

FOUR TRANSIT ISSUES ON LONG ISLAND

This report, prepared by Regional Plan Association for the Rauch Foundation, addresses a number of transit issues facing Long Island. First, it discusses the recent work done by the New York State Department of Transportation known as LITP 2000. At the core of LITP 2000's recommendations is a network of widened highways that would be designed to accommodate a transit system of buses. This proposal has received a decidedly mixed reaction and this report raises a number of issues that call it into question.

The report next turns to the matter of how to make the Long Island Rail Road a more effective means to carry people to jobs within the two counties, in contrast to its current prime role of bringing riders to jobs in New York City. The report pinpoints the greatest barrier to accomplishing this objective: the absence of a third track on a critical portion of the LIRR network, which prevents the operation of trains that could many more workers to their jobs by transit. Issues of connecting buses service and fare policies are also discussed.

The third topic covered by this report deals with the precarious financial situation of the two local bus carriers which prevents them from expanding service to address gaps and respond to shifting demands. Suggestion for addressing this are made.

Finally, this report lays out an approach for determining new land use patterns and densities that could be used to create more transit-oriented corridors on the Island. The Nassau Hub, the Route 110 Corridor, and Hicksville are used as prototypes for this work.

FOUR TRANSIT ISSUES ON LONG ISLAND:
A REPORT BY THE REGIONAL PLAN ASSOCIATION
TO THE RAUCH FOUNDATION

Introduction

This report, prepared by Regional Plan Association for the Rauch Foundation, addresses a number of transit issues facing Long Island. The two suburban counties of Long Island, Nassau and Suffolk, house a population of 2.8 million people who live in an area of 1,200 square miles stretching from the New York City border to some 100 miles to the east. In that area the population makes some seven million trips daily, most by private automobile. Transit, other than on school buses, accommodates about 460,000 of these trips, or under seven percent. Of these about 350,000 are made on the Long Island Rail Road, the transit life line for Long Island connecting it to New York City. Long Island Bus, a subsidiary of the Metropolitan Transportation Authority, operates a 330 vehicle bus network, and carries another 100,000 riders per day over its 39 routes, mostly in Nassau County. The considerable smaller Suffolk County Transit system carries another 14,000 riders a day in Suffolk County.

Travel by auto is the *de rigueur* on Long Island. Traffic congestion on Long Island long ago reached epic proportions; as early as the 1960s the Long Island Expressway was dubbed the world's longest parking lot. Much of the traffic congestion problem can be ascribed to the patterns of land use in the two counties, densities high enough to generate large volumes of travel per square mile, but not high enough to warrant a robust transit network. Much of the problem can be traced to the growth that began in with the post World War II boom in Nassau County and has extended to much of Suffolk County; it was designed solely with the automobile in mind, with scant attention paid to accommodating the transit rider or pedestrian. Today, there is an average of 1.77 autos per household in Nassau County and .183 in Suffolk County; a scant 7.7 percent do not own a car in Nassau County and 5.4 percent in Suffolk County.

Against this backdrop this report addresses four transit related issues. First, it discusses the recent work done by the New York State Department of Transportation known as LITP 2000. At the core of LITP 2000's recommendations is a network of widened highways that would be designed to accommodate a transit system of buses. This proposal has received a decidedly mixed reaction and this report raises a number of issues that call it into question.

The report next turns to the matter of how to make the Long Island Rail Road a more effective means to carry people to jobs within the two counties, in contrast to its current prime role of bringing riders to jobs in New York City. The report pinpoints the greatest barrier to accomplishing this objective: the absence of a third track on a critical portion of the LIRR network, which prevents the operation of trains that could many more workers to their jobs by transit. Issues of connecting buses service and fare policies are also discussed.

The third topic covered by this report deals with the precarious financial situation of the two local bus carriers which prevents them from expanding service to address gaps and respond to shifting demands. Suggestion for addressing this are made.

Finally, this report lays out an approach for determining new land use patterns and densities that could be used to create more transit-oriented corridors on the Island. The Nassau Hub, the Route 110 Corridor, and Hicksville are used as prototypes for this work.

LITP 2000 Is Not the Answer for Improving Transportation on Long Island

Over the last three years the New York State Department of Transportation, working with a team of consultants led by Parsons Brinckerhoff, has been examining alternatives for the transportation system on Long Island. The effort, known as LITP 2000, has recently released their preferred alternative, which has as its centerpiece the expansion of 60 miles of limited access highways in Nassau and Suffolk counties to accommodate an addition lane in each direction and the expansion of another 130 miles of arterial roads. A

complete list of the road segments to be widened is provided at the LITP 2000 website. The intent is that the added lanes on the highways would be used by carpools of two or more persons and public transit vehicles dubbed rapid commute vehicles. The expanded arterials would also have the capability of giving traffic priority to the rapid commuter vehicles. The rapid commute vehicle, a euphemism for express buses, would operate over 85 routes devised by LITP 2000 to bring commuters and any others to concentrations of work sites and transfer locations such as Long Island Rail Road stations throughout the two counties and to the subway system in eastern Queens. This network of bus service is projected to carry 61 million passengers per year using some 700 buses during the peak period, with perhaps another 100 to be purchased as the spare ratio. The buses are projected to operate at an average speed of just under 30 miles per hour, stopping at 72 boarding stations. Headways would vary by route from an average of five minutes for five of the routes, 15 minutes for 30 routes, 20 minutes for 30 routes and 30 minutes for 20 routes.

