

Appendix C

Demand Forecast

The current combined Long Island Railroad (LIRR) and Suffolk County Transit (SCT) ridership is estimated at 943,121 trips per year. Our best single estimate of the number of trips that will be taken on our proposed shuttle bus and rail system is 4,674,690 trips per year. This is 5.0 times as many trips as were estimated as made on the current system -- that is, the LIRR and SCT. See Table 1.

This estimate was derived by using the midpoint of the results from two different forecasting methods, shown in Table 2., and as detailed below:

Table 1.

COMPARISON BETWEEN ESTIMATED CURRENT AND PROPOSED RIDERSHIP ON PUBLIC TRANSIT IN FIVE EAST END TOWNS: 2004

	Trips per year	Trips per Day (365 days per year)
1. Current - Suffolk County Transit	594,791	1,900*
LIRR - includes riders to and from Manhattan	348,330	954
Total	943,121	2,854
2. Proposed - Coordinated Bus & Rail Shuttle System	4,674,690	12,807
3. Difference: 1) Proposed system provides 5.0 times the number of trips being provided by the current system 2) The proposed estimates exclude many thousand other potential riders. (See "Important Note" after Appendix Table 2.		

* 313 days per year because of no Sunday service.

Table 2.

**ESTIMATED TOTAL RIDERSHIP OF PROPOSED COORDINATED RAIL AND
BUS SHUTTLE SYSTEM BETWEEN EAST END HAMLETS: 2004**
(Based on two different methods of analysis.)

	Trips per year	Trips per Day (365 days per year)
1. Ridership from Workforce Data using Delphi Method plus two-days-per-week riders from EETS, plus elderly from EETS and the U.S. Census (See Appendix Table 1.)	3,571,758	9,786
2. Ridership from East End Transportation Survey and U.S. Census (See Appendix Table 2.)	5,777,622	15,829
3. Midpoints of 1. and 2.	4,674,690	12,807

Methodology:

1. **The workforce method** shown in Appendix Tables 1. and 1A. surveyed nine members and two advisors to Five Town Rural Transit (a variation of the Delphi method) and recorded the median of their responses to the question, “Using a scale of 0 to 15%, with 15 as the highest, rate the likelihood of workers in 15 different industrial classifications, becoming regular users of the proposed shuttle system.” The results were segregated by each of the five towns. The totals showed that 4,010 of the 58,203 resident workforce, or 6.9% were estimated to be regular users.

To make these data more comprehensive and comparable to the results in the second forecast (based on the current East End Transit Survey (EETS) and the U.S. Census of Population, 2000, we added: 1) an estimate of 2 days-per-

week riders using the data from the EETS and 2), an estimate of the elderly (66+) also from the EETS but discounted by a guesstimate of those that might be already counted as in the work force (35% discount for the 66-74 and a 15% discount for the 75+). **As shown in Table 2, this resulted in an estimate of 3,571,758 trips per year, or 9,786 trips per day.**

2. **The population survey method** shown in Appendix Table 2. was based on the EETS and 2000 U.S. Census population data for the age segments in the EETS, 18-34, 35-65, 66-74, and 75+. The EETS included random telephone interviews with 1,200 adults 18+, with statistically significant results for (among other things) each of five geographic areas -- East Hampton, Riverhead, Shelter Island/Southhold, Southampton east of the Shinnecock Canal and Southampton west of the Canal. We used several conservative assumptions to provide flexibility in the use of the system -- 4 days per week for the 4-5 times category, and 2 days per week for 2-3 times; 1.75 trips for the typical round-trip which would normally be considered as 2.0 trips, and 1.5 for the elderly (66+); 46 weeks as one year (to take account of vacations, holidays, and sick time) for everyone except the elderly for whom we used 40 weeks. **As shown in Table 2, and detailed in Appendix Table 2., this resulted in 5,777,622 trips per year, or 15, 879 trips per day.**
3. **Recognizing all of the many assumptions of these two methods of demand forecasting, Table 2. shows that we are using a midpoint of the results, as our best single estimate -- namely, 4,674,690 trips per year, or 12,807 trips per day.**

It must be emphasized, however, that there are several hundred thousand of potential users of the proposed shuttle system who have been excluded from our results because we are unable to make reasonable estimates for them. They are itemized in the "Important Note" after Appendix Table 2. Moreover, the current ridership figures for Suffolk County Transit and the LIRR, shown in Table 1, include figures for summer traffic while the estimated figures for the proposed system do not.

