Appendix H
NJ TRANSIT Pennsauken Junction Transit Center and Park & Ride
RiverLINE and Atlantic City Line
Pennsauken Township, Camden County, New Jersey

PARKING AND RIDERSHIP DATA

PENNSAUKEN TRANSFER STATION

BETWEEN ATLANTIC CITY LINE & RIVER LINE

SUMMARY RIDERSHIP FORECASTS & BENEFIT ASSESSMENT

METHODOLGY REPORT

NEW JERSEY TRANSIT PLANNING DEPARTMENT

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PENNSAUKEN TRANSFER STATION

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SUMMARY RIDERSHIP FORECASTS & BENEFIT ASSESSMENT

NJ TRANSIT FORECASTING DEPARTMENT

Background

NJ TRANSIT (NJT) Forecasting Staff was the lead agency in developing the ridership and parking forecasts for this project. This includes an assessment of project benefits in terms of autos removed from the regional highway system, and VMT reduced. A later update estimated energy savings and transit travel time savings. The project was proposed by NJT Management in 2002 as a long term future opportunity to link together the two major NJ TRANSIT fixed guideway projects in Southern New Jersey, the Atlantic City commuter rail line (ACRL) and the River Line Light Rail Transit (LRT) system. At the time, the River Line was under construction, and opened in March, 2004.

Today, the Atlantic City Rail Line is the only NJT Commuter Rail Line where a minimum of two transfers, or a long travel time via Philadelphia is required to connect to the rest of the NJ TRANSIT LRT or commuter rail system. Currently, riders from NJT's Northeast Corrridor Line or Trenton train station must take one of two time consuming paths to reach the Atlantic City Rail Line. These are:

1. Travel on SEPTA`s R-7 line from Trenton to 30th Street station. This requires between 50 minutes of travel time respectively. Change to the Atlantic City Rail Line at 30th Street Station. This transfer takes up to 10 minutes because of multiple tracks and level change at this station. Travel from Philadelphia to Atlantic City requires between 95 and 100 minutes. Total travel time (not including waiting time) is 145 to 150 minutes, or roughly 2 ½ hours.

2. Travel on NJT's River Line LRT from Trenton to Walter Rand station. This requires about 60 minutes. Add another 5 minutes for the transfer to PATCO High Speed Line at Walter Rand. Travel on the PATCO line for 16 minutes from Walter Rand to Lindenwold. Transfer (5 minutes) from PATCO to the Atlantic City Line. Travel on NJT's Atlantic City line for 58 minutes to Atlantic City. Total travel time (not including waiting time) is 144 minutes, or almost 2 1/2 hours.

The same travel time issue also applies to the entire River Line from Rt. 73 north into Trenton, where any riders accessing the LRT system also have to travel south to Walter Rand station to connect to PATCO to then reach the Atlantic City line.

The Pennsauken Transfer, which is named after the town the two lines cross in, significantly reduces transit rider travel time. Travel by Light Rail on the River Line from Trenton to the Pennsauken Transfer station is 50 minutes. A transfer from River Line to Atlantic City line will take 4 minutes. Travel time from Pennsauken Transfer to Atlantic City is estimated to take 74 minutes. Total transit travel time (not including waiting time) is 128 minutes, or 16 to 22 minutes faster then current travel options available.

These long existing transit travel times are considered a detriment to potential ridership. Also, by linking together two modest and relatively new rail services with each other and the rest of the NJT commuter rail system at Trenton, the potential additional ridership would expand transit ridership in South Jersey, while also reducing auto travel. The transfer station would also contribute to lower emissions from both Greenhouse Gas and other pollutants, as well as provide long term energy savings.

FORECASTING PROCESS

This station's primary ridership markets are from the local area to Atlantic City, local area to University City Philadelphia near 30th Street, River Line towns north of the proposed station to Trenton, and Atlantic City, Atlantic County and Camden County origins going to Trenton, and connections to the NEC Rail line to go to New Brunswick, Newark, or New York.