LITP 2000 has concluded that this network was the most effective way to alleviate traffic as many motorists would shift to either carpools or to the express bus system to avoid traffic congestion, resulting in lower levels of congestion than other alternatives studied.

This proposal raises a number of questions and issues.

- Is the projected demand reasonable given the strong advantages of driving?
- Will the additional road capacity be self-defeating, putting more drivers on the road rather than encouraging them to use carpools or the express buses?
- Will there be sufficient funds for the subsidies required for the additional bus operations, especially if the projected demand for their use doesn't fully materialize?
- Can an express bus system operate successfully in a totally suburban environment in contrast to all other such networks which are exclusively designed to serve the downtowns of large cities?
- Will the appearance of partially empty bus and carpool lanes lead to a turn-back of the added lanes for general use traffic as has happened elsewhere?

- Do the land uses and densities in Nassau and Suffolk counties suggest that there will be sufficient volumes of travelers in the corridors where express bus service is projected?

A discussion of these issues follows.

In 1990, the latest year for which comprehensive work travel data is available, some 18,300 people – 13,000 in Nassau and 5,000 in Suffolk – used buses to commute to work within the two counties, or about 1.9 percent of the 973,000 who traveled to work daily.¹ For travel within Nassau County about 3.4 percent of the 370,000 commuters used buses and for Suffolk the share was barely one percent of the 455,000 commuters. Work trips between counties also averaged only about one percent by bus. LITP 2000 projects that some 61 million riders per year will use the system. Assuming that most of this travel occurs on weekdays and that about 90 percent is to travel to and from work, and that three-quarters of the trips are made to and from destinations within the two counties, about 80,000 commuters would use the system to travel to work each day to Nassau and Suffolk job sites. If only half of these commuters drove to the stations (the other half walking) then 40,000 parking spaces would have to be sited by the station locations.

The routes that have been outlined suggest about 80 percent of these would travel within Nassau County, or about 64,000, equivalent to about 16 percent of the 400,000 intra-Nassau County commuters. This would increase the share from the 3.4 percent today to close to 20 percent with the express bus system in place (16 percent on express buses and another 4 percent of so remaining on local buses).

Today, 31 million trips are made on the MTA's Long Island Bus network each year and another 4.5 million on the Suffolk County Transit system. The LITP projects that 61 million per year would use the express bus network, increasing bus use on the Island to almost 100 million, or by three times.

¹ Although 2000 Census data for work travel has not been released in detail, the summary data suggests that the 2000 data will be very close to the 1990 modal patterns.

These modal shares and transit ridership growth estimates are very appealing at first blush. The logic is that if the transit option offers the potential rider a more dependable and faster trip than driving alone they will shift in great numbers to transit. However, there are a number of issues that must give one pause. Will this system be as effective in shifting travelers to the express bus system as projected? Once the 190 miles of highway widening is in place, especially on the 130 miles along arterials where buses will be sharing the additional lane with private cars, there will be a strong incentive to shift back to driving alone. Many factors conspire to work against attracting large numbers of riders:

- continuance of ample, convenient, and free parking at most destinations in the two counties;
- absence of layouts and designs at work sites consistent with transit use (walkable areas, buildings set near the street, clustering of buildings);
- need to wait for the express buses compared to the instantaneous availability of the private car – all but five routes will operate at headways of 15 minutes or more apart, making the time waiting for the bus a significant deterrent to their use;
- limited bus service in the off-peak;
- the strong pull to complete the trip by automobile since the many, if not a majority of commuters, would need to use their private cars to reach the park and ride location; and
- convenience of the automobile for multiple stops during the trip to and from work.

Given these factors, it would be surprising if the modal shares and ridership volumes projected – quintupling of bus shares and a tripling of ridership – would be attained. Should these projections not be realized there will be a very large public subsidies required to operate them, subsidies that are very hard to come by for existing transit services in a budget-tight environment at all levels of government today.

On the other hand, should the ridership projected be attained, the improvement projected for traffic relief will likely drive many of the prospective riders back to their cars, reaching some type of equilibrium with reduced transit ridership.

The likelihood of achieving the projected success of the express systems laid out by LITP 2000 is called into question in other ways. Express bus systems have never been operated in a suburban setting. All others in North America are designed to bring riders from the suburbs to central business districts where jobs are located close together and where the built environment is designed to encourage transit use and often to discourage excessive auto use. New York, Chicago, Los Angeles, Seattle, Houston, Pittsburgh and Ottawa are the North American cities with significant express bus networks, often aided by exclusive rights-of-way set aside for buses and carpools. There are no express systems designed or operating to carry commuters to traditional low density suburban locations that are so typical of the two suburban Long Island counties.