Appendix Tables 3. to 10. provide more detailed, back-up data. Table 3. shows estimated ridership of the elderly on the proposed system. The remaining tables show estimated current ridership on bus and rail (Table 4.), on the different buses (Table 5.), on the LIRR (Table 6.), on the LIRR on the South Fork (Tables 7. and 8.), and on the LIRR on the North Fork (Tables 9. and 10.).

Appendix Table 1.
ESTIMATED RIDERSHIP OF PROPOSED COORDINATED BUS AND RAIL SHUTTLE SYSTEM BETWEEN EAST END HAMLETS:
BASED PRIMARILY ON WORKFORCE: 2000

I. From Workforce Data using a variation of the Delphi Survey Method	
1. Ridership per day from Appendix Table 1A	4,010
2. Plus: increase to account for actual workforce (65,039) being 6,836 or 11.75% greater than resident workforce ¹ 4,010 times 1.1175 =	4,481
3. Plus: 6.7% increase in population from 4/1/2000 (Census date) to 1/1/2004 ² =	4,781
4. 4 ³ days per week times 46 weeks = 184 days times (4,781 riders X 1.75 ⁴ = 8,367) = Trips per year for workforce for regular users	1,539,528
II. Plus: estimated users 2 days per week at same 15% ⁵ as in EETS: 2 days per week X 46 weeks = 92 days X (10,245 ⁵ riders X 1.75 = 17,929) = Trips per year for users 2 times per week	1,649,468
III. Plus: Elderly (66+) discounted for an estimate of those in the workforce (See Appendix Table 3.) Trips per year for elderly	382,762
GRAND TOTAL (See note below.) Trips per year	3,571,758
Trips per day (365 days per year)	9,786

Footnotes:

- 1) U.S. Census, Long Island Regional Planning Board, "Long Island: Place of Work by Place of Residence," 8/1/2003.
- 2) Long Island Power Authority (LIPA), "Long Island Population Estimates," by Suffolk County Planning Department.
- 3) Four rather than five days per week recognizes that some flexibility is needed to account for non-work activities (shopping, children's activities, medical visits...)
- 4) Estimated at 1.75 rather than 2.0 to also recognize "flexibility" noted in 3. above.
- 5) 4,781 riders in I. above times 15/7ths (i.e., 15% rather than 7%).

Appendix Table 2.

ESTIMATED RIDERSHIP OF PROPOSED COORDINATED BUS AND TRAIN SHUTTLE SYSTEM BETWEEN EAST END HAMLETS: BASED ON EAST END TRANSPORTATION SURVEY OF 5 EAST END TOWNS, JULY 2005, 1 AND U.S. CENSUS OF POPULATION, 2000

	Ages			
	18-34	35-65	66 & over	Total
1. Population, 2000 (U.S. Census) ²	22,223	54,362	21,750	98,335

2. Calculations:	Trips/yr
A. 18-34 pop. - 22,223 x percent use - 15% = 3,333 riders x 4 days/wk ³ = 13,332 riders/wk x estimated 1.75 trips/day ⁴ = 23,331 trips/wk x 46 wks =	1,073,226
B. 18-34 pop. - 22,223 x percent use -20% = 4,445 riders x 2 days/wk ⁵ = 8,890 riders/wk x estimated 1.75 trips/day ⁴ = 15,558 trips/wk x 46 wks =	715,668
C. 35-65 pop. - 54,362 x percent use - 8% = 4,349 riders x 4 days/wk ³ = 17,396 riders/wk x estimated 1.75 ⁴ trips/day = 30,443 trips/wk =	1,400,378
D. 35-65 pop. - 54,362 x percent use - 14% = 7,611 riders x 2 days/wk ⁵ = 15,222 riders/wk x estimated 1.75 trips/day ⁴ = 26,639 trips/wk x 46 weeks =	1,225,394
Total: 18-65 pop.	4,414,666
E. Plus: 11.75% increase to account for the actual workforce being greater than resident workforce by 6,836 workers ⁶	4,933,389
F. Plus: 6.7% increase in population from 4/1/00 to 1/1/04 ⁷	5,263,926
G. Plus: Elderly (66+ pop.) (see Append. Table 3)	513,696
Total trips/yr:	5,777,622
Total trips/day (365 day/yr)	15,829

