dentistry; Newark
- Seton Hall Law School; Newark

It will also serve all public and private schools in Newark as listed below with priority determined by school size.

Biggest public high schools in Newark:

- **BARRINGER** (Students: 1,776; Location: 90 PARKER ST; Grades: 09 – 12)
- **EAST SIDE** (Students: 1,438; Location: 238 VAN BUREN ST; Grades: 09 – 12)
- **WEST SIDE HIGH** (Students: 1,176; Location: 403 SOUTH ORANGE AVE; Grades: 09 – 12)
- **MALCOLM X SHABAZZ HIGH** (Students: 1,160; Location: 80 JOHNSON AVE.; Grades: 09 – 12)
- **WEEQUAHIC** (Students: 935; Location: 279 CHANCELLOR AVE; Grades: 09 – 12)
- **ESSEX CTY V N 13TH ST NWK** (Students: 701; Location: 300 N 13TH ST; Grades: 09 – 12)
- **WEST MARKET STREET CENTER** (Students: 699; Location: 91 WEST MARKET STREET; Grades: 09 – 12)
- **TECHNOLOGY HIGH** (Students: 634; Location: 223 BROADWAY; Grades: 09 – 12)
- **SCIENCE HIGH** (Students: 548; Location: 40 RECTOR ST; Grades: 09 – 12)
- **ARTS** (Students: 522; Location: 556 M. L. KING BLVD.; Grades: 09 – 12)

Private high schools in Newark:

- **ST. BENEDICT PREP** (Students: 530; Location: 520 MARTIN LUTHER KING BLVD; Grades: 7 – 12; Boys only)
- **OUR LADY OF GOOD COUNSEL H S** (Students: 310; Location: 243 WOODSIDE AVENUE; Grades: 9 – 12)
- **ST VINCENT ACADEMY** (Students: 304; Location: 228 WEST MARKET STREET; Grades: 9 – 12; Girls only)
- **CHAD SCIENCE ACADEMY** (Students: 301; Location: 370 S 7TH ST; Grades: 7 – 12)

- **JERSEY PREPARATORY SCHOOL** (Students: 45; Location: 31 CENTRAL AVENUE; Grades: 9 – 12)
- **INDEPENDENCE HIGH SCHOOL** (Students: 44; Location: 179 VAN BUREN STREET; Grades: 9 – 12)

Biggest public primary/middle schools in Newark:

- **ANN STREET** (Students: 1,105; Location: 30 ANN ST; Grades: KG – 08)
- **DR WILLIAM H HORTON** (Students: 937; Location: 291 N 7TH ST; Grades: KG – 08)
- **GEORGE WASHINGTON CARVER** (Students: 925; Location: 333 CLINTON PL; Grades: KG – 08)
- **LUIS MUNOZ MARIN MIDDLE** (Students: 892; Location: 663 BROADWAY; Grades: 05 – 08)
- **WILSON AVE** (Students: 879; Location: 19 WILSON AVE; Grades: PK – 08)
- **LOUISE A. SPENCER** (Students: 866; Location: 66 MUHAMMAD ALI BLVD; Grades: PK – 08)
- **ABINGTON AVE** (Students: 864; Location: 209 ABINGTON AVE; Grades: PK – 08)
- **RAFAEL HERNANDEZ SCHOOL** (Students: 814; Location: 345 BROADWAY; Grades: PK – 08)
- **VAILSBURG MIDDLE SCHOOL** (Students: 808; Location: 107 IVY STREET; Grades: 06 – 08)
- **THIRTEENTH AVE** (Students: 804; Location: 359 THIRTEENTH AVE; Grades: PK – 08)

Biggest private primary/middle schools in Newark:

- **SACRED HEART ELEMENTARY SCHOOL** (Students: 825; Location: 24 HAZELWOOD AVENUE; Grades: PK – 8)
- **ST MICHAEL SCHOOL** (Students: 641; Location: 27-29 CRITTENDEN ST; Grades: KG – 8)
- **THE CHAD SCHOOL** (Students: 435; Location: 308 S 9TH ST; Grades: PK – 6)
- **BLESSED SACRAMENT SCHOOL** (Students: 403; Location: 600 CLINTON AVE; Grades: PK – 8)
- **ST LUCY FILIPPINI ACADEMY** (Students: 337; Location: 142 JEFFERSON ST; Grades: PK – 8)
- **ST CASIMIR ACADEMY** (Students: 300; Location: 366 EAST KINNEY STREET; Grades: PK – 8)
- **ACADEMY OF ST. BENEDICT** (Students: 294; Location: 124 NIAGARA; Grades: PK – 8)
- **QUEEN OF ANGELS ELEM SCHOOL** (Students: 283; Location: 44 IRVINE TURNER BLVD; Grades: PK – 8)
- **ST ROSE OF LIMA SCHOOL** (Students: 282; Location: 540 ORANGE STREET; Grades: KG – 8)
- **ST ROCCO SCHOOL** (Students: 272; Location: 21 ASHLAND STREET; Grades: PK – 8)

Service to Housing

The PRT network will serve residential areas with priority of service being determined by population density and trip production potential.

Total housing units.....	301,011	100.0
UNITS IN STRUCTURE		
1-unit, detached.....	103,183	34.3
1-unit, attached	11,848	3.9
2 units	43,847	14.6
3 or 4 units	48,235	16.0
5 to 9 units	19,146	6.4
10 to 19 units	16,509	5.5
20 or more units	57,987	19.3
Mobile home.....	221	0.1
Boat, RV, van, etc	35	-

Cumberland County

Background to Cumberland County

Cumberland County, New Jersey, can trace its roots all the way back to January of 1748, when it split from Salem County (its current Northwest neighboring county). Being one of the New Jersey's southern most states (second only to Cape May), Cumberland County has been steadfast to its roots as an agricultural haven, while also fostering an environment for the glass, canning, oyster, and clothing industries. In fact, the nearly 70,000 acres of farmland in Cumberland County have been farmed for at least 10,000 years (originally by the Lenni Lenape Indians). Today, about 150,000 people, whom reside in one of the fourteen townships, boroughs, and municipalities, inhabit Cumberland County.¹⁰

The following tables provide the notable statistics to the remarkable agricultural environment present in Cumberland County:

Agriculture Highlights & Statistics¹¹

• Growing Season	270 days, 193 frost-free
• Annual Average Temperature:	55.6° F.
• Annual Average Rainfall:	43 inches
• County Population (7/96 revised)	141,230
• Total Full-Time Operators:	251
• Total Part-Time Operators:	153
• Approximate Number of Farms:	404
• Total Acres in Production:	73,034
• Total Irrigated Acres:	15,870
• Total Area Acres in County:	489.3 Square Miles or 313,152 Acres
• Cumberland County Planning Board Land Use Assessment:	73,780.9 Acres or 23.6% of County Land Area

Agriculture Commodity Breakdown¹²

Aquaculture * (fresh & salt)	3,323 Total Acres
Field Crops	28,825 Total Acres
Barley	900
Wheat	9,000
Corn for grain	3,900
Pasture *	1,065
Harvested Hay and Forages	5,500

¹⁰ <http://www.co.cumberland.nj.us/facts/history/250.html>

¹¹ <http://www.co.cumberland.nj.us/business/agriculture/highlights.html>

¹² <http://www.co.cumberland.nj.us/business/agriculture/commodity.html>

Soybeans	17,000
Salt Hay *	1,460
Fruit Crops	1,941 Total Acres
Apples	350
Blueberries *	93
Peaches	1,400
Strawberries *	92
Blackberries & Raspberries*	6
Herb Crops *	1,082 Total Acres
Dill	73
Arugla	16
Basil	42
Parsley	306
Cilantro	68
Miscellaneous	577
Ornamental Crops	4,676 Total Acres
Bedding Plants *	21
Flowers - Cut *	450
Bulbs and Corms *	150
Evergreen Stock	1,292
Broadleaf Evergreens	428
Deciduous Shade Trees	1,145
Flowering Trees and Shrubs	412
Herbaceous Perennials	73
Sod - Cultivated *	493
Christmas Trees *	106
Timber *	106
Vegetable Crops - Fresh marked & processing	23,187 Total Acres
Potatoes	1,000
Tomatoes (fresh & processing)	1,500
Sweet Corn	1,000
Peppers	1,500
Asparagus	225
Cabbage	1,000
Lettuce	2,000
Squash (summer & winter)	1,500
Remaining Vegetable Acreage	13,462
Livestock *	2,811 Total Head
Poultry *	242,145 Total Birds

Estimated value of production: \$75-85 million per year/vegetable production
\$75-100 million nursery production

Figures based on statistics from New Jersey Department of Agriculture,
Division of Plant Industry for 1996 growing season.

Ranking in State Production¹³ *

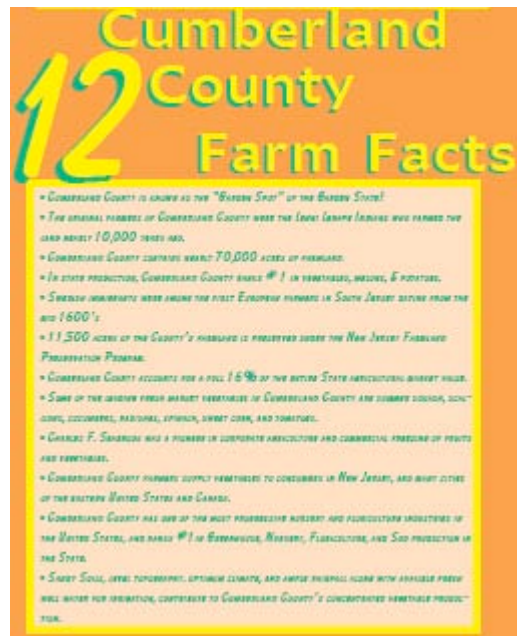
First:	cabbage
---------------	---------

¹³ <http://www.co.cumberland.nj.us/business/agriculture/highlights.html>

	lettuce (iceburg, romaine, Boston, bibb, leaf) eggplant parsley strawberries (4-way tie) wheat (for grain) flowering trees and shrubs herbaceous perennials broadleaf evergreens
Second:	number of certified nurseries barley for grain white potatoes nursery stock acreage peaches evergreen stock deciduous shade trees alfalfa hay tomatoes (fresh market)
Third:	peppers (bell) asparagus soybeans (for grain)

* Ranking based on statistics from New Jersey Department of Agriculture, Division of Plant Industry for the 1996 growing season.





Here are the Top 12 Fun Farm Facts on Cumberland County¹⁴:





Being predominately farmland, the economic landscape of Cumberland County is dominated by its three largest municipalities, Vineland, Bridgeton, and Millville. The following charts depict

¹⁴ <http://www.co.cumberland.nj.us/business/agriculture/2004farmmarketbrochure.pdf>

not only Cumberland County's economic status, but also provide a glimpse into the dominance of these three cities¹⁵:

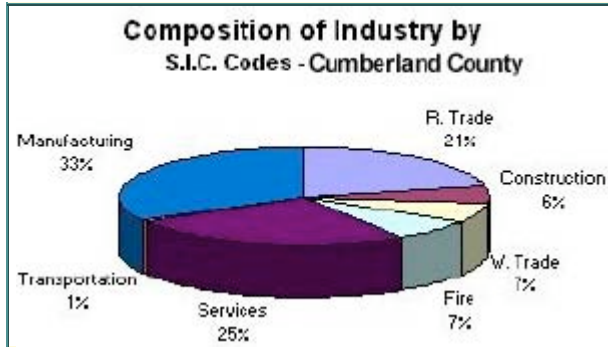
RETAIL TRADE	
	Cumberland County: 578 Establishments \$1.2 Billion in Sales \$130.1MM Annual Payroll \$18,177 Per Employee 7,157 Paid Employees \$8,700 Sales Per Capita
	City of Bridgeton: 103 Establishments/17.8% of Co. \$214,259MM Receipts/17.5% of Co. \$24,221MM Annual Payroll/18.6% of Co. 1,266 Employees/17.7% of Co.
	City of Millville: 100 Establishments/17.3% of Co. \$257,659MM Receipts/21% of Co. \$26,438MM Annual Payroll/20.3% of Co. 1,621 Paid Employees/22.6% of Co.
	City of Vineland: 308 Establishments/53.3% of Co. \$643,751MM Receipts /52.5% of Co. \$69,585MM Annual Payroll/53.5% of Co. 3,680 Paid Employees/51.4% of Co.

SERVICE INDUSTRY	
	1380 Establishments* \$742.2MM in Receipts** 16,411 Paid Employees \$345.2MM Annual Payroll \$19,884 Annual Income Per Employee

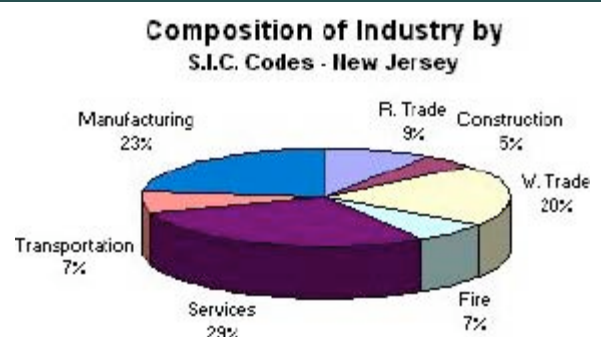
WHOLESALE TRADE	
	189 Establishments \$989.4MM Sales/\$7,018 Sales Per Capita 2,230 Paid Employees \$69.4MM Annual Payroll \$31,123 Annual Income Per Employee

¹⁵ <http://www.co.cumberland.nj.us/business/economy.html>

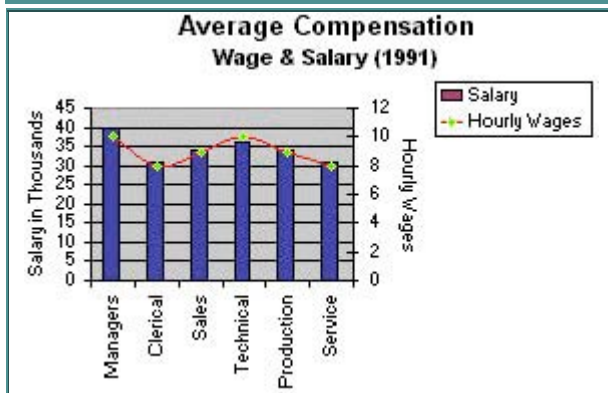
COMPOSITION OF INDUSTRY: COUNTY



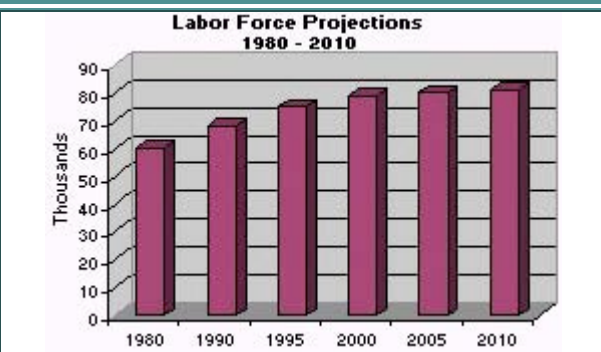
COMPOSITION OF INDUSTRY: STATE



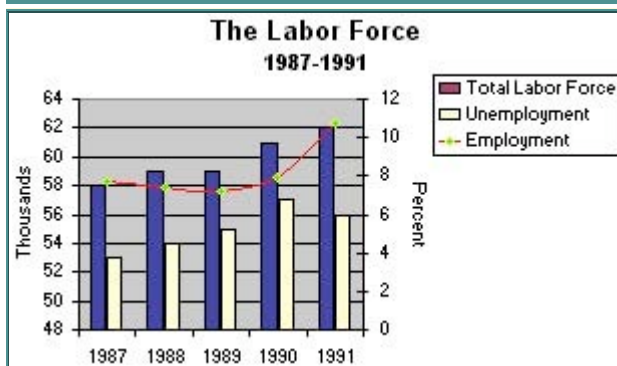
AVERAGE COMPENSATION



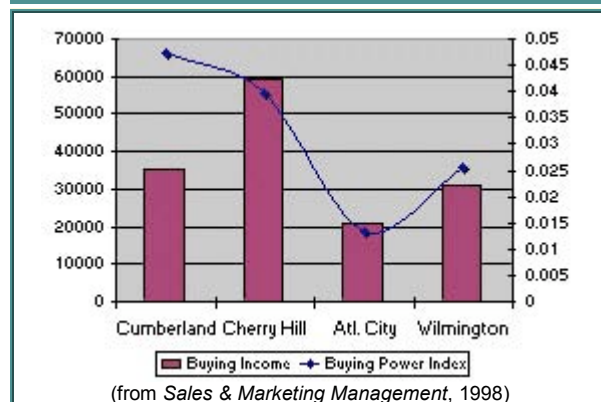
LABOR FORCE PROJECTIONS



LABOR FORCE

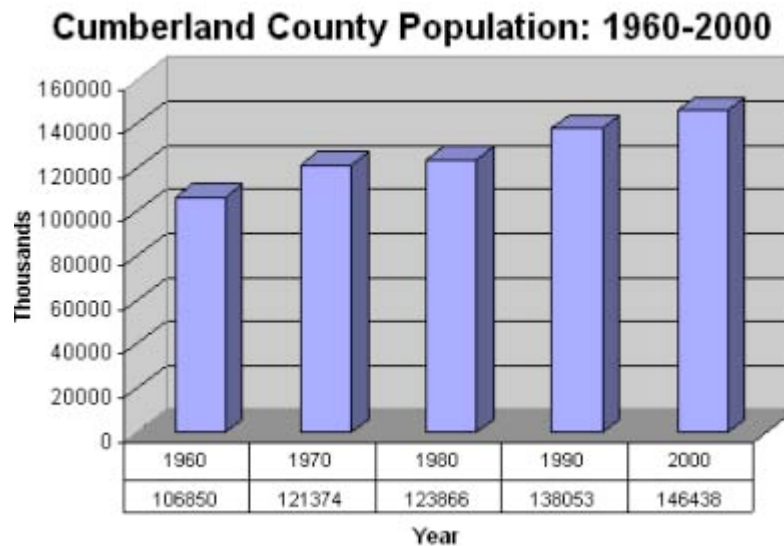


BUYING POWER INDEX



According to the 2000 Census, the 490 square miles of Cumberland County is home to roughly 150,000 people living in about 53,000 total housing units (22% of which were built before 1940, with only 9% being built in the last year), equating to a population density of 300. Cumberland County is able to keep its density at such a reasonable number because of its control on

population growth. Over the past forty years, the population has only slowly raised, as compared to growth rates for other more densely populated areas of New Jersey¹⁶:



If one were to look by municipality, they would notice that this annual growth rate is pretty much constant throughout Cumberland County¹⁷:

County Census Figures

Municipality:	4/1/2000	4/1/1990	Percent Change	Annual Growth Rate%	Square km	Square Mi.
• Bridgeton City	22,771	18,942	20.2	1.9	16.1	6.2
• Commercial Township	5,259	5,026	4.6	.5	84.1	32.5
• Port Norris CDP	1,507	1,701	-11.4		16.5	6.4
• Deerfield Township	2,927	2,933	-0.2	0	43.6	16.8
• Downe Township	1,631	1,702	-4.2	-0.4	131.5	50.8
• Fairfield Township	6,283	5,699	10.2	1.0	109.6	52.3
• Fairton CDP	2,253	1,359	65.8		7.3	2.8
• Greenwich Township	847	911	-7.0	-0.7	47.0	18.2
• Hopewell Township	4,434	4,215	5.2	.5	77.4	29.9
• Laurel Lake CDP	2,929					

¹⁶ <http://www.co.cumberland.nj.us/facts/census.html>

¹⁷ <http://www.co.cumberland.nj.us/facts/census.html>

• Lawrence Township	2,721	2,433	11.8	1.1	97.1	37.5
• Maurice River Township	6,928	6,648	4.2	.4	241.9	93.4
• Millville City	26,847	25,992	3.3	.3	109.7	42.4
• Port Norris CDP	1,507					
• Rosenhayn CDP	1,099	1,053	4.4		6.9	2.7
• Shiloh Borough	534	408	30.9	2.7	3.1	1.2
• Stow Creek Township	1,429	1,437	-0.6	-0.1	47.8	18.4
• Upper Deerfield Township	7,556	6,927	9.1	.9	80.6	31.1
• Seabrook Farms CDP	1,719	1,457	18		5.1	2.0
• Vineland City	56,271	54,780	2.7	.3	177.9	68.7
Total:	146,438	138,053	6.1	.6	1267.4	499.4

The Current Transportation Scenario Present in Cumberland County

One of the major problems with Cumberland County is its transportation state. Being one of the southernmost counties, and bordering the Delaware River and Delaware Bay, does not leave it with many viable roadways for entrance and exit. In fact, until the recently finished 40-mile stretch of Route 55 (which took 20 years to complete), the only other major roadways into Cumberland County were the congested New Jersey Turnpike, Garden State Parkway, Route 322, and I-295.