This empirical evidence is supported by the RPA's seminal work on land use and transit, Public Transportation and Land Use Policy.² RPA examined the land use warrants for express buses of two types – those depending primarily on park and rides for access and those relying on walk-ons. This work can be used to answer the question as to whether the land use patterns and densities in Nassau and Suffolk counties can meet the warrants for express buses. The RPA analysis determined the residential densities required to economically support these two types of services. The analysis varied the tolerance for costs on a per passenger-mile, the level of non-residential activities at prospective route destinations, bus travel speeds, frequencies of peak period service, and bus route length. Adapting this work and using the most optimistic combination of assumptions – high tolerance for subsidies and high average bus travel speeds (35 mph), the curves in Figure 1 were developed for varying frequencies of service assuming the travelers behaved as if they were going to a small sized city with 10 million square feet of non-residential floor-space, considerably larger than any such concentration in Nassau or Suffolk counties.

² Pushkarev and Zupan, Indiana University Press, 1977

Because they are can operate efficiently at lower densities, the exercise is presented here for the park and ride type express buses.

Figure 1 shows that for park and ride express bus service like that recommended by LITP 2000. As the route distance increases the required residential density to support the serve climbs too. This phenomenon occurs because at greater distances a smaller and smaller proportion of residents are traveling to any particular destination. Thus, more density is needed to support the service as the trip being considered is longer. And of course, with a higher frequency of service, the density needed will also grow. Figure 1 shows that at densities below 10 dwellings per acre these bus services can be successful for only shorter routes at lower frequencies. At five dwellings per acre only a very infrequent service – five buses over two-hours or one every 24 minutes, can be effectively operated. Where are such densities in Nassau and Suffolk counties located? There are only a handful of localities at 10 dwellings per acre or higher, which is equivalent to about 10,000 people per square mile. All are located in Nassau County, mostly south of the Long Island Expressway and west of the Meadowbrook Parkway.³ Figure 2 (in preparation) shows them and indicates the highways that are proposed in the LITP preferred alternative to be widened. Most of these communities are not located at or near the highways proposed for widening. Despite adequate densities then one is hard pressed to understand how residents in these communities will be positioned to use express buses on these routes to reach job in either county. A larger area of the two counties qualifies at the level of five dwellings per acre (equivalent to about 4,500 per square mile). But those densities would only support half hourly bus service, hardly the frequency to attract level of riders LITP 2000 suggests. Figure 2 makes plain that the locations where highways are proposed for widening are a poor match to the locations where higher densities might support express buses.

³ The communities exceeding 10,000 persons per square mile are East Rockaway, Franklin Square, Great Neck Place, Hempstead, Island Park, Long Beach, Lynbrook, Mineola, Munsey Park, New Hyde Park, South Floral Park, Valley Stream and Williston Park.

The RPA work concluded that walk-on park and rides could be successful only with urban densities exceeded 20 dwellings per acre, equivalent to about 20,000 people per square mile, densities considerably higher than any in Nassau or Suffolk counties.

Consider the level of subsidies that would be required if the express bus network envisioned by LITP 2000 did not materialize. If, for example, the 61 million passengers projected fell short. If the only one-third of the ridership materialized, then a \$4 fare would leave the operation \$173 million short of covering its \$233 million costs. If it met half its goal it would be \$111 million short. Even if it met two-thirds of the projected ridership, the deficit would be \$71 million which would more than double existing public subsidies in fiscal year 2000 for LI Bus and Suffolk Bus combined of \$65 million. Meanwhile, prospects for greater subsidies are dim, as is discussed elsewhere in this report, given the current governmental budget difficulties in Nassau County and New York State.

The LITP 2000 plan also envisions an increase in carpooling, attracted by the reduced congestion on carpool lanes. This flies in the face of recent history where despite growing highway congestion, carpool use has dropped – Nassau County from 9.4 percent carpooling in 1990 to 8.6 percent in 2000 and Suffolk County from 10.6 percent to 10.0 percent. This has happened two main reasons. First, higher incomes have made it possible in suburban communities for most licensed drivers to have an automobile available, reducing the incentive to drive alone. In 2000, 63 percent of all Nassau County and 68 percent of all Suffolk counties households owned two or more cars. Second, the increasingly complex lives we lead, with multiple travel requirements before and after work, make carpooling impractical for most people. These factors are likely to weigh more heavily for most commuters than the small time savings the extra highway lanes might temporarily bring.