Footnotes:

- 1) Appel Research, "East End Transportation Survey" (EETS), July 2005.
- 2) U.S. Census, 2000, Table CT3, "Sex by Single Year of Age"
- 3) EETS --- 4 times per week interpreted to mean "days" not "times," 4 days used -- not 4.5 to recognize need for conservative estimating.
- 4) Estimated at 1.75 times not 2.0 times to recognize need for commuters' flexibility.
- 5) EETS - 2 or 3 times per week interpreted to mean "days" not "times," 2 days used -- not 2.5 to recognize need for conservative estimating.
- 6) U.S. Census, Long Island Regional Planning Board, "Long Island Place of Work by Place of Residence," 8/1/2003.
- 7) Long Island Power Company (LIPA), "Long Island Population Estimates," by Suffolk County Planning Department.

IMPORTANT NOTE TO APPENDIX TABLES 1 AND 2

Both Appendix Tables 1. and 2. **exclude** several hundred of thousands of seasonal workers, undocumented-nonresident workers and non workers; workers with varying job locations who frequently report to the Census that their place of work is the location of the main office of their employers outside the East End when, in fact, they are currently working on a job within the East End; people under the age of 18 (27,107 in 2000) and, most importantly, second homeowners and their guests (149,100), guests in year-round households (42,532), and tourists in motels and camping sites (27,840). (Suffolk County Planning Department based on U.S. Census 2000, "Estimated Peak Seasonal Population 2000," 2/20/03, adjusted for estimated undercount of 2,250 second homes in Southampton. The actual count was later found to be 2,865.)

Also excluded, but only from the workforce data in Appendix Table 1. are: the handicapped not in the workforce (**total** handicapped are 13,372 in 2000), those below the poverty line but not in the workforce (**total** poor 12-64 are 6,785 in 2000), and those in households with no automobiles not in the workforce (**total** estimated are 7,216 in 2000), and the thousands of "stay-at-home moms and dads" not in the workforce. Many of these classifications overlap with one another and, therefore, their numbers cannot be added together for most any purpose.

It should also be remembered that the current ridership figures for Suffolk County Transit and the LIRR, shown in Table 1, include figures for summer traffic while the estimated figures for the proposed system do not.

Appendix Table 3.

**ESTIMATED RIDERSHIP OF ELDERLY ON PROPOSED COORDINATED
BUS AND RAIL SHUTTLE SYSTEM BETWEEN EAST END HAMLETS: 2004
(Based on East End Transportation Survey.) 1**

	Ages		
	66-74	75 & over	Total
1. Population, 2000 (U.S. Census) 2	10,524	11,226	21,750

2. Calculations:	Trips/yr
A. 66-74 pop.: 10,524 x percent use - 1% 3 = 105 riders x 4 days/wk = 420 riders/wk x estimated 1.5 trips/day = 630 trips/wk x estimated 40 wks/year =	25,200
B. 66-74 pop.: 10,524 x percent use - 18% 4 = 1,894 riders x 2 days/wk = 3,788 riders/wk x estimated 1.5 trips/day = 5,682 trips/wk x 40 wks /yr =	227,280
Gross Total 66-74	252,480
C. Plus: 6.7% increase in population from 4/1/00 to 1/1/04 5	269,396
D. Less: Estimated 35% in labor force 6	Net Total 66 - 74
	175,107
E. 75+ pop.: 11,226 x percent use - 4% 3 = 449 riders x 4 days/wk = 1,796 riders/wk x estimated 1.5 trips/day = 2,694 trip/wk x 40 wks/yr =	107,760
F. 75+ pop.: 11,226 x percent use - 9% 4 = 1,010 riders x 2 days/wk = 2,020 riders/wk x estimated 1.5 5 trips/day = 3,050 trips/wk x 40 wks/yr =	121,200
Gross Total 75+	228,960
G. Plus: 6.7% increase in population from 4/1/00 to 1/1/04 5	244,300
H. Less: estimated 15% in workforce 6	Net Total 75+
	207,655
Grand Totals, Net Elderly (discounted for workforce overlap)	382,762