NJT used a combination of the South Jersey Transportation Planning Organization (SJTPO) Model, the NJT Atlantic City Rail Line model, and the Delaware Valley Regional Planning Commission (DVRPC) model to assist in estimating the various ridership components. NJT also used off-model data such as 2000 Census Journey To Work data and mode splits in combination with data from these three models to estimate both work and non-work (including casino) travel.

Other Atlantic City related data utilized included casino worker origins from the Casino Control Commission, and surveys of the Atlantic City Line conducted in April, 2006, and the River Line conducted in Fall, 2004. Both of the organizations mentioned above are the MPO's for the Philadelphia and Atlantic City regions respectively, since travel using the Pennsauken Transfer station occurs in both regions.

The DVRPC model is a four step, traditional model with multiple transit modes. NJT contracted with DVRPC to produce data primarily related to the 30th Street/University District part of this project. NJT had DVRPC run their regional model using 2030 data, including baseline runs to compare actual model data to census and other information. NJT then provided adjustment factors based on 2000 Census data, 2015 demographics,

etc. to adjust the DVRPC model to account for actual Census travel data for trips to/from University District near 30th Street.

NJT used the April, 2006 Atlantic City Line Passenger Survey as a baseline to estimate ridrership to Atlantic City. This survey was incorporated into NJT's spreadsheet based Atlantic City Rail Line Model. This model has been validated against both 2006 survey and other data to estimate rail ridership to Atlantic City for work trips, recreational trips, non-work, and casino trip purposes. Using this model, ridership estimates from the local area, and from River Line transfers to Atlantic City points was produced. Trip table and coefficient data from the SJTPO model was also used as required.

- The forecasts assume existing River Line service with current Atlantic City Rail Line (ACRL) service of 14 trains per day. This is the "Base" Ridership Scenario.

- 2015 Forecast Year

- Forecasts DO NOT ACCOUNT for NEW CASINOS beyond existing casinos in 2006 and only minor (5%) increase in casino employment and visitation after 2015. A study being conducted by the Casino Reinvestment and Developoment Authority (CRDA) will examine higher casino worker and visitor forecasts which ARE NOT reflected in these estimates, or MPO forecasts.

- Forecasts include consideration of DVRPC model estimates of Local River Line boarding ridership, as well as Local area ridership to 30th Street Philadelphia via ACRL, and transfers from River Line to ACRL at 30th Street Philadelphia. NJT is primary forecaster of River Line transfers to Atlantic City, Local area ridership to Atlantic City, and diversion of existing ACRL line ridership. This split is required because the DVRPC model does not encompass the Atlantic City area.

- NJT adjusted DVRPC 2030 forecasts to 2015, based on demographic forecasts, and also made adjustments in ridership to account for changes in ACRL frequency. NJT and DVRPC forecasts averaged for local River Line LRT ridership (non-transfer related).

- Gas prices remain in current (2007) range of about $2.60 per gallon (+/-$0.40)

Methodology of Forecasts

- NJT used a modified version of the SJTPO model to estimate River Line to ACRL line transfer ridership, with adjustments to account for new ridership only. Other adjustments were done to fully account for service gaps in ACRL service with 2 hour frequency gaps. and examination of 2000 Census data.

- For local ridership to Atlantic City, 2000 Census and 2006 ACRL survey data were used. Data included estimate of rail transit share for work trips, factoring for non-work trips, and catchment area for Transfer Station compared to Cherry Hill station. Cherry Hill ACRL data was also utilized to estimate shift of existing ACRL riders to Transfer station and casino/visitor trips.
- NJT version of DVRPC model was used to estimate River Line Only ridership, which was averaged with DVRPC model results. NJT version of DVRPC model includes adjusments in River Line access/egress and zones compared to DVRPC.
- SJTPO growth rates of Atlantic City employment used for future growth to 2015.
- NJT adjustments to SJTPO model also used for estimating local rail ridership to Atlantic City.