The possibility is not remote that once put in place as high occupancy lanes for buses and carpools these widened roads could be converted to general purpose lanes. It has already happened in the New York metropolitan area. In northern New Jersey, I-80 and I-287

were widened, largely with federal funds with the federal stipulation that the added lanes would be used only for carpools and buses. The usage was low enough to create a backlash among single-occupant drivers who perceived the added lanes to be relatively empty, while they continued to be delayed on the other lanes. They petitioned their elected officials, and despite the fact that the federal funds for the road widening were based on the lanes remaining for high occupancy vehicles, the lanes were converted for general use. Moreover, federal law had stipulated that the state would have to pay back the federal government for the road construction, but through an act of the US Congress that passed easily, New Jersey did not have to repay the costs. Similarly, in Minneapolis the conversion of a high occupancy lane to general traffic is being pressed with all indication that it will be successful. Should the same course of events occur on Long Island, a still more auto-oriented, transit hostile environment with wider highways will have been created, continuing the cycle of sprawl and fruitless highway building.

In sum, the LITP 2000 proposal is overly optimistic regarding its attractiveness to Long Islanders. This conclusion is based on the characteristics of the service it is likely to offer compared to the choice to travel by automobile. This optimism is suggested in other ways. Density warrants for express buses, for the most part require higher densities than are found on most of the Island. This is borne out by the limited number of places in the United States where express buses are in operation, all centered on large central business districts, not spread suburban clusters of activity that typify Long Island. There is great danger in proceeding with the LITP 2000 plan. There is a real possibility, based on experience elsewhere, that the limitations of the added highway lanes will be relaxed and the widened highways would be used for mixed traffic, perpetuating the sprawl, highway expansion, more sprawl, more highway expansion cycle of the last 50 years. Even if partially successful, the express bus system proposed will accumulate huge deficits, well beyond the levels tolerated for buses in Nassau and Suffolk counties today.

Using the Long Island Rail Road for Commuting to Jobs on Long Island

To attract commuters to a commuter rail system requires fast, reliable and frequent service, competitive fares and an easy means to access the system from both a trip's starting point and its destination. For the travel to Manhattan, downtown Brooklyn and Jamaica, the Long Island Rail Road (LIRR) has a robust schedule, but with high fares, which are nonetheless competitive relative to the costs of driving and parking in the Region's core. The driving alternative raises the specter of endless congestion and uncertainty. And although parking at rail stations in the suburbs is a perennial problem, most people do find a parking spot or can reach the station in some other way. As for access to work sites, much of Manhattan (and Jamaica and downtown Brooklyn) are reachable on foot or by a short subway or bus ride.

Consider now how this contrasts with the trip to a Long Island work site from points in Queens, Brooklyn, or Manhattan, or western Nassau County, the so-called "reverse" commute. The fare is usually as high as the major flow (to Manhattan) commute, but the cost of driving is much less, since most parking is free in the suburbs. The rail schedule is limited since the service pattern is set to serve the huge city-bound market. Egress at suburban sites is an especially serious problem, since most work sites are beyond a reasonable walk distance, and the walking environment is often daunting. Connecting bus options to work sites are limited at best, and are usually absent. The auto alternative for the "reverse" trip is seldom as congested and as unreliable as the auto trip in the major commuting direction.

Most of the shortcomings of "reverse" commuting also applies to intra-Island work trips where the work site is to the east of the workers' residence – high fares, free parking for drivers, spotty train schedules, poor egress options. Competition for parking at the boarding station is a further complication.

This section of the report discusses what can be done to remedy these problems and make the LIRR a useful option for workers trying to reach their jobs on Long Island.

LIRR Service Schedule and the Reverse Commute. The LIRR is the busiest commuter rail system in the nation, providing 270,000 rides a day, mostly for the large numbers of commuters residing in Nassau and Suffolk Counties destined for Manhattan jobs, and to a lesser extent to destined for jobs in Downtown Brooklyn and Jamaica, Queens.

Consequently, its operation is geared to serving its major direction of flow, westbound in the morning and eastbound in the evening, which hampers the LIRR's ability to serve the Island-bound commuter who lives in New York City or western Nassau County. Nine of the LIRR's ten lines branch out east of Jamaica; the exception is the Port Washington Branch, which branches off at Woodside in the western part of Queens. Five of these nine lines⁴ use all or part of the two-track segment of the LIRR between Jamaica and Hicksville. On this segment during the morning and evening heavy commuting hours both tracks operate with peak direction trains only, preventing the operation of trains that might carry commuters living in New York City or western Nassau County to jobs in Nassau or Suffolk county. To examine this further, seven stations on these LIRR segments were chosen because they were representative of the reverse rail services offered, their geographic range and for the large numbers of jobs located in the jurisdictions near the stations. The stations chosen were:

- Mineola – Nassau County – 51,400 jobs in Mineola and Garden City zip codes, concentration of rail service
- Floral Park – Nassau County – 4,000 jobs – close in suburb to New York City
- Hicksville – Nassau County – 22,900 jobs – concentration of rail service
- Syosset – Nassau County – 11,700 jobs – Port Jefferson line
- Farmingdale – Suffolk County – 62,500 jobs in Farmingdale and nearby Melville
- Brentwood – Suffolk County – 43,900 jobs including government center in Hauppauge
- Ronkonkoma – Suffolk County – 14,800 jobs

Table 1 shows the number of “reverse” trains stopping at seven stations in the morning and evening peak periods. To highlight the weakness of these “reverse” rail services, the largest gap in minutes between trains is also shown. As is obvious in Table 1, anyone