Footnotes:

- 1) Appel Research. "East End Transportation Survey," July 2005. Including a telephone poll of 1,200 completed, randomly-selected interviews with 240 adults from each of five areas: East Hampton, Riverhead, Shelter Island/Southold, Southampton east of the Shinnecock Canal, and Southampton west of the Canal.
- 2) U.S. Census, 2000, Table PCT3, "Sex by Single Year of Age."
- 3) Percent responding that they will use the new system "4 or 5 times per week."
- 4) Percent responding that they will use the new system "2 or 3 times per week."
- 5) LIPA, "Long Island Population Estimates" by Suffolk County Planning Department.
- 6) Guesstimate by Liz Granitz & Hal Ross.

Appendix Table 4.

ESTIMATED BUS AND RAIL RIDERSHIP (No. of Trips) EAST END, 2004

	Trips per Year
Bus (excluding individual town paratransit buses) Actual data except estimates for Hampton Luxury Liner	1,211,955
Rail (midpoints of Census and AKRF data)	348,330
Total No. Bus and Rail Trips per year	1,560,285
Excluding Inter-city Manhattan buses:	
1. Bus - Suffolk County Transit	594,791
2. Rail - LIRR	348,330
Total, excluding intercity Manhattan buses	943,121

Note: For details, see Appendix Tables 5 - 10.

Appendix Table 5.
ESTIMATED BUS RIDERSHIP, 5 EAST END TOWNS, 2004
 (No. of Trips)

	Trips per Year 2004 (unless otherwise noted)
Suffolk County Transit	594,791
Hampton Jitney (2002)	496,353
Sunrise Coach (2001)	86,811
Hampton Luxury Liner (Estimated from schedules and fare data.)	35,000
	1,211,955

Appendix Table 6.
ESTIMATED EAST END LIRR RIDERSHIP (No. of Trips, 2004)

	Weekday Year-Round (Mon. - Fri.)	Sat. & Sun. Non- Summer	Summer Fri., Sat., Sun.	Total Trips per Year
	Census Data	AKRF Data	AKRF Data	
South Fork	141,160	11,598	67,784	220,542
North Fork	78,016	4,273	9,337	91,626
Total East End	219,176	15,871	77,121	312,168
<i>AKRF Data</i>				
South Fork	250,635	11,598	67,784	330,017
North Fork	40,864	4,273	9,337	54,474
Total East End	291,499	15,871	77,121	384,491
Midpoints	255,338	15,871	77,121	348,330

Note: For detail, see Appendix Tables 7 - 10.

Appendix Table 7.
LIRR RIDERSHIP, SOUTH FORK, 2004
 (No. of Trips)

Note: 1) For weekdays, data from U.S. Census, 2000, Table P-30.
 2) For weekends, data from AKRF, LIRR East End Transportation Study, 2000, 1998 & 1999 data.

1. Weekdays (Mon. - Fri.) 5 X 46 weeks ¹ = 230 days X (331 riders ² X 1.75 ³ = 579) = 133,170 X 1.06 ⁴ =	141,160			
2. Sat. & Sun., non-summer = 35 weeks X 2 days = 70 days X (132 riders ⁵ X 1.15 ³ = 152) = 10,640 X 1.09 ⁶ =	11,598			
3. Fri., Sat. & Sun., summer = 17 weeks				
Fri. Sat. ⁸ Sun. ⁹ Totals				
July (guesstimated at 85% of Aug.) 2,887 938 1,472				
August <u>3,396</u> ⁷ <u>1,104</u> <u>1,732</u>				
Jul. - Aug. av'g 3,142 1,021 1,602				
<u>Less: Commuters</u> (614) ---- ----				
Weekday av'g 2,528 1,021 1,602				
9 weeks X: 22,752 9,189 14,448 46,359				
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Sept (guesstimated at 50% of July) 1,137 ¹⁰ 370 580				
8 weeks X : 9,096 2,960 4,640 16,696				
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Total Summer Weekend 31,848 12,149 19,058 63,055				
				X 1.075 ¹¹ =
				67,784
Grand Total, LIRR Ridership, South Fork, 2004				220,542

