

# Appendix A - 2040 Demographic Projections

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For this 2040 RTP update, NJTPA updated and extended the demographic (population, household, and employment) forecasts for the region. These forecasts were created in consultation with our regional and county partners and used NJTPA's updated Demographic and Employment Forecast Model (DEFM) to help allocate county level forecasts to the local level. The process for developing forecasts was split into two processes: the creation of county-level forecasts and the allocation of those forecasts to a Traffic Analysis Zone (TAZ) and municipal level.

## County-Level Forecasts

The county-level forecasts were based on updated econometric modeling conducted in the spring and summer of 2011 by the New York Metropolitan Transportation Council (NYMTC) in partnership with the NJTPA. This modeling used NYMTC's regional economic model using updated national drivers provided by Global Insight, Inc. and economic data from the Regional Economic Information System (REIS) of the U.S. Bureau of Economic Analysis (BEA). Also, NYMTC continued to use Bureau of Labor Statistic (BLS) data as a basis for identifying employment in the region. The employment forecasts were produced first; population and household forecasts were driven by employment. NJTPA used the payroll component of employment produced from the NYMTC modeling for subsequent analyses.

The econometric model does not consider land use constraints. Therefore, after consultation with county planners, the resultant county level employment levels were shifted between counties based on known limitations (e.g., Highlands building constraints) making use of analysis completed for the 2035 forecast efforts to help with these adjustments. A further adjustment was made to interim year periods in 2015 and 2020 to suppress a jump in growth the model forecast based on an anticipated quick recovery from the 2008/2009 recession (the jump was smoothed into later time periods).

During this process, the NJTPA started using a new source of employment data: the U.S. Census Longitudinal Employer-Household Dynamics data (LEHD; also known as on-the-map data). Subsequent analysis in the summer of 2012 showed that the difference between LEHD data and BLS employment data was substantial enough to cause some Trans-Hudson modeling issues. The 2010 LEHD employment numbers tended to be less than the BLS numbers which caused the econometric model to forecast high employment growth in NJ in 2015 and 2020 which led to understated work trips from NJ to Manhattan. NJTPA increased the 2010 numbers to equate to the BLS numbers which reduced the NJ employment growth in 2015 and 2020 and improved the work trip forecasts from NJ to Manhattan.

Once employment forecasts were developed, the population and household model was used to produce forecasts. The population model is a modified Cohort-Survival model. Historical birth, survival and migration data were updated. As with the employment forecasts, the model results were adjusted to consider land use constraints in consultation with county planners. The household size assumptions

from the model were also decreased to replicate what was done in 2009; the belief was that the model was overstating increases in household size due to immigration.

The county-level forecasts were sent to county planners and regional agencies during early autumn of 2011 for agreement with the subsequent employment adjustments agreed to during the summer of 2012.

### **Allocation of county-level forecasts to the TAZ and Municipal levels**

Once the county-level control total forecasts are established, they need to be allocated to the TAZ and municipal levels. In 2011, NJTPA enhanced the demographic forecasting model, the DEFM, providing more flexibility in making adjustments on a TAZ and municipal basis. During the spring 2012, NJTPA requested detailed zoning and development information from each sub-region to help with the process of allocating the county-level control totals to the TAZ and municipal levels.

The allocation process is an iterative process that involves a great deal of GIS and spreadsheet analysis. Since the available data is different among counties, the analysis process varies slightly between counties but, in general, involves estimating current land uses (including eliminating preserved areas) and estimating residential and employment densities that can be applied to future growth in available vacant land and redevelopment areas. The DEFM allocates growth based on the characteristics of each TAZ, (e.g., historical growth rates, available land, transit/highway connectedness). Known developments are also considered in the allocation process. The model results are evaluated for reasonableness and adjustments are made when necessary. These draft forecasts are reviewed by county planners and regional agencies for reasonableness and adjustments are made based on their input. Agreement is reached when all reviewers find the forecasts reasonable.

NOTE: Due to the timing of Hurricane Sandy, the impacts of the storm could not be included in the analysis. From previous experience, it is expected that the biggest impacts will be felt in the near term and that most communities that suffer major storm impacts tend to comeback in 5-10 years. Exceptions to this tend to be larger and poorer communities (e.g. New Orleans after Hurricane Katrina). Another factor will be any future changes that might be made to change the development patterns in the hardest hit area to lessen the impacts of future storms. These are unknowns that could not be evaluated or included in this forecast analysis.

The following tables show the updated 2040 household, population and employment forecasts by county and municipality.

PLAN 2040 FORECASTS: Population, Households, and Employment

County	Municipality Code	Municipality Name	Population			Households			Employment		
			2010 Population	2040 Population	Annualized % Population Change 2010-2040	2010 Households	2040 Households	Annualized % Household Change 2010-2040	2010 Employment	2040 Employment	Annualized % Employment Change 2010-2040
Bergen	3400300700	Allendale borough	6,510	7,620	0.5%	2,240	2,610	0.5%	2,870	3,760	0.9%
Bergen	3400301090	Alpine borough	1,850	1,850	0.0%	610	610	0.0%	430	460	0.2%
Bergen	3400305170	Bergenfield borough	26,760	28,980	0.3%	8,850	9,560	0.3%	3,680	5,700	1.5%
Bergen	3400306490	Bogota borough	8,190	8,950	0.3%	2,770	3,010	0.3%	960	1,480	1.4%
Bergen	3400310480	Carlstadt borough	6,130	7,020	0.5%	2,380	2,710	0.4%	13,590	15,370	0.4%
Bergen	3400313570	Cliffside Park borough	23,590	25,490	0.3%	9,950	10,720	0.2%	2,670	4,020	1.4%
Bergen	3400313810	Closter borough	8,370	9,750	0.5%	2,750	3,180	0.5%	3,030	4,080	1.0%
Bergen	3400315820	Cresskill borough	8,570	9,620	0.4%	3,000	3,360	0.4%	3,290	4,040	0.7%
Bergen	3400317530	Demarest borough	4,880	5,600	0.5%	1,600	1,820	0.4%	850	1,360	1.6%
Bergen	3400318400	Dumont borough	17,480	18,760	0.2%	6,360	6,820	0.2%	1,920	2,960	1.4%
Bergen	3400319510	East Rutherford borough	8,910	10,010	0.4%	3,790	4,230	0.4%	10,900	22,900	2.5%
Bergen	3400320020	Edgewater borough	11,510	13,120	0.4%	5,640	6,410	0.4%	4,720	6,390	1.0%
Bergen	3400321300	Elmwood Park borough	19,400	21,980	0.4%	7,030	7,930	0.4%	9,050	11,710	0.9%
Bergen	3400321450	Emerson borough	7,400	7,840	0.2%	2,480	2,630	0.2%	2,540	3,060	0.6%
Bergen	3400321480	Englewood city	27,150	31,290	0.5%	10,060	11,550	0.5%	15,650	19,390	0.7%
Bergen	3400321510	Englewood Cliffs borough	5,280	6,000	0.4%	1,820	2,060	0.4%	9,580	10,830	0.4%
Bergen	3400322470	Fair Lawn borough	32,460	36,780	0.4%	11,930	13,510	0.4%	12,620	15,830	0.8%
Bergen	3400322560	Fairview borough	13,840	15,050	0.3%	4,850	5,260	0.3%	2,470	3,450	1.1%
Bergen	3400324420	Fort Lee borough	35,350	41,810	0.6%	16,370	19,280	0.5%	15,820	19,510	0.7%
Bergen	3400324990	Franklin Lakes borough	10,590	12,680	0.6%	3,530	4,210	0.6%	8,410	10,390	0.7%
Bergen	3400325770	Garfield city	30,490	33,890	0.4%	11,070	12,280	0.3%	5,510	8,160	1.3%
Bergen	3400326640	Glen Rock borough	11,600	13,670	0.5%	3,920	4,590	0.5%	2,720	4,190	1.5%
Bergen	3400328680	Hackensack city	43,010	48,190	0.4%	18,140	20,220	0.4%	44,250	51,670	0.5%
Bergen	3400330150	Harrington Park borough	4,660	5,470	0.5%	1,590	1,860	0.5%	1,080	1,630	1.4%
Bergen	3400330420	Hasbrouck Heights borough	11,840	13,730	0.5%	4,430	5,110	0.5%	4,020	5,570	1.1%
Bergen	3400330540	Haworth borough	3,380	4,220	0.7%	1,110	1,380	0.7%	760	1,340	1.9%
Bergen	3400331920	Hillsdale borough	10,220	12,200	0.6%	3,490	4,150	0.6%	2,300	3,710	1.6%
Bergen	3400332310	Ho-Ho-Kus borough	4,080	4,610	0.4%	1,400	1,580	0.4%	1,070	1,620	1.4%
Bergen	3400340020	Leonia borough	8,940	10,290	0.5%	3,280	3,760	0.5%	2,350	3,470	1.3%
Bergen	3400340680	Little Ferry borough	10,630	11,480	0.3%	4,240	4,560	0.2%	2,980	3,800	0.8%
Bergen	3400341100	Lodi borough	24,140	27,250	0.4%	9,470	10,640	0.4%	5,530	8,080	1.3%
Bergen	3400342090	Lyndhurst township	20,550	23,240	0.4%	8,340	9,400	0.4%	11,230	14,230	0.8%
Bergen	3400342750	Mahwah township	25,890	29,390	0.4%	9,510	10,730	0.4%	16,400	19,600	0.6%
Bergen	3400344880	Maywood borough	9,560	11,320	0.6%	3,650	4,290	0.5%	2,970	4,480	1.4%
Bergen	3400346110	Midland Park borough	7,130	8,010	0.4%	2,760	3,090	0.4%	3,900	4,710	0.6%
Bergen	3400347610	Montvale borough	7,840	9,170	0.5%	2,780	3,230	0.5%	11,620	13,410	0.5%
Bergen	3400347700	Moonachie borough	2,710	3,390	0.7%	1,010	1,250	0.7%	6,420	7,480	0.5%
Bergen	3400351660	New Milford borough	16,340	18,740	0.5%	6,140	7,000	0.4%	2,220	4,050	2.0%
Bergen	3400352320	North Arlington borough	15,390	17,260	0.4%	6,300	7,030	0.4%	2,900	4,460	1.4%
Bergen	3400353430	Northvale borough	4,640	5,280	0.4%	1,560	1,780	0.4%	3,900	4,700	0.6%

PLAN 2040 FORECASTS: Population, Households, and Employment

County	Municipality Code	Municipality Name	Population			Households			Employment		
			2010 Population	2040 Population	Annualized % Population Change 2010-2040	2010 Households	2040 Households	Annualized % Household Change 2010-2040	2010 Employment	2040 Employment	Annualized % Employment Change 2010-2040
Bergen	3400353610	Norwood borough	5,710	6,610	0.5%	1,930	2,220	0.5%	1,920	2,570	1.0%
Bergen	3400353850	Oakland borough	12,750	14,920	0.5%	4,340	5,040	0.5%	5,190	7,030	1.0%
Bergen	3400354870	Old Tappan borough	5,750	6,620	0.5%	1,930	2,220	0.5%	1,680	2,270	1.0%
Bergen	3400354990	Oradell borough	7,980	8,670	0.3%	2,750	2,980	0.3%	3,910	4,720	0.6%
Bergen	3400355770	Palisades Park borough	19,620	21,450	0.3%	6,930	7,580	0.3%	3,150	4,340	1.1%
Bergen	3400355950	Paramus borough	26,340	30,710	0.5%	8,630	10,030	0.5%	44,280	51,090	0.5%
Bergen	3400356130	Park Ridge borough	8,650	10,380	0.6%	3,280	3,920	0.6%	3,680	5,180	1.1%
Bergen	3400361680	Ramsey borough	14,470	16,750	0.5%	5,360	6,170	0.5%	11,130	13,500	0.6%
Bergen	3400362910	Ridgefield borough	11,030	12,810	0.5%	3,910	4,520	0.5%	5,000	6,530	0.9%
Bergen	3400362940	Ridgefield Park village	12,730	14,070	0.3%	4,850	5,360	0.3%	3,860	5,230	1.0%
Bergen	3400363000	Ridgewood village	24,960	29,720	0.6%	8,460	10,000	0.6%	12,130	16,160	1.0%
Bergen	3400363360	River Edge borough	11,340	13,000	0.5%	4,130	4,720	0.4%	3,850	5,380	1.1%
Bergen	3400363690	River Vale township	9,660	10,180	0.2%	3,420	3,610	0.2%	3,040	3,680	0.6%
Bergen	3400363990	Rochelle Park township	5,530	6,300	0.4%	2,090	2,370	0.4%	5,000	5,900	0.6%
Bergen	3400364170	Rockleigh borough	530	810	1.4%	80	110	1.3%	1,690	2,010	0.6%
Bergen	3400365280	Rutherford borough	18,060	21,020	0.5%	6,950	8,050	0.5%	7,110	9,820	1.1%
Bergen	3400365340	Saddle Brook township	13,660	15,670	0.5%	5,290	6,040	0.4%	9,550	11,630	0.7%
Bergen	3400365400	Saddle River borough	3,150	4,260	1.0%	1,220	1,630	1.0%	5,250	6,590	0.8%
Bergen	3400368970	South Hackensack township	2,380	2,910	0.7%	850	1,030	0.7%	5,890	6,530	0.3%
Bergen	3400372360	Teaneck township	39,780	45,010	0.4%	13,470	15,190	0.4%	15,830	20,160	0.8%
Bergen	3400372420	Tenafly borough	14,490	15,700	0.3%	4,770	5,150	0.3%	3,920	4,890	0.7%
Bergen	3400372480	Teterboro borough	70	90	1.1%	30	30	0.8%	6,790	8,390	0.7%
Bergen	3400375140	Upper Saddle River borough	8,210	9,350	0.4%	2,640	2,990	0.4%	4,610	5,580	0.6%
Bergen	3400376400	Waldwick borough	9,630	11,300	0.5%	3,420	3,990	0.5%	2,700	4,090	1.4%
Bergen	3400376490	Wallington borough	11,340	12,400	0.3%	4,640	5,060	0.3%	2,600	3,810	1.3%
Bergen	3400377135	Washington township	9,100	10,170	0.4%	3,260	3,640	0.4%	780	1,630	2.5%
Bergen	3400380270	Westwood borough	10,910	12,450	0.4%	4,440	5,040	0.4%	3,910	5,360	1.1%
Bergen	3400382300	Woodcliff Lake borough	5,730	6,910	0.6%	1,920	2,300	0.6%	6,010	7,260	0.6%
Bergen	3400382570	Wood-Ridge borough	7,630	9,900	0.9%	2,940	3,830	0.9%	2,060	2,300	0.4%
Bergen	3400383050	Wyckoff township	16,700	19,260	0.5%	5,650	6,470	0.5%	5,370	7,450	1.1%
Bergen Total			905,100	1,030,400	0.4%	335,700	380,600	0.4%	451,100	578,100	0.8%
Essex	3401304695	Belleville township	35,930	39,670	0.3%	13,400	14,690	0.3%	9,320	11,310	0.6%
Essex	3401306260	Bloomfield township	47,320	55,850	0.6%	18,390	21,490	0.5%	12,840	15,680	0.7%
Essex	3401309220	Caldwell borough	7,820	8,420	0.2%	3,360	3,600	0.2%	2,380	2,610	0.3%
Essex	3401311200	Cedar Grove township	12,410	13,940	0.4%	4,520	5,040	0.4%	5,020	5,670	0.4%
Essex	3401313045	City of Orange township	30,130	33,740	0.4%	11,200	12,410	0.3%	7,080	8,780	0.7%
Essex	3401319390	East Orange city	64,270	73,580	0.5%	24,950	28,220	0.4%	15,100	19,560	0.9%
Essex	3401321840	Essex Fells borough	2,110	2,650	0.8%	730	900	0.7%	280	500	2.0%
Essex	3401322385	Fairfield township	7,470	8,370	0.4%	2,650	2,950	0.4%	23,720	24,510	0.1%
Essex	3401326610	Glen Ridge borough	7,530	8,350	0.3%	2,480	2,730	0.3%	1,080	1,370	0.8%