⁴ Babylon, Montauk, Oyster Bay, Port Jefferson, and Ronkonkoma branches

wishing to use the LIRR and disembark at these stations to travel to jobs near them is faced with an unattractive service pattern. None of the stations have more than five trains available during the 2-⁵ hour period. Moreover, the use of the two tracks for Manhattan-bound trains prevents service for much of that time; six of the seven have service gaps of 1 ⁶ or more. The three-hour evening period is only slightly less unattractive for the return home, with a few more trains, and slightly less daunting service gaps, but hardly appealing to prospective rail riders. The seven stations are located on three of the LIRR's branches, but similar service patterns exist on the other branches as well since, in some cases these branches also use the Jamaica-Hicksville segment, and in other cases, all or part of the branch has only one set of tracks. This prevents the assignment of the tracks to the "reverse" direction in the peak periods. The construction of a long-discussed third track between Jamaica and Hicksville would remedy this problem. The third track will make it possible to operate a reasonable "reverse" service on the Port Jefferson, Ronkonkoma, and Montauk branches. However, if the third track is not completed by the time the East Side Access project⁷ is completed, now targeted for

Table 1: Reverse Commute Service for Seven Key Stations

Station	Morning Trains	Biggest Gap (min.)	Time of Gap	Evening Trains	Biggest Gap (min.)	Time of Gap
Mineola	5	96	6:39-8:15a	8	66	5:38-6:44p
Floral Park	3	70	6:21-7:31a	4	50	4:17-5:07p
Hicksville	5	98	6:48-8:26a	6	68	5:27-6:35p
Syosset	3	110	6:46-8:36a	3	80	5:20-6:40p
Farmingdale	2	95	7:00-8:35a	3	72	5:13-6:25p
Brentwood	0	182	6:22-9:24a	1	188	4:16-7:24p
Ronkonkoma	2	140	6:37-8:47a	1	148	4:46-7:14p

2012, the problem can only get worse as more peak service is scheduled in and out of Grand Central Terminal during the peak periods in the peak direction. It is therefore imperative that the third-track be installed before then. And the sooner it is installed, the sooner the benefits of reverse commuting can be realized. The MTA expects the third

⁵ 6:30am to 9:00am arrival time at suburban rail station

⁶ 4:00pm to 7:00pm departure time from suburban rail station

⁷ The East Side Access project would bring the LIRR into Grand Central Terminal, offering an average of 45-minutes daily time savings to over 75,000 Long Islanders working on the east side of midtown Manhattan. The MTA is moving forward with design and engineering, and is hopeful of raising the \$4 billion needed for construction.

track construction to cost \$100 million, and has included \$10 in its five-year (2000-2004) capital program to design, but not to build it. This would still leave the project completion many years away. And progress is further jeopardized by the rejection of the 2000 Transportation Bond Act by New York State voters. (It passed by a 60-40 margin in Nassau County and failed narrowly in Suffolk County).

“With Peak” Intra-Island Commuting. Commuters can also use the LIRR to travel within the two suburban counties in the peak direction. Here the problem is not the absence of sufficient track capacity, but the stopping patterns that have been established to serve the heavy flows into Manhattan, with many trains bypassing possible destination stations. To illustrate this, the number of trains stopping at the seven illustrative stations from each Long Island branch is shown in Table 2. A typical boarding station for each branch is used for illustration. Where one-seat service is not possible because of the configuration of the rail network an “X” is shown. As is readily apparent it is not possible to travel in a reasonable manner by the LIRR from most branches to the seven key stations described here. Of the seventy possible combinations (10 branches x seven stations), only 13 can offer service given the LIRR’s configuration. Of these 13, five could offer service (the trains pass the stations but don’t stop there), but don’t. This leaves eight branch-station combinations that have peak period service and of these, only four offer five or more trains over the 150-minute morning peak period. These include Huntington to both Hicksville and Mineola, Hempstead to Floral Park, and Ronkonkoma to Farmingdale.

Fares. Many of the workers who might consider using transit to reach jobs on Long Island are filling lower wage jobs, which naturally makes them sensitive to the fare levels charged on the LIRR. Fares today are set with the peak direction commuter in mind with the objective of covering as much of the cost of operation as possible while not repelling customers or incurring excessive political wrath. Because of the high cost of the automobile alternative for travel to Manhattan, the excessive congestion for traveling there, and the relatively high incomes of the Manhattan-bound commuters, it is possible to set those at high levels. But the use of the same fares for the same trip for the reverse commute is counterproductive, repelling potential customers, who, on average have lower incomes, do not face high parking charges (if any) at their job sites, nor face the

same level of mind-numbing traffic to reach their jobs as those driving westbound towards Manhattan in the morning.