Road travel is not the only way into Cumberland County: there is also by air, rail, and boat. If you wish to travel by air you can land at Millville Airport, the only FAA Flight Service Station in New Jersey; as it contains a 6,100-foot runway. If you wish to travel by rail, many of the county's municipal parks are serviced by either Winchester & Western and by Conrail. If you wish to travel by boat, utilize the Bridgeton Port.¹⁸

Besides the railway, the only other option for public transportation is by bus, provided by NJ Transit, which provides three separate routes. Route # 408 (departing from Millville) and route # 410 (departing from Bridgeton), both run to Philadelphia; whereas, route # 553 travels between Upper Deerfield and Atlantic City.¹⁹

PRT: the Answer to All of Cumberland County's Public Transportation Needs

Cumberland County is need of a transportation system that will provide true personal mobility. A transportation system that will allow residents to travel to and from intra-county work, instead of only providing transportation to Philadelphia. Cumberland County needs a transportation

¹⁸ <http://www.co.cumberland.nj.us/facts/transportation.html>

¹⁹ http://www.njtransit.com/sf_bu_schedules.shtml

system that will allow other New Jerseyans to travel into Cumberland County to enjoy the beautiful landscape, and all that Cumberland has to offer. Cumberland County needs PRT.

In the 2000 Census, it was reported that 78 % of Cumberland County occupants drive to work, alone in private automobiles. Modern day society does not want to travel in masses, people do not want to be one of the crowd. They want individuality, they want the freedom to individually escape and get away. For many years this has been accomplished thanks to the automobile. However, there are far too many automobiles on the roads. Resulting in extensive pollution, but more importantly traffic congestion.

By building a PRT network in Cumberland County, one would be able to greatly reduce the number of automobiles on the road, thus reducing high levels of toxic emissions and drastically reduce the traffic congestion situation. More importantly, a PRT network is personal transportation for the masses. In other words, everyone can take advantage of the many possibilities it provides. Personal transportation does not need to be only for the wealthy and privileged, but for the people.

The Cumberland County Planning Board expects that the county population will grow to 190,000 people by the end of the current year. That is an increase of 19 % since 2000, or an increase of 4 % per year, where the previous 10 year annual increase was only 1%. The reason for this population growth: accessibility. With the completion of Route 55, travel times into and out of Cumberland County have been drastically cut. Accordingly, Route 55 has been dubbed “Cumberland County’s Gateway to the World.” If PRT were implemented in Cumberland County, there is no telling what commerce levels could be reached.²⁰

The Major PRT Attractions

The following maps of Cumberland County show the current breakdown of Cumberland County:

²⁰ <http://www.co.cumberland.nj.us/facts/transportation.html>

Top Employers in Cumberland County²¹
 Non-Government Employers of 100 Or More Employees
 March 2004

	<i>Employer:</i>	<i>Municipality:</i>	<i># Employed:</i>
1)	South Jersey Hospital System (Cumberland County only)		1923**
2)	Durand Glass Manufacturing Company <i>Thierry DeCroocq, Plant Manager</i>	Millville	832
3)	Alcan	Millville	740**
4)	Mid Atlantic Recycling	Vineland	656
5)	Training School at Vineland	Vineland	622***
6)	Clement Pappas Co., Inc. <i>Dean Pappas, CEO</i>	Upper Deerfield	605
7)	Kimble Glass, Inc. <i>Donald C. Devine, President</i>	Vineland	548
8)	Wawa	(various)	490**
9)	ShopRite	Vineland/Bridgeton	480**
10)	Seabrook Brothers & Sons, Inc. <i>James Seabrook, CEO</i>	Upper Deerfield	420*
11)	Sheppard Bus Service <i>Kenneth Sheppard, President</i>	Fairfield Twp.	400**
12)	Silverton Marine Corp. <i>Don Jones, President</i>	Millville	389
13)	Progresso Quality Foods/Pillsbury <i>James Ellis, Plant Manager</i>	Vineland	375
14)	Tri-County Community Action Agency, Inc. <i>Albert B. Kelly, President/CEO</i>	Bridgeton	325
15)	Aq/Mart Produce <i>Michael Altman, President</i>	Lawrence Twp.	306*
16)	Acme Markets, Inc.	(various)	298**
17)	Leone Industries <i>Peter Leone, E.V.P.</i>	Bridgeton	265
18)	Dallas Airmotive <i>Hugh McElroy, President</i>	Millville	253
19)	Bayada Nurses	Millville	250
20)	Comar, Inc. <i>Henry Tamagni, President</i>	Vineland	244
21)	Santa's Best	Vineland	244***

²¹ Cumberland County Department of Planning and Development

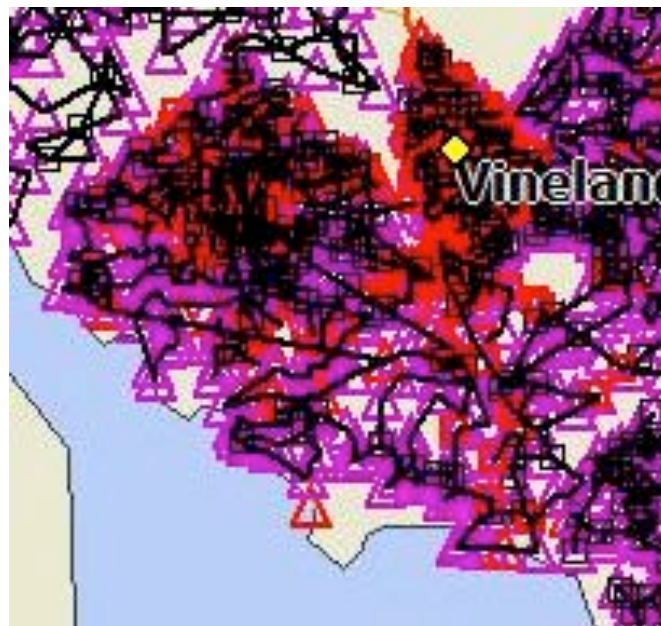
	<i>Jacki Eilenberg, Administrative Assistant</i>		
22)	Omni Baking	Vineland	244
23)	<u>Wal-Mart</u> <i>John Schneider, Manager</i>	Millville	241***
24)	<u>Sun National Bank</u>	Vineland	234**
25)	Sheppard Farms, Inc. <i>David Sheppard, Jr.</i>	Lawrence Twp.	205*
26)	<u>Boscov's</u> <i>Mary Ryan, Store Manager</i>	Vineland	201**
27)	<u>Verizon</u>	(various)	200
28)	<u>T-Fal</u> <i>Greg Infeld, President/CEO</i>	Millville	193**
29)	<u>Chemglass, Inc.</u> <i>Walter Surdam, President</i>	Vineland	189*
30)	Meridian Health Care (Millville Center)	Millville	188
31)	<u>Home Depot</u>	Vineland	187**
32)	Cumberland County Homemaker	Millville	183
33)	<u>Vineland Kosher Poultry Co.</u> <i>Irving Rabb, General Manager</i>	Vineland	183
34)	<u>Venice Maid Co.</u> (Div. Connelly) <i>Dale Guhr, President</i>	Vineland	168**
35)	<u>US Filter/Wallace Tiernan</u> <i>Joseph Millen, VP</i>	Vineland	153*
36)	<u>Kontes Glass Co.</u> <i>Dave McLuckey, Plant Manager</i>	Vineland	153
37)	Nardelli Brothers <i>William J. Nardelli, Vice-President</i>	Cedarville	150***
38)	Tri-County Security Service <i>Daniel E. Coe, President</i>	Vineland	150
39)	<u>ARC International</u> <i>Jean-Rene Gougelat, CEO</i>	Millville	145
40)	Waste Management of NJ, Inc. <i>Darrell Martin, Site Manager</i>	Vineland	141
41)	<u>Casa DiBertacchi, Inc.</u> <i>Alex Asselta, President</i>	Vineland	140
42)	<u>National Freight, Inc., (NFI Management Services)</u> <i>Bernard Brown, President</i>	Vineland	136
43)	Rennoc	Vineland	130
44)	<u>Daily Journal</u> <i>Nancy Monaghan, President</i>	Vineland	125
45)	<u>Comcast</u> <i>Robert Piperato, Director of Operations</i>	Vineland	124

46)	Sears Roebuck & Co.	Vineland	123**
47)	Millville Rescue Squad	Millville	120
48)	Arthur J. Ogren, Inc.	Millville	120
49)	DeRossi & Son, Co. <i>Donald DeRossi, President</i>	Vineland	117
50)	DeCou Hilltop Orchards <i>Genie DeCou, Owner</i>	Shiloh Borough	115*
51)	Casi/Protank	Vineland	114
52)	Prudential	Millville	111**
53)	F & S Produce <i>Sam Pipitone, President</i>	Rosenhayn	110
54)	Joffe Lumber & Supply Co. <i>Sol G. Joffe, President</i>	Vineland	110
55)	Vineland Laboratories, Inc.	Vineland	100
56)	Lanning Brothers Farms, Inc.	Lawrence Twp.	100*

** Full and Part-Time * Seasonal ***Seasonal & Full/Part-time

Among the many attractions in Cumberland County that the PRT system would connect are the above listed companies, the two movie theaters home to Cumberland County, 6 golf courses, many dining options, farm and produce stands, marinas, charter boats, the Manumuskin River Preserve, the Cumberland County Courthouse, the many public and private schools, Cumberland County College, the Cumberland County Liberty Bell, and Millville Airport (which employs 1,400 people and generates a combined payroll of \$30 million per year), amongst many other places (e.g. residential areas).

The proposed PRT network for Cumberland County would look something like this:



It may be a bit hard to understand from this diagram, as an explanation is in order. The proposed PRT system for Cumberland County contains over 950 stations and almost 500 interchanges, as it spans the entire county. The design serves two purposes: (1) to provide for easy transportation two and from Vineland, Millville, and Bridgeton; and (2) to provide for easy access to the attractive destinations on the coastline and other distant locations. Therefore, Vineland, Millville, and Bridgeton were designed as the three central hubs. There are many different lines traveling both in and out of these three municipalities. Once within them, the PRT network becomes a grid, as to facilitate easier travel around the cities and to provide the availability to easily change ones direction to a new location without wasting too much time. Furthermore, the PRT network was set-up with a looping nature the further away you are from these three cities. The reason for this is because the anticipated travel volume levels is not anticipated to be as high, as the PRT network is acting as more of a connector to these remote locations. Highlighting Downe Township easily displays this looping idea:



Value of PRT to the Future Evolution & Vitality of Cumberland County

The Board of Chosen Freeholders of the County of Cumberland recently released a document entitled “Planning for the Future: A Summary of Cumberland County Planning Initiatives” for the Cumberland County Department of Planning and Development. In this document they list the main goals of the “Cumberland County Traffic and Transportation Plan.” Of these goals, there are many which would be achieved through implementation of PRT.

Goal I: Plan, construct and maintain the transportation, public transit and circulation network to advance the growth and development of the county. This would easily be achieved as a state-wide PRT system would not only allow Cumberland County residents to travel throughout Cumberland County, but would also provide for transportation destinations state-wide.

Goal II: Plan, design, construct, maintain and manage a circulation system which provides for efficient vehicular movement within and through the County. They say the best defense is a strong offense; accordingly, the best way to ease traffic congestion, is to reduce the number of vehicles on the roads by providing alternate personal travel options.

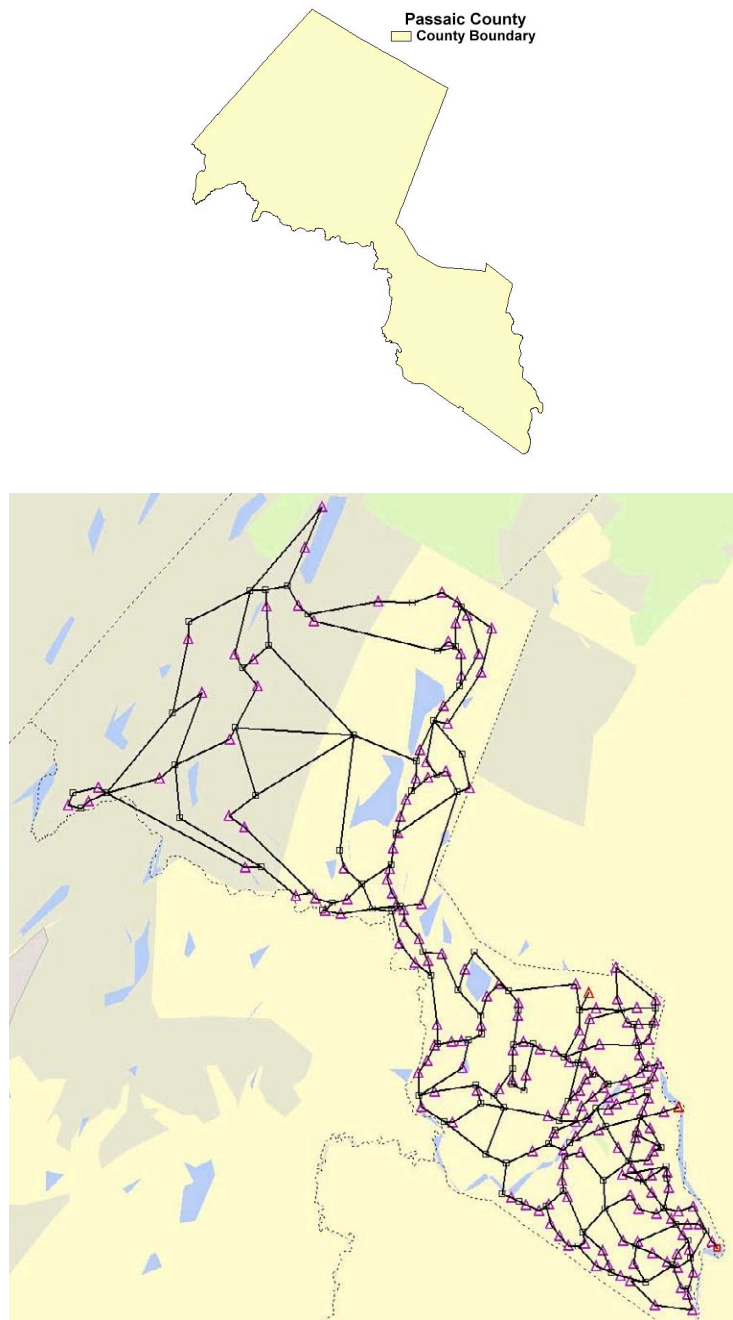
Goal IV: Enhance regional connections to and from Cumberland County. PRT would link Cumberland County with the rest of New Jersey.

Goal VI: Maintain, expand and explore new opportunities for mass transit connections within and around the County. Bingo! Yahtzee! Checkmate! PRT IS THE NEW OPPORTUNITY FOR MASS TRANSIT WITHIN AND AROUND CUMBERLAND COUNTY!

Goal VIII: Coordinate transportation planning with environmental and land use programs. PRT will reduce car emissions tenfold, and is clearly the environmental friendly mass transportation solution.

Goal IX: Maximize funding opportunities and promote a well-coordinated funding strategy for transportation projects and programs.

Passaic County



LAND USE

Passaic County covers 185.29 square miles of land, with an average population density of 2,643.5 persons per square mile. The 2000 Census recorded a population of 490,377 and the Census Bureau population estimate for 2002 is 496,646. The northern half of Passaic County is sparsely populated, with considerable space taken up by lakes. The southern half of the County is more heavily populated, including Wayne, Paterson, and Passaic City.

EXISTING TRANSIT SERVICES

New Jersey Transit currently serves Passaic County with both rail and bus service. The Main and Montclair-Boonton Lines provide rail service to southern Passaic County. NJ Transit also operates several bus lines in Passaic County, including the Paterson – New York, Wayne – New York, Paterson Saddle Brook, and Passaic – Wayne lines.

Figure 1: NJ Transit Rail Lines in Passaic County



These current public transit systems provide service for only very limited paths and often require transfers to reach the final destination. As a result, commuters and other travelers often use automobiles rather than taking public transportation. Passaic County is served by major highways, including I-80 and the Garden State Parkway. In addition, Meadowlink (Passaic, Paterson, and Clifton) and TransOptions (suburban Passaic County), both Transportation Management Associations, coordinate and obtain funding for car and vanpools.

According to the US Census, the mean travel time to work (for workers age 16 and up) is 26.4 minutes for Passaic County, with an average of 30 minutes for all of New Jersey.

PRT NETWORK

Size and Coverage

In designing the PRT network, stations were placed in an attempt to serve as many trip productions and attractions (i.e. homes, schools, places of work, etc) as possible while maintaining a reasonable number of stations. To do this, stations were thought of as having a ¼ mile radius served. This length is ideal because it is approximately the furthest the average person would be willing to walk for transportation. The basic network design consists of interconnected loops of guideway. Interchanges link up loops in a manner that allows passengers to reach any station from any other station without going too far out of their way due to the nature of one-way links.

As a result, the proposed PRT network for Passaic County consists of 189 stations and 244 miles of guideway. This network spans the entire county. Coverage of specific places of employment, shopping, recreation, education, and housing is discussed in more detail in the following subsections.

Service to Employment

The PRT system is designed to provide non-stop transportation for workers in their daily commute. The table below lists a sample of the employers served by the PRT system. Stations serving places of employment would get frequent use. Every day most employees would make both a home-based trip to work and back and occasional work-based trips during the day to run errand and take lunch breaks.

Figure 2: Sample Places of Employment Served by PRT

Name	Township
NJ Medical Center Building	Ringwood
Passaic Health Care Center	Haskell
Lakeland Auto Supply	Haskell
State Farm Insurance	Packanack
PNC Bank	Wayne
Saint Mary's Hospital	Passaic
Clifton Electronical Supply	Clifton
North Jersey Press	Clifton
American Cynamid Corp.	Pompton Lakes
N. Jersey District Water Supply	Wanaque
Hewitt Plaza	West Milford

Service to Shopping

The PRT system is ideal for shoppers. Unlike conventional public transit, each PRT rider has his/her private car, allowing plenty of room for shopping bags and packages. The table below shows sample shopping centers and freestanding stores served by the proposed PRT system.

Figure 3: Sample Retail Centers Served by PRT

Name	Township
Fieldstone Park Shopping Center	Ringwood
Super Food Town	Wanaque
Wanaque Sporting Goods	Wanaque
Fountains of Wayne	Wayne
Wayne Hills Mall	Wayne
Wards Pharmacy	Bloomingtondale
Ben Franklin Store	Pompton Lakes
Boslands Flower Shop	North Haledon
Shoprite Plaza	West Paterson
Lakeland Furniture	Wayne

Service to Recreation

The proposed PRT system provides nonstop service to recreational areas throughout Passaic County. These areas include libraries, theaters, athletic facilities, and parks. The table below provides a sample of recreational facilities served by PRT.

Figure 4: Sample Recreational Facilities Served by PRT

Name	Township
Ringwood Public Library	Ringwood
Bauman Library	Totowa
Westmount Swim Club	West Paterson
Ballet Makers	Totowa
YWCA	Paterson
Goffle Brook Park	Hawthorne
Weasel Brook Park	Clifton
Town Tavern	Macopin
Battleship Maine Memorial	Pompton Lakes
Colfax Road Park	Pompton Lakes



Rifle Camp Park



Dey Mansion



Goffle Brook Park

Service to Education

The PRT network provides service to most public and private schools in Passaic County. PRT is ideal for sending children to school because it provides the comfort and security of a private car and nonstop trip without forcing parents to drop-off and pick-up their children. This eliminates two extra trips every day, half of which usually occur during the morning rush hour. The table below provides a sample of Passaic County schools served by the PRT network.

Figure 5: Sample Schools Served by PRT

Name	Township	Level	Enrollment
# 1 Thomas Jefferson	Passaic	1st-6th	648
# 8 Pulaski School	Passaic	K-3rd	431
Charles Olbon School	W. Paterson	K-4th	288
Eleanor Hewitt School	Ringwood	4th-5th	332
Haskell School	Haskell	K-8th	458
Lakeland Regional HS	Wanaque	9th-12th	1068
Lincoln School	Pompton Lakes	K-5th	394
MJ Ryerson Middle School	Ringwood	6th-8th	509
Randall Carter School	Wayne	K-5th	380
Robert Erskine School	Ringwood	K-3rd	319
Wanaque Elementary School	Wanaque	PK-8th	581
Washington Park School	Totowa	K-4th	519

Service to Housing

According to the 2000 census, there are 163,856 households in Passaic County with an average of 2.92 persons per household. The goal in laying out the PRT network was to provide service to approximately 90% of these households within a ¼ mile walking distance. Thus in the table below, the estimated population served is approximately 90% of the actual population of the township.