Weekday Forecasts

Table 1 summarizes weekday ridership for the proposed ACRL/River Line Transfer Station by type of trip, ie. River Line to ACRL transfers, by direction, local ACRL ridership, and River Line only ridership. Table 1 shows ridership for the current "Base" ACRL service.

ACRL ridership is higher on weekends in the summer, but lower ACRL ridership to Philadelphia and lower River Line ridership on weekends results in typical summer weekdays being used as the design time period for station ridership and parking demand.

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- **Total of 150 weekday transfer riders between River Line and ACRL (300 daily trips). Most of these trips (75%) or 110 weekday riders (220 trips) are transfers from the River Line going southbound on the ACRL to Atlantic City.**

- **Total of 25% of River Line to ACRL transfer riders are to Philadelphia, or 40 boarding riders by 2015. This is a final estimate that takes into account DVRPC 2030 model results, adjusted to 2015.**

- **Total of 130 boarding riders southbound on the ACRL to Atlantic City (260 trips) are new transit riders from the local area.**

- **A total of 50 Existing ACRL riders (100 trips) are diverted from existing ACRL stations, mostly from Cherry Hill, and a few from Lindenwold. Most of these riders are to Atlantic City. Based on 2006 Atlantic City Rail Line survey.**

- **Combined, new plus existing diverted ACRL riders result in 420 boarding weekday riders on ACRL to Atlantic City. This includes River Line to ACRL transfers, and is for a typical summer weekday.**

- **Based on data provided by DVRPC from their forecast model, NJ TRANSIT has estimated the number of new ACRL boarding riders to 30th Street Philadelphia from the local area as 90 riders per weekday assuming current ACRL service levels. These are modifications of DVRPC estimates that take into account forecast year (2015) and the current ACRL service frequency.**

ACRL has a total estimated daily boarding ridership of 420 riders (840 trips) on a typical summer weekday. This includes 50 existing boarding riders diverted from the Cherry Hill and Lindenwold ACRL stations.

River Line Weekday Ridership

- **Local area River Line ridership is 150 boarding riders by 2015.** This only partly includes new Pennsauken redevelopment. **This forecast is an average of estimates prepared by NJT and DVRPC. It does reflect some redevelopment at Pennsauken, based on DVRPC forecasts.**

- All of the River Line local ridership is new to the River Line. NJT has not estimated auto or bus diversions for this market, but there are no River Line existing riders diverted to this station.

- **Total additional River Line ridership is 300 daily new boarding riders (600 trips)** which includes both local boarding riders and riders transferring to/from ACRL. Most (80%) of the transfer riders are from north of the Transfer station, with concentrations at Trenton, Burlington City.

- About 50% of the River Line ridership is generated by Transfers to or from the Atlantic City Line.

TOTAL TRANSFER STATION RIDERSHIP

- **As indicated in Table 1, total NJT ridership (River Line and ACRL) at the Transfer Station is estimated to be 570 daily boarding riders (1,140 daily trips), which is the "Base" scenario with current ACRL service levels.**

PARKING

- ACRL ridership generates between 110 parking spaces to Atlantic City, with the "Base" current ACRL line service level. This includes parking demand of 30 spaces that are existing ACRL riders that shift to the Transfer Station from mostly Cherry Hill station. Parking demand for Philadelphia ridership is estimated to be 60 parking spaces. **Total ACRL parking demand is 170 parking spaces.**

Accounting for turnover results in a maximum daily demand of 150 spaces for the ACRL line portion of the station.