PLAN 2040 FORECASTS: Population, Households, and Employment

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Essex	3401334450	Irvington township	53,930	57,660	0.2%	20,090	21,260	0.2%	9,000	11,790	0.9%
Essex	3401340890	Livingston township	29,370	33,030	0.4%	9,990	11,160	0.4%	22,440	24,710	0.3%
Essex	3401343800	Maplewood township	23,870	27,260	0.4%	8,240	9,320	0.4%	6,210	7,660	0.7%
Essex	3401346380	Millburn township	20,150	22,940	0.4%	6,810	7,680	0.4%	16,690	18,530	0.3%
Essex	3401347500	Montclair township	37,670	43,150	0.5%	15,090	17,040	0.4%	21,600	25,240	0.5%
Essex	3401351000	Newark city	277,140	345,180	0.7%	94,540	115,560	0.7%	151,930	185,480	0.7%
Essex	3401352620	North Caldwell borough	6,180	6,890	0.4%	2,090	2,310	0.3%	300	520	1.8%
Essex	3401353680	Nutley township	28,370	31,580	0.4%	11,310	12,510	0.3%	11,190	12,770	0.4%
Essex	3401364590	Roseland borough	5,820	6,520	0.4%	2,350	2,610	0.4%	12,720	13,750	0.3%
Essex	3401369274	South Orange Village township	16,200	18,810	0.5%	5,520	6,340	0.5%	7,660	9,590	0.8%
Essex	3401375815	Verona township	13,330	14,700	0.3%	5,320	5,820	0.3%	4,480	5,180	0.5%
Essex	3401378510	West Caldwell township	10,760	12,070	0.4%	3,910	4,360	0.4%	10,060	10,940	0.3%
Essex	3401379800	West Orange township	46,210	51,670	0.4%	16,790	18,620	0.3%	15,570	18,270	0.5%
Essex Total			784,000	916,000	0.5%	283,700	326,600	0.5%	366,700	434,400	0.6%
Hudson	3401703580	Bayonne city	63,020	78,650	0.7%	25,230	31,700	0.8%	14,540	23,840	1.7%
Hudson	3401719360	East Newark borough	2,410	4,510	2.1%	760	1,410	2.1%	380	680	2.0%
Hudson	3401728650	Guttenberg town	11,180	11,650	0.1%	4,470	4,700	0.2%	1,080	2,030	2.1%
Hudson	3401730210	Harrison town	13,620	32,050	2.9%	4,870	12,940	3.3%	4,540	15,920	4.3%
Hudson	3401732250	Hoboken city	50,010	57,630	0.5%	25,040	28,710	0.5%	19,070	27,090	1.2%
Hudson	3401736000	Jersey City city	247,640	356,250	1.2%	96,870	144,430	1.3%	105,730	155,670	1.3%
Hudson	3401736510	Kearny town	40,680	43,000	0.2%	13,460	14,340	0.2%	12,890	17,070	0.9%
Hudson	3401752470	North Bergen township	60,770	70,830	0.5%	22,060	26,380	0.6%	18,950	25,890	1.0%
Hudson	3401766570	Secaucus town	16,260	22,840	1.1%	6,300	8,830	1.1%	36,390	44,230	0.7%
Hudson	3401774630	Union City city	66,440	69,870	0.2%	22,810	24,090	0.2%	11,580	17,380	1.4%
Hudson	3401777930	Weehawken township	12,550	17,200	1.1%	5,710	7,850	1.1%	6,330	9,190	1.3%
Hudson	3401779610	West New York town	49,710	52,840	0.2%	18,850	20,060	0.2%	7,380	11,360	1.4%
Hudson Total			634,300	817,300	0.8%	246,400	325,400	0.9%	238,900	350,300	1.3%
Hunterdon	3401900550	Alexandria township	4,940	5,890	0.6%	1,760	2,020	0.5%	830	1,700	2.4%
Hunterdon	3401905650	Bethlehem township	3,980	4,910	0.7%	1,340	1,590	0.6%	2,060	3,410	1.7%
Hunterdon	3401906370	Bloomsbury borough	870	980	0.4%	340	370	0.3%	360	560	1.4%
Hunterdon	3401909280	Califon borough	1,080	1,180	0.3%	390	420	0.2%	190	230	0.7%
Hunterdon	3401913720	Clinton town	2,720	2,930	0.2%	1,060	1,120	0.2%	2,760	3,190	0.5%
Hunterdon	3401913750	Clinton township	13,480	14,960	0.3%	4,570	4,960	0.3%	4,350	7,670	1.9%
Hunterdon	3401917170	Delaware township	4,560	5,630	0.7%	1,790	2,110	0.6%	630	1,230	2.2%
Hunterdon	3401918820	East Amwell township	4,010	5,040	0.8%	1,520	1,820	0.6%	1,000	1,800	2.0%
Hunterdon	3401923700	Flemington borough	4,580	4,800	0.2%	1,820	1,880	0.1%	8,150	9,070	0.4%
Hunterdon	3401924870	Franklin township	3,200	4,330	1.0%	1,140	1,450	0.8%	1,310	3,020	2.8%
Hunterdon	3401925350	Frenchtown borough	1,370	1,450	0.2%	600	620	0.1%	450	580	0.9%
Hunterdon	3401926550	Glen Gardner borough	1,700	1,810	0.2%	770	810	0.2%	70	140	2.1%
Hunterdon	3401929460	Hampton borough	1,400	1,520	0.3%	570	610	0.2%	230	420	2.0%

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Hunterdon	3401931320	High Bridge borough	3,650	3,830	0.2%	1,420	1,470	0.1%	840	1,120	0.9%
Hunterdon	3401932460	Holland township	5,290	6,170	0.5%	1,970	2,230	0.4%	750	1,380	2.0%
Hunterdon	3401937065	Kingwood township	3,850	5,230	1.0%	1,450	1,850	0.8%	820	1,650	2.4%
Hunterdon	3401938610	Lambertville city	3,910	4,060	0.1%	1,960	2,020	0.1%	1,330	1,610	0.6%
Hunterdon	3401939630	Lebanon borough	1,360	1,830	1.0%	600	780	0.9%	1,620	2,070	0.8%
Hunterdon	3401939660	Lebanon township	6,590	7,950	0.6%	2,300	2,670	0.5%	1,240	2,040	1.7%
Hunterdon	3401946260	Milford borough	1,230	1,320	0.2%	520	550	0.2%	220	370	1.6%
Hunterdon	3401961920	Raritan township	22,190	24,080	0.3%	8,060	8,600	0.2%	8,230	15,960	2.2%
Hunterdon	3401962250	Readington township	16,130	18,520	0.5%	5,970	6,690	0.4%	8,190	11,340	1.1%
Hunterdon	3401970980	Stockton borough	540	570	0.2%	240	250	0.2%	140	210	1.4%
Hunterdon	3401972510	Tewksbury township	5,990	7,380	0.7%	2,190	2,590	0.6%	2,060	4,130	2.3%
Hunterdon	3401974420	Union township	5,910	6,680	0.4%	1,750	1,930	0.3%	970	1,890	2.3%
Hunterdon	3401978230	West Amwell township	2,840	4,010	1.2%	1,100	1,360	0.7%	820	1,500	2.0%
Hunterdon Total			127,400	147,100	0.5%	47,200	52,800	0.4%	49,600	78,300	1.5%
Middlesex	3402310750	Carteret borough	22,840	29,050	0.8%	7,590	10,520	1.1%	8,010	9,910	0.7%
Middlesex	3402315550	Cranbury township	3,860	4,780	0.7%	1,320	1,820	1.1%	7,790	11,560	1.3%
Middlesex	3402318490	Dunellen borough	7,230	8,360	0.5%	2,570	3,100	0.6%	1,010	1,350	1.0%
Middlesex	3402319000	East Brunswick township	47,510	54,510	0.5%	16,810	20,120	0.6%	24,530	28,780	0.5%
Middlesex	3402320230	Edison township	99,970	115,000	0.5%	34,970	41,730	0.6%	75,450	87,250	0.5%
Middlesex	3402330840	Helmetta borough	2,180	2,820	0.9%	890	1,240	1.1%	200	300	1.4%
Middlesex	3402331470	Highland Park borough	13,980	14,690	0.2%	5,880	6,280	0.2%	2,620	3,110	0.6%
Middlesex	3402334890	Jamesburg borough	5,920	6,330	0.2%	2,170	2,370	0.3%	3,500	3,840	0.3%
Middlesex	3402345690	Metuchen borough	13,570	15,480	0.4%	5,240	6,210	0.6%	5,900	7,030	0.6%
Middlesex	3402345900	Middlesex borough	13,640	19,620	1.2%	4,980	7,800	1.5%	5,510	8,020	1.3%
Middlesex	3402346620	Milltown borough	6,890	10,550	1.4%	2,600	4,340	1.7%	1,510	2,530	1.7%
Middlesex	3402347280	Monroe township	39,130	55,150	1.2%	16,500	24,030	1.3%	8,940	14,590	1.6%
Middlesex	3402351210	New Brunswick city	55,180	79,700	1.2%	14,120	23,250	1.7%	41,920	50,950	0.7%
Middlesex	3402352560	North Brunswick township	40,740	54,490	1.0%	14,550	20,730	1.2%	24,290	31,260	0.8%
Middlesex	3402354705	Old Bridge township	65,380	82,620	0.8%	23,780	32,890	1.1%	11,210	17,160	1.4%
Middlesex	3402358200	Perth Amboy city	50,810	58,390	0.5%	15,420	18,510	0.6%	13,760	17,690	0.8%
Middlesex	3402359010	Piscataway township	56,040	73,280	0.9%	17,050	24,760	1.3%	40,970	51,810	0.8%
Middlesex	3402359280	Plainsboro township	23,000	24,930	0.3%	9,400	10,260	0.3%	14,520	26,120	2.0%
Middlesex	3402365790	Sayreville borough	42,700	56,950	1.0%	15,640	22,200	1.2%	9,670	18,840	2.2%
Middlesex	3402368550	South Amboy city	8,630	12,230	1.2%	3,370	5,090	1.4%	1,950	3,040	1.5%
Middlesex	3402368790	South Brunswick township	43,420	64,470	1.3%	15,070	24,930	1.7%	24,310	34,260	1.2%
Middlesex	3402369390	South Plainfield borough	23,390	30,280	0.9%	7,880	10,800	1.1%	22,280	26,110	0.5%
Middlesex	3402369420	South River borough	16,010	18,410	0.5%	5,650	6,770	0.6%	2,760	3,780	1.1%
Middlesex	3402369810	Spotswood borough	8,260	9,710	0.5%	3,130	3,890	0.7%	2,250	2,840	0.8%
Middlesex	3402382000	Woodbridge township	99,590	121,290	0.7%	34,620	44,590	0.8%	54,320	70,470	0.9%
Middlesex Total			809,900	1,023,100	0.8%	281,200	378,200	1.0%	409,200	532,600	0.9%

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			2010 Population	2040 Population	Annualized % Population Change 2010-2040	2010 Households	2040 Households	Annualized % Household Change 2010-2040	2010 Employment	2040 Employment	Annualized % Employment Change 2010-2040
Monmouth	3402537560	Lake Como borough	1,770	1,780	0.0%	790	790	0.0%	250	270	0.3%
Monmouth	3402500070	Aberdeen township	18,210	20,070	0.3%	6,880	7,370	0.2%	3,540	5,730	1.6%
Monmouth	3402500730	Allenhurst borough	500	500	0.1%	220	220	0.0%	190	200	0.2%
Monmouth	3402500760	Allentown borough	1,830	1,840	0.0%	700	700	0.0%	620	670	0.2%
Monmouth	3402501960	Asbury Park city	16,120	23,230	1.2%	6,730	9,060	1.0%	3,740	4,760	0.8%
Monmouth	3402502110	Atlantic Highlands borough	4,390	4,530	0.1%	1,870	1,900	0.1%	1,310	1,560	0.6%
Monmouth	3402502440	Avon-by-the-Sea borough	1,900	1,910	0.0%	900	900	0.0%	310	340	0.3%
Monmouth	3402504930	Belmar borough	5,790	5,850	0.0%	2,690	2,700	0.0%	1,210	1,380	0.4%
Monmouth	3402506970	Bradley Beach borough	4,300	4,780	0.4%	2,100	2,310	0.3%	710	840	0.6%
Monmouth	3402507750	Brielle borough	4,770	4,920	0.1%	1,810	1,840	0.1%	1,350	1,610	0.6%
Monmouth	3402514560	Colts Neck township	10,140	11,920	0.5%	3,280	3,520	0.2%	2,730	4,080	1.3%
Monmouth	3402516660	Deal borough	750	760	0.0%	330	330	0.0%	520	530	0.1%
Monmouth	3402519840	Eatontown borough	12,680	15,360	0.6%	5,370	6,350	0.6%	15,080	21,050	1.1%
Monmouth	3402521570	Englishtown borough	1,850	1,990	0.2%	620	650	0.1%	810	1,050	0.9%
Monmouth	3402522440	Fair Haven borough	6,120	6,270	0.1%	1,970	1,990	0.0%	910	1,050	0.5%
Monmouth	3402522950	Farmingdale borough	1,330	1,410	0.2%	550	570	0.1%	1,780	2,050	0.5%
Monmouth	3402525200	Freehold borough	12,050	12,590	0.1%	4,010	4,090	0.1%	3,360	4,050	0.6%
Monmouth	3402525230	Freehold township	36,180	41,700	0.5%	12,580	13,990	0.4%	26,040	34,000	0.9%
Monmouth	3402530690	Hazlet township	20,330	21,340	0.2%	7,140	7,350	0.1%	6,050	7,710	0.8%
Monmouth	3402531500	Highlands borough	5,010	5,110	0.1%	2,620	2,650	0.0%	920	1,090	0.5%
Monmouth	3402532640	Holmdel township	16,770	20,210	0.6%	5,580	6,530	0.5%	10,310	15,780	1.4%
Monmouth	3402533300	Howell township	51,080	56,790	0.4%	17,260	18,740	0.3%	13,360	19,890	1.3%
Monmouth	3402534200	Interlaken borough	820	830	0.0%	360	360	0.0%	40	40	0.0%
Monmouth	3402536480	Keansburg borough	10,110	10,370	0.1%	3,810	3,860	0.0%	1,770	2,160	0.7%
Monmouth	3402536810	Keyport borough	7,240	7,460	0.1%	3,070	3,120	0.1%	2,580	3,020	0.5%
Monmouth	3402540770	Little Silver borough	5,950	6,240	0.2%	2,150	2,210	0.1%	2,210	2,570	0.5%
Monmouth	3402541010	Loch Arbour village	190	200	0.1%	80	80	0.0%	30	40	0.4%
Monmouth	3402541310	Long Branch city	30,720	31,820	0.1%	11,750	11,990	0.1%	9,730	11,790	0.6%
Monmouth	3402542990	Manalapan township	38,870	42,540	0.3%	13,260	14,100	0.2%	9,340	13,160	1.1%
Monmouth	3402543050	Manasquan borough	5,900	6,080	0.1%	2,370	2,410	0.1%	1,450	1,670	0.5%
Monmouth	3402544070	Marlboro township	40,190	44,350	0.3%	13,000	13,910	0.2%	9,730	14,080	1.2%
Monmouth	3402544520	Matawan borough	8,810	9,240	0.2%	3,360	3,450	0.1%	3,790	4,600	0.6%
Monmouth	3402545990	Middletown township	66,520	70,720	0.2%	23,960	24,980	0.1%	19,950	25,770	0.9%
Monmouth	3402546560	Millstone township	10,570	11,150	0.2%	3,300	3,370	0.1%	1,620	2,670	1.7%
Monmouth	3402547130	Monmouth Beach borough	3,280	3,310	0.0%	1,490	1,500	0.0%	450	520	0.5%
Monmouth	3402549890	Neptune township	27,940	30,850	0.3%	11,200	12,050	0.2%	13,340	17,280	0.9%
Monmouth	3402549920	Neptune City borough	4,870	5,050	0.1%	2,130	2,180	0.1%	1,420	1,750	0.7%
Monmouth	3402554270	Ocean township	27,290	28,630	0.2%	10,610	10,920	0.1%	9,570	11,640	0.7%
Monmouth	3402554570	Oceanport borough	5,860	7,950	1.0%	2,170	2,930	1.0%	3,870	6,580	1.8%
Monmouth	3402562430	Red Bank borough	12,210	13,410	0.3%	4,930	5,270	0.2%	12,540	15,200	0.6%