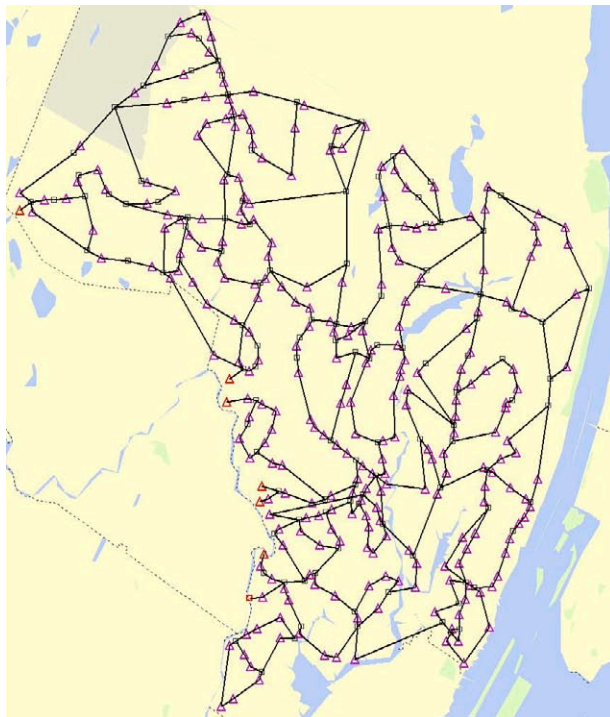
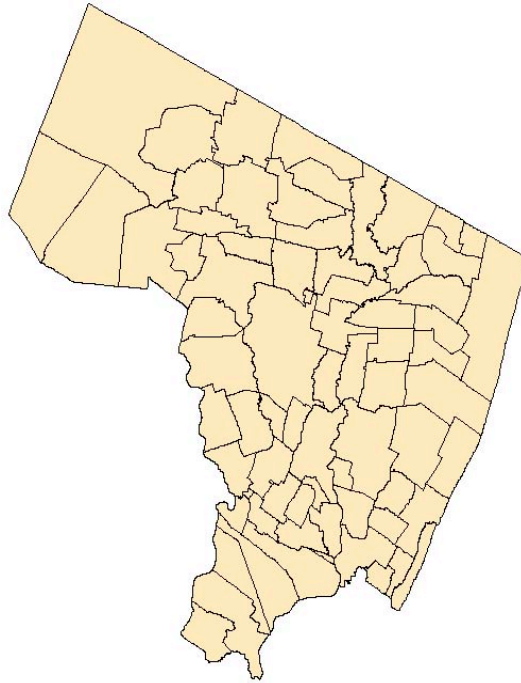
Figure 6: Estimated Population Served for Select Townships/Cities

Township	Population	Est. Pop. Served	Stations
Little Falls	10,855	9,770	11
Wayne	54,069	48,662	26
West Milford	26,410	23,769	13
Clifton	78,672	70,805	22
Haledon	7,920	7,128	9
Passaic	67,861	61,075	11
Paterson	150,750	135,675	36

Value of PRT

A PRT system would be highly valuable for Passaic County. Because Passaic County is so diverse, it is vital that all residents have quick, convenient transportation, regardless of their ability to afford an automobile. A PRT system would allow the cities in southern Passaic County to grow by attracting labor and business from northern Passaic and adjacent counties without sacrificing the undeveloped land and parks in northern Passaic County.

BERGEN COUNTY



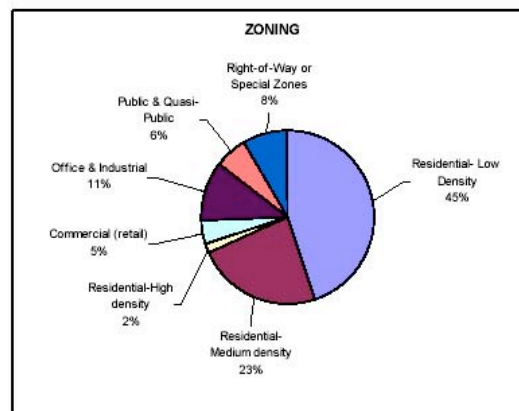
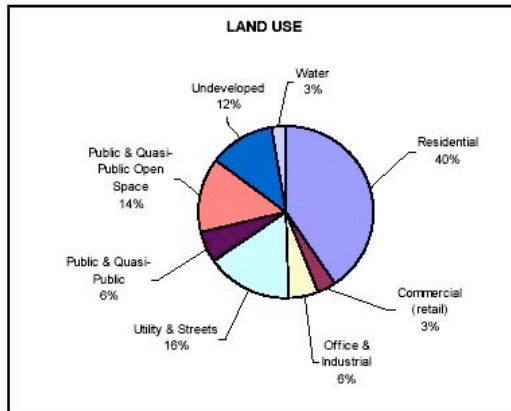
Land Use

Bergen County is New Jersey's most populous, with a population of 884,118 according to the 2000 census. It covers 234 square miles of land, with an average of 3775.5 persons per square mile. Most of Bergen County is developed, with only 14% of its land undeveloped in 1994. Bergen County is primarily suburban due to its close proximity to New York City.

Figure 1: Bergen County Land Use

	Land Use				Zoning	
	1982		1994		1988	
	acres	%	acres	%	acres	%
Residential - Low Density (4 du/ac)	36,815	24.1	40,000	26.2	68,247	44.7
Residential - Medium density (4-19 du/ac)	24,295	15.9	25,000	16.4	35,582	23.3
Residential - High density (20+ du/ac)	975	0.6	1,000	0.7	2,749	1.8
Commercial (retail)	4,886	3.2	5,000	3.3	6,975	4.5
Office & Industrial	8,590	5.6	9,000	5.9	17,040	11.2
Utility & Streets	24,452	16.0	25,000	16.3	-	-
Public & Quasi-Public	8,708	5.7	9,000	5.9	9,310	6.1
Public & Quasi-Public Open Space	21,531	14.1	22,800	14.9	-	-
Undeveloped	18,793	12.3	12,100	7.9	-	-
Water	3,739	2.5	3,800	2.5	-	-
Right-of-Way or Special Zones	-	-	-	-	12,870	8.40
Total	152,784	100.0%	152,784	100.0%	152,784	100.0%

Source: Bergen County Department of Planning and Economic Development, Sept. 2002.



Existing Transit Services

New Jersey Transit currently serves Bergen County with both train and bus service. Both the Pascack Valley and Bergen County lines run from Hoboken, in Hudson County, through Bergen County into New York State. In addition, New Jersey Transit operates several bus lines in Bergen County, including service from Newark – Hackensack, Jersey City – Hackensack, Paramus – Ridgefield Park – New York, Meadowlands Sports Complex – New York, and Fort Lee – New York.

Figure 2: NJ Transit Rail Lines in Bergen County



These current public transit systems provide service for only very limited paths and often require transfers to reach the final destination. As a result, commuters and other travelers often use automobiles rather than taking public transportation. Several major highways serve Bergen County, including the Garden State Parkway, I-80, and the New Jersey Turnpike/I-95. Approximately 16% of the county's land is used for utilities and roads. In addition, Bergen County has several small regional airports and seaplane bases.

PRT Network

Size and Coverage

In designing the PRT network, stations were placed in an attempt to serve as many trip productions and attractions (i.e. homes, schools, places of work, etc) as possible while maintaining a reasonable number of stations. To do this, stations were thought of as having a ¼ mile radius served. This length is ideal because it is approximately the furthest the average person would be willing to walk for transportation. The basic network design consists of

interconnected loops of guideway. Interchanges link up loops in a manner that allows passengers to reach any station from any other station without going too far out of their way due to the nature of one-way links.

As a result, the proposed PRT network for Bergen County consists of 275 stations and 298 miles of track. This network spans the entire, serving approximately 90% of trip productions and attractions and 795,700 people. Coverage of specific places of employment, shopping, recreation, education, and housing is discussed in more detail in the following subsections.

Service to Employment

The majority of workers (57 %) employed in Bergen County also live in Bergen County. Many others commute to Bergen County with about 8% commuting from New York State. According to the US Census, the mean travel time to work (for workers age 16 and up) is 29.7 minutes for Bergen County, slightly lower than the statewide average of 30 minutes. Of those who live in Bergen County, 58% are employed in Bergen County. 20% commute to New York State for work.

Figure 3: Commuter Data for Bergen County

	PLACE OF RESIDENCE FOR PERSONS EMPLOYED IN BERGEN COUNTY					
	1980	Percent	1990	Percent	2000	Percent
New York City	15,888	4.47	31,572	7.14	20,325	1.67
Dutchess Co, NY	167	0.05	208	0.05	245	0.06
Nassau Co, NY	1,309	0.38	2,330	0.53	1,337	0.31
Orange Co, NY	3,314	0.93	8,175	1.85	7,310	1.68
Putnam Co, NY	93	0.03	305	0.07	157	0.04
Rockland Co, NY	10,166	2.86	14,808	3.35	12,687	2.92
Suffolk Co, NY	522	0.15	1,041	0.24	564	0.13
Westchester Co, NY	1,904	0.54	5,253	1.19	3,221	0.74
Bergen Co	237,948	66.99	256,562	58.00	246,163	56.64
Essex Co	9,997	2.81	14,453	3.27	18,158	4.18
Hudson Co	17,553	4.93	22,176	5.01	26,458	6.09
Middlesex Co	2,219	0.62	4,595	1.04	5,826	1.34
Morris Co	6,163	1.73	9,614	2.17	12,094	2.78
Passaic Co	37,697	10.60	47,954	10.84	53,138	12.23
Somerset Co	459	0.13	1,576	0.36	2,327	0.54
Union Co	2,378	0.67	4,335	0.98	5,419	1.25
Other Areas/Not Reported	8,004	2.25	17,360	3.92	19,169	4.41
TOTAL	355,781	100.00%	442,317	100.00%	434,598	100.00%

Source: U.S. Bureau of the Census, Census 2000. (STF S-5, 1980, 1990)

Figure 4: Commuter Data cont.

	PLACE OF WORK FOR BERGEN COUNTY RESIDENTS					
	1980	Percent	1990	Percent	2000	Percent
New York City	64,541	15.65	71,537	16.87	74,966	17.54
Dutchess Co, NY	92	0.02	78	0.02	71	0.02
Nassau Co, NY	560	0.14	1,354	0.32	1,468	0.34
Orange Co, NY	327	0.08	234	0.06	486	0.11
Rockland Co, NY	3,871	0.94	5,475	1.29	5,858	1.37
Suffolk Co, NY	107	0.03	214	0.05	302	0.07
Westchester Co, NY	2,599	0.63	5,005	1.18	3,689	0.86
Bergen Co	237,948	57.71	256,562	60.49	246,163	57.59
Essex Co	15,890	3.85	16,959	4	17,733	4.15
Hudson Co	21,051	5.11	24,385	5.75	25,444	5.95
Middlesex Co	1,835	0.45	2,842	0.67	4,149	0.97
Monmouth Co	113	0.03	510	0.12	952	0.22
Morris Co	3,501	0.85	6,014	1.42	9,631	2.25
Passaic Co	24,029	5.83	24,659	5.81	24,081	5.63
Somerset Co	304	0.07	982	0.23	1,492	0.35
Union Co	3,220	0.78	4,029	0.95	5,124	1.20
Other Areas/ Not Reported	32,241	7.82	3,263	0.78	5,853	1.37
Total Employed	412,329	100.00%	424,102	100.00%	427,462	100.00%

Source: U.S. Bureau of the Census, Census 2000. (STF S-5, 1980, 1990)

As of 2000, the leading occupations in Bergen County were “management, professional, and related” occupations (43%), “sales and office” occupations (30%), and “service” occupations (11%). The proposed PRT network has stations near most major employers, designated to serve employees in their daily commute.

Figure 5: Major Employers in Bergen County

Name	Type	Township	Employees
AT&T Wireless Services, Inc.	Paging	Oaramus	2100
Conopco Inc.	Misc. Food Manufacturing	Englewood Cliffs	1000
County of Bergen	Executive and Legislative Offices	Hackensack	2700
Englewood Hospital and Med. Center	General Medical and Surgical Hospital	Englewood	2000
Hackensack University Med. Center	General Medical and Surgical Hospital	Hackensack	6200
Holy Name Hospital	General Medical and Surgical Hospital	Teaneck	2000
Marcil Paper Mills, Inc	Sanitary Paper Product Manufacturing	Elmwood Park	1000
Mellon Investor Services, LLC.	Commodity Contracts Brokerage	Ridgefield Park	1100
Mercedes-Benz USA, LLC.	Motor Vehicle Merchant Wholesalers	Montvale	900
Merck-Medco Managed Care LLC	Pharmaceutical	Franklin Lakes	2200
Quest Diagnostics Inc.	Medical Laboratories	Teterboro	2200
The Society of the Valley Hospital	General Medical and Surgical Hospital	Ridgewood	2700
United Airlines, Inc.	Scheduled Passenger Air Transportation	Paramus	700
United Parcel Service General Service	Corporate, Subsidiary, Regional Offices	Mahwah	1100
United States Postal Service	Postal Service	Hackensack	700

Service to Shopping

The proposed Bergen County PRT network serves many malls, shopping centers, and freestanding retail establishments.

Figure 6: Sample of Retail Centers served by PRT

Name	Location
Bergen Mall	Paramus
Bloomingdales	Hackensack
Boulder Run Shopping Center	Midland Park
Cedar Hill Shopping Center	Wycoff
Kmart	Lodi
Lord and Taylor	Paramus
Park Mall	Westwood
Radio Shack	Tenafly
Saddle Brook Mall	Saddle Brook
Sears	Paramus
Shop Right	River Edge
Sicomac Shopping Center	Wycoff
Sorrentos Mall	Lodi
Wycoff Shopping Center	Wycoff

Service to Recreation

Bergen County has many parks, including Belmont Hill County Park, Campgaw Mountain Reservation, Dahnert's Lake County Park, Darlington County Park, Rampapo Mountain Reservation, Overpeck County Park, Riverside County Park, Pascack Brook County Park, Saddle River County Park, Samuel Nelkin County Park, Van Saun County Park, Wood Dale County Park, and Bergen County Zoological Park.



Bellmont Hill Park



Saddle River County Park



Bergen County Zoological Park



Overpeck County Park



Riverside County Park



Darlington County Park

Bergen County also has four public golf courses in Darlington, Orchard Hills, Overpeck, and Rockleigh.

The PRT network also provides service to the Meadowlands, the sports complex housing Giants Stadium and Continental Airlines Arena. Giants Stadium, with a seating capacity of 80,242, is currently home to the New York Giants, New York Jets, and MetroStars. Continental Airlines Arena tenants include the New Jersey Nets, New Jersey Devils, and Seton Hall University men's basketball team. The arena is also a concert venue. Its seating capacity ranges from 19,040 for hockey games to 20,029 for college basketball. Two large PRT stations specially equipped to handle large crowds serve this area.



Figure 7: Sample of Recreational Facilities Served by PRT

Name	Township
Baldwin Park	Hackensack
Closter Library	Closter
Continental Airlines Arena (Meadowlands)	East Rutherford
Giants Stadium (Meadowlands)	East Rutherford
Graydon Park	Ridgewood
Hackensack Golf Club	Hackensack
Laurel Lake	Laurel Lake
Orchard Hills Golf Course	Paramus
Sunyside Park	Tenafly
TGI Fridays	Wood Ridge
Upper Saddle River Library	Upper Saddle River
Walnut Park	Tenafly
Willow Edge Park	Rockleigh

Service to Education

In the 2002-2003 school year, 128,610 children were enrolled in Bergen County public schools and 27,020 were enrolled in private schools. The table below gives a sample of the schools served by the PRT system.

Figure 8: Sample of Schools Served by PRT

Name	Township	Level	Enrollment
Brookside School	Westwood	5th-6th	336
E Brook Middle School	Park Ridge	K-6th	384
Fairleigh Dickenson	Teakneck	University	6464
Fairmount School	Hackensack	preK-4th	565
Fieldstone School	Montvale	5th-8th	409
Mahwah High School	Mawah	9th-12th	771
Manito School	Oakland	K-5th	392
Park Ridge HS	Park Ridge	7th-12th	528
Radburn School	Fairlawn	K-6th	397
Ramapo Ridge Middle School	Mawah	6th-8th	755
Ramsey High School	Ramsey	9th-12th	746
St Paul School	Ramsey	K-8th	322
Woodside School	Franklin Lakes	K-5th	476

Service to Housing

According to the most recent land use and zoning data (1994), its 330,817 households (measured by the number of occupied housing units) and 9,003 vacant housing units occupy residential areas covering 40% of Bergen County's land.

Figure 9: Estimated Population Served for Select Townships

Township	Population	Families	Est. Pop. Served	Stations
Allendale	5,900	1,915	5,310	3
Bergenfield	24,458	9,035	22,012	5
Closter	8,094	2,767	7,285	3
Elmwood Park	17,623	6,940	15,861	4
Hackensack	37,049	17,705	33,344	18
Montvale	6,946	2,439	6,251	4
Oradell	8,024	2,836	7,222	2
Paramus	25,067	7,892	22,560	15
Park Ridge	8,102	3,063	7,292	3
Ramsey	13,228	4,960	11,905	11
Ridgefield	9,996	4,106	8,996	2
Rutherford	17,790	7,220	16,011	3
Saddle Brook	13,296	5,036	11,966	2
Teaneck	37,825	13,334	34,043	6
Wyckoff	15,372	5,248	13,835	10

Value of PRT

Bergen County is New Jersey's most populous and is still growing. The New Jersey Department of Labor projects a 2005 total population of 905,600 representing a 2.4% increase from the 2000 Census. The NJ Department of Labor also projects a 2005 labor force of 473,800. This growth means more people commuting to work in Bergen County and New York City, shopping, going to school, and visiting Bergen County's attractions. PRT would decrease traffic congestion without forcing travelers to sacrifice privacy. In addition, PRT allows those without cars freedom of movement, which cannot be achieved with conventional public transportation.

Northern New Jersey

Land Use

Northern New Jersey is a diverse area characterized by urban, suburban, and rural zones. In the east, the suburbs of New York City extend into New Jersey, creating a condensed ex-urban and suburban environment. The west side of the state, however, is vastly different from the east containing mostly undeveloped land. The area on the West, termed the Skylands Region has greatly different land use zoning than the densely populated east. Considering the diversity of the transportation needs of the counties in Northern New Jersey, the Personal Rapid Transit system must be site specific to each county's needs. PRT will be useful for Sussex County because it will encourage growth in many of the undeveloped Mountainous regions. Warren County as well will be more accessible for intra-county commuting, encouraging development inside the county. In the east, Bergen County which is the most populated county in the state, needs the PRT system to manage the increasing traffic volume. Passaic County has differentiated land use between the northern and southern areas, and will be served by the PRT system by enabling transportation from the residentially zoned north to the urban development in the south of the county. Hudson County has been plagued by traffic congestion and possible solutions have proved unsuccessful. PRT will drastically improve the flow between commercial, residential, and recreational land use zones. Essex County is home to a New Jersey's second largest city, PRT will be the best supplement to the existing heavy rail system traversing across the county to New York City. PRT will facilitate development in the urban areas of Newark by improving transportation into and throughout the city.

Description of Transit Service in Northern NJ

The largest existing transportation infrastructure in place is the interstate and state highway system. Northern New Jersey is infamous for traffic congestion as well as other highway development problems. The Garden State Parkway and the New Jersey Turnpike are toll roads which cross through the region allowing efficient north-south flow of traffic. Each county has traffic management systems designed to help with the increasing traffic congestion plaguing the eastern region out skirting New York City. Newark, in Essex County, is the home of New Jersey's only international airport serving most of the state's airline traffic. For years NJ Transit has been serving the region with extensive rail lines and buses systems. Four of these rail lines serve the east side of the northern region currently. The differences between the eastern and western part of the region, however, vary considerably. The western most counties are served by only bus lines, the central areas light rail and bus, whereas the east has heavy and light rail and an extensive bus service.

Summary Description of the PRT Network for the Region

The total size of the PRT network is 2770 stations and the total guideway is 2298.96 miles in length. Based on the implementation of PRT networks throughout the Northern NJ region it is clear that this form of transportation would have a positive impact on society for numerous reasons. First, it is economical. The PRT network will decrease congestion and commute times. This will have improve the economy by allowing more time for their workday as well as by decreasing delivery times. The PRT service will be convenient for residents to use on a daily basis for tasks such as going to school, shopping and recreation. This will improve the quality of life for all residents. PRT will also improve traffic safety throughout the region by decreasing the number of accidents that occur. Another positive impact of PRT will be on the environment. With less congestion and traffic will come decreased pollution. PRT should certainly be considered as an option to serve the transportation needs of Northern New Jersey.