- 1) Estimated for 1 year, assuming 2 weeks' holidays, 3 weeks' vacation, 1 week sick time.
- 2) U.S. Census, 2000, Table P 30.
- 3) Estimated number of rides per day, to and from work or other places.
- 4) Estimated increase from 2000 to 2004 at 1.5% increase per year.
- 5) Estimated at 40% of the weekday riders because AKRF data (LIRR East End Transportation Study, 2000, p. D-7) for Fall 1998 showed 31% as the ratio between weekday and weekend for ridership east of Jamaica but South Fork has many more second homeowners.
- 6) Estimated increase from 1998 to 2004 @ 1.5% average increase per year.
- 7) 2,953 arrivals X 1.15 (estimated west bound) = 3,396 (AKRF, LIRR East End Transportation Study, 2000, for Fri., 8/13/99, Table 4-16, p. 4 - 24.
- 8) Estimated at 32.5% of Fri., LIRR ... Study, p. 4. - 24. (midpoint of 25% - 40% range)
- 9) Estimated at 51% of Fri., based on peak trains, LIRR ... Study, p. D-11.
- 10) 2,887 minus 614 commuters (579 X 1.06) = 2,273 X 0.5 = 1,137.
- 11) Estimated increase from 1999 to 2004 @ 1.5% average increase per year.
- 12) 579 weekday X 1.06 to yield 614 weekday commuters in 2004.

Appendix Table 8.
LIRR RIDERSHIP, SOUTH FORK, 2004
 (No. of Trips)

(Note: All data from AKRF, LIRR East End Transportation Study, 2000. Data from 1998 & 1999.)

1. Weekdays (Mon. - Fri.) 5 X 46 weeks ¹ = 230 days X (570 riders ² X 1.75 ³ = 998) = 229,940 X 1.09 ⁴ =	250,635
2. Sat. & Sun. Non-summer (See Table 7.)	11,598
3. Fri., Sat. & Sun., Summer (See Table 7.)	67,784
Grand Total, LIRR Ridership, South Fork, 2004	330,017

1. Estimated for 1 year, assuming 2 weeks' holidays, 3 weeks' vacation, 1 week sicktime.
2. AKRF, LIRR East End Transportation Study, 2000, Appendix D-19.
3. Estimated rides per day, to and from work.
4. Estimated increase from 1998 to 2004 @ 1.5% average increase per year.

sick time.

- 2) U.S. Census, 2000, Table P - 30.
- 3) Estimated rides per day, to and from work or other places.
- 4) Estimated increase from 2000 to 2004 at 1.5% increase per year.
- 5) Estimated at 37% of the number of Sat. and Sun. riders on the South Fork (132 shown in Table 7.) based on the AKRF data (LIRR East End Transportation Study, 2000), p.D-7.
- 6) Estimated increase from 1998 to 2004 @ 1.5% average increase per year..
- 7) Guesstimated at 80% of July 4 weekend figures, LIRR East End Transportation Study, 2000, p. D-12.
- 8) Estimated at 32.5% of Fri., LIRR ... Study, p. 4-24.
- 9) Estimated at 53% of Fri., based on peak trains, LIRR ... Study, p. D-12.
- 10) July guesstimated at 85% of August.
- 11) $502 - 32 = 470 \times 0.5 = 235$.
- 12) Estimated increase from 1999 to 2004 @ 1.5% average increase per year.

Appendix Table 10.
LIRR RIDERSHIP, NORTH FORK: 2004
 (No. of Trips)

Note: All data from AKRF, LIRR East End Transportation Study, 2000. Data from 1998 & 1999.

1. Weekdays (Mon. - Fri.) $5 \times 46 \text{ weeks}^1 = 230 \text{ days} \times (93 \text{ riders}^2 \times 1.75^3 = 163) = 37,490 \times 1.09^4$	40,864
2. Sat. & Sun., non-summer (See Table 9)	4,273
3. Fri., Sat. & Sun, summer (See Table 9)	9,337
Grand Total, LIRR Ridership, North Fork, 2004	54,474

1. Estimated for 1 year, assuming 2 weeks' holidays, 3 weeks' vacation, 1 week sick time.
2. AKRF, LIRR East End Transportation Study, 2000, Appendix D-15.
3. Estimated rides per day, to and from work.
4. Estimated increase from 1998 to 2004 @ 1.5% average increase per year.