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Monmouth	3402564410	Roosevelt borough	880	900	0.1%	310	320	0.0%	70	80	0.4%
Monmouth	3402565130	Rumson borough	7,120	7,640	0.2%	2,340	2,450	0.2%	1,690	2,350	1.1%
Monmouth	3402566240	Sea Bright borough	1,410	1,500	0.2%	790	790	0.0%	470	530	0.5%
Monmouth	3402566330	Sea Girt borough	1,830	1,840	0.0%	820	820	0.0%	1,090	1,130	0.1%
Monmouth	3402567350	Shrewsbury borough	3,810	4,280	0.4%	1,260	1,360	0.2%	5,990	6,930	0.5%
Monmouth	3402567365	Shrewsbury township	1,140	1,190	0.1%	580	590	0.1%	770	900	0.5%
Monmouth	3402570110	Spring Lake borough	2,990	3,000	0.0%	1,250	1,250	0.0%	830	900	0.3%
Monmouth	3402570140	Spring Lake Heights borough	4,710	4,790	0.1%	2,320	2,330	0.0%	1,140	1,330	0.5%
Monmouth	3402573020	Tinton Falls borough	17,890	24,120	1.0%	8,360	10,940	0.9%	9,070	15,140	1.7%
Monmouth	3402574540	Union Beach borough	6,250	6,400	0.1%	2,140	2,170	0.0%	790	1,000	0.8%
Monmouth	3402574900	Upper Freehold township	6,900	7,290	0.2%	2,360	2,480	0.2%	1,990	2,550	0.8%
Monmouth	3402576460	Wall township	26,160	30,290	0.5%	10,050	11,220	0.4%	18,000	23,580	0.9%
Monmouth	3402579310	West Long Branch borough	8,100	8,630	0.2%	2,380	2,480	0.1%	5,780	6,570	0.4%
Monmouth Total			630,400	696,900	0.3%	234,000	252,500	0.3%	246,200	327,200	1.0%
Morris	3402706610	Boonton town	8,350	9,220	0.3%	3,240	3,670	0.4%	3,470	5,590	1.6%
Morris	3402706640	Boonton township	4,260	4,590	0.2%	1,580	1,720	0.3%	680	1,180	1.9%
Morris	3402709040	Butler borough	7,540	8,400	0.4%	3,030	3,480	0.5%	2,370	3,890	1.7%
Morris	3402712100	Chatham borough	8,960	9,130	0.1%	3,070	3,180	0.1%	4,250	5,960	1.1%
Morris	3402712130	Chatham township	10,450	11,380	0.3%	3,920	4,360	0.4%	2,200	3,920	1.9%
Morris	3402712580	Chester borough	1,650	1,790	0.3%	620	690	0.4%	2,840	3,670	0.9%
Morris	3402712610	Chester township	7,840	7,870	0.0%	2,590	2,630	0.0%	1,410	1,780	0.8%
Morris	3402717650	Denville township	16,640	18,310	0.3%	6,430	7,370	0.5%	9,840	13,580	1.1%
Morris	3402718070	Dover town	18,160	19,970	0.3%	5,560	6,400	0.5%	6,000	8,610	1.2%
Morris	3402719210	East Hanover township	11,160	12,490	0.4%	3,890	4,480	0.5%	17,870	22,470	0.8%
Morris	3402723910	Florham Park borough	11,700	13,440	0.5%	4,000	4,800	0.6%	17,190	22,090	0.8%
Morris	3402729550	Hanover township	13,710	15,700	0.5%	5,310	6,270	0.6%	14,850	19,190	0.9%
Morris	3402729700	Harding township	3,810	4,220	0.3%	1,460	1,690	0.5%	1,220	2,130	1.9%
Morris	3402734980	Jefferson township	21,310	21,350	0.0%	7,830	8,120	0.1%	3,630	3,730	0.1%
Morris	3402737110	Kinnelon borough	10,250	10,250	0.0%	3,470	3,580	0.1%	1,950	2,030	0.1%
Morris	3402740290	Lincoln Park borough	10,520	11,350	0.3%	4,000	4,600	0.5%	3,860	5,490	1.2%
Morris	3402741362	Long Hill township	8,700	9,460	0.3%	3,110	3,500	0.4%	2,930	4,160	1.2%
Morris	3402742510	Madison borough	15,850	16,630	0.2%	5,490	5,830	0.2%	7,300	10,460	1.2%
Morris	3402745330	Mendham borough	4,980	5,110	0.1%	1,720	1,760	0.1%	1,920	2,270	0.6%
Morris	3402745360	Mendham township	5,870	6,100	0.1%	1,950	2,030	0.1%	850	1,180	1.1%
Morris	3402746860	Mine Hill township	3,650	4,190	0.5%	1,330	1,590	0.6%	500	580	0.5%
Morris	3402747670	Montville township	21,530	23,100	0.2%	7,490	8,250	0.3%	11,270	15,220	1.0%
Morris	3402748090	Morris township	22,330	24,130	0.3%	8,140	9,040	0.4%	10,460	14,940	1.2%
Morris	3402748210	Morris Plains borough	5,530	5,860	0.2%	2,130	2,320	0.3%	6,310	7,280	0.5%
Morris	3402748300	Morristown town	18,410	22,490	0.7%	7,420	9,340	0.8%	24,700	31,710	0.8%
Morris	3402748480	Mountain Lakes borough	4,160	4,450	0.2%	1,310	1,440	0.3%	3,060	4,000	0.9%



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Morris	3402748690	Mount Arlington borough	5,050	5,480	0.3%	2,280	2,570	0.4%	1,420	2,270	1.6%
Morris	3402749080	Mount Olive township	28,110	30,150	0.2%	10,690	11,740	0.3%	9,390	13,150	1.1%
Morris	3402750130	Netcong borough	3,230	3,500	0.3%	1,380	1,520	0.3%	1,900	2,650	1.1%
Morris	3402756460	Parsippany-Troy Hills township	53,240	57,950	0.3%	20,280	22,730	0.4%	53,090	67,930	0.8%
Morris	3402758110	Pequannock township	15,540	16,200	0.1%	6,470	6,750	0.1%	6,690	8,250	0.7%
Morris	3402761890	Randolph township	25,730	27,280	0.2%	9,010	9,720	0.3%	8,110	11,120	1.1%
Morris	3402763300	Riverdale borough	3,560	4,680	0.9%	1,550	2,220	1.2%	2,580	2,840	0.3%
Morris	3402764050	Rockaway borough	6,440	7,060	0.3%	2,440	2,740	0.4%	4,720	6,210	0.9%
Morris	3402764080	Rockaway township	24,160	24,360	0.0%	8,980	9,260	0.1%	10,860	11,560	0.2%
Morris	3402764980	Roxbury township	23,330	25,660	0.3%	8,290	9,400	0.4%	8,740	12,780	1.3%
Morris	3402775890	Victory Gardens borough	1,520	1,520	0.0%	530	550	0.1%	130	140	0.3%
Morris	3402777240	Washington township	18,530	18,650	0.0%	6,240	6,400	0.1%	3,430	3,690	0.2%
Morris	3402780390	Wharton borough	6,520	6,680	0.1%	2,300	2,360	0.1%	2,420	2,810	0.5%
Morris Total			492,300	530,200	0.2%	180,500	200,100	0.3%	276,400	362,500	0.9%
Ocean	3402973125	Toms River township	91,260	117,430	0.8%	34,770	45,280	0.9%	39,670	52,200	0.9%
Ocean	3402903050	Barnegat township	20,940	30,880	1.3%	8,130	12,460	1.4%	2,420	4,580	2.1%
Ocean	3402903130	Barnegat Light borough	570	810	1.1%	270	390	1.2%	130	210	1.6%
Ocean	3402903520	Bay Head borough	970	1,270	0.9%	460	620	1.0%	300	590	2.3%
Ocean	3402903940	Beach Haven borough	1,170	1,490	0.8%	530	680	0.8%	350	420	0.5%
Ocean	3402904180	Beachwood borough	11,050	13,340	0.6%	3,680	4,510	0.7%	900	1,570	1.8%
Ocean	3402905305	Berkeley township	41,260	53,870	0.9%	20,350	25,420	0.7%	5,550	9,760	1.9%
Ocean	3402907420	Brick township	75,070	95,570	0.8%	29,840	38,540	0.9%	19,800	27,770	1.1%
Ocean	3402918670	Eagleswood township	1,600	4,480	3.5%	620	1,820	3.6%	710	1,800	3.2%
Ocean	3402930390	Harvey Cedars borough	340	410	0.7%	170	210	0.7%	60	110	2.2%
Ocean	3402934530	Island Heights borough	1,670	1,820	0.3%	680	750	0.3%	310	420	1.0%
Ocean	3402934680	Jackson township	54,860	92,440	1.8%	19,420	33,760	1.9%	11,420	22,700	2.3%
Ocean	3402937380	Lacey township	27,640	37,180	1.0%	10,180	13,790	1.0%	5,640	8,300	1.3%
Ocean	3402937770	Lakehurst borough	2,650	3,620	1.0%	880	1,220	1.1%	1,220	1,660	1.0%
Ocean	3402938550	Lakewood township	92,840	133,730	1.2%	24,280	35,470	1.3%	28,700	39,050	1.0%
Ocean	3402939390	Lavallette borough	1,850	1,970	0.2%	930	990	0.2%	370	440	0.6%
Ocean	3402940560	Little Egg Harbor township	20,070	30,930	1.5%	8,060	12,590	1.5%	2,990	6,080	2.4%
Ocean	3402941250	Long Beach township	3,050	3,880	0.8%	1,540	1,970	0.8%	1,200	1,490	0.7%
Ocean	3402943140	Manchester township	43,070	61,440	1.2%	22,840	32,110	1.1%	5,390	11,170	2.5%
Ocean	3402943380	Mantoloking borough	300	360	0.6%	160	190	0.6%	20	100	6.0%
Ocean	3402954300	Ocean township	8,330	11,900	1.2%	3,480	5,080	1.3%	1,260	2,160	1.8%
Ocean	3402954450	Ocean Gate borough	2,010	2,140	0.2%	830	890	0.2%	120	220	1.9%
Ocean	3402958590	Pine Beach borough	2,130	2,360	0.3%	820	910	0.4%	220	330	1.4%
Ocean	3402959790	Plumsted township	8,420	17,200	2.4%	2,940	6,190	2.5%	1,200	3,820	3.9%
Ocean	3402959880	Point Pleasant borough	18,390	21,580	0.5%	7,270	8,620	0.6%	4,130	5,710	1.1%
Ocean	3402959910	Point Pleasant Beach borough	4,670	5,550	0.6%	1,990	2,380	0.6%	2,480	3,110	0.8%

PLAN 2040 FORECASTS: Population, Households, and Employment

County	Municipality Code	Municipality Name	Population			Households			Employment		
			2010 Population	2040 Population	Annualized % Population Change 2010-2040	2010 Households	2040 Households	Annualized % Household Change 2010-2040	2010 Employment	2040 Employment	Annualized % Employment Change 2010-2040
Ocean	3402966450	Seaside Heights borough	2,890	3,140	0.3%	1,380	1,510	0.3%	1,260	1,340	0.2%
Ocean	3402966480	Seaside Park borough	1,580	1,640	0.1%	830	870	0.1%	140	180	0.9%
Ocean	3402967110	Ship Bottom borough	1,160	1,350	0.5%	560	650	0.5%	480	590	0.7%
Ocean	3402969510	South Toms River borough	3,680	4,980	1.0%	1,100	1,510	1.1%	290	550	2.1%
Ocean	3402970320	Stafford township	26,540	36,640	1.1%	10,100	14,300	1.2%	9,600	13,100	1.0%
Ocean	3402971640	Surf City borough	1,210	1,320	0.3%	620	690	0.3%	390	500	0.8%
Ocean	3402974210	Tuckerton borough	3,350	4,840	1.2%	1,400	2,050	1.3%	490	950	2.3%
Ocean Total			576,600	801,600	1.1%	221,100	308,400	1.1%	149,200	223,000	1.3%
Passaic	3403182423	Woodland Park borough	11,820	13,480	0.4%	4,630	5,320	0.5%	4,990	5,920	0.6%
Passaic	3403106340	Bloomington borough	7,660	9,630	0.8%	2,940	3,730	0.8%	1,370	2,320	1.8%
Passaic	3403113690	Clifton city	84,140	99,560	0.6%	30,660	36,620	0.6%	30,970	40,050	0.9%
Passaic	3403129070	Haledon borough	8,320	9,790	0.5%	2,780	3,290	0.6%	1,400	2,040	1.3%
Passaic	3403130570	Hawthorne borough	18,790	22,250	0.6%	7,450	8,890	0.6%	6,010	7,910	0.9%
Passaic	3403140620	Little Falls township	14,430	16,380	0.4%	4,740	5,400	0.4%	6,330	7,350	0.5%
Passaic	3403153040	North Haledon borough	8,420	10,030	0.6%	3,120	3,760	0.6%	1,540	2,170	1.1%
Passaic	3403156550	Passaic city	69,780	82,210	0.5%	19,410	23,060	0.6%	16,570	22,060	1.0%
Passaic	3403157000	Paterson city	146,200	179,020	0.7%	44,330	54,900	0.7%	41,570	59,470	1.2%
Passaic	3403160090	Pompton Lakes borough	11,100	12,620	0.4%	4,190	4,800	0.5%	2,120	2,730	0.8%
Passaic	3403161170	Prospect Park borough	5,870	6,920	0.6%	1,800	2,140	0.6%	560	960	1.8%
Passaic	3403163150	Ringwood borough	12,230	14,380	0.5%	4,180	4,960	0.6%	2,140	3,060	1.2%
Passaic	3403173140	Totowa borough	10,800	13,310	0.7%	3,780	4,650	0.7%	12,690	14,630	0.5%
Passaic	3403176730	Wanaque borough	11,120	13,160	0.6%	4,020	4,800	0.6%	2,160	2,920	1.0%
Passaic	3403177840	Wayne township	54,720	66,060	0.6%	19,130	23,150	0.6%	37,800	45,240	0.6%
Passaic	3403179460	West Milford township	25,850	32,550	0.8%	9,630	12,250	0.8%	4,450	7,710	1.8%
Passaic Total			501,200	601,300	0.6%	166,800	201,700	0.6%	172,700	226,500	0.9%
Somerset	3403504450	Bedminster township	8,170	8,310	0.1%	4,100	4,160	0.0%	9,590	9,850	0.1%
Somerset	3403505560	Bernards township	26,650	27,370	0.1%	9,780	10,040	0.1%	15,360	16,250	0.2%
Somerset	3403505590	Bernardsville borough	7,710	7,990	0.1%	2,690	2,780	0.1%	2,810	2,960	0.2%
Somerset	3403506790	Bound Brook borough	10,400	13,160	0.8%	3,590	4,530	0.8%	3,890	4,540	0.5%
Somerset	3403507180	Branchburg township	14,460	18,140	0.8%	5,270	6,580	0.7%	10,010	14,660	1.3%
Somerset	3403507720	Bridgewater township	44,460	47,810	0.2%	16,110	17,290	0.2%	32,190	52,250	1.6%
Somerset	3403522890	Far Hills borough	920	1,050	0.4%	380	420	0.4%	580	590	0.1%
Somerset	3403524900	Franklin township	62,300	71,390	0.5%	23,300	26,930	0.5%	30,460	42,910	1.1%
Somerset	3403527510	Green Brook township	7,200	8,300	0.5%	2,380	2,720	0.5%	3,860	3,980	0.1%
Somerset	3403531890	Hillsborough township	38,300	53,230	1.1%	13,570	18,750	1.1%	11,370	30,240	3.3%
Somerset	3403543620	Manville borough	10,340	10,810	0.1%	4,020	4,190	0.1%	2,090	2,440	0.5%
Somerset	3403546590	Millstone borough	420	530	0.8%	160	210	0.8%	10	80	8.7%
Somerset	3403547580	Montgomery township	22,250	26,060	0.5%	7,640	8,930	0.5%	11,220	19,340	1.8%
Somerset	3403553280	North Plainfield borough	21,940	23,030	0.2%	7,450	7,760	0.1%	2,800	3,170	0.4%
Somerset	3403557300	Peapack and Gladstone borough	2,580	3,040	0.5%	890	1,040	0.5%	1,980	3,080	1.5%

PLAN 2040 FORECASTS: Population, Households, and Employment

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Somerset	3403561980	Raritan borough	6,880	8,380	0.7%	2,670	3,220	0.6%	9,480	9,770	0.1%
Somerset	3403564320	Rocky Hill borough	680	810	0.6%	280	330	0.5%	410	600	1.3%
Somerset	3403568460	Somerville borough	12,100	17,830	1.3%	4,590	6,750	1.3%	10,530	14,210	1.0%
Somerset	3403568730	South Bound Brook borough	4,560	4,620	0.0%	1,730	1,750	0.0%	430	470	0.4%
Somerset	3403576940	Warren township	15,310	17,450	0.4%	5,060	5,790	0.4%	13,910	14,810	0.2%
Somerset	3403577600	Watchung borough	5,800	7,300	0.8%	2,110	2,650	0.8%	4,690	6,260	1.0%
Somerset Total			323,400	376,600	0.5%	117,800	136,800	0.5%	177,700	252,500	1.2%
Sussex	3403701330	Andover borough	610	930	1.4%	240	390	1.6%	140	340	2.9%
Sussex	3403701360	Andover township	6,320	9,130	1.2%	2,070	3,110	1.4%	2,350	3,770	1.6%
Sussex	3403707300	Branchville borough	840	1,160	1.1%	360	520	1.2%	360	580	1.6%
Sussex	3403709160	Byram township	8,350	11,090	0.9%	2,930	3,970	1.0%	1,110	2,410	2.6%
Sussex	3403724810	Frankford township	5,570	9,470	1.8%	2,050	3,610	1.9%	2,360	4,360	2.1%
Sussex	3403724930	Franklin borough	5,050	6,700	1.0%	1,940	2,660	1.1%	1,640	2,200	1.0%
Sussex	3403725140	Fredon township	3,440	5,730	1.7%	1,210	2,110	1.9%	940	2,120	2.7%
Sussex	3403727420	Green township	3,600	5,690	1.5%	1,180	1,950	1.7%	510	1,460	3.6%
Sussex	3403729220	Hamburg borough	3,280	3,730	0.4%	1,360	1,570	0.5%	1,230	1,460	0.6%
Sussex	3403729490	Hampton township	5,200	7,970	1.4%	2,020	3,220	1.6%	1,100	2,580	2.9%
Sussex	3403729850	Hardyston township	8,210	10,830	0.9%	3,260	4,410	1.0%	1,390	2,620	2.1%
Sussex	3403732910	Hopatcong borough	15,150	17,450	0.5%	5,650	6,620	0.5%	1,320	2,500	2.1%
Sussex	3403737440	Lafayette township	2,540	4,870	2.2%	880	1,780	2.4%	1,760	3,000	1.8%
Sussex	3403747430	Montague township	3,850	6,030	1.5%	1,540	2,510	1.6%	580	1,780	3.8%
Sussex	3403751930	Newton town	8,000	9,260	0.5%	3,170	3,710	0.5%	4,290	5,020	0.5%
Sussex	3403754660	Ogdensburg borough	2,410	2,850	0.6%	860	1,040	0.6%	180	390	2.6%
Sussex	3403765700	Sandyston township	2,000	3,500	1.9%	790	1,450	2.1%	330	1,170	4.4%
Sussex	3403769690	Sparta township	19,720	24,260	0.7%	6,870	8,510	0.7%	5,580	7,510	1.0%
Sussex	3403770380	Stanhope borough	3,610	4,160	0.5%	1,400	1,630	0.5%	1,590	1,950	0.7%
Sussex	3403770890	Stillwater township	4,100	4,910	0.6%	1,550	1,900	0.7%	430	830	2.2%
Sussex	3403771670	Sussex borough	2,130	2,510	0.5%	900	1,070	0.6%	680	900	0.9%
Sussex	3403775740	Vernon township	23,940	28,530	0.6%	8,620	10,400	0.6%	5,770	8,170	1.2%
Sussex	3403776640	Walpack township	20	20	0.0%	10	10	0.0%	-	-	0.0%
Sussex	3403776790	Wantage township	11,360	18,730	1.7%	3,910	6,770	1.8%	2,010	5,680	3.5%
Sussex Total			149,300	199,500	1.0%	54,800	74,900	1.1%	37,600	62,800	1.7%
Union	3403905320	Berkeley Heights township	13,180	17,270	0.9%	4,470	5,830	0.9%	7,550	9,340	0.7%
Union	3403913150	Clark township	14,760	17,250	0.5%	5,560	6,530	0.5%	6,680	7,930	0.6%
Union	3403915640	Cranford township	22,630	27,420	0.6%	8,580	10,410	0.6%	13,680	16,710	0.7%
Union	3403921000	Elizabeth city	124,970	147,790	0.6%	41,600	48,980	0.5%	48,130	63,750	0.9%
Union	3403922860	Fanwood borough	7,320	8,200	0.4%	2,630	2,940	0.4%	1,150	1,490	0.9%
Union	3403925800	Garwood borough	4,230	5,500	0.9%	1,780	2,310	0.9%	2,070	2,650	0.8%
Union	3403931980	Hillside township	21,400	26,160	0.7%	7,110	8,690	0.7%	7,060	9,300	0.9%
Union	3403936690	Kenilworth borough	7,910	10,020	0.8%	2,840	3,590	0.8%	14,850	16,510	0.4%