Conclusion

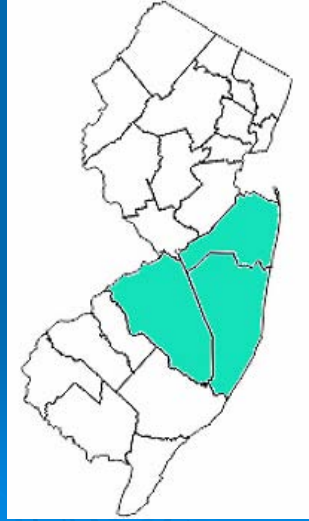
Through all the hard work and long hours, the proposed PRT network includes 10,597 stations and 18,022 miles of guideway. Although this might seem like an overly ambitious amount of proposed guideway, it should be noted that the number is far less than half of the existing roads in New Jersey alone. Conservative estimates peg the total cost of the project at around \$10 billion. And although \$10 billion might sound like a lot of money, it is quite the small price to pay for efficient and effective transportation for everyone.

Links

<http://quickfacts.census.gov>
<http://getnj.com>
<http://appelfarm.org>
<http://conectiv.com>
<http://cooperhealth.org>
<http://dupont.com>
<http://hometownlocator.com>
<http://mannington.com>
<http://mhschealth.com>
<http://newjerseyvisitorsnetwork.com>
<http://pepcoholdings.com>
<http://pseg.com>
<http://saalemcc.edu>
<http://saalemcc.org>
<http://saalemco.org>
<http://saalemcounty.com>
<http://www.sjca.net>
www.jenkinsons.com/aquarium
<http://www.oceancountygov.com/discover/default.htm>
<http://www.oceancountygov.com/discover/intro.htm>
<http://www.co.ocean.nj.us/Transportation/main.htm>
<http://www.co.ocean.nj.us/planning/databooktoc.htm>
<http://www.co.hunterdon.nj.us/>
<http://www.co.burlington.nj.us/departments/economic/development/media/pdf/burlingtoncounty.pdf>
<http://www.co.burlington.nj.us/tourism/tourism.htm>
<http://www.co.burlington.nj.us/tourism/recreation/index.htm>
<http://www.burlington-county-living.com/>
<http://factfinder.census.gov/>
<http://www.census.gov/geo/www/tiger/index.html>
<http://www.co.burlington.nj.us/departments/transportation/bcts/schedule/index.html>
<http://www.hometownlocator.com/City/Burlington-New-Jersey.cfm>
<http://transportationchoices.com/trafficalerts.htm#burlingtonalerts>
<http://www.usacitiesonline.com/njcounties.htm>
<http://reference.allrefer.com/gazetteer/W/W02248-west-milford.html>
<http://quickfacts.census.gov/qfd/states/34/34031.html>
<http://www.co.bergen.nj.us/parks/index.html>
<http://www.city-data.com/city/Paterson-New-Jersey.html>
http://www.epodunk.com/cgi-bin/localList.php?local=18796&locTGroup=School_districts&direction=down&sec=0
www.passaiccountynj.org/Departments/publications/Relocation%20Benefits%202004.pdf
<http://www.co.bergen.nj.us/planning/data/glance/glance.pdf>
<http://schooltree.org/NJ-PASSAIC.html>
www.njtransit.com

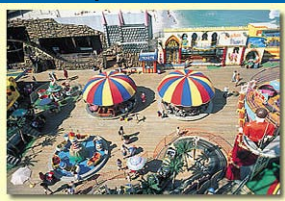
Central-Eastern New Jersey

- Burlington, Ocean, Monmouth Counties
- 1st, 2nd, 6th largest counties in the state
- 1,239,550 acres of land total
- Population: 1,575,310



Characteristics of Region

Monmouth: most densely populated areas, 10% undeveloped public open space



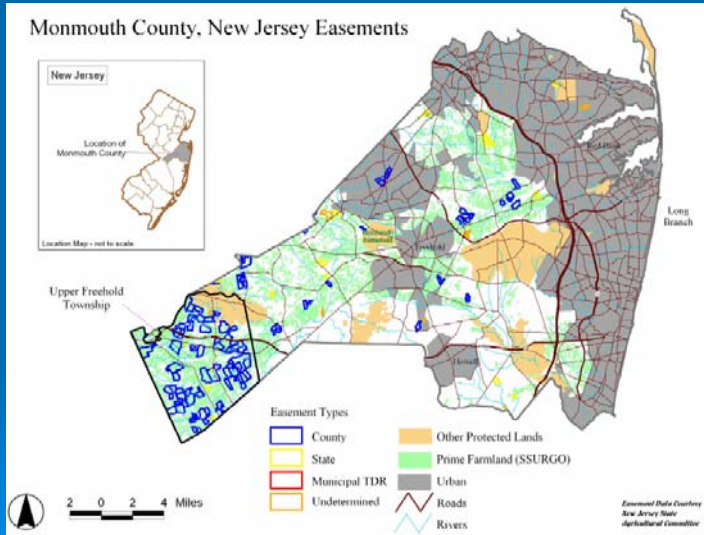
Ocean: resorts and large attractions, such as amusement parks and army bases



Burlington: principally limited to agriculture



Monmouth County



General Facts

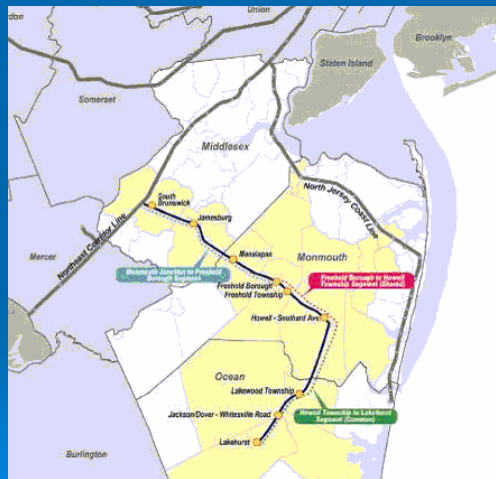
- Sixth largest county in the state
301,805 acres
- 53 Municipalities
- Coastal and Northern parts most populous
- >80 % of agricultural land in Upper Freehold Township
- Population: 615,300
(1305 people/sq. mile)

Current Public Transportation

- Ferry Service
- Intrastate Bus Services
- Passenger Rail Service
 - North Jersey Coast Line Rail
- Metro-area Bus Services
- Senior transportation
- $\frac{3}{4}$ commuters drive to work
ALONE

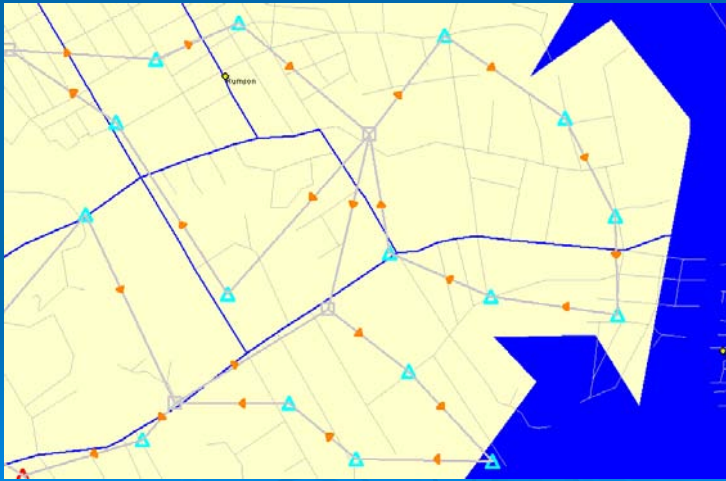


NJ Transit Plans to alleviate congestion (M-O-M project)



Construction of PRT network

one-way guideway loops connected by interchanges



PRT for Monmouth

- 554 stations
- 1150 miles of guideway
- 95% of residents have a PRT station within 3/8 mile of their home (584,540 residents)
- Expandable network as population grows



Service to Housing and Education

95% coverage to area

(213,000 of 224,000 housing units served)

- 3rd best of 300 national communities as best places to live
- Stations located at entrances to neighborhoods to avoid interference with homes
- Service to all 63 schools (preK-12)

Service to Employers

1. U.S. Army Communications-Electronics Command and Fort Monmouth	6,000
2. Meridian Health System (Riverview and Jersey Shore Medical Centers)	5,300
3. AT&T	4,900
4. Lucent Technologies	4,800
5. County of Monmouth Hall of Records	3,310
6. Monmouth Medical Center	2,392
7. Naval Weapons Station	3,200
8. CentraState Healthcare System	1,800
9. Foodarama Supermarkets Inc.	1,550
10. Bayshore Community Health Service	1,400

Total Service to Top 10 employers: 34,700

Shopping and Recreation

- Visitors spend total of \$1.68 billion dollars on lodging, restaurants, automobiles, recreation, transportation, and retail
- Range of recreational activities includes: 27 miles of beaches, Atlantic Highland Municipal Marina, Sandy Hook Park, 36 different park areas (more than 11,000 acres), Monmouth Park Racetrack, Monmouth Arts Center, PNC Bank Arts Center, and host of other venues countywide

Need for PRT

- One of fastest growing counties in the state
- Existing infrastructures cannot support influx of people
- 89% of polled residents cited road congestion as a problem for their area
- Facilitate mobility for all residents



OCEAN COUNTY, NJ

County Description

- 2nd largest county in NJ
- 638 sq. miles
- 33 municipalities
- Population: 510,916
- Land use
 - Resort county
 - Suburbanization:
population increase due
to in-migration



Existing Transit Services

- Largest road network in state: 620 mi.
- Visitors advised to rent a car because of limited public transport system
- Proponent of MOM: Monmouth-Ocean-Middlesex Rail Service: network of railways that provide direct connection to the dense areas of the 3 counties

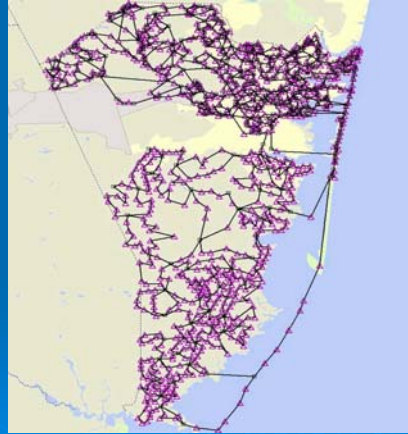
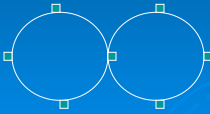
Need for PRT

- Sudden population increase
– fastest growing county in NJ
- Wildlife & land preservation
- Roads unable to handle existing traffic loads
- Quality of life



The Network


- 1662 stations
- 974 miles of guideway
- Network design:



Service to Employers

- Potential labor force: 241,166
- Actual number of residents employed in 2003 in Ocean County: 227,426
- Need to move people out of the county to find work
- Employers need a reliable system

Service to Shopping & Recreation

- Beach resorts
- Fort Dix military base
- Amusement parks 
- Multiple connections from barrier beaches to mainland
- All restaurants, malls, and shopping centers are 1/4 mi. from a PRT station

Service to Educational & Residential

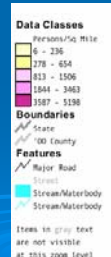
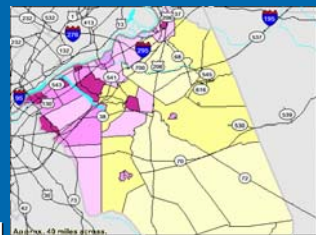
- Number of housing units: 248,711
- 92,834 persons aged between 5 & 18 years
- Most homes and all schools are no more than 1/4 mi. from a PRT station



Burlington County

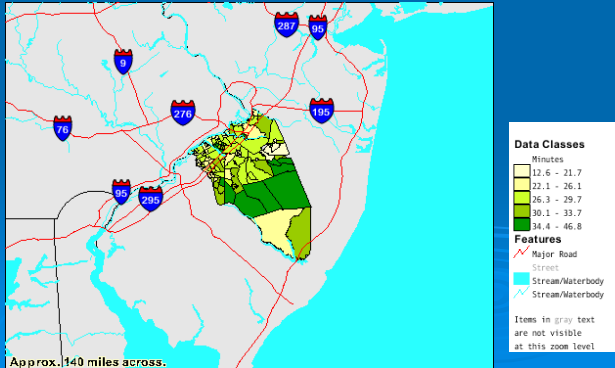
General Facts

- Largest county in New Jersey
524,160 acres
- 432,000 residents
- Known for extensive forests and farmland
- Cranberry and Blueberry production vital to county



Current Transportation Situation

- 81% of residents use car to travel
- Light Rail to Trenton and greater NJ Transit system
- Entirely inadequate methods of public transportation



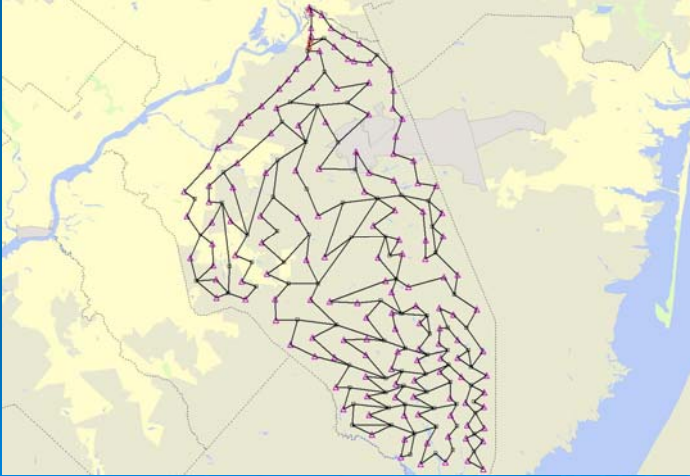
10 Employers with 1000+ Employees

1. Lockheed Martin
2. Cendant Mortgage
3. Virtua Memorial Hospital of Burlington County
4. Commerce Bank
5. Deborah Heart and Lung Center
6. Viking Yacht Co. Corp
7. Burlington Coat Factory
8. Lourdes Medical Center of Burlington County
9. CVS Corporation
10. Medco



Construction of PRT network

stations arranged in a grid pattern connected by interchanges



PRT for Burlington

- 300 stations and interchanges
- 549 miles of guideway
- 180,000 people commute to work daily – PRT can get them there on time!



Housing

- Over 95% of households can reach PRT station with in ½ mile of their homes
- It is easy enough to construct PRT that station locations and guide ways can be adjusted/ moved to preserve the quality of residential areas

Education

- Services all 55 of Burlington County Schools
- Minimizes home to school based trips, thus reducing morning rush hour congestion
- A reliable enough system that can allow a reduction of school bus funding

Service to Shopping & Recreation

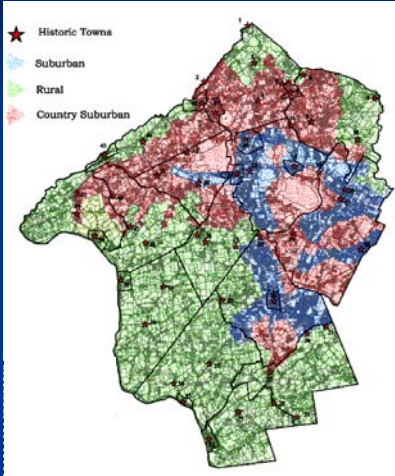
- 8,500 sq ft of shops, including 4 large malls and 15 antique or specialty shops
- Columbus Mart – South Jersey's largest flea market
- Agritourism: 857 farms host fairs, fruit and vegetable picking, and petting zoos
- 2,100 acres of parkland



-
- A map of Laramie County, Wyoming, showing its 17 townships. Each township is outlined in black and filled with a unique color. The townships are labeled as follows: LERANON TWP (pink), CALDWYN TWP (light blue), TOWNEBURG TWP (light blue), HAMILTON TWP (brown), BLOOMING TWP (orange), PETERSBURG TWP (yellow), HERRINGBORO TWP (light green), LERANON TWP (pink), CLINTON TWP (pink), UNION TWP (light green), CLINTON TWP (pink), LEANING TWP (pink), HOLLAND TWP (blue), ALEXANDRIA TWP (pink), FRANKLIN TWP (light green), READINGTON TWP (light blue), MINERAL TWP (blue), PRINCETON TWP (pink), KINWOOD TWP (light green), EAST ANNEVILLE TWP (yellow), DELAWARE TWP (light blue), WEST ANNEVILLE TWP (pink), and LAMBERTVILLE CITY (pink).

HUNTERDON TOWNSHIP MAP

LAND USE



HUNTERDON LAND USE

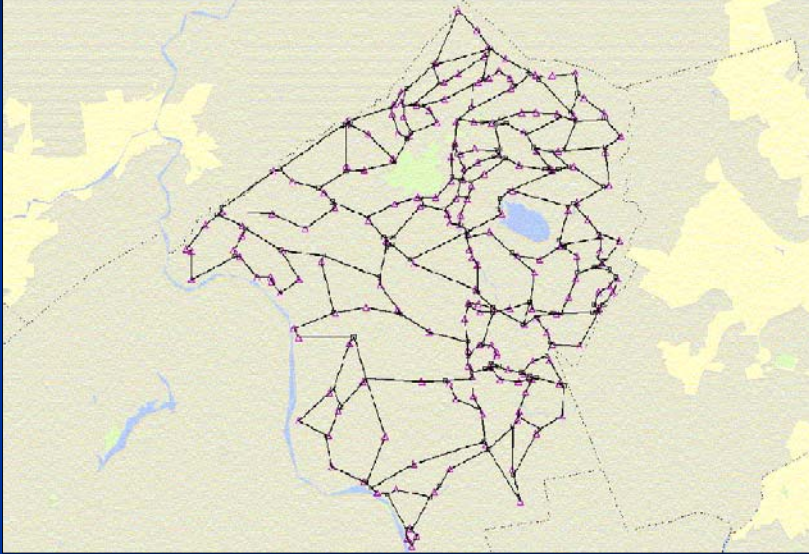
- Rural Areas
 - Much of the county
 - South and West
- Suburban Areas
 - High density commercial and residential
 - Central Region
 - Route 78/202 Corridor
- Country Suburban Areas
 - Low density residential

EXISTING TRANSPORTATION

- Roads
 - 242 miles of county roadway
 - 1,653 total roadway miles
- Bus Service, “The Link”
 - 30 vehicles, 19 routes, 700 trips/day
 - Variations of two major lines
 - 10¢ per zone mile
- Passenger Rail
 - NJT Raritan Line
 - High Bridge, Annandale, Lebanon, Whitehouse Station

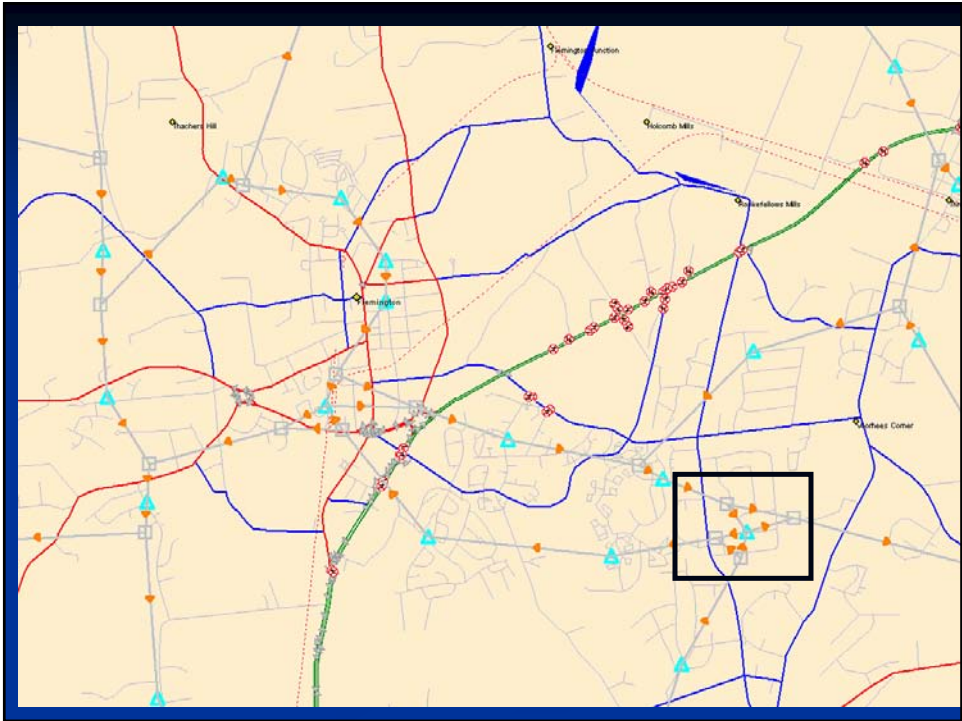


HUNTERDON PRT



PRT SUMMARY

- 191 Stations
- 380 miles of guideway
- 11 Two-way stations
- NE Station Concentration
- Services 75% of population



2-WAY STATION DETAIL



SERVICE TO EMPLOYMENT

- 41% of county works in county
- Many small businesses
- Other companies serviced:
 - Atlantic Spring
 - Burlington Coat Factory
 - Johanna Foods
 - Shop-Rite

Employer	Municipality	# of Employees
ChubbInsurance Co.	Readington	1,500
Foster Wheeler	Union Twp.	>1500
Hunterdon County	Flemington	500-999
Hunterdon Medical Center	Raritan Twp.	1600
Merck & Co.	Readington Twp.	1800

MAJOR EMPLOYERS SERVICED

SERVICE TO SHOPPING



Flemington Shopping District

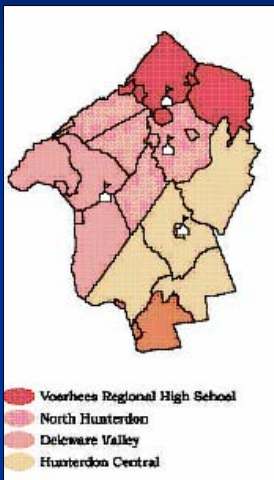
- Dense retail in Flemington and Raritan Township
- Flemington Businesses
 - Flemington Mall
 - Gift Pac
 - Thrift Drug
- Lambertville Businesses
 - JFinkle & Son Hardware
 - National Auto Supply
 - River Horse Brewing Co.