- River Line Only parking demand is 60 **parking spaces.**

- **Total maximum accumulation of parking on a summer weekday would be 210 parking spaces after accounting for turnover.** This adds the ACRL and River Line parking demands shown above (150+60). These forecasts do include new local ACRL ridership to Philadelphia. With 283 parking spaces, the project can accommodate the forecast demand, with a utilization of 74%. NJT Forecasting suggests adding about a 10% margin to the parking demand forecasts to account for ridership surges for special events like Convention Center events in Atlantic City, summer weekend services, **and 2015 to 2030** growth to Atlantic City.. **This results in a parking need of a minimum of 230 spaces. This suggests that the project as currently planned can handle the Base condition.**

- **With a 10% oversupply margin, total parking supply required would be (as shown in Table 1) about 230 spaces.**

GROWTH Beyond 2015

Demographic forecasts for the area from DVRPC show no growth to a slight decline. American Community Survey Data (ACS) for 2005-2007 compared to 2000 Census also shows a slight decline in work trips from Pennsauken only. Overall, Atlantic City work and recreational travel is forecast to only grow by less then 0.25% per year after 2015 from the local area. Philadelphia growth to the University area is expected to be in the same range. Extrapolating this out to a 20 year forecast after opening (as required by FTA) would produce a ridership growth of about 5% by 2032. This would include demand for parking and local access. The parking forecast described above already includes a 10% additional margin for parking and auto access. This is well within the ridership forecast for the local area.

For the transfer ridership, a higher growth rate of about 0.5% per year or about 10% is estimated to occur. However, this ridership does not impact the local area, or traffic or parking needs.

Overall, with growth to 2032, maximum parking demand would be 220 spaces on a typically summer weekday. Adding in a 5% margin to account for additional parking for Atlantic City Convention Center events yields a need for about 230 parking spaces. Comparing this demand to 283 spaces supplied results in an estimated 2032 utilization of 81% of parking capacity.

PROJECT BENEFITS and METHODOLOGY

Auto Diversions

Based on existing mode splits, existing rail and bus surveys, Atlantic City Corridor auto surveys, and other data from the DVRPC model. an estimate of auto diversions by market was estimated. Table 2 summarizes by major market the "new" transit riders. New Transit riders are auto person trips. These were then divided by auto occupancy by market and trip purpose. **A total of 72% of the "Base" Ridership using the Transfer station riders are diverted from driving autos, and another 14% are passengers in cars, for a total of 86% auto person diversions.**

For the "Base" Ridership Scenario, with current ACRL service, a total of 820 autos are diverted (two directions). About 400 of these are to/from Atlantic City, 200 to/from Philadelphia, and 220 are along the River Line, including connections to Philadelphia and Trenton. This represents 410 autos in each direction.

Vehicle Miles Traveled (VMT) Savings

Vehicle Miles diverted are estimated by applying an average distance to each auto diverted by market, considering origin and destination. Because the only model estimates were for Philadelphia and adjusted, an average trip distance by market was estimated with some consideration for actual drive paths. This was done with a spreadsheet. Total VMT for the "Base" Ridership scenario was 30,400 VMT reduced on an average weekday.

This daily VMT figure was converted to an annual number by applying annualization factors based on existing ridership patterns of ACRL, PATCO, and River Line. The ACRL has a higher then typical annualization factor of 330 because weekend and especially summer weekend ridership is close to average weekday ridership or higher.

Annual VMT saved is estimated to be from 9.7 million miles for the "Base" scenario in 2015. For the Base scenario, 60% of the VMT saved is in the DVRPC region, or 5.8 million VMT, and 40% is in the SJTPO region, or 3.9 Million VMT. This grows by about 10% in 2032, to a saving of 10.7 milllion miles of VMT for the "Base" scenario in 2032..

Energy and Other Project Benefits

For the "Base" Ridership scenario, the project will save 440,600 gallons of gasoline annually in 2015. This converts into 10,500 barrels of oil in 2015. Energy savings assume current gasoline mileage of about 22 mpg for autos and light trucks.

The ACRL will have an increase in 259,000 new transit trips by 2015 for the "Base" Ridership Scenario with Existing ACRL service. Using FY 2008 as a base, this would represent about a 20% increase in annual ACRL ridership. Assuming a 10% increase to 2032, this would grow to 285,000 new transit trips by 2032.