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Union	3403940350	Linden city	40,500	48,220	0.6%	14,910	17,760	0.6%	18,480	24,140	0.9%
Union	3403948510	Mountainside borough	6,690	7,980	0.6%	2,470	2,950	0.6%	5,770	6,390	0.3%
Union	3403951810	New Providence borough	12,170	15,410	0.8%	4,410	5,570	0.8%	9,050	10,250	0.4%
Union	3403959190	Plainfield city	49,810	56,150	0.4%	15,180	17,270	0.4%	8,500	11,580	1.0%
Union	3403961530	Rahway city	27,350	32,780	0.6%	10,530	12,620	0.6%	12,960	16,070	0.7%
Union	3403964620	Roselle borough	21,090	24,330	0.5%	7,410	8,550	0.5%	4,480	6,240	1.1%
Union	3403964650	Roselle Park borough	13,300	15,450	0.5%	5,000	5,800	0.5%	1,960	3,100	1.5%
Union	3403966060	Scotch Plains township	23,510	26,820	0.4%	8,600	9,830	0.4%	6,070	7,650	0.8%
Union	3403970020	Springfield township	15,820	19,080	0.6%	6,510	7,850	0.6%	10,750	12,630	0.5%
Union	3403971430	Summit city	21,460	25,160	0.5%	7,710	9,060	0.5%	15,650	20,370	0.9%
Union	3403974480	Union township	56,640	68,720	0.6%	19,560	23,710	0.6%	32,460	39,640	0.7%
Union	3403979040	Westfield town	30,320	37,360	0.7%	10,570	13,010	0.7%	9,820	13,240	1.0%
Union	3403981650	Winfield township	1,470	1,470	0.0%	710	710	0.0%	10	140	10.9%
Union Total			536,500	638,500	0.6%	188,100	224,000	0.6%	237,100	299,100	0.8%
Warren	3404100670	Allamuchy township	4,320	4,930	0.4%	1,950	2,050	0.2%	640	860	1.0%
Warren	3404101030	Alpha borough	2,370	3,150	1.0%	960	1,180	0.7%	890	1,180	0.9%
Warren	3404104990	Belvidere town	2,680	3,960	1.3%	1,050	1,430	1.0%	1,550	1,960	0.8%
Warren	3404106160	Blairstown township	5,970	7,180	0.6%	2,120	2,350	0.3%	1,870	2,500	1.0%
Warren	3404124960	Franklin township	3,180	4,030	0.8%	1,120	1,310	0.5%	450	600	1.0%
Warren	3404125320	Frelinghuysen township	2,230	2,640	0.6%	760	830	0.3%	190	200	0.3%
Warren	3404128260	Greenwich township	5,710	6,280	0.3%	1,810	1,830	0.0%	1,840	2,100	0.4%
Warren	3404128710	Hackettstown town	9,720	12,100	0.7%	3,580	4,090	0.5%	7,210	8,320	0.5%
Warren	3404129820	Hardwick township	1,700	1,930	0.4%	570	600	0.1%	210	230	0.3%
Warren	3404130090	Harmony township	2,670	3,700	1.1%	1,020	1,300	0.8%	530	700	1.0%
Warren	3404133060	Hope township	1,950	2,340	0.6%	740	820	0.3%	470	510	0.3%
Warren	3404133930	Independence township	5,660	6,290	0.4%	2,230	2,280	0.1%	760	1,010	1.0%
Warren	3404137320	Knowlton township	3,060	3,440	0.4%	1,100	1,140	0.1%	800	1,060	1.0%
Warren	3404140110	Liberty township	2,940	3,220	0.3%	1,050	1,050	0.0%	210	220	0.1%
Warren	3404141490	Lopatcong township	8,010	8,990	0.4%	3,140	3,230	0.1%	4,520	5,410	0.6%
Warren	3404143320	Mansfield township	7,730	10,010	0.9%	2,970	3,540	0.6%	1,370	2,000	1.3%
Warren	3404155530	Oxford township	2,510	2,920	0.5%	950	1,010	0.2%	1,150	1,290	0.4%
Warren	3404158350	Phillipsburg town	14,950	17,460	0.5%	5,930	6,360	0.2%	4,910	6,680	1.0%
Warren	3404159820	Pohatcong township	3,340	3,640	0.3%	1,310	1,310	0.0%	370	840	2.8%
Warren	3404177270	Washington borough	6,460	8,370	0.9%	2,620	3,120	0.6%	1,240	1,660	1.0%
Warren	3404177300	Washington township	6,650	8,810	0.9%	2,380	2,900	0.7%	3,020	3,900	0.9%
Warren	3404180570	White township	4,880	6,460	0.9%	2,120	2,570	0.7%	820	1,100	1.0%
Warren Total			108,700	131,800	0.6%	41,500	46,300	0.4%	35,000	44,300	0.8%
Total NJTPA Region			6,578,900	7,910,400	0.6%	2,398,800	2,908,400	0.6%	2,847,400	3,771,700	0.9%

NOTE: Municipal numbers have been rounded to the nearest 10; county totals have been rounded to the nearest 100. All calculations were done on unrounded values so totals and growth percentages calculated using

the rounded numbers may not match the values in this table.



# Appendix B - Mitigating Adverse Environmental Impacts of Transportation Improvements

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The thirteen county NJTPA region is made up of diverse ecological resources from the lush environment of the Highlands to fragile wetlands to farmlands of rural Central New Jersey to the unique Pinelands to the New Jersey Meadowlands to historic parks to the miles of exceptional coast line and barrier islands found on the Jersey shore. One of the goals identified in Plan 2040 is to “protect and improve the quality of natural ecosystems and the human environment.” Reflecting this goal, the NJTPA’s planning and project development programs are designed to explicitly consider the impacts that transportation investments can have on both the human and natural environments, and focus specifically on minimizing or mitigating negative impacts.

Considering the complexity and diversity of the environment across the region, the NJTPA uses readily available published environmental inventories to identify protected landscapes and historical features. Beginning at the early stages in the planning process and continuing throughout, this information is used first as a contextual backdrop for the identification of transportation needs, and later as an important factor in prioritizing and selecting the most appropriate transportation improvement strategies for specific locations. Identifying environmental issues (through mapping overlays) early in the planning process helps determine whether particular types of projects should be advanced or avoided in vulnerable areas. It also helps address National Environmental Policy Act (NEPA) requirements more effectively than if such issues would be left for consideration until late in project development. Where project development proceeds, the inventories of environmental features are used to fully incorporate environmental mitigation techniques that minimize unavoidable impacts to these areas.

Environmental mitigations called for by this plan are to be developed in consultation with numerous federal, state and local agencies responsible for and interested in environmental stewardship, including:

- New Jersey Department of Environmental Protection
- Division of Land Use Regulation Freshwater Wetlands Stream Encroachment Coastal Regulation Tidelands Management
- Bureau of Dam Safety and Flood Control
- Division of Fish and Wildlife Office of Historic Preservation Green Acres Program
- Bureau of Air Quality Planning Division of Parks and Forestry Division of Water Quality
- New Jersey Department of Transportation, Bureau of Environmental Program Resources
- NJ TRANSIT
- New Jersey Department of Community Affairs, Office of Smart Growth

- Federal Highway Administration, Environmental Coordinator
- Federal Transit Administration
- U.S. Environmental Protection Agency
- U.S. Army Corp of Engineers
- All NJTPA Member Agencies and municipalities, as appropriate

The specific types of environmental mitigation activities implemented are ultimately determined by the governing regulatory authority and are dependent upon the resource being impacted and the severity of that impact. Among the key environmental areas of concern to the NJTPA are the following:

### **Regional Air Quality/Non-attainment and Maintenance Areas**

Air quality is a regionally scaled environmental issue, with the NJTPA seeking attainment and maintenance of the National Ambient Air Quality Standards throughout northern New Jersey. Mitigation activities are applicable throughout the region, represented throughout this plan by the emphasis on Smart Growth, support for public transit, walking and biking, limiting the addition of new highway capacity, and support for a variety of Transportation Demand Management (TDM) and highway operational improvement initiatives. These approaches seek to significantly curb the growth in vehicle miles traveled and reduce vehicular pollutant emissions, including greenhouse gas emissions in accordance with the New Jersey Global Warming Response Act of 2007.

### **Water Quality Management Planning Areas**

The establishment of Water Quality Management Planning Areas by the State, including the New Jersey Highlands and New Jersey Meadowlands, supports the preservation and protection of the quality of the region’s precious water resources. Mitigation within these areas focuses on growth management and protecting, preserving and repairing critical areas such as wetlands and open water features.

### **Freshwater Wetlands, Lakes, Rivers and Streams**

To preserve and protect the ecological integrity of the region’s wetlands, the NJTPA and its member agencies seek to avoid disruptive transportation improvements located within identified wetland areas. Where disruption is unavoidable, projects are developed and designed to be consistent with the requirement of the New Jersey Department of Environmental Protection’s Freshwater Wetlands Protection Act. That is, proposed projects seek to minimize adverse impacts to the maximum extent practical and include, or are accompanied by, appropriate mitigation measures. Applicable mitigation techniques are ultimately determined with the New Jersey Department of Environmental Protection, New Jersey Department of Transportation, and New Jersey Transit. Examples of common mitigation techniques that may be applied in these areas include:

- Minimizing adverse environmental impacts and restoring temporarily impacted areas to preconstruction conditions;
- Transportation facility design that minimizes the “footprint” of new impervious surfaces;
- The creation of new wetland areas at a ratio ranging up to 1-acre of disturbance to 3-acres newly created wetlands;
- The restoration or rehabilitation of damaged wetlands again at a ratio ranging up to 1-acre of disturbance to 3-acres of enhancement; or
- If available, the purchase of wetland credit acres from an existing wetland mitigation bank within the same watershed.

### New Jersey Coastal Areas

Protection of New Jersey’s remarkable coastal areas is addressed by the Coastal Area Facility Review Act (CAFRA) or the Waterfront Development Law. The CAFRA jurisdictional area begins where the Cheesequake Creek enters Raritan Bay in Old Bridge, Middlesex County. It extends south along the coast around Cape May, and then north along the Delaware Bay ending at the Kilcohook National Wildlife Refuge in Salem County. The inland limit of the CAFRA area follows an irregular line drawn along public roads, railroad tracks, and other features. The Waterfront Development Law generally regulates all development within 500 feet of any tidal water body.

Avoiding damage to these areas is preferable, but sometimes a transportation project is warranted within the CAFRA zone or adjacent to any tidal water body. To mitigate negative impacts, techniques can include monetary contributions or designating compensation land for the loss of resources. To offset for removal of vegetation or addition of impervious surfaces, Conservation Easement/Restrictions protecting other areas from future development may be executed.

### Designated “Green Acres” Areas

Properties designated under the state Green Acres program represent historic, scenic, and recreational open spaces acquired and owned by the State to be preserved for public use and enjoyment. Where any Green Acres property is encumbered by the construction of a roadway, bridge or other transportation right-of-way, mitigation must provide replacement land of equal or greater value, provide parkland improvements, provide funds for the acquisition of land for recreation and/or conservation purposes or provide another type of monetary compensation.

### Forested Areas

Forested parts of the region include those in the Pine Barrens of the Pinelands Preservation Area as well as the Highlands. Avoiding disturbance of these natural areas is most desirable to preserve water and wildlife resources. Where transportation improvements do have negative impacts, such impacts should be minimized and mitigated. Mitigation practices within forest areas include the replacement

of upland forest with forest of equal ecological value and function. Forest replacement may be achieved by either onsite plantings or if onsite plantings are not feasible offsite plantings within preservation or planning areas may be permitted. If neither option is feasible, payment into a fund dedicated the purchase of upland forest may be allowed.

### **Flood Hazard Areas**

State designated Flood Hazard Areas identify locations with significant risk of flooding, particularly during hurricanes or other major storms. Transportation projects and land development can change natural drainage and create new paths for runoff, with potentially dangerous consequences. Any development within a regulated flood hazard zone is required to take all reasonable measures necessary to minimize adverse environmental impacts resulting from the construction of the proposed project. Building in and maintaining effective drainage systems, including ditches, culverts, and catch basins are critical in infrastructure improvements and maintenance. Other mitigation techniques include restoring temporarily disturbed vegetation with vegetation of equal or higher quality, restoring all habitats, restoring all land and water features to their pre-construction condition, and preventing sedimentation and erosion to the greatest extent possible.

### **Historic Districts and Sites**

The historic and aesthetic value of northern New Jersey's built environment is also recognized as key to the quality of life of the region's residents. Where transportation improvements are developed which may impact on such resources, appropriate mitigation and design elements should be addressed. Section 106 of the National Historic Preservation Act (NHPA) requires all federal agencies to take into account the effects of their undertakings on historic properties. All properties listed or eligible for inclusion into the National Register and/or State Register are protected by the New Jersey Historic Preservation Office. Typically mitigation activities include the preservation and documentation of these assets along with context-sensitive design of new or renovated infrastructure to complement existing streetscape or architectural features as closely as possible.

### **Rare, Threatened and Endangered Species**

Currently the ecosystem in New Jersey provides habitat to nearly 500 wildlife species, 73 of which are listed as threatened or endangered. In an effort to help protect these species, the NJDEP has surveyed the entire State and delineated potential critical habitats. A significant portion of this critical habitat is protected from development through the establishment of Wildlife Management Areas (WMA) and the enforcement of the various State regulations. In the event that a planned transportation project will encumber identified critical habitat, various mitigation measures are immediately triggered. These mitigation measures included possible realignment of the entire facility or portion thereof or the establishment of new habitat either on or off site.



## Soil Erosion and Sediment Control

To reduce soil erosion and sedimentation during and upon construction completion, the majority of NJTPA's transportation improvement projects require compliance with the New Jersey Soil Erosion and Sediment Control Act of 1975. The local Soil Conservation District is responsible for reviewing and certifying all Soil Erosion and Sediment Control Plans prior to any construction activities. Certification of a Soil Erosion and Sediment Control Plan ensures that the proper soil stabilizing techniques have been fully incorporated into the project design.

To minimize unavoidable soil displacement occurring during construction and prevent future soil erosion, the Soil Erosion and Sediment Control Act requires that all steep slopes (slopes exceeding 15%) be stabilized, silt fencing securing the project area be installed, all temporarily disturbed areas be re-vegetated and stormwater runoff be properly collected and conveyed.