SERVICE TO RECREATION

- Hunterdon County Parks
 - 3 state parks serviced: Round Valley, Spruce Run, and Vorhees
- Wineries
 - Unionville and Alba Vineyards serviced
- Golf Courses
 - Olde York Country Club
 - Copper Hill Country Club
 - Oak Hill Golf Club



SERVICE TO EDUCATION



- 35,000 school age children
- 42 elementary schools
- 5 high schools

School	Enrollment
Delaware Valley	813
Hunterdon Central	2,326
Hunterdon North and Vorhees Regional	2,250

THE PRT SOLUTION- WHY?

- Unite the county
- State-wide system connectivity
- Convenient
 - Not subject to schedules
 - You set your own schedule
- Stimulate growth and travel



Mercer County PRT Network



The Capital County

Land Use Description of the County

- Mercer County includes 1 city, 8 townships and 4 boroughs
- Population: around 351,000
- Land Area: roughly 146,000 acres
 - 42% developed
 - 32,000 acres for agriculture
 - 8,400 acres for recreational use
- 3 airports



Current Public Transportation for Mercer County

- NJT
 - 13 bus routes in Mercer County
 - Northeast Corridor Line
 - Princeton Branch
- SEPTA
 - Connects Philadelphia to Trenton
- Local Commuter Shuttles
- Camden/Trenton River LINE light rail

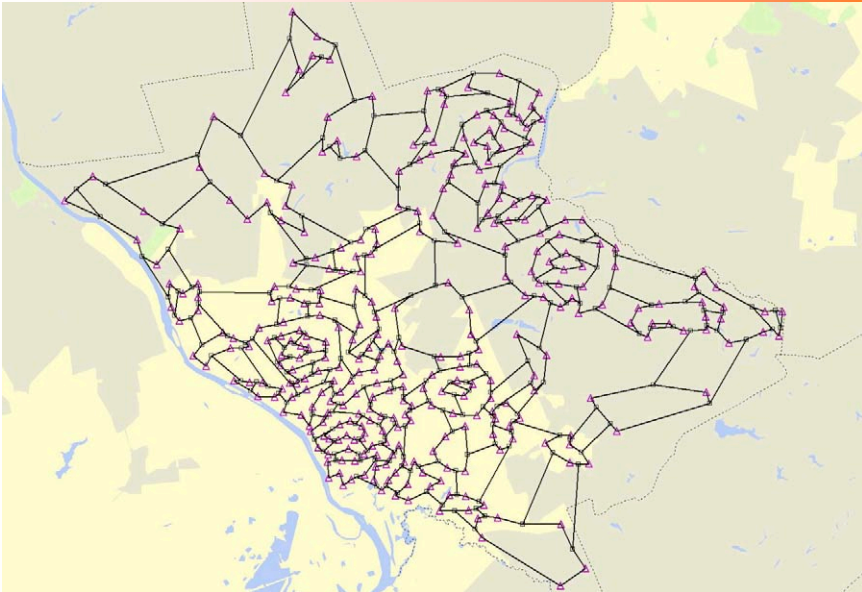


	Mercer County	NJ	US	
TRANSPORTATION TO WORK				
	Number	Number	Number	
Workers 16 and over	163,257			
	Number	Pct	Pct	Pct
Public transportation	11,236	7	10	5
Car, truck, van or motorcycle	137,770	84	84	88
Walk	7,349	5	3	3
Work at home	5,161	3	3	3

Description of the PRT network in the County

Size and Coverage

- Covers all major cities and townships
- Focus on highly populated areas
- 319 stations
- 369 miles of PRT track
- Serves roughly 85 to 90% of the population

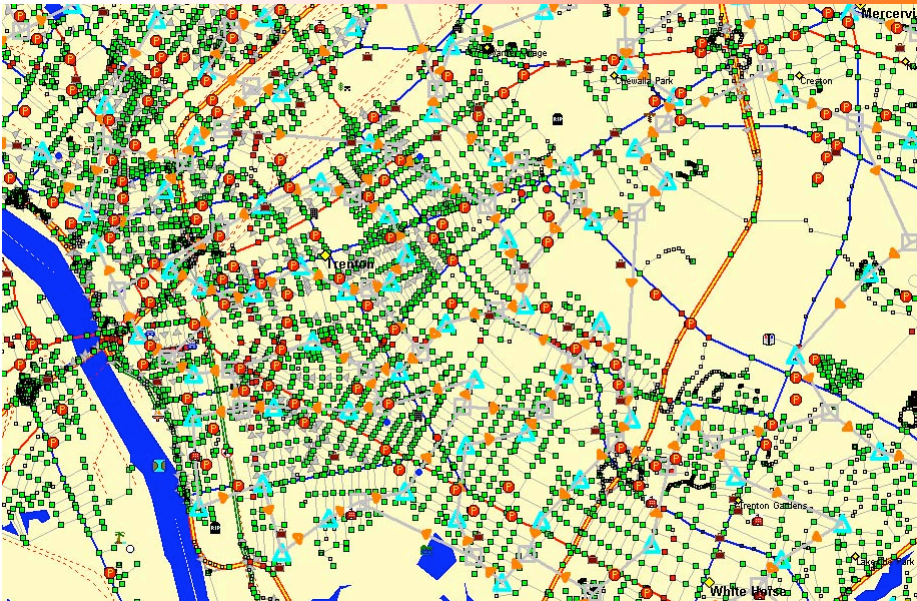


Description of the PRT network in the County



Service to Employment

- Mercer County employs roughly 176,000 people
- Most jobs come from companies in manufacturing, wholesale trade, retail trade, health care and social assistance and professional, scientific and technical services
- Build stations in and around major metropolitan areas



Description of the PRT network in the County



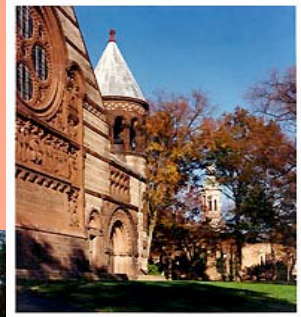
Service to Recreation

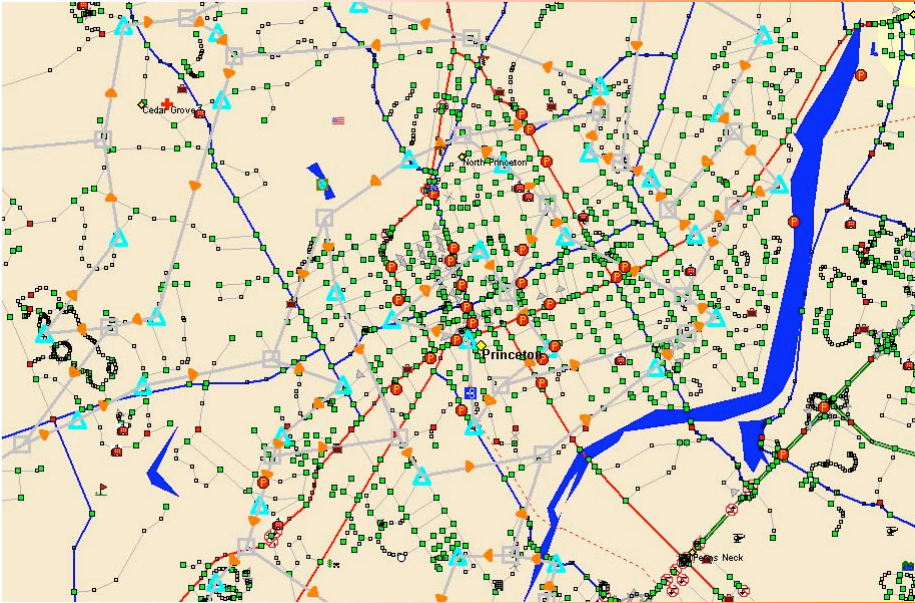
- Mercer County has 4 public golf courses, five ice hockey rinks, four tennis facilities, plethora of museums and theatres, Waterfront Park and Sovereign Bank Arena
- 10 major shopping centers, including Quakerbridge Mall and Mercer Mall
- “Main Street” shopping

Description of the PRT network in the County

Service to Education

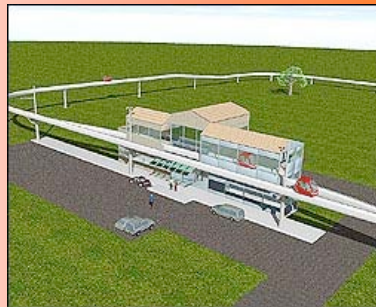
- Mercer County has nine public school districts with 94 schools and 50,000 students
- There’s also 21 private school and six colleges/universities including TCNJ, Rider and Princeton
- PRT network will serve all public and private schools
- PRT network will serve all colleges/universities with stations either on campus or within walking distance of campus





Value of PRT to the future evolution and vitality of the County

- Alleviate traffic problems throughout the county
- Cut down on pollution
- Safety that is superior to cars and buses
- Quick, efficient and effortless travel
- Ability to ride only with people you know
- Non-stop travel



Central New Jersey



- Hunterdon County
- Mercer County
- Middlesex County
- Monmouth County
- Somerset County
- Union County

Shawn Woodruff

Marquis Martin-Easton

Darius Craton

Neset Pirkul

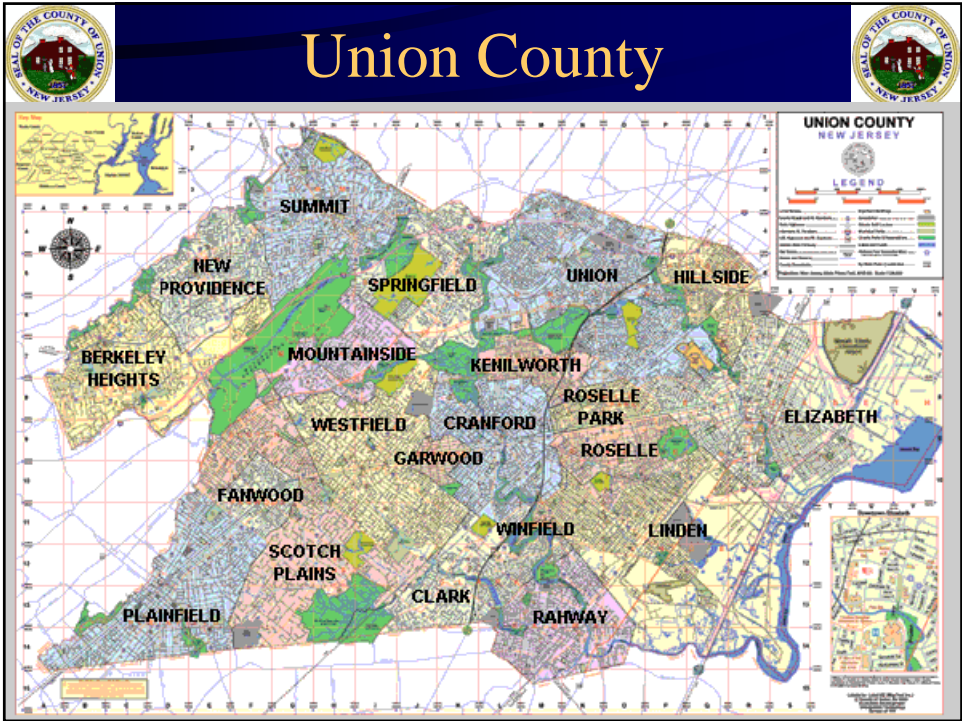
Matt Lauria

Mike Daylamani

Region Data

- Land Area
 - 1628 sq. mi
 - 22% of New Jersey
- Population
 - 2,650,000
 - 31% of New Jersey

- PRT Track Miles 3174 mi.
- PRT Stations 1862



Union County Facts

- Population – 522,541
- Land Area – 104 sq. mi.
- Municipalities – 21
- Largest Town – Elizabeth
- 3rd most densely populated county (5,059)
- 6th largest county population
- Established in 1857

Land Use

- 70%
Commercial/Industrial/Residential
- 30%
Undeveloped/Recreational

Union is situated along the eastern coast of the United States south of New York. The Arthur Kill waterway separates the southern half of Union County from Staten Island, New York while Newark Bay separates the northern half of Union County from Hudson County New Jersey.

Existing Transportation Air/Water

- Newark Liberty International Airport
29 million passengers in 2003
- Linden Airport
- Port Elizabeth- Largest container cargo port on the east coast.
- The Arthur Kill – one of the world's busiest waterways.



Existing Road Transportation

Major Highways

- NJ Turnpike
213 million travelers each year
- Garden State Parkway
600,000 vehicles per day
- Routes 1,9,22,24,78



General



172 mi. of county roads
470 bridges

Existing Transportation Rail

- Rail
- Northeast Corridor Line
- North Jersey Line
- Raritan Valley Line
- Gladstone Line
- Morristown Line

TVM  
112

TVM  
24, 26, 52, 56,
57, 58, 59, 62, 112

TVM  
56, 57, 94

TVM   
62

TVM  

North Elizabeth
1180 North Ave.,
1 mile west of Rts. 1 & 9

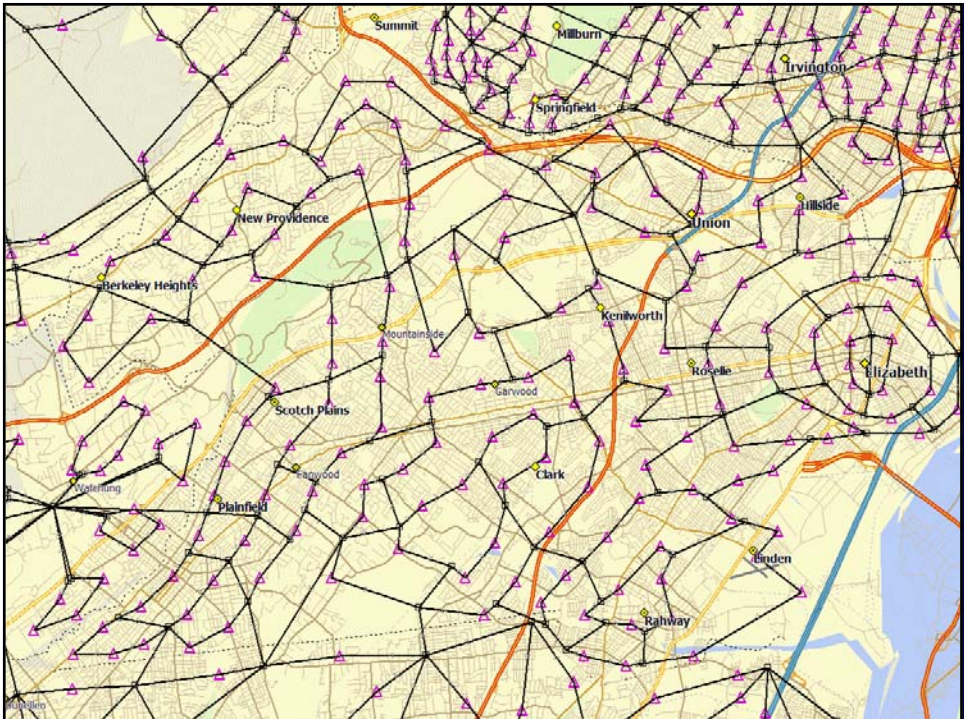
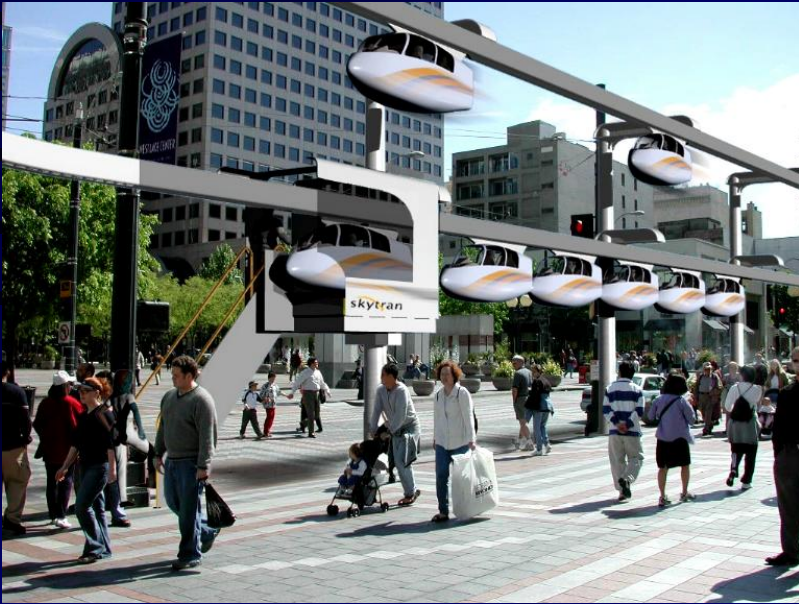
Elizabeth
W. Grand Ave.,
1 block west of Broad St.

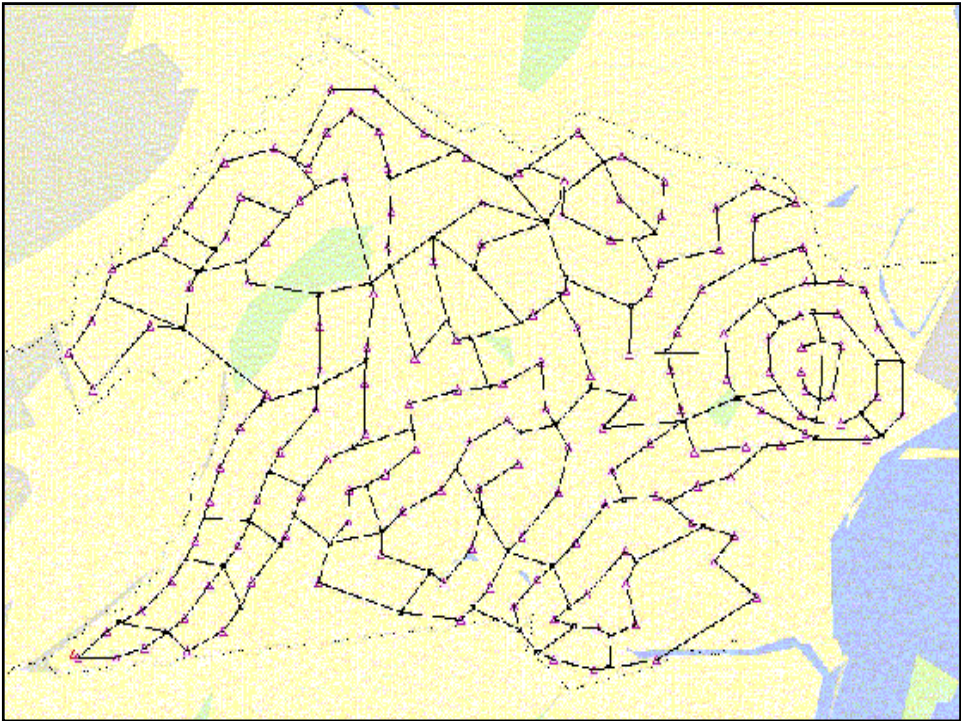
Linden
S. Wood Ave.,
approx. 1/2 mile west
of Rt. 1 & 9

Rahway
Milton Ave.,
Between Irving & Broad St.



PRT – Union County





PRT serves...

Business

Merck & Co.
Wakefern Food Corp.
Lucent Technologies
Schering-Plough
Novartis
GM
AT&T

Retail/Recreation

Jersey Gardens Outlet Mall – over 170 stores
Union County Arts Center
30 parks
3 Golf Courses

INDUSTRY		
Agriculture, forestry, fishing and hunting, and mining	158	0.1
Construction	12,151	5.0
Manufacturing	36,638	15.0
Wholesale trade	11,400	4.7
Retail trade	24,964	10.2
Transportation and warehousing, and utilities	18,211	7.5
Information	10,929	4.5
Finance, insurance, real estate, and rental and leasing	23,493	9.6
Professional, scientific, management, administrative, and waste management services	27,926	11.4
Educational, health and social services	44,881	18.4
Arts, entertainment, recreation, accommodation and food services	13,067	5.4
Other services (except public administration)	11,047	4.5
Public administration	9,332	3.8

Union County Arts Center in
Rahway, NJ



G.M. assembly plant in
Linden, NJ.