**Table 2: Morning Peak Westbound Trains to Seven Stations Near Work
Concentrations from Typical Stations on Each LIRR Branch Line**

Branch	Babylon	Far Rock-away	Hempstead	Long Beach	Oyster Bay	Montauk	Port Jefferson	Port Washington	Ronkonkoma	West Hempstead
Typical Station	Massapequa	Woodmere	Hempstead	Oceanside	Glen Cove	Patchogue	Huntington	Great Neck	Central Islip	Malverne
Mineola	X	X	X	X	3	0	5	X	2	X
Floral Park	X	X	8	X	0	0	0	X	0	X
Hicksville	X	X	X	X	X	0	6	X	2	X
Syosset	X	X	X	X	X	X	X	X	X	X
Farmingdale	X	X	X	X	X	X	X	X	6	X
Brentwood	X	X	X	X	X	X	X	X	2	X
Ronkonkoma	X	X	X	X	X	X	X	X	X	X

Lowering fares can make a difference. The LIRR's sister agency, Metro North did just that for reverse and intra-suburban commutes on its New Haven line on three occasions in the 1990s. In 1993, intra-Connecticut fares were lowered in some markets, producing ridership gains of up to 10 percent. Revenue grew more for those station pairs with lowered fares than those whose fares were not lowered. In 1994, the success of this program led to fare reductions for "reverse" commutes from The Bronx to Greenwich and Stamford, Connecticut. Fares were lowered by as much as 20 percent and ridership responded by growing 34 percent, yielding a net revenue gain of 17 percent in those markets. Three years later further fare reductions of six percent for reverse commutes led to a 21 percent increase in ridership, and a 5 percent reduction in intra-Connecticut commuter fares produced a 15 percent growth in ridership. Each produced more, not less revenue, belying the conventional wisdom among transit operators that you cannot make up the revenue with higher ridership if you lower fares. In these cases, to use the economist's parlance, the elasticity exceeded -1.0.

On the LIRR the same types of fare reductions can be put in place. For reverse commuting lower fares can be charged during those times of day and in those directions that reverse commuters would use. For intra-Island travel, the fares can be lowered by significant amounts and done in increments to test their effect until revenue no longer grows with added ridership. The only limitation for intra-Island fares for travel in the peak direction is that they not be lowered so much that commuters destined for New York would be tempted to purchase them and combine them with another station-to-station commuter pass to save money on their commute.

On Metro North's New Haven line, it was possible to expand service to respond to ridership increases. On the LIRR, more service is not now possible because of the track limitations, and the poor "reverse" schedules will seriously compromise ridership gains that would likely materialize from lowering fares. Again, the key is the construction of the third track.

Station Access at Suburban Rail Stations. Commuting by rail to work sites on Long Island is hampered by the inability to easily reach the work site from the rail station. Many work locations are beyond walking distance and where there is connecting bus service it is often infrequent or poorly timed to match the rail service. The rail schedules do not give information about connecting bus service, despite the fact that Long Island Bus (the major bus carrier on Long Island) is an arm of the MTA, as is the LIRR. (A curious sign of the times is that information is obtainable on the LIRR's website but not on the schedules distributed at stations). In Table 3 the seven stations used to illustrate the rail scheduling problems earlier also illustrate the spottiness of connecting bus service.

Of the seven stations, two have no bus service at all and another has only one route. Brentwood had five routes and Ronkonkoma four, and Mineola and Hicksville have a rich array of service, with 7 and 12, respectively. However, even there not all the routes connect to major work destinations nearby. Of the 36 and 34 buses stopping near the station during the morning peak, only 7 and 9, respectively make good connections with

the train service. In Ronkonkoma's case there is some bus service, just no rail service to connect to it.

Table 3: Connecting Bus Service During the Morning Peak Period

Station	# Buses Routes	# Connecting to Major Work Destinations	# Buses on Those Routes in AM Peak	# With Well-Timed Connections
Mineola	7	4	36	7
Floral Park	0	0	0	0
Hicksville	12	5	34	9
Syosset	0	0	0	0
Farmingdale	1	1	4	3
Brentwood	5	5	14	4
Ronkonkoma	4	4	8	0

What to Do About Bus Subsidies on Long Island?

Like all transit systems in the nation, Long Island's two major bus systems -- the MTA's Long Island Bus and Suffolk County Transit operate at a deficit. In fiscal 2001, LI Bus had operating expenses of \$ 80 million, of which only \$33 million or 41.2 percent was covered by fare revenues. Suffolk County Transit had a \$26.8 million operating budget with only 22.2 percent or \$5.9 million raised from fares in 2000. Thus, the two systems need to find close to \$60 million a year to support its transit system. For LI Bus, the largest share of its \$47 million deficit, \$35.3 million is covered by New York State funds, with most of the rest coming from Nassau County. Suffolk County Transit's \$21 million deficit is closed with about \$12 million for local funds and \$11 million from the New York State.

In the current anti-tax environment, especially in Nassau County where large increases in property taxes are being proposed to close its enormous budget gap, it is a political anathema to raise the idea of new taxes for transit operations. But consider what could be

accomplished with very little impact on the average household's budget. For example, \$20 million spread over the County's 450,000 households come to only \$44 dollars per household. A fee based on the County's 950,000 registered motor vehicles would come to just over \$20. If converted to per gallon basis, three cents per gallon would raise the \$20 million. In Suffolk, where the subsidies are lower, and the population greater, these tax impacts would be even lower on a per household, per vehicle or per gallon basis.