## Stormwater Management

Non-point pollution or uncontrolled and untreated stormwater runoff from paved and other impervious surfaces carries pollutants into surface and ground waters, with negative effects on aquatic life, drinking water, and recreational resources. Additionally, fast moving surface runoff erodes stream banks, channeling meandering streams into fast moving torrents during storm events. The NJ DEP's stormwater management rules (N.J.A.C. 7:8) regulate discharges of pollutants to surface and ground water by controlling the construction of impervious surfaces. These include paved roads and paths, parking facilities, and other development. In addition to limits on impervious surfaces, additional strategies are required to control and treat stormwater in order to mitigate its potential impacts.

# Appendix C – Air Quality Conformity Determination

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Upon approval by the NJTPA Board of Trustees, the Air Quality Conformity Determination will be inserted into Appendix C.

The Air Quality Conformity Determination Report will be available for public comment from July 11, 2013 to August 12, 2013, the same public comment period as the Regional Transportation Plan (RTP), Plan 2040, and the Transportation Improvement Program (TIP).

# Appendix D – NJTPA Congestion Management Process

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## Introduction

The region’s extensive transportation infrastructure assets are the result of continued investment over time, empowering the region’s economic and social activity by enabling the movement of persons and the flow of goods. Preservation, management and targeted expansion of infrastructure capacities are fundamental to sustaining the region’s development and well-being. (Conversely, allowing the existing assets to degrade over time would greatly and adversely affect the region.)

The NJTPA operates a Congestion Management Process, or CMP, systematically investigating the region’s complex travel patterns and looking toward suitable approaches for improving the transportation system’s convenience and reliability. Such a “performance-based” process is federally required<sup>i</sup> as an integral part of the metropolitan planning process in MPOs like the NJTPA.

Based on established NJTPA policy, the Regional Capital Investment Strategy<sup>ii</sup>, the CMP is structured around a broad regional analysis of transportation needs and strategies called Strategy Evaluation. Recommendations for action in specific locations is drawn from and related to Strategy Evaluation findings in Strategy Refinement and CMP Compliance activities. Projects are prioritized, selected for funding and subsequently implemented based on consistency with CMP objectives. Regular monitoring of performance is conducted and comprehensive methods for evaluating impacts of projects have been developed.

The CMP has been in place for several plan cycles and undergone periodic enhancements. Some features have been updated leading up to *Plan 2040*, while other important enhancements are still in progress. Consistent with the overall approach for *Plan 2040*, the CMP is building on prior planning work while evolving to meet broader emerging priorities and support the *Together North Jersey Regional Plan for Sustainable Development* effort.

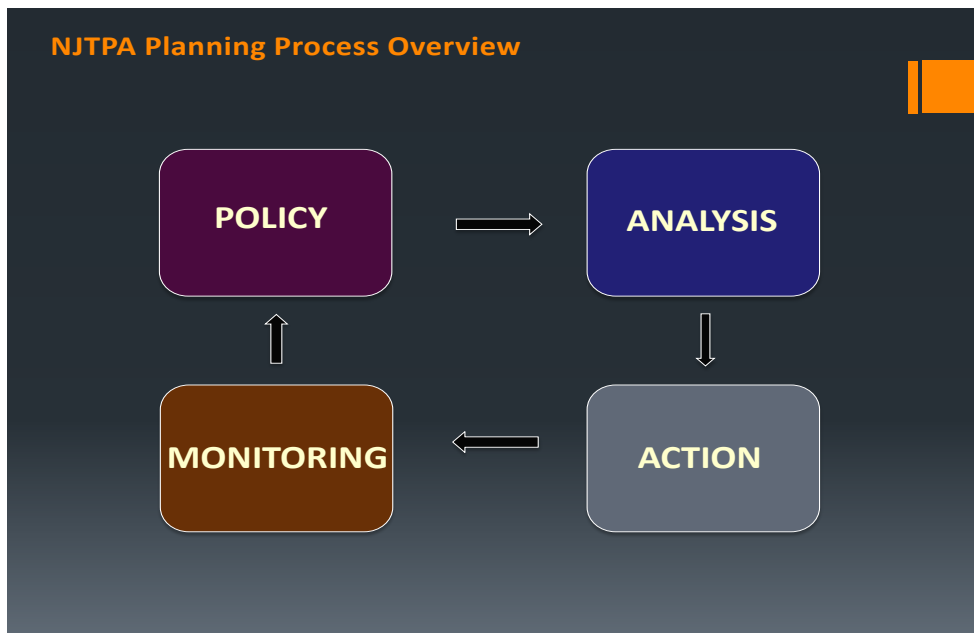
This appendix briefly describes established elements within the CMP, especially those related to the Strategy Evaluation analysis. Priorities and projects within *Plan 2040* and the NJTPA Transportation Improvement Program (TIP) are already supported by operation of the CMP. In addition, CMP analytical findings have been made available and utilized by NJTPA partner agencies, including NJDOT (for statewide assessment of congested places), subregions (for the development of studies and project concepts), and Transportation Management Associations (for work program development).

New system performance measures are currently being explored to address requirements enacted in the federal MAP-21 legislation. Once national performance measures are set (by 2015) related to national congestion, reliability and freight movement goals, new state and regional targets will need to be established, system reports will need to be developed, and plan and TIP impacts will need to be assessed.

Further, the NJTPA is developing an innovative web-based platform intended to strengthen the integration of the CMP and other planning work for the region. The Planning Recommendations Integration Management Engine, or PRIME, will help regional, subregional, state and other partner planners query, draw from, and connect planning findings. This should help to advance recommendations that emerge from systematic planning work like the CMP and subregional planning studies toward implementation. It should also help to find synergies among needs so that complementary strategies can be packaged appropriately and advanced concurrently (a core feature of the CMP).

As required by Federal transportation law, and reflected in new planning requirements in the MAP-21 legislation, MPOs must base their planning decisions on the performance of the transportation system. Since the NJTPA region's air has concentrations of ozone that exceed national standards (i.e., the region is part of federally designated non-attainment areas), the use of a CMP is an integral part of the NJTPA planning process and addresses Federal requirements to provide information and strategies to decision-makers regarding accessibility, mobility, and congestion as they relate to the movement of persons and goods in northern New Jersey.

The NJTPA planning process, including the CMP (see figure below), is guided by regional policy that drives a broad multi-modal analysis of congestion-related issues, in turn producing recommendations for public agency action. Periodic monitoring examines whether desired policy objectives are achieved.



## POLICY

The CMP is guided by adopted NJTPA policy – especially the Regional Capital Investment Strategy (RCIS) and other elements of the Regional Transportation Plan (RTP) – and through substantial review by NJTPA member and partner agencies. National, state and local priorities are fully incorporated as conveyed through federal CMP requirements, directions set by the NJDOT Long Range Transportation Plan and the State Development and Redevelopment Plan, preservation needs identified by the Highlands, Pinelands, and Meadowlands agencies, and continual subregional input into the metropolitan process.

As a crucial foundation, the RCIS explicitly emphasizes smart growth, safe travel, preserving existing transportation infrastructure, expanding the region’s transit system, operationally improving the roadway system, efficient goods transport, managing incidents and applying technology, and supporting walking and bicycling. All of these priorities are in some way connected to how well the transportation system performs its essential functions, and how congestion and related issues reflect on that performance.

In this policy context, it is recognized that traffic congestion is complex to address. While widening roadways at a bottleneck may help manage or reduce congestion, widening long stretches of roadways may add a level of additional capacity that can lead to overall increased vehicle volumes, more traffic congestion and air pollution over time. Also, many vibrant commercial districts, urbanized areas and important major roadway arteries experience daily recurring “routine” traffic congestion that cannot realistically be eliminated due to potential costs, limited land availability and/or potential quality of life impacts to communities. Recognizing these limitations, the NJTPA’s multi-modal CMP is used to explore a full range of transportation solutions, including finding alternatives to avoid all but the most essential additions of roadway capacity.

Importantly, the NJTPA recognizes that congestion is most problematic when it hinders accessibility, a key contributor to the region’s economic and community well-being. Transportation works well when it puts travelers’ desired destinations (jobs, shopping, schools, parks, and so on), within reach, making them accessible. It works well when trips are predictable, with reasonable expected travel times and actual travel times matching those expectations. Effective transportation provides flexibility and convenience, in terms of available routes and a good choice of possible means of transportation.

## ANALYSIS

Congestion, crowding, incidents and accidents can hinder the region’s accessibility, as can inefficient roads or transit connections, missing sidewalks, or unavailable information on travel options. But accessibility is also fundamentally tied to where people live, work, shop and play in the region – specifically, how far destinations are from one another and whether households and businesses are located where the transportation system can serve them best. Overall, the northern New Jersey transportation system provides enormous accessibility to the region, but addressing the challenges of a growing and changing region require understanding congestion in these broader contexts. Analysis within the CMP contributes to this understanding.

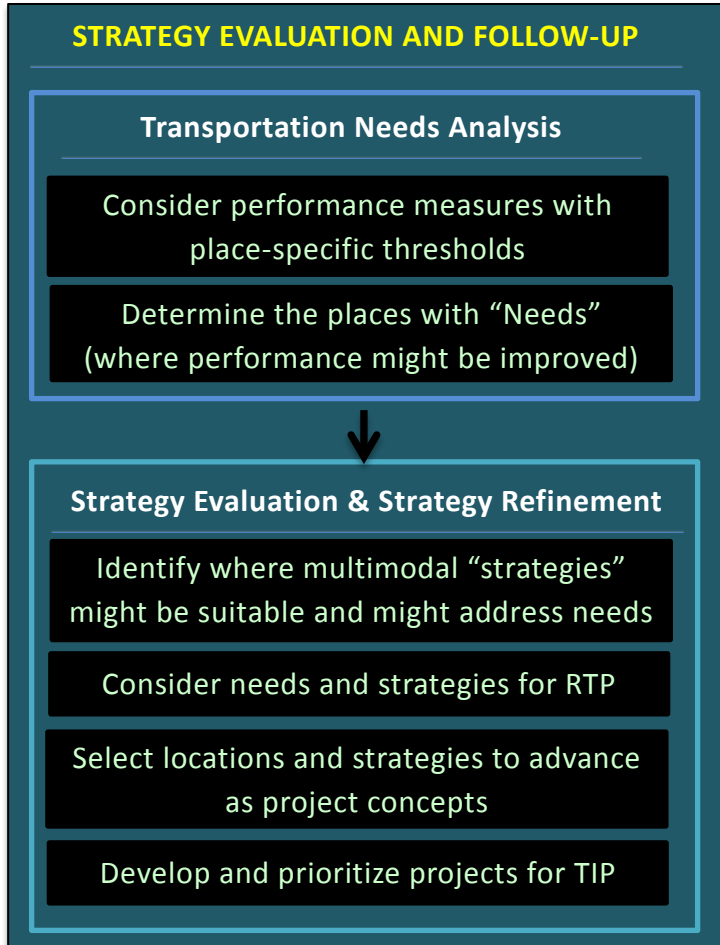
## Strategy Evaluation Analysis

NJTPA analysis related to the CMP is developed and presented in various venues, including the main text of *Plan 2040*. Central to the CMP, however, is an ongoing regional study called Strategy Evaluation. This study focuses on questions such as:

- How reliable is the transportation system?
- Can people readily access jobs and other destinations?
- Do they have access to transit?
- How bad are highway delays?
- Is freight movement efficient?
- How safe and convenient is travel by bicycle and on foot?

And for each question, what improvement strategies are most appropriate and where should they be implemented?

First conducted for the NJTPA's 2002 RTP and updated in subsequent plan cycles, Strategy Evaluation is a data-driven study that identifies specific accessibility and mobility needs and connects these to origins and destinations of travel. In this way, Strategy Evaluation orients its findings around context, selecting solutions that are appropriate for prevailing land uses and activities in particular places. The study explicitly draws attention to the diversity of land use and environmental conditions ("place types") present in northern New Jersey municipalities. Special considerations regarding environmentally sensitive areas and low-income and minority communities are also taken into account. A wide variety of data is applied, place-specific objectives are considered, established performance measures are assessed, regional needs are identified, and strategies throughout the region are investigated. The results of the Strategy Evaluation, identification of suitable places in the region for possible improvement strategies, support the NJTPA Regional Transportation Plan and, with follow-up "Strategy Refinement" and project-level planning, support development of the Transportation Improvement Program. The diagram below illustrates the process:



It is important to note that needs and strategies emerging from Strategy Evaluation represent but one avenue for identifying and beginning to plan improvements in the region. While it is an essential part of the planning process, other sources include corridor and subregional studies, statewide management systems, freight studies, transit studies, intelligent transportation studies, Transportation Management Association work, local transportation circulation elements and public input.

To support consistency among these complementary efforts with regard to the CMP, Strategy Evaluation findings are also used by the NJTPA as a regional reference. This is particularly critical for initiatives that may result in significant expansion of roadway space as CMP assessment is mandated for capacity increasing projects before Federal funds may be applied. For such projects, the CMP looks at road expansions as a last resort and as appropriate, requires that they be coupled with complimentary operational and travel demand management strategies.

Some detail on the Strategy Evaluation is offered here, with recognition that updating of the study will continue beyond *Plan 2040*. In fact, features currently being added are specifically oriented toward the broader perspectives appropriate to the *Together North Jersey* cooperative *Regional Plan for Sustainable Development* effort. Referencing findings produced earlier for *Plan 2035*, updates either completed or in progress are indicated below.

## Regional Transportation Needs

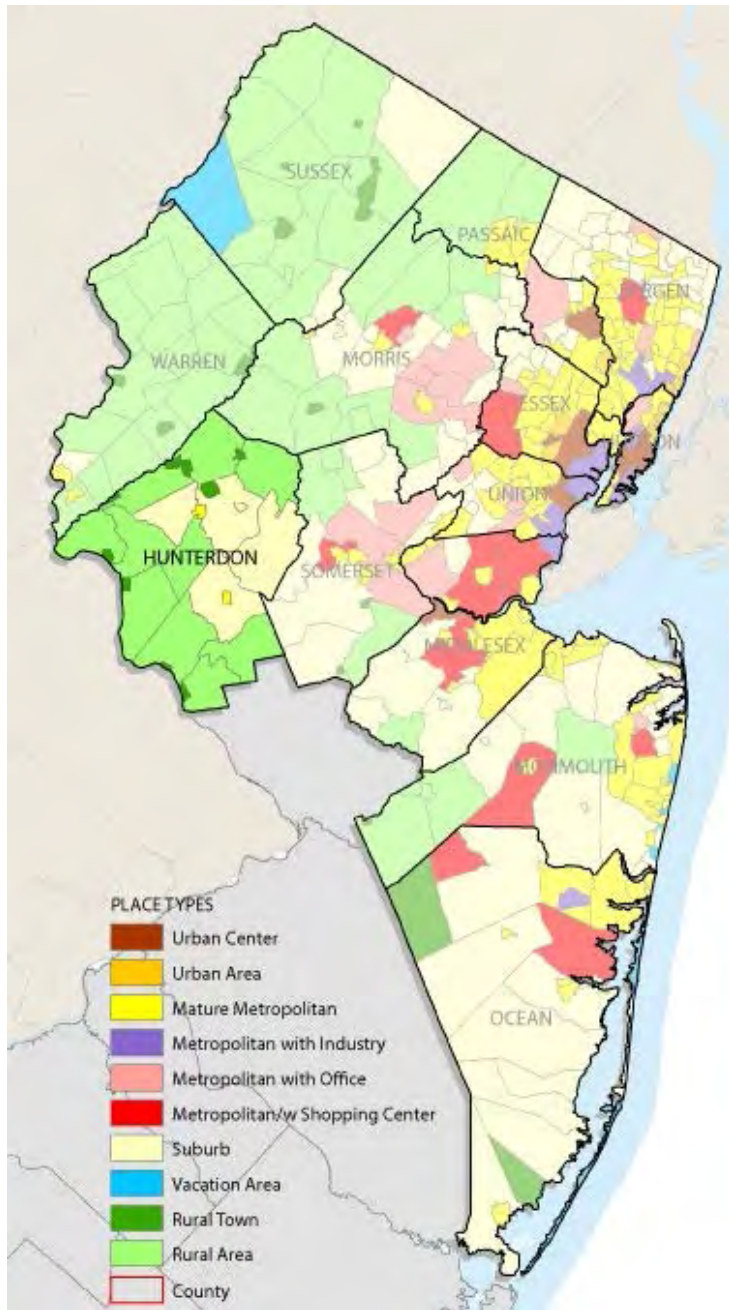
Update of the Strategy Evaluation's place-based needs analysis is underway, with initial results echoing those detailed in an *NJTPA Strategy Evaluation Regional Transportation Needs* produced for *Plan 2035*.

### *Place Types*

Transportation performance and needs vary greatly depending on the landscape – ranging from the urban core to exurban and rural areas. The region contains large environmentally sensitive areas close to developed areas, adding to its complexity. The variety of place types – considering land use, population density, employment, the nature of economic activities, street patterns, and so on – help point the way to how future land use and transportation features should be supported or discouraged.

The desired objectives, in turn, allow for settings standards of performance according to context. For instance, levels of congestion that indicate a “need” can be set lower in rural or suburban areas (where a greater level of congestion can be expected). Where performance standards are not met, needs for improving accessibility and mobility are identified and improvements area sought. Strategy Evaluation identified ten place types, each with specific standards for transportation performance (see map).