PRT serves...

Educational

- Kean University
13,000 undergraduate students
91% of students travel to school each day
- Union County College
10,000 students
- Union County Vocational-Technical Schools
- 160 schools for pre-school – 8th grade
78,000 students

SCHOOL ENROLLMENT		
Population 3 years and over enrolled in school.....	136,230	100.0
Nursery school, preschool.....	11,242	8.3
Kindergarten.....	7,787	5.7
Elementary school (grades 1-8).....	60,223	44.2
High school (grades 9-12).....	28,762	21.1
College or graduate school.....	28,216	20.7

Residential

192,945 Housing Units

Average family size is 3.3 members

HOUSING OCCUPANCY		
Total housing units.....	192,945	100.0
Occupied housing units.....	186,124	96.5
Vacant housing units.....	6,821	3.5
For seasonal, recreational, or occasional use.....	475	0.2
Homeowner vacancy rate (percent).....	0.9	(X)
Rental vacancy rate (percent).....	3.3	(X)

Area	Population	Stations	Avg./Station
Union Population	522,541		
Population Served	470,287	162	2,903
Population Not Served	52,254	0	0
Elizabeth	123,000	31	3,968
Rahway/Linden	66,094	17	3,888
Rest of Union County	281,193	114	2,467

Miles of Guideway – 183

Why use PRT???

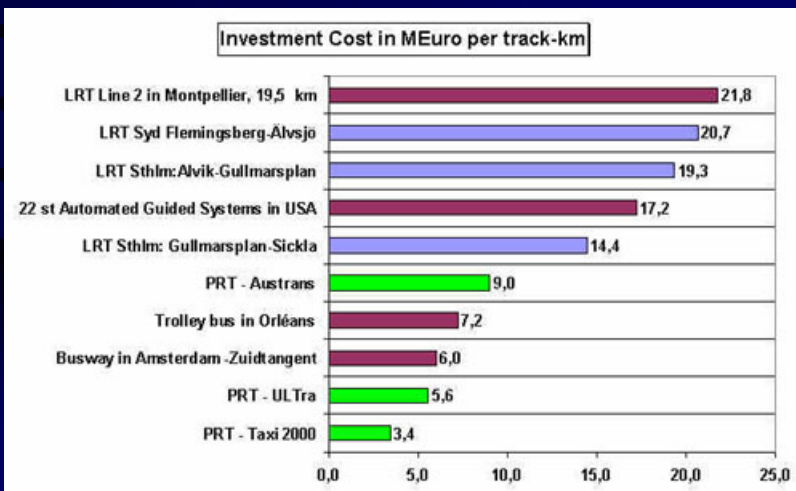
- Car dominated region

83% of home-based work trips are by car

VEHICLES AVAILABLE		
None	23,653	12.7
1	65,635	35.3
2	69,253	37.2
3 or more	27,583	14.8
COMMUTING TO WORK		
Workers 16 years and over	238,606	100.0
Car, truck, or van - - drove alone.	169,325	71.0
Car, truck, or van - - carpooled.	27,686	11.6
Public transportation (including taxicab)	25,294	10.6
Walked.	7,729	3.2
Other means.	2,880	1.2
Worked at home	5,692	2.4
Mean travel time to work (minutes) ¹	28.7	(X)

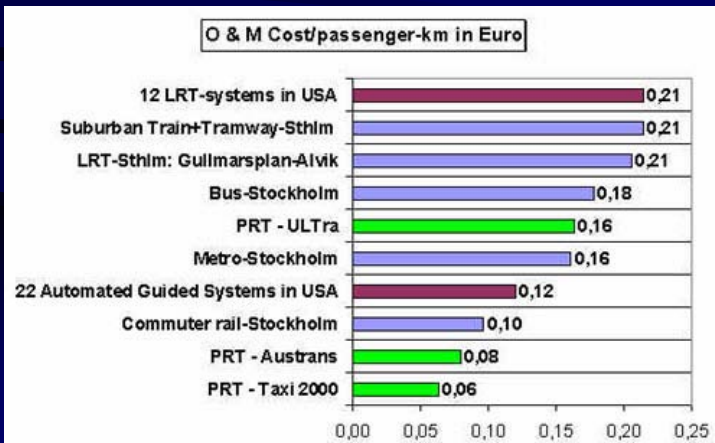
Why use PRT cont.

- Low-cost transportation



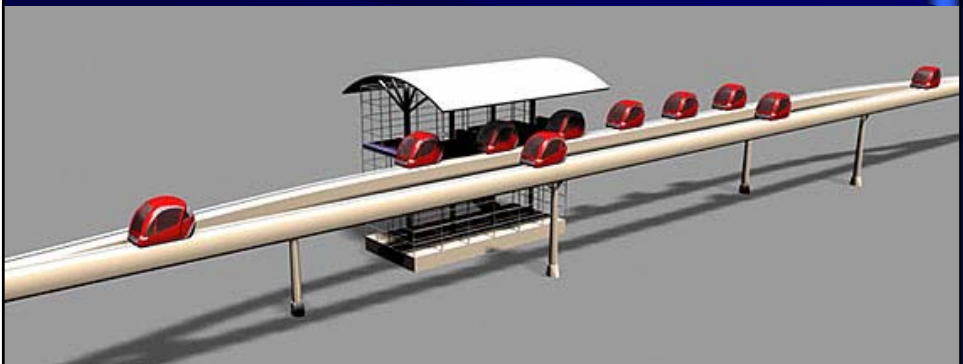
Why use PRT cont.

- Inexpensive construction and operating costs



Why use PRT cont.

- Faster travel times
- Offline stations which provide non-stop travel from origin to destination



Why use PRT cont.

- PRT networks allow for additions at any time without impeding current network flow.
- Minimal noise
- Environmentally friendly
- Decreased road congestion
- Simple integration into existing infrastructure



Cape May County PRT Network

Brief County Facts



**Fairly evenly populated, but
population very dense along
eastern coast and inlets**

Land area of 255 sq. miles

Population of 105,000

**Summertime population of
625,000**

**Generates second most
amount of revenue in tourism
in New Jersey**

**Only 2% of population uses
public transportation to get
to work**

Why PRT in Cape May?

- Tourism
 - Large influx of visitors into Cape May County, especially in the summer when population increases six fold
 - Allows for short trips or daytrips, ex. to Cape May or Wildwood, without hassle of driving or inflexibility of most public transportation
 - Can provide a large number of stations and routes in areas with many attractions
 - Convenience to tourists will easily feed money back into the network

Why PRT Cont.

- Lack of strong public transportation alternatives
 - NJ Transit Buses
 - Connect to rest of NJ
 - However, people may prefer not to take buses
 - Cape May Seashore Lines
 - Limited access
 - Again, only 2% of all commuters in Cape May use public transportation to get to work



PRT Network for Cape May County



Connects and serves all developed parts of county (~100,000 permanent residents and many more tourists)

Primarily one-way track

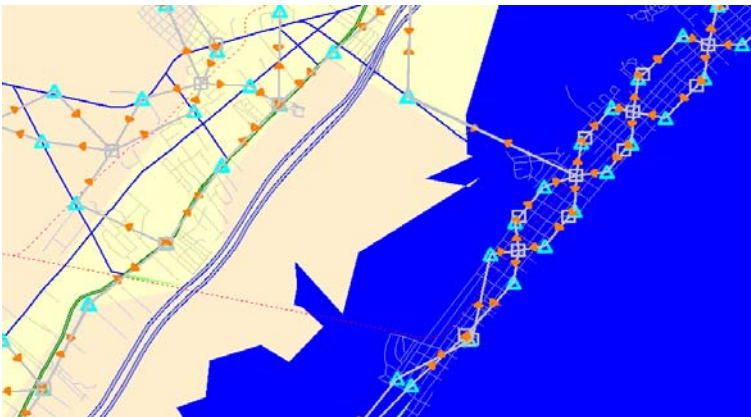
518 stations

488 miles of guide way

Stations within easy access from virtually all populated areas

Uses simulated two-way track along narrow ocean coast and along specific routes that serve as “highways”

PRT Network Design



Demonstrates both highway design running parallel here to Garden State Parkway and simulated two-way track on a narrow inlet

PRT Network Design with Attractions and Residential Areas Visible



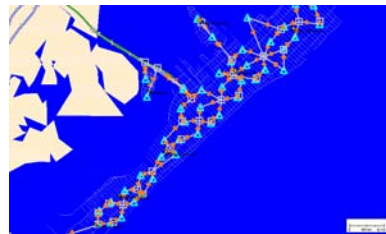
Virtually all the population is served by a station within 3/8 mile
In areas with many attractions, the PRT network is even more accessible

Selected Attractions Served by PRT

- #1 County Employer – Burdette Tomlin Memorial Hospital. Estimated 1,100 trips per day
- Wildwood – many stations and easy to change direction to cater to the many tourist attractions
- The network serves virtually ALL major attractions within 1/4 mile radius of stations



Burdette Tomlin Memorial Hospital



PRT network in Wildwood, a popular recreational destination

Simulation of PRT System in Cape May County

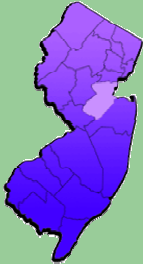


Conclusion

- PRT system in Cape May County would cater to the substantial tourism industry and the influx of travelers associated
- The PRT network for the county provides direct routes across the county as well as easily maneuverable subsystems in attractive areas
- It would also offer a viable alternative to the personal automobile, for lack of another sufficient public option



Middlesex County



The “Heart” of New
Jersey

General Facts

- Stretches from the Rahway River south to Mercer and Monmouth Counties and from Raritan Bay on the Atlantic Ocean west to Somerset County
- 318 square miles in size
- Encompasses 25 municipalities
- Includes extensive industrial, office, and residential areas

Land Uses

- Educational Facilities:
 - 175 public schools, five county vocational-technical schools, and over 70 parochial and private schools serve the approximately 100,000 primary and secondary school students
 - 5 Post-Secondary school institutions, most notably
 - Rutgers, The State University
 - Middlesex County College

Land Uses

- Housing and Population
 - One of the fastest growing counties in the state
 - Growing from a population of 629,982 in 1970 to 717,949 in 1999
 - 45.7% increase in housing units from 1970 including new homes and apartments
 - Approximately 250,174 housing units for an average of 784 units per square mile

Land Uses

- Medical Centers

- Middlesex County has five major hospitals with a total bed space of 1,900
 - JFK Medical Center (Edison)
 - Raritan Bay Medical Center (Old Bridge)
 - Raritan Bay Medical Center (Perth Amboy)
 - Robert Wood Johnson University Hospital (New Brunswick)
 - St. Peters University Hospital (New Brunswick)

Land Uses

- Recreation and Shopping

- 18 county parks encompassing 6,600 acres
- 5,000 acres of open space
- Three golfing facilities
 - Tamarack Golf Course (East Brunswick)
 - Meadows At Middlesex (Plainsboro)
 - Raritan Landing Gold Course (Piscataway)
- Over 75 shopping centers and two major malls; the Menlo Park Mall and the Woodbridge Center

Existing Transit Services

- NJ Transit - Train
- PATH (Port Authority Trans-Hudson)
- Amtrak
- NJ Transit - Bus
- Seastreak Ferry
- Commuter Shuttles
- Suburban Bus Transit
- Academy Motor Coach

PRT Network

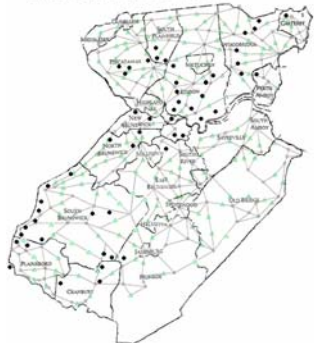


PRT Network

- Size and Coverage
 - goal was to achieve total county coverage with no user being further than a quarter-mile from a PRT station
 - spans the entire 318 square miles of the county
 - reaches every residential, commercial, educational, recreational and industrial area in the county
 - was important to create a network with no unnecessary long circuitous paths
 - network consists of various small loops connected by interchanges

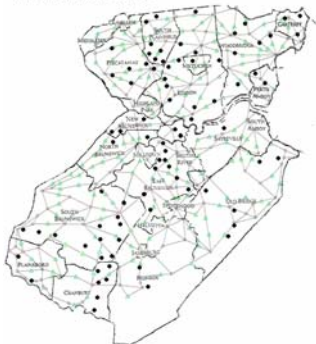
PRT Network Coverage

Map of Middlesex County Hotels and Conference Centers



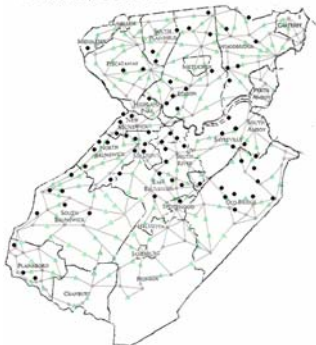
PRT Network Coverage

Map of Middlesex County
Industrial Parks



PRT Network Coverage

Map of Middlesex County
Shopping Centers



PRT Network

- Summary
 - 269 Stations
 - 117 Interchanges
 - 435 Miles of Guideway

PRT Network

- **Value of the PRT System**
 - Current public transit services are not adequately handling the increasing congestion on the county's motorways
 - Being one of the fastest growing counties in the State, Middlesex County will feel the extra burden of an increased population more than most
 - PRT System will go a long way in alleviating the existing, and future, load on the motorways and help sustain the rapid and exciting growth the County has benefited from



James Cong

ORF 467 – PRT Presentation Northern New Jersey



Rachel Blair



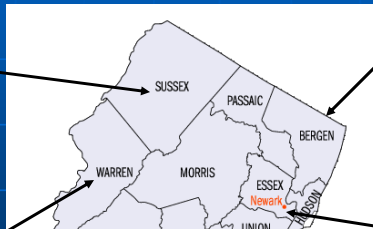
Jessica Blankshain

January 11, 2005
Professor Kornhauser

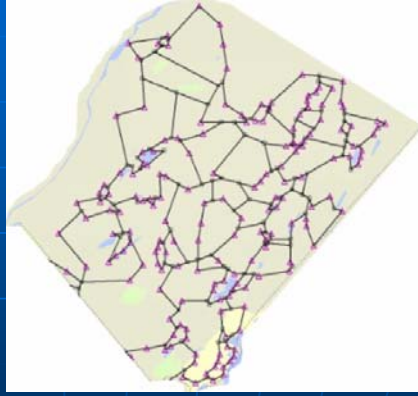


Jeff Jones

North Jersey – A Diverse Region

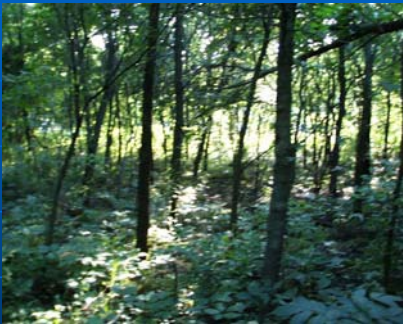


Sussex County



Jeff Jones
ORF 467

Land Use



Quick Facts About Sussex County

- Population of 131,000
- Very rural and hilly
- Claims to be the home to the best waterfall in New Jersey
- 60% of the work force residing in Sussex commutes outside the county
- Current mass transportation system only one small bus line



Major Destinations Served



- Sussex County Community College
- Crystal Springs Resort
- New Jersey Cardinals Stadium
- Mountain Creek Ski Resort
- Wal-Mart

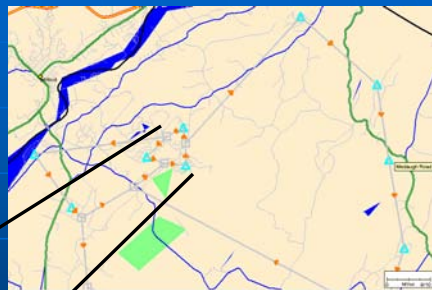
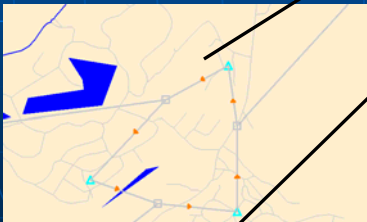


Newton Memorial Hospital



Station Connectivity

Small Loop...



...Within Larger Loops

Summary info about Sussex PRT

- 174 stations
- Roughly 118,000 people reside within $\frac{1}{4}$ mile radius of a station
- Smaller loops of residential districts linked to outside community through larger loops
- Approximately 375 Miles of Track

Why PRT Would Revitalize Sussex

- Encourage Businesses to Relocate to Sussex

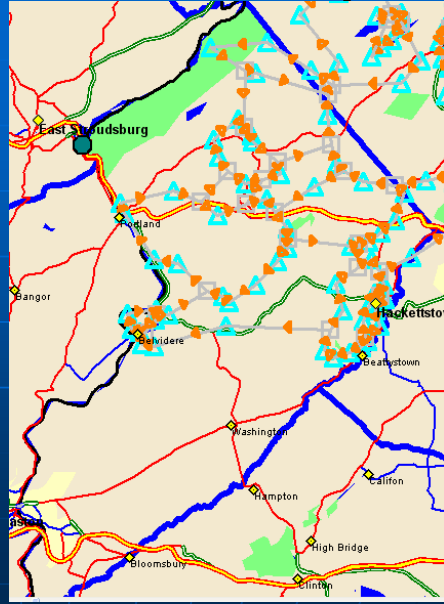


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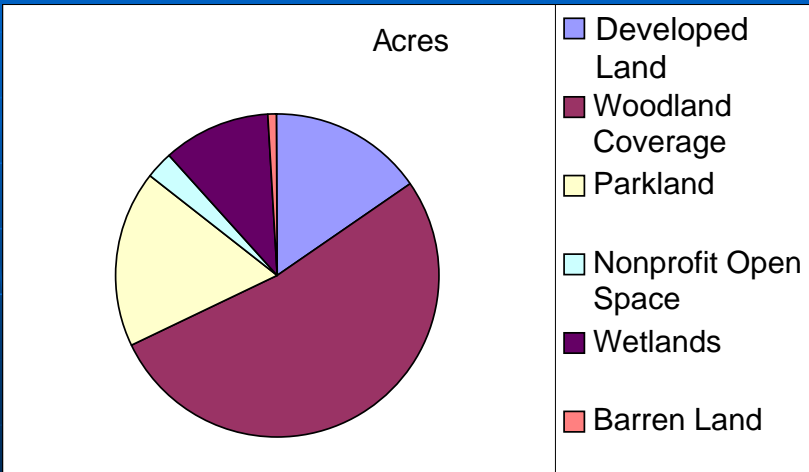


Warren County



Jeff Jones and
Rachel Blair

Land Use



Quick Facts About Warren County

- Population of 103,000
- 25% Population increase projected over next 15 years
- Home to the first commercial highway in the U.S.
- I-78 and I-80 connect Warren County residents to their jobs in NYC and metro NJ

Major Destinations Served



- M&M Mars Corporation
- Warren County Community College
- Land of Make Believe
- Warren General Hospital



Warren General Hospital

Apple Mountain Golf and Country Club



Summary Info of Warren PRT

- 161 Stations
- Roughly 90,000 people reside within $\frac{1}{4}$ mile radius of a station
- Approximately 425 miles of track
- Each Major Destination with its own dedicated Station

Why Would PRT Revitalize Warren

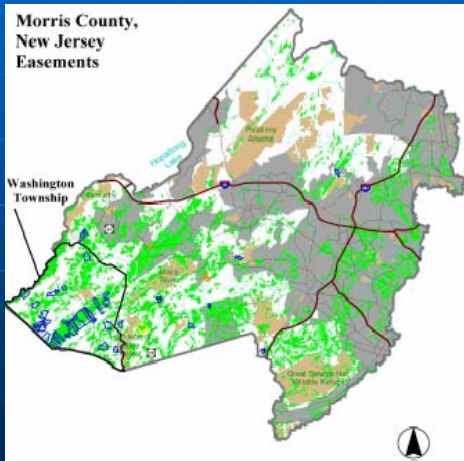
- Warren County PROJECT SMART GROWTH
 - An attempt to plan future land use through intelligent transportation decisions
 - PRT perfect way to strategically utilize transportation to mold county

Morris County, NJ



Personal Rapid Transit

Land Use: Morris County



Beige and Green Areas are Farmland

Grey Areas are Urban

White Areas are Undeveloped

-The Majority of the Agricultural land is in the Southwest Corner

The eastern region (closest proximity to NYC) of the county is the most densely populated

Just over 60% of Morris County is developed land

Existing Transportation Infrastructure

- Three Major Interstate Highways traversing North-South and East-West (I -280, I-80, and I-287)
- 600 Miles of County and State Roads
- Relatively Extensive Freight Rail services the Major Industrial Districts: The Morristown & Erie Railway, Norfolk Southern, and Western Railway serve Morris manufactures. There are a total of 9 freight lines.
- County-wide Bus System Offers Service to most popular destinations, however Bus Schedules are Highly Variable
- Main Commuter Rail:
NJ Transit: Morristown Line and Gladstone Branch with service to NYC and Hoboken, Boontown Line with service to Newark

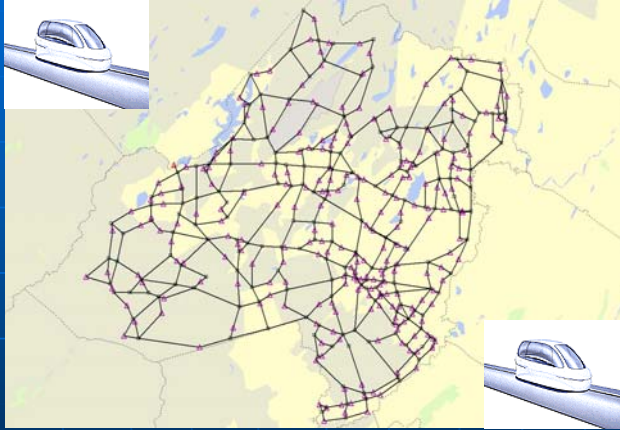


*morris county
division of transportation management*

Welcome



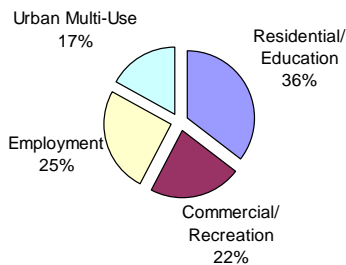
Design of the Morris PRT Network



- One-way Guideway Rail in a Loop Structure with interchanges between each station enabling direction changes.
- Service to each of the 39 Municipalities in the county
- More compact loops in the east, because of the increased density of residential and commercial development

PRT stations are distributed proportionally to the Land Use of the County

PRT STATION DISTRIBUTION



Station TOTAL	240
Residential/ Education	105
Commercial/ Recreation	65
Employment	75
Urban Multi-Use	50

PRT: The Morris County Basics

Approximately 150 miles of guideway need to cover service for 90 % of all trips in the 470 sq. mi county.