Each of these sources of funds could by themselves establish a permanent and stable funding source for covering deficits of the bus transit system on Long Island and make it possible for the bus operators to plan for service improvements without depending on last minute or overdue budget deliberations in Albany between the legislature and the Governor. By using a combination of revenue sources, so that no one source bears the full burden of transit deficits it may be possible to create a package that is political acceptable and form the foundation for improved transit service.

How to Use Land Use to Create a Workable Transit Network On Long Island

It is axiomatic among transportation planners that the way the land is settled – the arrangement, density and design of the uses to which land is put – more than any other set of factors controls the amount and mode of travel of the transportation network. Furthermore, studies have strongly suggested that the arrangement, density and size of the non-residential uses of land have a greater influence on travel demand than residential uses. Large and concentrated non-residential activities, like those found at the core of cities, are closely associated with heavy transit use. Figures 3 and 4, reproduced from Public Transportation and Land Use Policy clearly illustrate these points.

Long Island's two suburban/exurban counties can hardly be thought of as densely settled. Nassau's three towns – Hempstead, North Hempstead and Oyster Bay – average only about 6,000, 4,000 and 3000 people per square mile, and Suffolk County averages about 1,500 per square mile, densities at which transit is not encouraged or where auto used

suppressed. Moreover, there are no largely non-residential places in the two counties that even the casual observer would classify as concentrated, large and urban. Nassau and Suffolk are the home of some 1.2 million jobs, but in places where there are many jobs, such as at the Nassau Hub or along Route 110, they are arranged to accommodate the automobile rather than transit. In the case of the Nassau Hub they are spread over a large area, and in the case of Route 110 located in linear fashion with buildings set back from the roadway. And at other places where there is a greater concentration, such as in Mineola or Hicksville, the number of jobs is relatively small.

In this report an approach is suggested to develop a workable land use plan for three areas of Long Island that hold some promise for increasing transit use. The three areas selected are the Nassau Hub, Route 110 in Farmingdale and Hicksville. They represent three distinct types of land use arrangements: Nassau Hub is a large formless area, but with many large scale non-residential uses, principally offices, a retail center, two colleges and a sports arena; Route 110 has a linear configuration running north-south, largely lined with well separated “single-family” office buildings; Hicksville is representative of an older downtown developed around a rail station, that has been largely overrun with expanses of parking to serve the New York City-bound LIRR commuter.

The objective here is to outline a technical approach that would enable the determination of the changes in land uses it would take in or near each of these places to support transit services. The approach is to find the configuration of land uses that can create enough travel demand by transit to support cost-effective transit service. The approach follows the one employed by RPA in developing its land use warrants in Public Transportation and Land Use Policy. In that work, transit use in a corridor was estimated incorporating measures of residential and non-residential densities. Then the cost of providing the transit service was determined – itself a function of demand since it is more costly to provide transit in dense areas even as the cost per rider drops. Then density thresholds were created for each transit mode, including local and express buses, light rail and rapid transit. Given the interest in bus rapid transit, thresholds for that “mode” should be developed. It is this technique that would be replicated for each of the study sites – the

Nassau Hub, Route 110 and Hicksville. This approach – determine the land use needed to support transit is 180 degrees removed from the approach taken by LITP 2000. New York State accepted the current and projected land uses based on the past and attempt to build to support it. Naturally, with that approach a change in modal orientation for Long Island is unlikely.

A step by step discussion of how the “land use first” approach that is needed is described below. To employ this technique to the three areas here the first step would be to develop an inventory of the existing land uses in the corridor or area. Included would be the net residential density by small area, residential labor force by small area, size and density of contiguous non-residential areas, and the spatial relationships among them. Census data from the US Census for 2000 would be used to determine existing distributional patterns of commuting.

Next a series of land use scenarios would be developed for the corridor or area and the peak period travel demand using transit would be calculated for each using relationships developed in Public Transportation and Land Use Policy. These relationships were designed along the following lines:

- Determine the total number of trips for work and non-work purposes emanating from and area as a function of residential and work force densities;
- Determine the share of those trips attracted to concentrations of non-residential activities as a function of the distance to these destinations and their size;
- Determine the share of these trips using transit based on the residential density of the home site, income of residents, auto ownership of residents, size, density, and character (urban or suburban) of the non-residential concentrations, and prospective frequency of transit service and proximity to rail or bus service;
- Determine the total transit trips in the corridor or area;
- Determine the cost the frequency of service that would be provided in the corridor to meet the transit demand for each possible transit mode;
- Determine the operating cost of providing that service as a function of frequency and speed of service where speed is a function of residential density;

- Determine the cost per passenger of the potential service for each scenario; and
- Interpolate the results to adjust the land uses to determine workable land use scenarios for each transit mode.