***Places with Special Considerations***

Assessing needs takes into account that some places in the region have features warranting special consideration. Of particular concern are environmentally sensitive areas and places with high concentrations of low-income and minority populations.

To fulfill its goals for preserving the environment and the region’s natural resources, the NJTPA seeks to minimize impacts on wetlands, floodplains, coastal areas, lakes, streams, dunes, beaches, parks, forests, natural habitats, and other environmentally sensitive areas. The NJTPA also pays particular attention to the transportation needs of low income and minority populations to ensure an equitable and inclusive

planning process. In both cases, these special considerations are mandated by Federal and state policy and regulations.

### **Performance Measures**

A range of performance measures of accessibility to and from these different types of places support further assessments of location-specific needs. These measures have been analyzed in relation to places throughout the region, places that serve as the origins and destinations of travel for people and goods:

- **Roadway Accessibility:** Performance measures associated with roadway travel such as excess routine travel delay, likelihood of unexpected delays, hotspot delay or time spent in extreme congestion
- **Public Transit and Shared Ride Use:** Performance measures associated with emphasis on availability of alternate travel modes, providing travel options and reducing the need for automobile trips
- **Walking and Biking:** Performance measures associated with making walking and bicycle share to supplant shorter automobile trips and promote health and add liveliness of streets and community character
- **Goods Movement:** Performance measures associated with efficient and reliable movement of freight in and through the NJTPA region

### ***Roadway Accessibility and Delay***

Given the extensive automobile and truck travel in the region, the analysis looks at several aspects of performance associated with roadway travel: routine delay, hotspot congestion, and likelihood of unexpected or incident delay. These are highly interrelated and paint a picture of where overflowing roadways hinder or constrain accessibility. Unexpected and hotspot congestion are considered more onerous than routine delay.

Unexpected roadway delay results from unpredictable events on roadways such as accidents/crashes, stalled vehicles, unforeseen failure of the roadway system or unforeseen breakdowns of public utilities. Because of its unpredictable nature and monetary and other costs associated with it, unexpected delay is highly frustrating to travelers and strongly impacts the reliability of the movement of people and of freight. Crashes are a major contributor to this delay.

Many needs have been identified in many parts of the region based on these roadway delay measures. Some notable places affected by unexpected delay include areas along the east-west I-80 corridor from north Warren to central Morris, in the southern Bergen/Hudson County area, in central Union/Middlesex County, in northwest Monmouth County, in western Somerset and in central Ocean Counties. Also important are those in very dense origin and destination of Hudson, Essex, and Bergen Counties, denser parts of Union, Middlesex, and Monmouth Counties, and burgeoning areas in and around the New Jersey Highlands. Given the width of diversity of these locations and markets, approaches to addressing these needs will vary markedly from place to place.

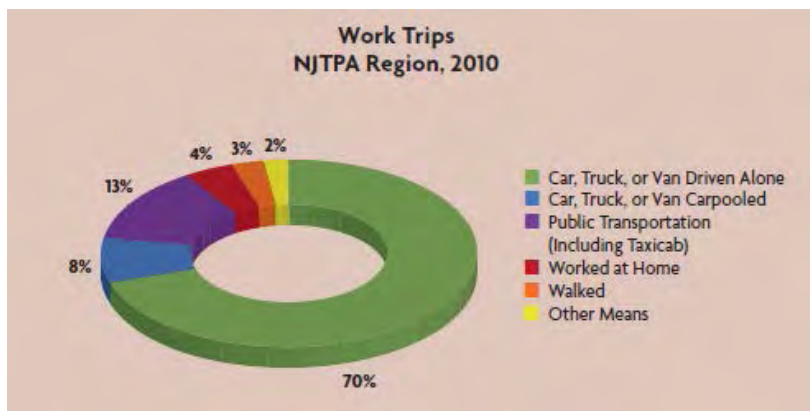
Reliability of the Interstates and National Highway System is one of the national goals newly identified by MAP-21 and one drawing significant attention by agencies throughout the nation (including the

NJTPA). The importance of the goal is coupled with powerful new data—data utilized daily for real-time operations and for traveler information, but also becoming increasingly available in archived form for planning purposes. The NJTPA has begun to make use of such data, including working with NJDOT, DVRPC, TRANSCOM, the I-95 Corridor Coalition, and other partners. As the field matures, applications within the NJTPA CMP are expected to increase dramatically.

### *Use of Public Transit and Shared Ride*

The success of the region’s bus and rail transit system and shared-ride travel (such as carpools) in general is highly desirable. Given the air quality benefit of reducing auto use, the energy efficiency of transit, the sustainable economic benefits of encouraging smart growth, and the preservation of natural resources based on management of land use, the NJTPA has embraced public transit as a major regional priority. The success of transit and shared ride modes depend on the availability of fast, frequent, and direct service to major regional destinations.

As described within *Plan 2040*, regionally, about 13% of the region’s commuters take public transportation, 8% carpool, and 3% walk to work (see figure). For many of the region’s densely developed areas, over 25 percent of their residents’ daily commuting trips are made by public transit, including Newark, Jersey City, Union City, and Hoboken. The region’s major urban destinations, including Newark, Jersey City, and of course, Manhattan, enjoy large percentages of transit and shared commuters.



Source: US Census

Some areas in the region have densities that might yield larger public transit shares than they currently experience, but land use patterns, demographics or available services may have room for improvement. These include places along the northern Hudson River, inner core areas in Bergen, Passaic, Essex and Union, and parts of the Route 9 corridor from north Ocean to Middlesex such as Lakewood, Freehold, Old Bridge, and East Brunswick. In addition to noting that increased transit and shared ride use is desirable everywhere, needs like these are highlighted by in the current Strategy Evaluation analysis.

Further study of this performance measure is taking place for *Together North Jersey*, as it has been identified as a key indicator for the effort. Among a host of other areas, a transportation topic report

prepared as background for the RPSD looks at a variety of behavioral, demographic, market and infrastructure dimensions that relate to transit mode share. Considering how transit use can be enhanced in support of a more sustainable region is important not only to the transportation topic, but also to the RPSD’s economic development, land use, environmental, housing and other topics.

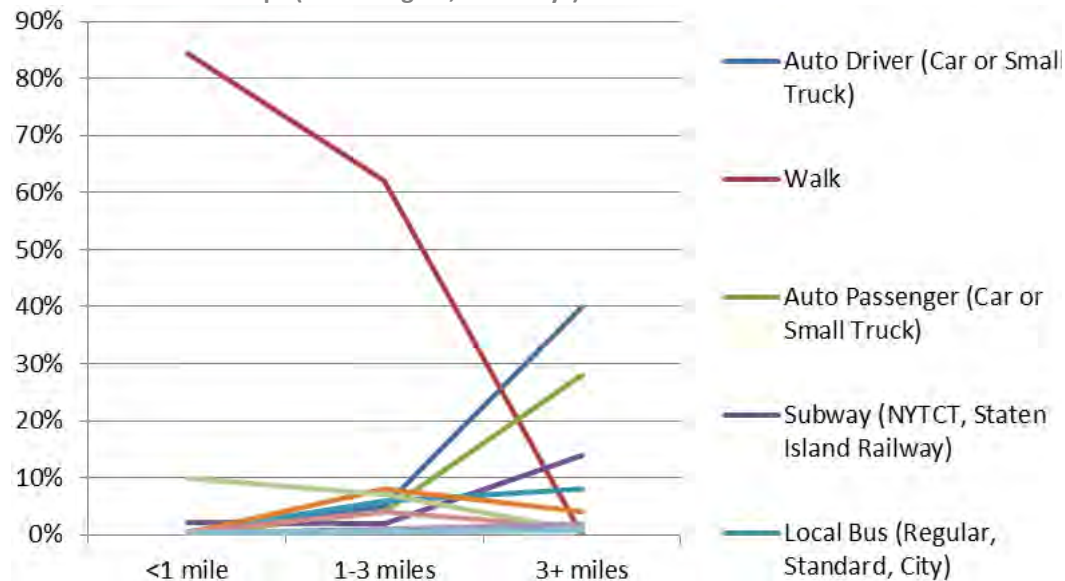
### Walking and Biking

For their health and environmental benefits as well as their contribution toward efficient mobility and land use, the NJTPA is also committed to promoting walking and biking. The agency seeks to make these two travel modes convenient, safe, efficient, and attractive for shorter trips. Increased walking and biking is therefore seen as a need for all places in the region.

Relatively high needs have been identified for Urban Centers, Urban Areas, Mature Metropolitan Areas, Metropolitan Places with Industry, and Rural Towns because they provide greater opportunities for enhancement than other place types. However, as the prevalence of walking and biking may depend on unique local features, improvements may be quite viable in other place types as well. For example, places identified as Metropolitan with Shopping Center or Metropolitan with Office may benefit from enhanced sidewalks or bicycle paths connecting shopping malls and office complexes with surrounding residential area.

New information regarding the overall prevalence of walking and biking has been produced in a recently completed major survey of travel behavior for the New York-New Jersey-Connecticut metropolitan area, conducted in a partnership of the New York Metropolitan Transportation Council and the NJTPA. Initial results show that walking in northern New Jersey is a more common mode for social/recreational and shopping trips than for work trips. Schools are frequently reached by school bus or walking. For shorter trips, residents walk or bike strikingly more often. Walking is the mode used for the vast majority of the shortest trips (see figure).

Mode Use for Short Trips (NJTPA region, weekdays)



Source: NYMTC/NJTPA Regional Household Travel Survey, 2010-11

As for the public transit mode share indicator, the proportion of trips taken on foot or bicycle is a key indicator being examined further and supported for *Together North Jersey*.

### **Goods Movement**

Freight movement is a critical element of the region's economy and quality of life. Each year about 473 million tons of domestic freight is moved into, out of, or within the region. In terms of tonnage, for domestic freight traveling to, from or within North Jersey, more than 80% travels by truck, nearly 12.7% by water and 6.5% by rail. Truck is the preferred mode choice of freight movement for shorter length of trip, time sensitive delivery trips, and the door-to-door service trips. A number of facilities make northern New Jersey a hub for goods movement for the northeastern and mid-Atlantic states including:

- Port Newark/Port Elizabeth/Port Jersey, the East Coast's largest container port (third largest nationally);
- Newark Liberty International Airport's air cargo facilities;
- The NJ Turnpike and major Interstate and State Highways;
- Rail terminals connecting to points throughout North America;
- Warehousing and distribution facilities operated by some of the nation's largest logistics companies

These networks and facilities serve as gateways to not only the NJTPA region, but also the larger New York/New Jersey metropolitan region as a whole.

Analysis of goods movement within the CMP framework builds largely on numerous NJTPA freight planning studies and deliberations with public and private partners. Supporting movement of freight by alternate modes is an important emphasis of the NJTPA and its CMP. On the region's roadways, major freight movements are recognized to involve these corridors:

- East-West Corridor (Interstates 80 and 78)
- North-South Corridor (New Jersey Turnpike)
- Bergen County Connector Corridor (NJ Route 17)
- Northeastern New Jersey Beltway Corridor (Interstate 287)

Because of the enormous amount of goods moved annually through these corridors, it is critical that the roadways operate efficiently and provide freight carriers with predictable and reliable travel times. Doing so helps to lower the costs of transportation related delay, which are passed along to the region's consumers. To assess freight reliability, the amount of additional travel Time needed by trucks caused by congestion along major freight highway corridors is measured for both peak AM and PM hours over a normal month of operation. This is an emerging measure for the CMP, and it makes use of newly available operations data noted above. The reliability measure and freight movement performance are also highlighted in MAP-21 and will draw increasing attention as its provisions are implemented.

### **Strategy Identification**

Following the Strategy Evaluation identification of transportation needs, the analysis delineates areas throughout the region where particular types of transportation improvements might be appropriate.

These types of improvements (referred to as “strategies”) were previously grouped into four categories: Ridesharing and Transit Support; Public Transit Enhancement; Roadway Improvements; and Freight Movement. More recently, a fifth category; “Livability and Sustainability” has been added to more fully support RPSD development (see chart below). Within each of these groups, more specific strategies are identified, such as highway operational improvements, local buses, rail freight projects, park and ride lots and most recently Complete Streets as part of the new category.

IDENTIFY STRATEGIES TO ADDRESS NEEDS				
Ridesharing & Transit Support	Public Transit Enhancements	Roadway Improvements	Freight Movements	Livability & Sustainability
Rail Park & Ride	Public Transit ITS	Intersection Improvements	Truck Corridors/Routes	Complete Streets
Bus/Carpool Park & Ride	Public Transit Rail	Interchange Improvements	Freight Rail	Transportation Oriented Land Use
Shuttle	Local Bus Enhancements	Roadway ITS	Port Facilities	Bicycle
Carpool/Vanpool	Regional & Express Bus	Roadway Expansion/Mainline	Port Area & Core Freight Area	Pedestrian
	BRT & Transit Priority Treatment	Incident Management	Marine Freight	
	Ferry	Access Management	Freight ITS	

Based on a broad series of screening criteria and observations of connections with identified travel markets and performance needs, Strategy Evaluation study generates a comprehensive series of maps for all categorized strategies. The maps show where particular transportation improvement strategies are recommended for further consideration, such as bus and rail initiatives, roadway restructuring, intermodal freight infrastructure, and intelligent technology for keeping travelers informed. These Strategy Evaluation maps help illustrate how these strategies fit into the northern New Jersey landscape and transportation infrastructure.

This approach is currently being updated in consideration of the RPSD effort. Strategy areas identified within *Plan 2035* largely remain valid for *Plan 2040*, with the continuing caveat that they represent potential strategies that warrant additional study rather than definitive findings of beneficial or desirable improvements. Of note, the NJTPA Planning Recommendation Information Management Engine (PRIME), a planning tool currently under development, is intended to support further accounting for strategies of the CMP and other NJTPA and partner planning studies. Moving beyond static mapping of areas, PRIME should make CMP findings more available and relatable to planners in the region, hence supporting the advancement of those findings toward implementation as appropriate.

### Strategy Considerations

The following summarizes some of the considerations that are taken into account for each strategy category in the Strategy Evaluation analysis.

## *Roadway Improvements*

One approach to addressing roadway mobility is to directly improve roadway operations or capacities. Based on the analysis of congestion and other variables around the region and taking into account expected roadway performance standards in each of the region's place types—together with the results of consultations with county and local officials—the CMP identifies potentially appropriate locations for making various roadway improvements. As noted previously, expansion of roads or adding new roads is a limited option for most locations due to high costs, environmental impacts and the likelihood that capacity expansion may provide only temporary congestion relief. However, capacity expansions will be appropriate for some locations, often matched by transit, travel demand management and land use measures to limit their negative impacts and sustain their benefits.

The main focus for road investment in the region is to optimize the existing network through road enhancement projects, such as redesigning intersections, improving signal timing, managing roadway access, and interchanges at key chokepoints. The following describe general strategies the CMP identifies to improve the efficiency or throughput of roadways:

- **Improve Operation of Roadways, Intersections, and Interchanges:** Road improvements can make traffic flow more smoothly and provide better access to destinations. Improvements to intersections, which are often congestion hot spots, are particularly important. They can include signalization, signage upgrades, intersection geometry modifications, lane and shoulder widening, channelization, restriping, and new turning or acceleration/deceleration lanes. Grade separation of existing intersections or reconfiguration as roundabouts may also be an option. In addition, improved signage, including coordinated efforts to meet upgraded reflectivity standards, will help improve operational efficiency
- **Manage Roadway Access:** Improving the location, spacing and design/operation of driveways, median openings and street connections, and coordinated planning of adjacent land uses can prevent conflicts between through travel and local activity. Access on many roads is controlled by the state Highway Access Code. Roadway access controls include limiting curb cuts, providing service roads, designating limited use of breakdown lanes and allowing for bus stops, pullouts, and priority lanes.
- **Implement Intelligent Transportation Systems:** Technological improvements can be used to improve traffic flow and provide real-time information to help drivers speed their trips by changing routes or modes in response to notification of delays. Some technologies include traffic control centers, high speed toll plazas, ramp metering electronic incident notification networks, roadside traffic monitors and computerized traffic signaling. “Smart” traffic signaling, where the signal timing changes depending on traffic conditions, are also an option. Statewide and regional traffic coordination will play an increasingly important role.
- **Improve Incident Management:** Improving incident detection through the use of emergency patrol and closed circuit television monitoring and timely dispatch of incident response team could lessen the impacts of incidents such as vehicle breakdowns or accidents along strategic and major corridors in the NJTPA region.

In considering expansion of the roadway system, fiscal, environmental, and planning considerations have combined to make this a solution with only very limited application in the NJTPA region. Past experience has shown that expanding roadway capacity is expensive and often faces strong local opposition. It also may not provide permanent congestion relief, since it can encourage sprawl development that adds more cars to the road and, under some circumstances, can even induce additional auto trips that otherwise would not be made. Nevertheless, increases in road capacity may be considered after detailed study. In addition, any capacity increases must be advanced in conjunction with appropriate complementary strategies—including ITS, smart growth, ridesharing and transit enhancement measures—to manage demand and maintain performance. Importantly, proposed projects that would significantly expand roadway space or add new roads will continue to require special analysis in the NJTPA CMP before federal funds may be applied.