Just over 400,000 out of the population of 470,000 would live within ¼ mile of a PRT Station

Service to Employment

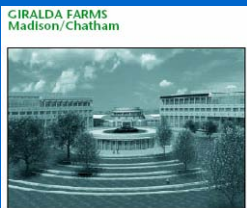
Service to School

Service to Shopping

Recreational Service



Service to Employment Centers



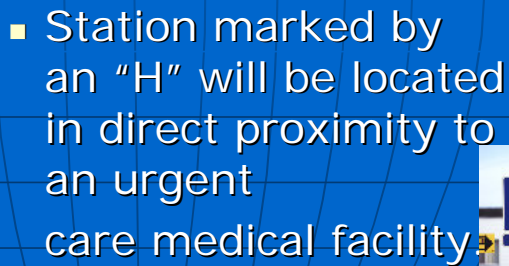
Serving 54 of the Nations Fortune 500
Companies and 8 Global 500

Companies in Morris County

Employment Centers	Location	Floor Space	Stations	Trips/ Day
Mack-Cali Business Campus	Hanover	1.7 M sq ft	S59	1,500
Morris Corporate Center	Parsippany	1.8 M sq ft	S223	1,500
Giralda Farms	Madison/ Chatham	1 M sq ft	S138	800
Montville Business Center	Montville	1.2 M sq ft	S69	1,200
Park Avenue at Morris Co	Florham Park	1.2 M sq ft	S72	1,000
International Trade Center	Mount Olive	3.5 M sq ft	S201	2,500

***All Stations In These Areas serve ONLY the Professional Center**

Morristown Memorial Hospital	S45	Morristown
St. Clares Health Sevices	S163	Denville
St. Clares Health Sevices	S240	Dover
Chilton Memorial Hospital	S111	Pompton Plains
Kessler Institue	S203	Chester



- Benefits of PRT Re: Shopping
- Increase Sales Revenue During Peak Hours caused by increased accessibility
- Increases Commercial Development

Education Facilities

COLLEGES	Enrollment	PRT STATION
County College of Morris	8,590	S71
Drew University	1,558	S207
Fairleigh Dickinson Univ	2,690	S108
College of St. Elizabeth	1,337	S42

Colleges and Universities
Secondary Education
Elementary Schools
Childcare Facilities



- All Elementary and Secondary schools larger than 500 students have ¼ mi access to PRT Stations
- More than 100,000 students served (15% Pre-K/K, 65% Grades 1-12, 20% College Students)
- Over 700 Childcare Facilities Serviced By PRT

Service to Recreation

- 12 Golf and Country Clubs PRT Stations
- Access to 13,000 Acres of Parkland
- 4 PRT Stations for Amusement Parks

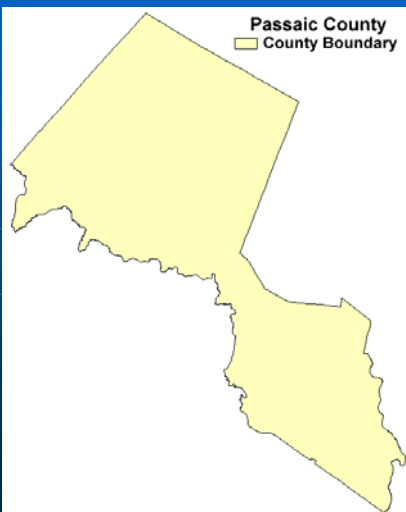


- In combination with the Close Residential Proximity PRT provides, Recreation becomes more accessible and enjoyable.

Benefits To Morris County

Decreased Cost of Living
Encourage Growth of the already
Expanding Economic Sector
Decreased Commuting Times by
25% in Professional Areas

Passaic County



Land Use

- 185 square miles
- 490,377 people
- The northern half of Passaic County is less densely populated, containing many lakes and open space
- The southern half of Passaic County is more densely populated with Wayne, Paterson, and Passaic.

Existing Transportation

- New Jersey Transit
 - Rail
 - Bus
- Roads and Highways
- Transportation Management Associations
 - Carpools
 - Vanpools



Size and Coverage

- Estimated 446,980 people served
- 189 stations, 244 miles of guideway
- Stations are located to serve 90% of trip productions and attractions within a ¼ mile radius
- General pattern – interconnected loops



Service to Employment

- The PRT system serves employers such as
 - State Farm Insurance, Packanack
 - PNC Bank, Wayne
 - North Jersey Press, Clifton
 - St. Mary's Hospital, Passaic



Service to Recreation



■ PRT serves

- Parks (Goffle Brook park pictured)
- Libraries
- Athletic facilities



Service to Education

Name	Township	Level	Students
# 1 Thomas Jefferson	Passaic	1st-6th	648
Charles Olbon School	W. Paterson	K-4th	288
Haskell School	Haskell	K-8th	458
Lakeland Regional HS	Wanaque	9th-12th	1068
Robert Erskine School	Ringwood	K-3rd	319



Service to Housing

Township	Population	Est. Pop. Served	Stations
Little Falls	10,855	9,750	11
Wayne	54,069	48,650	26
West Milford	26,410	23,750	13
Clifton	78,672	70,800	22
Haledon	7,920	7,100	9
Passaic	67,861	61,100	11
Paterson	150,750	135,700	36

Value of PRT

- Passaic County is very diverse
- Mobility is vital
- Allows cities in southern Passaic County to grow without sacrificing open space in northern Passaic County

Essex County

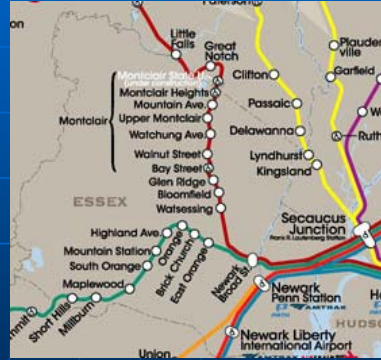
Introduction

- 793,633 people
- 6285.4 people per square mile
- Light suburban areas
- Newark - 273,546 people; 23.8 square miles



Existing Transportation

- Personal vehicles,
- NJ Transit –
Morristown,
Montclair Boonton
line
- Workforce – 73.5%
by car, 18.6% by
public
transportation



Existing Transportation - Newark

- City Subway
system - which
links residents in
the north as well
as in nearby
suburbs
- Bus routes
- Air Train – to
airport



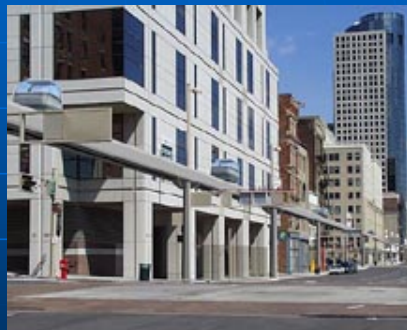
PRT Network

- 766 stations and interchanges
- the guideway is 357.52 miles



Service to Employment

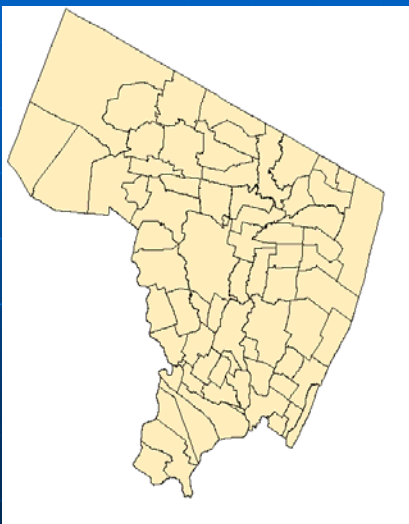
- work force includes 370,939 people
- mean travel time to work is 31.2 minutes
- Newark – numerous large corporations – Prudential Financial, Verizon, PSE&G etc.



Service to Shopping, Recreation and Education

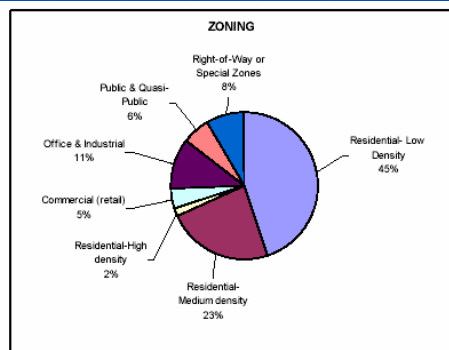
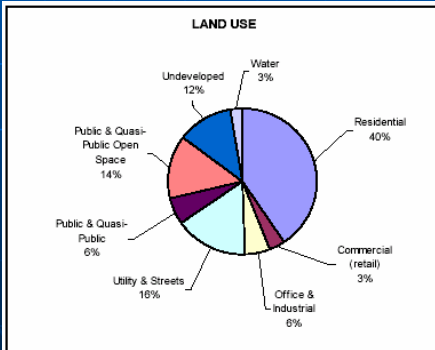
- Cedar Mall Plaza and Livingston Mall, each in Livingston, as well as the Mall at Short Hills
- Parks – South Mountain Reservation, West Essex Park, Eagle Rock Reservation
- Colleges – Rutgers, Newark; NJIT
- Public and Private Schools – Barringer HS, East Side HS in Newark

Bergen County



Land Use

- 234 square miles
- 884,118 people



Existing Transportation

- New Jersey Transit
 - Rail
 - Bus
- Roads and Highways
 - NJ Turnpike
 - Garden State Parkway



Size and Coverage

- Estimated 795,700 people served
- 275 stations, 298 miles of guideway
- Stations are located to serve 90% of trip productions and attractions within a ¼ mile radius
- General pattern: interconnected loops



Service to Employment

- Some top employers in Bergen County
 - Hackensack University Medical Center – 6200
 - County of Bergen – 2700
 - The Society of the Valley Hospital – 2700
 - Merck-Medco Managed Care LLC – 2200
 - Quest Diagnostics Inc. – 2200
- 57% of those employed in Bergen County also live in Bergen County
- 58% of those who live in Bergen County are also employed in Bergen County

Service to Recreation

- Parks
- Golf Courses
- Meadowlands



Service to Education

- 79 school districts
- 128,610 children enrolled in public schools 2002-2003

Name	Township	Level	Students
E Brook Middle School	Park Ridge	K-6th	384
Fairleigh Dickenson	Teaneck	University	6464
Fairmount School	Hackensack	preK-4th	565
Mahwah High School	Mawah	9th-12th	771
Manito School	Oakland	K-5th	392
Radburn School	Fairlawn	K-6th	397

Service to Housing

Township	Population	Families	Est. Pop. Served	Stations
Allendale	5,900	1,915	5,300	3
Bergenfield	24,458	9,035	22,000	5
Closter	8,094	2,767	7,250	3
Elmwood Park	17,623	6,940	15,850	4
Hackensack	37,049	17,705	33,350	18
Montvale	6,946	2,439	6,250	4
Oradell	8,024	2,836	7,200	2
Paramus	25,067	7,892	22,500	15
Park Ridge	8,102	3,063	7,250	3
Ramsey	13,228	4,960	11,900	11
Ridgefield	9,996	4,106	9,000	2
Rutherford	17,790	7,220	16,000	3
Saddle Brook	13,296	5,036	12,000	2
Teaneck	37,825	13,334	34,000	6
Wyckoff	15,372	5,248	13,850	10

Value of PRT

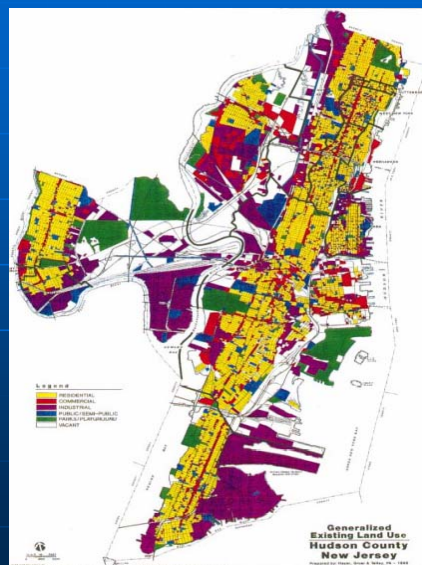
- Bergen County is heavily populated and growing
- Much production/attraction of intracounty trips
- PRT reduces congestion



Hudson County

Introduction

- 608,975 people
- 13,068 people/sq mile
- heavy downtown urban areas
- mixed use areas
- dense residential areas



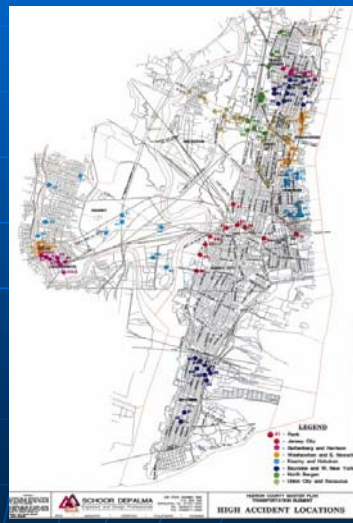
Current Transit Service

- Hudson-Bergen Light Rail Transit System
- NJ Transit commuter trains and buses



Current Transit Service

- PATH rapid transit system to NYC
- Roads and Highways
- Accidents
- Integration Efforts



PRT Network

- 140 Stations
- Length of guideway: 118.45 miles
- Grid-like pattern



Services to Employment

- 271,770 people
- 55% drive; 34% public transportation
- 32.6 minutes average travel time
- Rush hour flow

Table V-4
Major Private Sector Employers, 1999
Hudson County

Employer	Number of Employees	Location
UPS	2,200	Secaucus
ADP Brokerage Service Division	2,000	Jersey City
Donaldson Lufkin & Jenrette Pershing Division	2,000	Jersey City
Jean Nicole, Inc.	2,000	Secaucus
Liz Claiborne, Inc.	1,800	North Bergen
Jersey City Medical Center	1,770	Jersey City
APA Transport Corp.	1,500	North Bergen
Lehman Brothers, Accounts Payable	1,400	Jersey City
Local 2 – 406 PACE	1,385	Bayonne
APA Turck Leasing Corp.	1,300	North Bergen
Bayonne Hospital	1,200	Bayonne
St. Mary Hospital	1,200	Hoboken

Source: Hudson County Economic Development Corporation, November 1999

Service to Recreation and Education



Education <ul style="list-style-type: none"> • 77 Public Elementary Schools • 6 Middle Schools • 18 High Schools • 39 Elementary Parochial Schools • 11 Secondary Parochial Schools • Non Public Schools: <ul style="list-style-type: none"> 9 Kindergarten - 8th Grade 2 9th,12th Grade 6 Kindergarten - 12th Grade • 11 Charter Schools • 1 Regional Day School (7th and 8th Grade Special Needs) • 3 Vocational & Technical Schools <p><small>Source: Hudson County Superintendent of Schools, August 2007</small></p>	Institutes of Higher Education <p>Hudson County Community College: Jersey City and West New York. Associate degree programs.</p> <ul style="list-style-type: none"> • New Jersey City University: Jersey City. Undergraduate and graduate degree programs. • Stevens Institute of Technology: Hoboken Undergraduate and graduate degree programs. • Saint Peter's College: Jersey City. Undergraduate and graduate degree programs.
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- Parks, recreation, open space and historical sites

Service to Housing

	TOTAL	New Privately Owned Housing thru July	Total Units	Single Family Units	Single Family Value	Two Family Units	Two Family Value	3-or-4 Family Units	3-or-4 Family Value	5/More Family Units	5/More Family Value
Bayonne	61,842	18	0	0	0	18	\$1,208,141	0	0	0	0
East Newark	2,377	0	0	0	0	0	0	0	0	0	0
Guttenberg	10,807	8	0	0	0	8	\$647,426	0	0	0	0
Harrison	14,424	10	0	\$392,500	10	\$609,084	0	0	0	0	0
Hoboken	38,577	117	0	0	0	0	0	0	0	117	\$10,399,733
Jersey City	240,055	265	8	\$1,444,310	152	\$8,754,480	6	\$309,413	99	\$13,027,494	
Kearny	40,513	9	1	\$114,500	8	\$661,870	0	0	0	0	0
North Bergen	58,092	21	8	\$878,700	8	\$734,120	0	0	5	\$78,333	
Secaucus	15,931	19	13	\$1,254,258	6	\$550,433	0	0	0	0	0
Union City	67,088	79	0	0	4	\$258,500	18	\$1,127,300	57	\$3,037,000	
Weehawken	13,501	0	0	0	0	0	0	0	0	0	0
West New York	45,768	52	0	0	4	\$375,000	0	0	48	\$1,995,122	
TY TOTAL	608,975	598	30	\$4,084,268	218	\$13,889,054	24	\$1,436,713	326	\$28,537,682	

Population

Housing Units

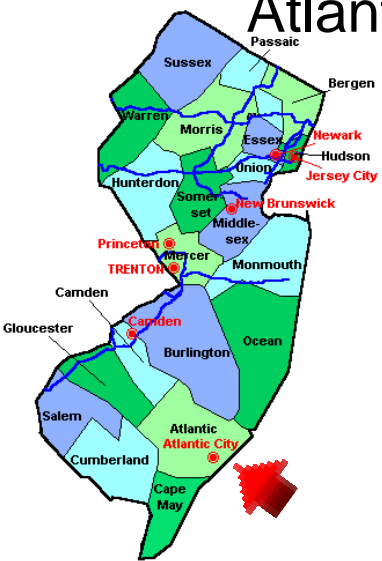
Summary

- Economical – less congestion
- Improves quality of life – serves shopping recreational, schools
- Environment friendly – decreases pollution

	Stations/Interchanges	Total Guideway (mi)
Warren	240	310
Sussex	362	462
Morris	451	538
Bergen	396	297
Passaic	296	244
Essex	766	327
Hudson	259	118
	2770	2298



Atlantic County



A map of New Jersey showing its various counties. Atlantic County is highlighted in green. Other counties shown include Sussex, Warren, Morris, Essex, Bergen, Hudson, Jersey City, Newark, Union, Somerset, Middlesex, Mercer, Monmouth, Ocean, Burlington, Gloucester, Camden, Princeton, Trenton, Salem, Cumberland, and Cape May. A red arrow points to Atlantic County.