The above description, although mechanistic, should provide a sense of the lane use requirements for each of the three corridors areas in question. This is not to say that a more qualitative approach cannot be overlaid on the more quantitative one. For example, the use of transit will depend on many more localized design features – clustering of buildings near one another and near bus and/or rail stops to make transit more efficient and speedy and to reduce transit riders' walking distances, for example. These features are not easy to quantify, but are critical components of a successful transit system. Features such as these are determined by zoning ordinance, and where development has occurred, these features are not easily changed.

As discussed above, the three corridors/areas differ and considerations regarding each are worthy of mention here. The Nassau Hub currently has its land uses spread over a large area with each of its non-residential uses separated by either too far to walk or separated by heavily trafficked roadways, making walking among them dangerous or impossible. To make it more transit hospitable it would be desirable to establish a transit mode that would have its own right-of-way, and avoid the unreliability and delays associated with heavy traffic. Earlier work by RPA for the Nassau Hub suggested that it might be possible to develop a light rail system, but only if the new land uses in the area were tightly clustered near the light rail stations and designed to make walking easier. Current zoning in the area in no way ensures that this will happen.

Regarding the Route 110 corridor, the section from the Northern State Parkway to Route 109 might be able to support a stronger transit system than it has now if it could take advantage of a number of prospective and mutually supporting functions including commuting to the corridor from points north and south connecting to Route 110, transit as feeder to the Farmingdale and Amityville stations, and reverse commuter to those two stations. The demand analysis would be used to address each of these potential markets.

The design issues are relevant for the work sites along the corridor. Presently, building setbacks and the wide right-of-way work against transit use. Selected preferential treatments for buses in the corridor would be helpful too (it is not anticipated that there could be sufficient density in the corridor to warrant a light rail line).

For Hicksville the presence of frequent train service offers a ready-made potential for improved transit service. The station area today is dominated by low end uses and parking for New York City-bound commuters. Few use the 12 bus lines as feeders to transfer to the rail service since schedules are not coordinated. This is the case because the bus schedules are designed to meet the needs of their customers and Long Island Bus considers the feeder service relatively inconsequential – “the tail wagging the dog.” But if there was more development occupying more of the area around the station, then bus use and frequency might increase enough that the feeder (and distributional) function of the buses would be a more natural function, and not require schedule coordination. For this to happen, the shift of a substantial portion of the commuter parking market to a new station just to the east near the Long Island Expressway is worthy of exploration. Any scenario building for Hicksville should test this possibility: move a given percent of parking from Hicksville; develop freed up land for both residential and non-residential development; determine the transit use along the various roadways that converge at the station.

Figure 1
Necessary Residential Densities to
Support Express Bus Park and Ride Service
as Function of Route Length and Service Frequency

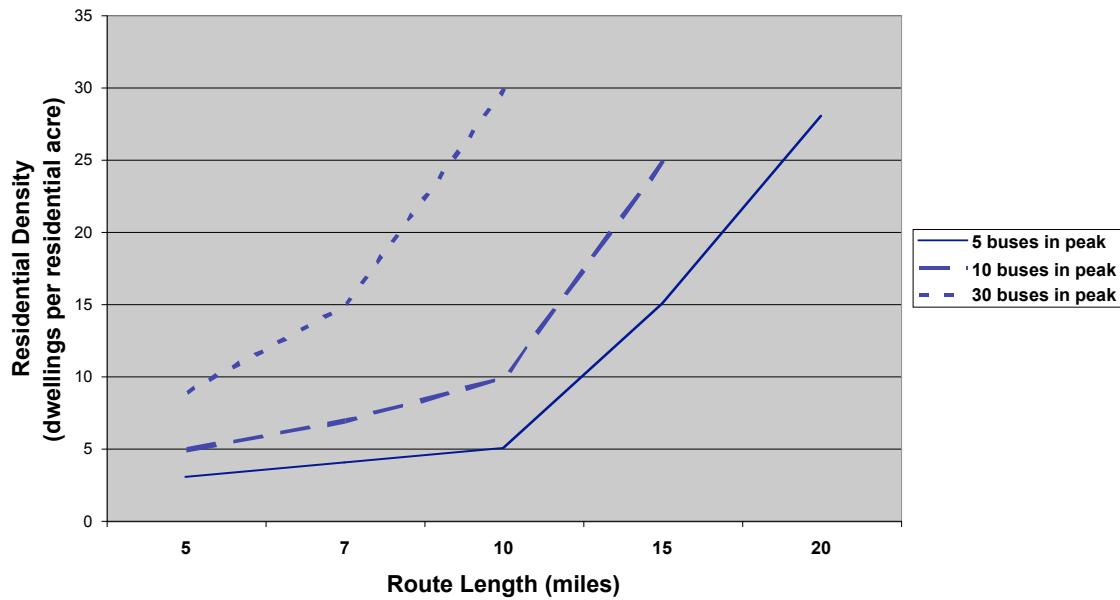


Figure 2



J. Zupan/RPA
April 2002