### *Public Transit Enhancement*

While many significant enhancements to public transit infrastructure have been made over the last two decades, providing convenient access to bus and rail transit as an alternative to driving to work and for other trips remains a challenge for many parts of the region. Improving the reach of the transit system and supporting its use helps to remove trips from the region's congested highway networks, increases the public transit mode share, supports land development in focused regional centers, safeguards the region's air quality and provides essential travel to lower income residents, the disabled, elderly and those without cars.

The CMP assesses strategies for public transit enhancement by considering a host of measures. These include current patterns of bus and rail usage, residential densities around the region that can support bus and rail transit, and the current ability of residents to access destinations—such as employment and commercial centers—that have the potential to be served by transit.

The following describe general strategies used to enhance or improve public transportation:

- **Support Enhancements to Rail Service:** Possible rail improvements include new stations on existing lines, new lines or increased frequency of service, improvement of on-time performance and reliability, rail system resilience from weather related incidents, intermodal connections, and use of diesel-electric locomotives. Given the expense of fixed rail infrastructure, difficult choices must be made on where best to invest in rail enhancements
- **Enhance and Expand Local Bus Service:** Bus service in northern New Jersey is the backbone of mass transit in the region, used by almost two-thirds of NJ Transit passengers in the region. Bus transit is less expensive to operate and more flexible than new rail lines in addressing the transit market needs of a dispersed development pattern.
- **Implement Bus Rapid Transit and Enhance Express Bus:** Premium buses and long distance express buses can cost-effectively deliver service that is comparable in many ways to fixed guide way rail
- **Public Transit Intelligent Transportation Systems:** Transit technologies can be applied at different scales in the NJTPA region commensurate with the level of communication or monitoring required or resources available. For instance, real time monitoring of transit vehicles, priority signal



treatments or transit customer information systems could be applied on a single transit route, over a series of routes, across a service area or across the entire system. (Much progress is underway on such technological improvements.)

- Enhance and expand Ferry Services: Strategies that would be considered for Ferry Services range from development of new routes, terminals and/or parking facilities, expansion of existing routes, service levels or facilities, and/or improved land-based transit connections (e.g., shuttles, rail, bus routes). Although policy strategies (e.g., changes in fare policy and/or subsidies to make service more affordable or attractive to additional users) could also be considered, they would likely face significant challenges.

### *Ridesharing and Transit Support*

The CMP assesses opportunities for strategies that enable travelers to conveniently access bus, rail and ferries and to coordinate their travel in shared autos and vans. These are important in helping improve the efficient movement of people, including increasing transit ridership. This assessment involves considering residential patterns around current transit stations, hubs and routes; patterns of regional commuting; and demographic trends, among others.

- Expand Bus and Carpool Park-and Rides: There are many opportunities throughout the region to expand bus park-and-ride capacity. These facilities serve as cost-effective collecting points for commuters, especially in low density suburban areas “upstream” of major highway congestion.
- Improve Rail Park-and-Rides: For large parts of the region, adequate parking is essential to enable commuter rail or light rail use.
- Support Community Shuttles: Community shuttles can play an important role in providing access to the transit system. These small buses can often link residents with rail or bus service during peak commuting hours and then serve other purposes during the day.
- Support Ridesharing and Other Trip Reduction Programs: NJDOT, Transportation Management Associations (TMAs) and numerous employers operate programs to encourage the formation of carpools and vanpools and to link residents with employment centers. They include programs such as ride-matching and guaranteed ride-home services that make shared rides commutes a viable option, and telecommuting and flex- time policies help to either reduce trips or at least shift them out of the most congested times.

### *Freight Movement*

As touched on earlier, the NJTPA region is one of the busiest freight handling centers in the nation. Goods from all over the world enter and leave the United States through its marine terminals, and raw materials and finished products arrive and depart through major rail freight terminals. In addition, high-value, time-sensitive commodities are shipped via air cargo through its international airport and numerous small airports; and distribution centers along major highways dispatch goods via trucks to much of the northeastern U.S. The region’s status as a freight hub is a key advantage in retaining and attracting businesses, and in supporting its overall economy. But it also creates ongoing needs to address increased highway traffic and improve infrastructure to support the port, rail terminals and other freight facilities.

The CMP examines a host of potential strategies for improving the efficiency of goods movement in the region. They address freight movement needs involving: highways and bridges; ports and port access initiatives; warehousing initiatives; rail initiatives; and air cargo initiatives.

The facilities in the port area have been greatly developed over the past 100 years and will continue to play a critical role in the region's growth. Among the key initiatives for improving port access will be addressing inadequate clearance under the Bayonne Bridge (currently advancing) and improving roads, possibly through grade separations or exclusive truck routes.

Goods movement strategies identified by the CMP include:

- **Improve Rail Freight:** The improvement needs of the region's rail corridors are centered on a lack of capacity and the elimination of existing bottlenecks. These bottlenecks include: a lack of direct connectivity at a number of locations (Marion Junction, Waverly Loop, Greenville Yard); weight restrictions on many short line railroads and NJ TRANSIT-owned lines; clearance restrictions, and insufficient line and yard capacity (primarily in areas where mainlines have been single tracked). At this time, there is not an on-time performance issue in rail freight operation. However, capacity constraints are likely to be exacerbated by increased freight volumes forecast for the future.
- **Freight ITS:** Deploying Freight ITS strategies such as Variable Message Signs warning truckers on delays, available parking spots at rest areas at major entry and exit points of key truck corridors in the region such as I-80, I-78, New Jersey Turnpike, State Route 17 and I-287 and in the core freight areas will increase the reliability and efficiency of the freight movement in the region.
- **Truck Corridors:** Strategies in this category concentrate on the five major truck corridors identified earlier, addressing safety, congestion, and reliability. Specific issues include high truck crash rate locations, roadway capacity, bottleneck interchanges, bridge improvements, pavement improvements, truck parking, improved management of incidents and construction projects, and roadway/ramp geometry improvements.
- **Core Regional Freight Facilities:** Beyond the port area, a broad Core Freight Facilities Area represents the concentration of cargo facilities, warehouses, custom firms, intermodal facilities and rail yards in Bergen, Essex, Hudson, Middlesex, and Union Counties. Improvements here should focus on capacity of the facility, access to national highway/rail network/maritime networks, community issues (such as redeveloping old industrial sites (brownfields) for the purpose of expanding/adding capacity, reducing pollution on-site via new "green" equipment, routing trucks away from residential areas as they access the freight facilities), facility expansion, operational changes such as increasing hours of operation, new technologies, new/expanded road/rail connections, dredging channels to provide adequate depth for the ever larger vessels, and increased clearance under the Bayonne Bridge.

## *Livability and Sustainability*

With increased attention paid to the implications of transportation on economic development, community health, equity, climate change and other societal issues, the NJTPA CMP specifically highlights strategies oriented toward promoting livability and sustainability. These largely focus on land use, development, climate resilience, and support for “active” transportation (such as walking and bicycling). They also dovetail significantly with the *Together North Jersey* efforts and the development of a RPSD.

- **Promote Complete Street Policies:** The strategy to encourage complete streets is to add or enhance infrastructure that improves the ability of the street to accommodate users who are not traveling in a motorized vehicle. Depending on the needs of the area, sometimes a complete re-design of a street may be necessary. Municipalities and counties can promote complete streets by adopting complete streets policies. Such policies should define what elements of complete streets are most important to their community and develop a plan to convert auto-oriented streets to complete streets. The conversion plan could include criteria for prioritizing which locations and what types of treatments would receive funding first. Such policies also could require the inclusion of complete streets elements for new streets and for any major reconstruction of existing streets.
- **Pedestrian facilities and programs:** For their health and environmental benefits as well as their contribution toward efficient mobility and land use, the NJTPA is also committed to promoting walking and biking. The agency seeks to make these two travel modes convenient, safe, efficient, and attractive for shorter trips. Adding or enhancing pedestrian infrastructure provides friendly, safe and secure sidewalks with sufficient clear space for walking and with the amenities that facilitate travel by walking. Street design and safe pedestrian crossings and connections to other modes of transportation can help. Land use changes such as converting single use areas to multi use areas with mixed income residences and improved access to local shops and services also will yield more pedestrian activity.
- **Bicycle facilities and programs:** Providing quality, exclusive, safe and secure facilities can encourage travel by bicycle in all places within the NJTPA region. Providing dedicated paths and an inviting main street with a variety of stores and services or a public transit stop within a half mile bicycle ride can significantly encourage biking. Design improvements on shared streets can also facilitate the use of bicycles. Land use policy changes that encourage mixed use development or redevelopment (e.g., transit oriented development, Transit Village programs) and that seek to increase population and/or employment densities in proximity to key service, cultural or recreational destinations can also support bicycle connectivity.
- **Land Use Policies:** A primary factor in developing land use strategies is each community’s vision for its future. Any vision will consider the type of land uses people want to welcome into their community or prohibit from their community, the type and amount of population and economic growth the community is willing to embrace, and the strategies they are pursuing to achieve those goals. In addition, the community must consider the feasibility of achieving its goals in concert with what nearby communities are doing and regional and national trends that may affect the likelihood of successfully implementing their plan. Ongoing work on the

New Jersey State Development and Redevelopment Plan/State Strategic Plan represents important work in connection with the establishment and enhancement of local land use policies.

## **ACTION**

As needs and strategies are identified in various paths in the NJTPA planning process, public action related to and drawing from the CMP can follow in a myriad of ways. One important resource for generating potential project concepts from CMP analysis has been the NJTPA Strategy Refinement process, periodically conducted to follow Strategy Evaluation. Dozens of concepts emerging from Strategy Refinement have been included in prior NJTPA plans, and consistency with both Strategy Evaluation and Refinement findings has been considered by NJTPA as studies, work programs and projects have been advanced by NJDOT, NJ TRANSIT, TMAs, subregions and others. For examination of consistency, a CMP Compliance process has been developed, focusing on ensuring that required features of planning work are conducted as projects advance.

In project prioritization stages of the NJTPA process, well-defined project candidates are considered for inclusion in the TIP according to a broad range of goal-oriented criteria. CMP-related criteria are among these, providing consistent input as projects compete for implementation funding. The NJTPA is currently updating the project prioritization process, which should allow consideration of updated CMP measures and findings.

## **STRATEGY REFINEMENT AND PRIME**

Project concepts emerging from the CMP's performance-based Strategy Refinement are important candidates for further planning, project development, and implementation. While these candidates have been subject to the region's fiscal constraints (like all potential improvements) and compete against numerous other critical priorities, a number have moved directly toward implementation or are closely related to projects that have been implemented. To move specific concepts, detailed study and project implementation is the responsibility of the NJTPA and the region's implementing agencies, including NJDOT, NJ TRANSIT, subregions and Transportation Management Associations.

In the Strategy Refinement effort conducted for Plan 2035, areas and associated strategies were extracted from Strategy Evaluation findings and factors including:

- Compatibility with smart growth principles, including compact development, preservation of natural resources, and economic diversity.
- Advancing sustainability by addressing energy and environmental issues.
- Serving people in areas with identified needs listed in Strategy Evaluation.
- Impacts and benefits to minority and low-income communities.
- Compatibility with NJTPA's RCIS principles.
- Level of local and institutional support.
- Cost.

- Magnitude of benefits.
- Difficulty of implementation.
- Synergies between two or more areas in the same vicinity.
- Impact on multiple subregions.

Unaddressed priorities from the earlier Strategy Refinement remain as potential improvements, but the ongoing update of Strategy Evaluation will set the stage for comprehensively revisiting the region's needs. Importantly, PRIME, the Planning Recommendations Integration Management Engine under development should provide an excellent platform to support future Strategy Refinement, naturally drawing from Strategy Evaluation findings and finding synergies among appropriate regional, state and subregional planning work. The vision for PRIME is to help advance systematic performance-based planning toward implementation, and support for the CMP is to be a principal application of the tool.

## **CMP COMPLIANCE**

Beyond strategies and concepts that directly emerge from the CMP's Strategy Evaluation and Refinement, the NJTPA examines congestion-related projects proposed for the RTP, UPWP/PDWP, and TIP for CMP consistency. This CMP Compliance process provides support for efforts of all participants in the planning process, while maintaining the essential integrity of the CMP approach.

To that end, NJTPA has recently developed a set of screening guidelines in a template structure to help conduct such examination. The guidelines ask study and project sponsors (such as those producing a Local Concept Development study) to assist in making connections to RTP and CMP identified priorities, specific objectives, and established performance measures. Where initiatives are not drawn from or cannot reference such elements, additional work may be required or reexamination of established priorities may need to be considered by the NJTPA. Connections are also made to the ranges and types of considered strategies. Here again, consistency with NJTPA established priorities and findings is required or differences must be justified. For projects proposing additional carrying capacity for single occupancy vehicles, NJTPA CMP compliance requires that studies carefully demonstrate that the road expansion is fully warranted and that all appropriate complementary operational improvement and travel demand management strategies are packaged with the project.

For illustration purposes, a current version of the template structure (as developed to review products of the Local Concept Development Program) is pictured, with some of the steps that the NJTPA takes in ensuring consistency with the CMP.

<b>CMP STUDY INFORMATION</b>	
<b>DATE:</b> <b>CMP DOCUMENTATION COMPLETED BY:</b> <b>STUDY TITLE:</b> <b>SPONSORING AGENCY:</b>	
<b>STUDY AREA INFORMATION</b>	
<b>DESCRIPTION OF CMP STUDY AREA</b>	<b>Describe the Study Area</b> (attach maps and/or illustrations) <i>To complete this section, the applicant will need, at minimum, to provide a description of transportation-related issues in the study area in the context of the categories such as:</i> <ul style="list-style-type: none"> <li>• Land Use</li> <li>• Economic Characteristics</li> <li>• Roadway Design Characteristics</li> <li>• Roadway Operational Issues</li> <li>• Pedestrian and Bicycle Considerations</li> <li>• Environmental Issues</li> <li>• Access Management Issues</li> <li>• Public Transit Issues</li> <li>• Freight Movement Issues</li> </ul>
<b>STUDY GOALS AND OBJECTIVES</b>	
<b>IDENTIFICATION OF STUDY GOALS AND OBJECTIVES</b>	<b>Describe the Goals and Objectives Defined for the Study Review Process</b> <i>To complete this section, the applicant will need to describe the guiding goals and objectives established for the evaluation process used in the study</i>
<b>IDENTIFICATION OF PROPOSED PROJECT CONCEPT</b>	
<b>IDENTIFICATION OF PROJECT CONCEPT</b>	<b>Describe the Overall Project Concept</b> <i>To complete this section, the applicant will need to describe the project concept identified (based on the analysis documented below) to address the study area goals and objectives</i>
<b>DETERMINE ACCESSIBILITY/MOBILITY/ CONGESTION-RELATED ELEMENTS</b>	<b>Determine Whether the Proposed Project Concept has Accessibility/Mobility/Congestion-Related Elements</b> <i>To complete this section, the applicant will need to determine whether the approach will address accessibility, mobility and/or traffic congestion related to the movement of persons or goods in the study area. If the project concept contains congestion-related elements, proceed further with CMP Study documentation</i>
<b>CONSISTENCY WITH STUDY AREA GOALS AND OBJECTIVES</b>	
<b>DETERMINE PROPOSED PROJECT CONCEPT CONSISTENCY WITH REGIONAL AND LOCAL GOALS AND OBJECTIVES</b>	<b>Determine Whether The Proposed Project Concept Is Consistent with Regional and Local Goals and Objectives</b> <i>To complete this section, the applicant will need to evaluate the consistency of the proposed project approach with goals and objectives that have been identified through the following:</i> <ol style="list-style-type: none"> <li>1. NJTPA Strategy Evaluation planning and transportation objectives for affected Place Type(s)</li> <li>2. NJTPA Regional Transportation Plan goals</li> <li>3. NJ State Development and Redevelopment Plan, NJDOT Long Range Plan goals</li> <li>4. Other Relevant Policy Goals and Objectives.</li> </ol> <i>Although complete consistency is not required, documentation should clearly demonstrate that the proposed project concept supports the overall planning objectives for the study area</i>
<b>REGIONAL PERFORMANCE NEEDS AND MEASURES FOR ANALYSIS</b>	
<b>DETERMINE REGIONAL PERFORMANCE NEEDS AND ANALYSIS MEASURES</b>	<b>Determine Study Area Needs Using Transportation Performance Measures</b> <i>To complete this section, the applicant will need to identify the relevant performance needs in the study area in terms of specific performance measures. As applicable, regional needs identified in the NJTPA Strategy Evaluation analysis<sup>1</sup> should be highlighted. Identified quantitative (or where appropriate, qualitative) performance measures should serve as a basis for assessment of multimodal, mode-specific, travel demand management, operational management, transportation technology, and/or capacity-oriented strategies. Care should be taken to ensure that measures sufficiently represent the identified planning and transportation objectives; e.g., facility performance measures (e.g., LOS, v/c ratios) may inform the assessment but may be incomplete on their own.</i>
<b>IDENTIFY CONSIDERED STRATEGY ALTERNATIVES</b>	
<b>DESCRIBE RANGE OF STRATEGY ALTERNATIVES CONSIDERED</b>	<b>Describe the Strategy Alternatives Considered</b> <i>To complete this section, the applicant will need to identify the range and definition of strategy alternatives considered through the study process. Each strategy will need to be defined in terms of the scale and scope as considered by the study, and identified in the context of the NJTPA Strategy Evaluation Detail Strategy Categories.<sup>2</sup> The range of strategies considered</i>

<sup>1</sup> For more information, see the NJTPA Regional Transportation Needs Report.