- Atlantic County is known for
- Tourism
 - Casinos
 - Golf Courses
 - Boardwalk
- Manufacturing
 - China, glassware
 - Yachts
- Agriculture

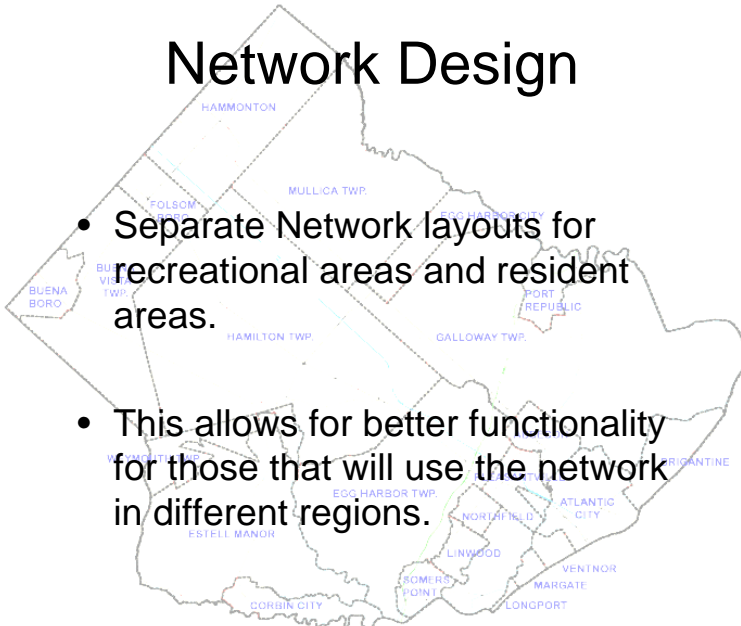
Atlantic County

- Over a quarter of a million residents
 - Workforce of 119,759
 - 95,004 Households
- Over 7 Million Over Night Tourist Yearly
- Over 28 Million Day-Trippers Yearly
- Serving Atlantic City, NJ Transit doesn't even connected to rest of network!!!!
 - Obviously, a huge demand for PRT!!!



Network Design

- Separate Network layouts for recreational areas and resident areas.
- This allows for better functionality for those that will use the network in different regions.

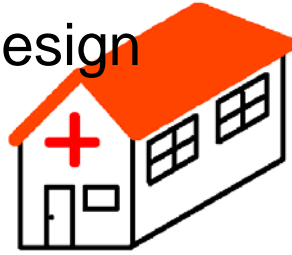


Residential Design

- Station Layout

- Emphasis:

- Schools
 - Medical Centers
 - Commercial Shopping



Ease of Access: Within Towns and Between Towns

Accomplished through Connected Concentric Circles.

Residential Layout



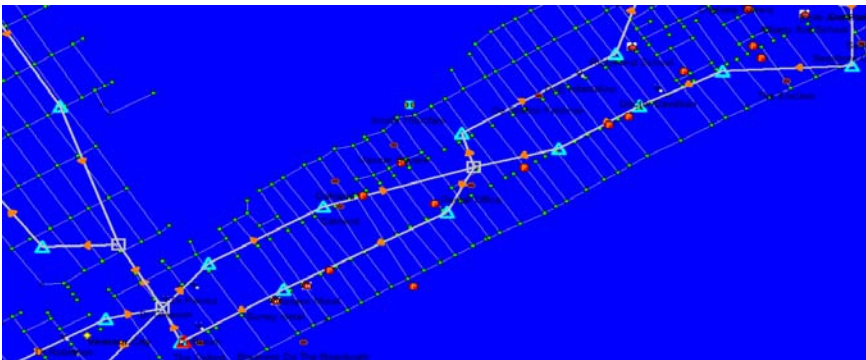
Atlantic City

Recreational Design

- Station Layout
 - Emphasis on Leisure Destination
 - Resorts and Casinos
 - Golf Courses
 - Parks
 - While still providing essential functionality
 - Schools, Hospitals, Shopping
 - And Other Residential Functionality



Recreational Layout



Interlocking Pearl Necklace Design

Two Opposite Direction, intersecting parallel tracks

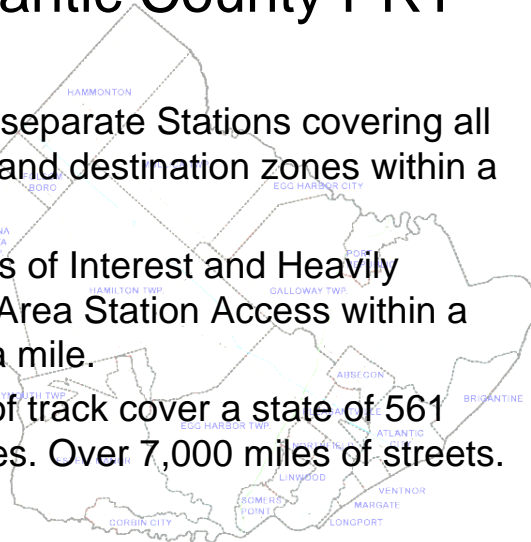
Special Features

- Balance of Traffic in and out of Atlantic County
 - Extra Shuttles would not be needed for tourists, they would come from counties of origin and stay until the tourists left.
- Tax Casinos
 - By knowing each destination, casinos can be billed according to the number of visitors use PRT.

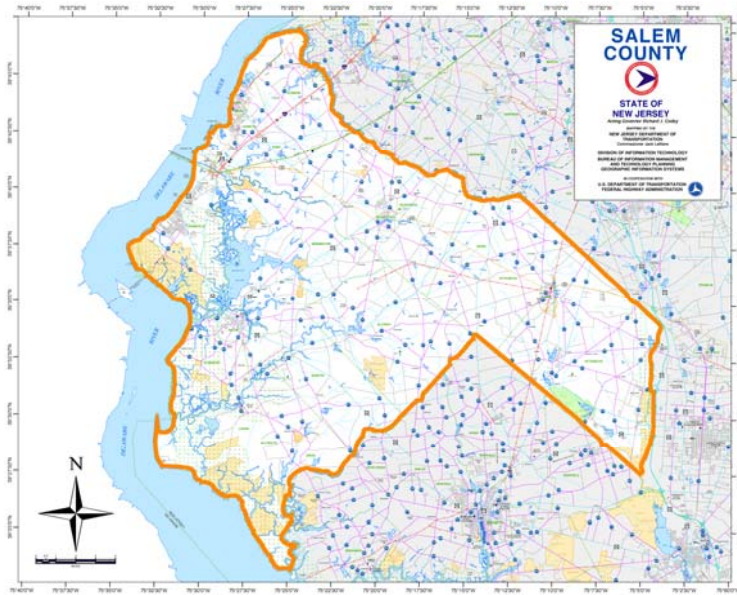


Atlantic County PRT

- Over 1300 separate Stations covering all residential and destination zones within a half mile.
- Major Areas of Interest and Heavily Populated Area Station Access within a quarter of a mile.
- 791 miles of track cover a state of 561 square miles. Over 7,000 miles of streets.



Salem County, NJ



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Salem County, NJ

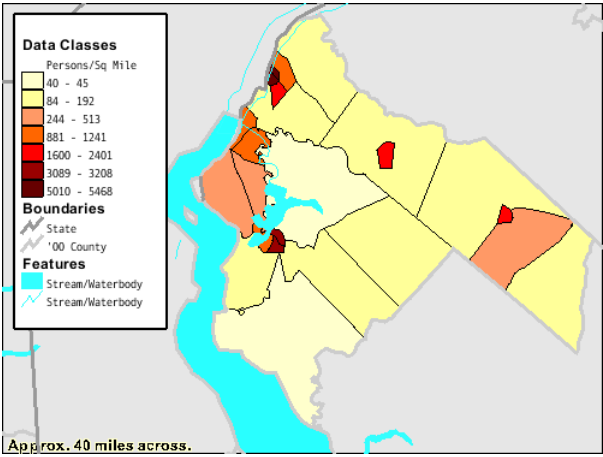
General Information

Population, 2003	64,854
Land area, 2000	338 mi ²
Housing units, 2002	26,493
Households, 2000	24,295
Persons per household, 2000	2.60
Median household income, 1999	\$45,573
Per capita money income, 1999	\$20,874

- Least densely populated county in New Jersey.
- Poorest, per capita county in New Jersey.
- Oldest county in New Jersey.
- 15 Miles from Wilmington, DE.
- 35 Miles from Philadelphia, PA.
- 65 Miles from Atlantic City, NJ.

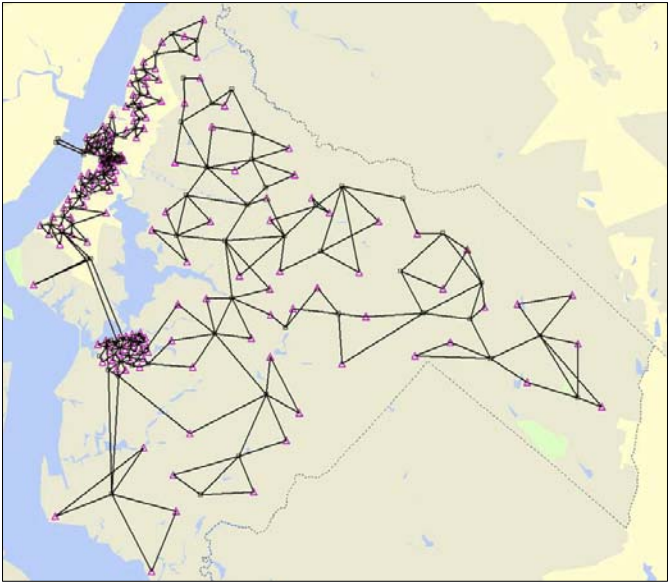
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Salem County, NJ
Population Density



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Salem County, NJ
PRT Network



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Salem County, NJ

Travel Times

Data Classes

Minutes

20.0 - 20.1
21.8 - 22.4
22.7 - 23.3
24.3 - 24.3
25.0 - 25.5
26.2 - 26.5
27.2 - 28.0

Boundaries

- State
- '00 County

Features

- Stream/Waterbody
- Stream/Waterbody

Approx. 40 miles across.

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Salem County, NJ

Transit System

NJ Transit Bus system:
#423, #468

SEPTA Bus system:
#401, #402, #410,

Highway System:



A map of Salem County, New Jersey, showing its geographical location and major transportation infrastructure. The county is shaded in light blue against a dark blue background. Major highways are shown as white lines, with route numbers in red and blue shields. Key features include:

- Highways:** I-95 (Interstate 95) running north-south through the center; I-76 (Interstate 76) running east-west across the top; US-42 (U.S. Route 42) running north-south on the western side; US-130 (U.S. Route 130) running north-south on the eastern side; and several other state routes like 561, 46, 45, 20, 562, 66, and 472.
- Transit Routes:** Red circles with numbers 1, 2, 3, 4, and 5 are placed at various locations along the highway network, indicating specific transit stops or service areas.
- Geography:** The Delaware River is shown as a blue line flowing through the northern part of the county.

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Salem County, NJ

Major Employers



Private Sector employers, excluding retail businesses

PSEG	1,965
E.I. duPont	1,450
Mannington Mills	860
Memorial Hospital of Salem County	800
Connectiv	529
Anchor Glass	361
SJ Hospital Systems-Elmer	350
The GEON Company	200
B & B Poultry	168
Ganes Chemicals	155
Ranch Hope	145
Wire-Pro, Inc	130
SalemCare	130
Woodstown National Bank	130
Walt's Bus Service	130
PSEG Nuclear Training	114
SJ Transportation Co	80
Cumberland Dairy	80
Unico Services	77
Spark's Electric, Inc	75
First National Bank of Elmer	69
PG&E Generating	66
MAC Specialty Coatings	58
Franklin Savings Bank	55

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Salem County, NJ

Recreation



Appel Farms Arts & Music Center
 Cowntown Rodeo and Cowntown Flea Market
 Davidow Theater
 Finns Point Lighthouse
 Oakwood Summer Theater
 YMCA of Salem County
 Wood Lanes Bowling Center
 Penn Salem Marina
 Centerton Golf Club
 Holly Hills Golf Club
 Ron Jaworski's Wild Oaks Country Club
 Fort Mott State Park

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Salem County, NJ

Education

Salem Community College

Salem County Technical Institute

High Schools

Salem County Tech
Penns Grove High School
Pennsville Memorial High School
Salem High School
Schalick High School
Woodstown High School

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Salem County, NJ

PRT at Computer Science building of Salem Community College



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Salem County, NJ

Sources

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Cumberland County: The Garden Spot



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The "Garden Spot"

- * **Cumberland County** is known as the "Garden Spot" of the Garden State!
- * The original farmers of **Cumberland County** were the Lenni Lenape Indians who farmed the land nearly 10,000 years ago.
- * **Cumberland County** contains nearly 70,000 acres of farmland.
- * In state production, **Cumberland County** ranks # 1 in vegetables, melons, & potatoes.
- * **Cumberland County** accounts for a full 16% of the entire State agricultural market value.
- * Sandy Soils, level topography, optimum climate, and ample rainfall along with available fresh well water for irrigation, contribute to **Cumberland County's** concentrated vegetable production.

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Did you know? Cumberland's...

- * Population – 150,000
- * Total Housing Units – 53,000
- * Land Area - square miles -- 490
- * Population Density -- 300
- * Median Household Income -- \$39,150
- * Median Family Income -- \$45,400
- * Mean Retirement Income -- \$15,130
- * Per Capita Income - \$17,380

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Agriculture Highlights & Statistics

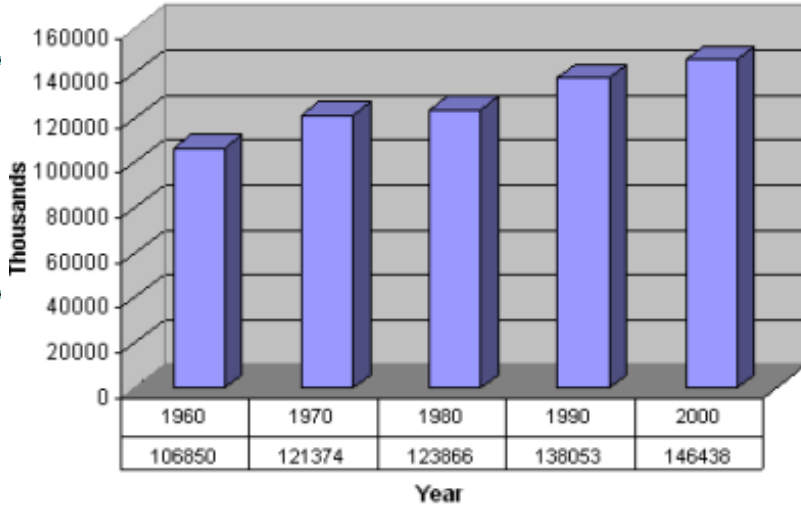
• Growing Season	270 days, 193 frost-free
• Annual Average Temperature:	55.6° F.
• Annual Average Rainfall:	43 inches
• County Population	150,000
• Total Full-Time Operators:	251
• Total Part-Time Operators:	153
• Approximate Number of Farms:	404
• Total Acres in Production:	73,034
• Total Irrigated Acres:	15,870
• Total Area Acres in County:	490 Square Miles or 313,152 Acres
• Cumberland County Planning Board Land Use Assessment:	73,780.9 Acres or 23.6% of County Land Area

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Cumberland County Population: 1960-2000



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County Census Figures

Municipality:	4/1/2000	4/1/1990	Percent Change	Annual Growth Rate%	Square km	Square Mi.
• Bridgeton City	22,770	18,942	20	2	16	6
• Commercial Township	5,259	5,026	5	1	84	33
• Port Norris CDP	1,507	1,701	-11		17	6
• Deerfield Township	2,927	2,933	0	0	44	17
• Downe Township	1,631	1,702	-4	-0.4	132	51
• Fairfield Township	6,283	5,699	10	1	110	52
• Fairton CDP	2,253	1,359	66		7	3
• Greenwich Township	847	911	-7	-1	47	18
• Hopewell Township	4,434	4,215	5	1	77	30
• Laurel Lake CDP	2,929					
• Lawrence Township	2,721	2,433	12	1	97	38
• Maurice River Township	6,928	6,648	4	0.4	242	93
• Millville City	26,847	25,992	3	0.3	110	42
• Port Norris CDP	1,507					
• Rosenhayn CDP	1,099	1,053	4		7	3
• Shiloh Borough	534	408	31	3	3	1
• Stow Creek Township	1,429	1,437	-1	0	48	18
• Upper Deerfield Township	7,556	6,927	9	1	81	31
• Seabrook Farms CDP	1,719	1,457	18		5.1	2
• Vineland City	56,271	54,780	3	0.3	180	69
Total:	146,438	138,053	6	1	1,268	500

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The Big Three



Three Largest
Municipalities are:

- 1) Vineland City
- 2) Millville City
- 3) Bridgeton City

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Retail Trade

- * **Cumberland County:**
578 Establishments
\$1.2 Billion in Sales
\$130 MM Annual Payroll
\$18,180 Per Employee
7,160 Paid Employees
\$8,700 Sales Per Capita

- * **City of Millville:**
100 Establishments/17% of Co.
\$257,660 MM Receipts/21% of Co.
\$26,440 MM Annual Payroll/20% of Co.
1,620 Paid Employees/23% of Co.
- * **City of Vineland:**
308 Establishments/53% of Co.
\$643,750 MM Receipts /53% of Co.
\$69,590 MM Annual Payroll/54% of Co.
3,680 Paid Employees/51% of Co.
- * **City of Bridgeton:**
103 Establishments/ 18% of Co.
\$214,260 MM Receipts/ 18% of Co.
\$24,220 MM Annual Payroll/ 9% of Co.
1,270 Employees/18% of Co.

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Top Ten Employers

	Employer:	Municipality:	# Employed:
1)	South Jersey Hospital System (Cumberland County only)		1,920
2)	Durand Glass Manufacturing Company	Millville	830
3)	Alcan	Millville	740
4)	Mid Atlantic Recycling	Vineland	660
5)	Training School at Vineland	Vineland	620
6)	Clement Pappas Co., Inc.	Upper Deerfield	605
7)	Kimble Glass, Inc.	Vineland	550
8)	Wawa	(various)	490
9)	ShopRite	Vineland/Bridgeton	480
10)	Seabrook Brothers & Sons, Inc.	Upper Deerfield	420

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Current Transit Options

- * Automobile
- * Bus
 - From Millville or Bridgeton to Philadelphia
 - From Upper Deerfield to Atlantic City
- * Railway
 - Winchester & Western
 - Conrail

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Dependency on Automobile

- * 78% drive to work alone
- * 14% drive in carpools
- * 50% of occupied housing units have 2 or more vehicles available to use
- * Average commuting time to work is 23 minutes

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Major Roadways

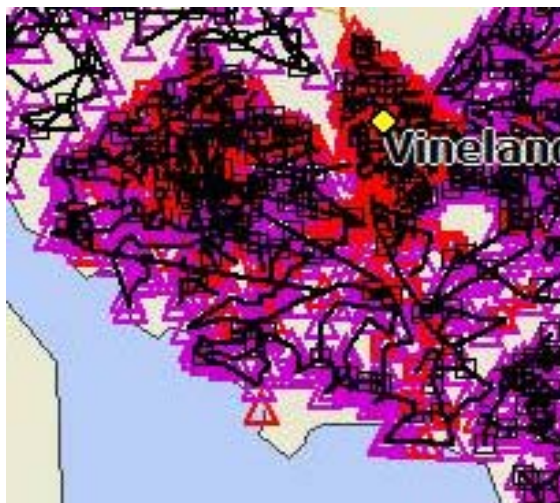


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The PRT Network



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The Hub in Bridgeton



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The Outer Loop



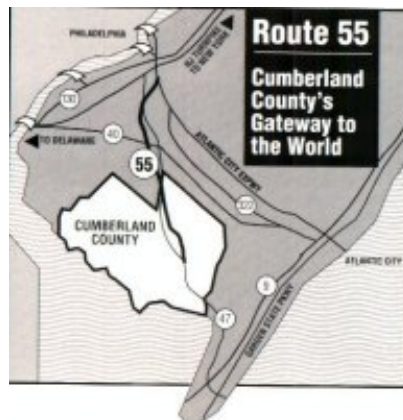
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Rt. 55 – Cumberland's "Gateway to the World"

- * 40 miles long
- * Took 20 years to complete
- * Expected to provide a 40% increase in county population by 2006
- * Greatly reduced travel time to Philadelphia



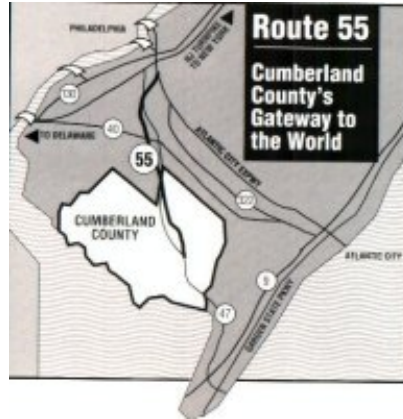
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~~Rt. 55 - Cumberland's "Gateway to the World"~~

- * 40 miles long
- * Took 20 years to complete
- * Expected to provide a 40% increase in county population by 2006
- * Rt. 55 is actually Gateway to PHILADELPHIA



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PRT: Cumberland's GATEWAY TO THE WORLD

- * Cumberland will have 950 stations
- * Services 85% of Population
- * Extends for 610 miles over 490 sq. miles
 - Allows travel to all parts of Cumberland County & New Jersey.
 - For example, you will be able to leave the Atlantic City Boardwalk to play a round of golf in Cumberland at Cohanzick Golf Course, then go visit the Cumberland County Liberty Bell, before sitting in front of one of the 12 screens at Regal Theater, and then finally heading home to Salem County.



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