To give some scale, the ACRL station daily boarding ridership of 420 riders per typical weekday in 2015 and 470 riders in 2032 would be after Atlantic City the fourth highest boarding ridership station on the ACRL. Lindenwold with 592 and Philadelphia with 573 are comparable to the 2032 ridership, and Cherry Hill with 311 is close to the year 2015 ridership forecast of 420 daily boarding ACRL riders. (all figures from 2007).

Access Mode to Station

NJT estimated how riders traveled to the proposed station based on the type of trip, and the origin of the trip. Existing riders that transfer between the ACRL and River Line are transit riders. Local access riders were based on origin, distance from station, and pattern of existing ACRL and River Line riders based on passenger surveys. Atlantic City bound riders tend to have higher auto occupancies because of a mix of work and recreational riders. Table 3 summarizes the access mode to the station by major market for 2015.

Table 1- Summary of Pennsauken Transfer Station Weekday Ridership
2015 & 2032 by Type of Ridership for "Base" ACRL Service Levels

Market Segment	ACRL Existing "Base" Service 2015 Weekday Riders	ACRL Existing "Base" Service 2015 Weekday Trips	ACRL Existing "Base" Service 2032 Weekday Riders	ACRL Existing "Base" Service 2032 Weekday Trips
River Line to ACRL Southbnd to Atlantic City	110	220	120	240
River Line to ACRL Northbnd to Philadelphia	40 (D)	80	45 (D)	90
Local Area ACRL Boardings to Atlantic City	130	260	140	280
Local Area ACRL Boardings to Philadelphia	90 (D)(1)	180	95 (D) (1)	190
Existing ACRL Riders Diverted to Transfer Station	50	100	50	100
River Line Only Station Boardings	150 (D)(2)	300	150 (D)(2)	300
TOTAL Riders	570	1,140	600	1,200
TOTAL ACRL related	420	840	450	900
Total Parking Demand	210		220	
TOTAL Parking Needed	230		240	

NOTE: Boarding riders and trips shown.

(1) Ridership estimated by NJ TRANSIT using DVRPC 2030 ridership forecasts. DVRPC estimates were adjusted to reflect current ACRL service frequency and 2015 conditions.
(D) Indicates ridership input from DVRPC

(2) Average of DVRPC and NJT estimates. Includes some redevelopment.

River Line Total Daily Ridership of 300 riders (600 trips) with current ACRL service.

Table 2- Summary of Pennsauken Transfer Station Total and New Transit Ridership By Source (Weekdays)

Market	Existing **"Base"** Service 2015 Total Riders	Existing **"Base"** Service 2015 New Transit Riders	Existing **"Base"** Service 2032 Total Riders	Existing **"Base"** Service 2032 New Transit Riders
ACRL Only to Philly	90	80	95	85
ACRL Only to AC	180	130	190	140
TOTAL ACRL Only	**270**	**210**	**285**	**225**
To Trenton	100	100	100	100
To Camden	50	40	50	40
Total River Line Only	**150**	**140**	**150**	**140**
Total Transfer Riders	**150**	**140**	**165**	**155**
River Line to AC	110	100	120	110
River Line to Philly	40	40	45	45
Total STATION Riders	**570**	**490**	**600**	**520**

Note- All numbers shown are riders, multiply by 2 to get daily trips

Most ACRL riders except those shown as existing ACRL riders are primarily auto with some bus diversions. Most River Line only riders are diverted from auto and bus. Diversions based on census and other existing mode share data.

Table 3- Summary of 2015 Pennsauken Transfer Station Access Mode by Market (Weekdays)

Market	Parkers	Drop-Off	Walk/Bike	Carpool	Transit	**TOTAL**
TOTAL Local ACRL Only	172	48	19	31	0	**270**
Total River Line Only	60	48	30	12	0	**150**
Total Transfer Riders					150	**150**
Total STATION Riders	**232**	**96**	**49**	**43**	**150**	**570**
Percentage of Riders	**41%**	**17%**	**9%**	**8%**	**26%**	

Convert Daily parkers to Maximum parking demand by applying turnover factor Of 1.10, parking demand is 210 in 2015, growing to 230 in 2032.