<sup>2</sup> See Appendix A of this document below

	should, as appropriate, include travel demand management, including growth management and congestion pricing; traffic operational improvements; multimodal improvements, including public transportation and non-motorized; intelligent transportation systems technologies; and additional roadway system capacity
<b>IDENTIFY SUPPORTING STUDIES AND PROJECTS</b>	
<b>IDENTIFY AND DOCUMENT RELEVANCE OF SUPPORTING STUDIES</b>	<b>Identify Previous Studies Used to Support the Study Area Evaluation Process</b> To complete this section, the applicant will need to identify the range of studies reviewed to support to development of the proposed project concept
<b>IDENTIFY AND DOCUMENT RELEVANT CAPITAL AND PLANNING PROJECTS</b>	<b>Identify Relevant Improvement Projects That Have Been Programmed or Completed in the Study Area</b> To complete this section, the applicant will need to identify the range and relevance of capital and planning improvement projects categorized as follows: <ol style="list-style-type: none"> <li>1. Projects Recently Completed</li> <li>2. Projects Under Construction</li> <li>3. Projects in Preliminary/Final Design</li> <li>4. Projects in Feasibility Assessment</li> </ol>
<b>IDENTIFY PROJECT OUTREACH AND COORDINATION</b>	
<b>IDENTIFY AND DOCUMENT PUBLIC AND INTERAGENCY PARTICIPATION</b>	<b>Identify and Document Outreach Performed</b> To complete this section, the applicant will need to identify the range of outreach participants and their involvement responsibilities categorized as follows: <ol style="list-style-type: none"> <li>1. Interagency Participation / Technical Advisory Committee</li> <li>2. Community and Local Officials / Stakeholder Participation</li> <li>3. Public Participation</li> <li>4. Special Populations Participation (e.g. Environmental Justice communities)</li> </ol>
<b>ADDITIONAL DECISION FACTORS CONSIDERED</b>	
<b>IDENTIFY AND DOCUMENT ADDITIONAL DECISION FACTORS CONSIDERED</b>	<b>Identify and Document Relevant Factors Considered</b> To complete this section, the applicant may wish to identify additional factors that may provide support for the proposed project concept and/or clarification of specific study area needs and appropriate strategies. These factors may include, but are not limited to, the following categories: <ol style="list-style-type: none"> <li>1. Environmental</li> <li>2. Land Use</li> <li>3. Smart Growth</li> <li>4. Capital Cost of Potential Improvements</li> <li>5. Economic Development</li> </ol>
<b>IDENTIFY AND SELECT PRIMARY AND COMPLEMENTARY STRATEGY ALTERNATIVES</b>	
<b>IDENTIFY PRIMARY AND COMPLEMENTARY STRATEGIES</b>	<b>Identify Appropriate Primary and Complementary Strategies</b> To complete this section, the applicant will need to quantitatively or, where appropriate, qualitatively assess the applicability and, where possible, anticipated performance of each strategy. Evaluation should seek to determine whether each strategy can independently address the full identified needs in the study area as a stand-alone primary alternative, or whether it may require the support of or work more effectively with other complementary strategies
<b>RECOMMENDED PROJECT CONCEPTS</b>	
<b>RECOMMEND PROJECT CONCEPTS</b>	<b>Recommend Strategy Alternatives (attach maps or illustrations where necessary)</b> To complete this section, the applicant will need to recommend appropriate multi-modal primary and complementary strategy alternatives that to the extent possible collectively address the accessibility, mobility and congestion-related needs identified for the study area. As the NJTPA region is in non-attainment of national air quality standards for ozone, special requirements are in effect for highway projects that result in significant increases in carrying capacity for single occupant vehicles (such as a new general purpose highway on a new location or adding general purpose lanes, with the exception of safety improvements or the elimination bottlenecks) <sup>3</sup> . Where significant new SOV capacity is recommended, the applicant will need to document the evaluation of the full reasonable set of alternatives that were considered and identify reasonable context-specific complementary strategies that must accompany the project
<b>RECOMMEND FUTURE DATA COLLECTION AND PERFORMANCE MONITORING REQUIREMENTS</b>	
<b>RECOMMEND FUTURE DATA COLLECTION AND PERFORMANCE MONITORING METHODS</b>	<b>Recommend Methods to Collect Data and Measure Performance of Recommended Strategy Alternatives</b> To complete this section, the applicant will need to identify appropriate data collection and performance monitoring methods that will evaluate the ongoing effectiveness of strategies recommended for implementation. This documentation will need to provide specific methods for completing these assessments and identify appropriate responsible agencies for conducting these assessments in the future

<sup>3</sup> See Final Rule, Metropolitan Transportation Planning and Programming, 23 CFR 450.320(e), February 14, 2007

## PARTICIPATION

The CMP overall and its analytical Strategy Evaluation and Strategy Refinement elements, have relied on substantial interagency participation during their analytical phases, with materials posted online and findings incorporated during plan development (including material for public review during visioning outreach). Application of the results of these studies is also subject to input in follow-up planning and project development and in further regional analysis as part of the normal NJTPA planning cycle.

Overall, the NJTPA Board of Trustees and its Planning and Economic Development Committee has guided the CMP via direction in the Unified Planning Work Program Tasks. Earlier Strategy Evaluation efforts included workshops with NJTPA member and partner agencies and regional stakeholders, particularly as represented through the standing NJTPA Regional Transportation Advisory Committee (RTAC). These workshops covered all phases of the studies: defining place types, setting planning and transportation objectives, choosing performance measures, setting targets, identifying needs, categorizing appropriate strategies, identifying strategy locations, and selecting strategy areas for refinement. In Strategy Refinement, fine-tuning and prioritizing strategy refinement areas involved extensive one-on-one coordination with subregions and implementing agencies.

Current CMP development in support of the Plan 2040 and further in preparation for the RPSD is principally relying on coordination and participation initiatives of those efforts. With the NJTPA co-leading (with NJ TRANSIT) the transportation topic for *Together North Jersey*, there is significant opportunity for interagency cross-fertilization and input regarding transportation priorities and technical review. Public input received through the RTP and RPSD outreach efforts are also instrumental in informing CMP development.

## MONITORING

Examining the region's progress toward meeting its goals provides important feedback to decision-makers focusing on performance, and is a defined element within the CMP. The NJTPA monitors such progress in a variety of ways. This includes regular monitoring of key regional indicators, the periodic updates of performance measures and needs in Strategy Evaluation, and new techniques developed for tracking project-level performance results. The latter, NJTPA's Project Performance Results study<sup>iii</sup> drew from Strategy Evaluation and Refinement to identify performance measures of interest and is beginning to help planners investigate actual project accomplishments, fine tune improvements, and correct for unintended consequences in the future.

*Plans 2040* (and prior NJTPA plans) incorporate information from these types of monitoring, which helps to frame considerations on the region's goals, investment strategy and selection of strategies and projects to implement. In addition, specific monitoring requirements are emerging from the MAP-21 legislation regarding national performance goals, state and MPO targets, and reporting on congestion, reliability, air quality, freight movement and other performance measures. These requirements will involve reporting in both the RTP and the TIP, and complementing (and contributing to the CMP), should help point the way toward beneficial, effective transportation investments for the region.



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<sup>i</sup> See Final rule on Metropolitan Transportation Planning and Programming, 23 CFR 450.320, and on Management and Monitoring Systems, 23 CFR 500.109, published February 14, 2007.

<sup>ii</sup> NJTPA Regional Capital Investment Strategy, adopted March 14, 2005, updated for NJTPA Plan 2035, September 2009, and incorporated within Plan 2040, September 2013.

<sup>iii</sup> NJTPA Performance Results Study, Assessing the Impacts of Implemented Projects, Final Report and Guidebook, December 2011.

# Appendix E - Future Transit Needs

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The foremost concern in projecting future funding needs is fully funding a state of good repair for NJ TRANSIT's current public transit system and operating it in a safe and secure manner. NJ TRANSIT has the distinction of being recognized by the FTA as currently operating a system which is a state of good repair. Having a resilient system with hardened assets is also a focus of NJ TRANSIT. It is anticipated that as work progresses to understand what are the full range of actions which are necessary, more investments will be identified for advancement. However, ongoing investment is needed to sustain a functional, reliable, safe, and secure statewide public transit system responsive to customer needs.

After addressing system state of good repair, proposed future projects must go through a series of physical and operational feasibility, environmental and economic, and, ridership, fiscal and financial analyses. Among the future investment needs being considered for longer term capital funding are the following:

## Capacity Improvements and Transit Service Expansions

### Additional Trans-Hudson Public Transit Capacity

Various studies are underway to examine ways to increase trans-Hudson bus, rail, and ferry capacities. Among the major efforts is the Amtrak-led Gateway Project focused on adding train capacity between NJ and Manhattan and the companion Federal Railroad Administration (FRA) managed NEC Future effort examining the future needs of the entire Northeast Corridor from Washington, DC to Boston. The Gateway Project would provide two additional tunnels under the Hudson River for Amtrak and NJ TRANSIT, provide access to an expanded New York Penn Station and the future Moynihan Station, and replace the aging Portal Bridge over the Hackensack River.

The Port Authority of NY & NJ (PANYNJ) is also examining the potential for capacity improvement to the bus system using the Route 495 Exclusive Bus Lane, Lincoln Tunnel, and Port Authority Bus Terminal. This bus system is currently operating close to or above its practical capacity. Projected growth in trans-Hudson bus ridership indicates enhanced bus capacity is as important a need as the focus on rail and other modal capacity increases.

Other planning efforts are focused on PATH, ferries and possible extension of the NYC #7 Subway Line to NJ. Except for PATH, which has funding to expand its trans-Hudson capacity, the other proposed transit mode projects are being progressed through the required transportation and environmental planning phases. It is anticipated that once these efforts are sufficiently progressed, an effort to form a workable fair partnership of the right stakeholders will be initiated to fund and advance the implementation of one or more projects between now and 2040.

## Regional Rail System Core Capacity

Up through the early 1980's decisions were made to reduce the number of railroad track miles - whether whole lines, portions of lines, or the number of tracks on a line - because of insufficient demand at the time and the economics of keeping additional track miles in operation. Once that era ended, incremental investments have been made to add new tracks, extend services, and provide new connections to accommodate increased demand for rail service. Based on current and projected demand, there is a need to selectively add capacity to the core rail system to accommodate operating additional trains and projected ridership. Current projects, such as the Midline Loop on the Northeast Corridor or the pocket track in Summit on the Morris & Essex Line, are examples of what will be needed as rail service is increased. While there are some general ideas of where these additions should be located, much more work is needed to define them and place them in an investment timeline which marries with projected increased ridership and adding trains.

Among the new connections needed is the Hunter Flyover. This connection would allow an eastbound Raritan Valley Train to go from the Lehigh Line to the Northeast Corridor eastbound tracks without crossing at-grade in front of other westbound trains. The current eastbound train movement crossing four tracks at-grade in front of trains going in the opposite direction both slows down train services and reduces the capacity of the Northeast Corridor south of Newark Penn Station. Amtrak's plans for more intercity and faster train services require that this at-grade train movement be eliminated. Plus, NJ TRANSIT also needs to add trains on the Northeast Corridor to accommodate the projected growth in ridership.

There are several rail lines where additional tracks will be needed to accommodate additional train service. Among these lines are portions of the Bergen County, Main and Pascack Valley Lines; Morris & Essex Line, Montclair-Boonton, and Raritan Valley Line. There are also bridges on the rail system which are capacity constrained, such as the Main Line Bridge over the Hackensack River between Lyndhurst and Secaucus which is only a single track, and additional capacity will be necessary. Two other bridges with limited capacity include the Morris and Essex Line Bridge over the Passaic River and the North Jersey Coast Line Bridge over the Raritan River. The latter bridge includes rail freight considerations to permit additional freight access to the Jamesburg Branch.

Adding a third track for six miles between Cranford and the Northeast Corridor in Newark is critical to improving service along the Raritan Valley Line. This critical link is owned by Conrail, CSX and NS and known as the Lehigh Line. This is a former Lehigh Valley Railroad line which had accommodated a four track main line. The two remaining tracks are shared by NJ TRANSIT trains and a growing number of freight trains operated by the three freight railroads owning the line.

## Regional Rail Extensions of Service

There are a number of projects progressing through the transportation and environmental planning process, but have not reached the implementation stage. They remain on the list of candidate future projects and it is likely that some will progress into implementation. Those projects are (in no special order):

- Monmouth-Ocean-Middlesex Rail Line
- West Trenton Rail Line
- Extension of Rail Service on the Raritan Valley Line
- Extension of Rail Service to Flemington
- Bergen-Passaic Rail Service on NYS&W

Except for the proposed new service on the NYS&W Railroad, the other proposed services will require use of the Northeast Corridor where future capacity will be an issue. Amtrak and the Federal Railroad Administration (FRA) are examining future demand for rail service on the Northeast Corridor, including capacity needs and additional improvements. The segment between Newark Penn Station and Penn Station NY is of vital importance for the northern New Jersey region.

NJ TRANSIT is now implementing the extension of the Lackawanna Cut-Off from Port Morris to Andover, NJ in Sussex County, a distance of about 6 miles. NJ TRANSIT is not planning to fund any extensions further westward since the majority of the projected riders would be residents of Pennsylvania and the service is only operationally feasible if it were extended into Pennsylvania. If the State or local governments of Pennsylvania come forward with the necessary additional capital funding for the extension and funding to cover operating expenses not covered by fares, NJ TRANSIT will cooperate with them accordingly.

For the long term, the NJTPA recognizes that it is important to gain agreement with and funding from Pennsylvania for new or expanded service into the state because additional travel options in this area would help alleviate traffic congestion on I-80. This would not only benefit auto travelers and trucks, but could provide critical redundancy in an emergency situation. The state of Pennsylvania presently does not have a funding source for a commuter rail project such as this. Seeking Pennsylvania's involvement is consistent with how NJ TRANSIT provides rail service to Spring Valley and Port Jervis in New York State today under contract to Metro North Railroad, which is part of the New York Metropolitan Transportation Authority.

## **Bus Rapid Transit and Bus System Improvements**

To offer improved bus service and to reorient the state's bus system to better connect people and places, a number of Bus Rapid Transit and Bus Improvement studies have been completed and are being advanced where possible, resulting in a need for capital funding.

Future implementation of the following projects would improve and increase bus services within the state and to Midtown Manhattan (not listed in any particular order).

- Route 1 BRT – Build a bus system, in phases, from Hamilton, extending to Trenton and New Brunswick. Interconnected bus routes will offer improved connectivity between four train stations along the Northeast Corridor and the residential, retail and commercial developments along the US 1 corridor.

- Route 9 Use of Shoulders by Buses – This project will extend the existing use of the shoulders by buses in Old Bridge southward along US 9 towards Lakewood. The shoulders are used by the buses when the highway becomes congested in peak weekday travel periods.
- Union County Sustainability Corridor – Using a former railroad right of way between Cranford and Elizabeth as the backbone, this east-west transit corridor would provide dedicated and shared bus lanes, bicycle / pedestrian paths, and connect riders to transit oriented development at appropriate locations. The corridor is centered on a new station on the Northeast Corridor in downtown Elizabeth which is being funded as a separate capital project in NJ TRANSIT’s upcoming 5-year capital program.
- Greater Newark –Two earlier bus improvements, the Go 25 and Go 28, initiated NJ TRANSIT’s interest in advancing incrementally into bus rapid transit services. A study of the bus system centered on downtown Newark and nearby communities was conducted and found there are five major bus corridors which warrant improvements offering BRT like services. Given this is a built up urban area with limited street widths and intense traffic, fully dedicated bus lanes are not feasible.
- Jersey City – There is an extensive bus system in Jersey City, a densely developed area with an intensely used street system. There is an opportunity to make incremental improvements to bus service and offer as many BRT attributes as are feasible.
- Bergen County – Land use density in Bergen County varies greatly. Linking residential, health, business and retail centers will require an improved bus system that offers as many BRT attributes as are feasible. This system is centered on Paramus and Hackensack.
- Passaic County –Centered on Paterson, Clifton and Passaic but extending to other portions of the county, there is an opportunity to improve bus service and provide as many BRT attributes as are feasible.
- Other –The more densely developed inner counties offer more opportunities to provide bus service with BRT-like amenities because of greater ridership potential. There are other individual corridors and portions of counties in the greater NJTPA region which may offer future opportunities for supporting improved bus services.
- Bus Passenger Facilities – As bus system improvements are implemented, the opportunity to identify potential new locations and construct new bus stations in northern New Jersey may arise to serve new transit routes. There is an ongoing need to improve existing and to add new bus stops, shelters and signage.

## Trans-Hudson Commuter Ferry System

The trans-Hudson ferry system, especially those services using Hoboken Terminal and Weehawken Ferry Terminal, play a major role in accommodating current and future transportation from New Jersey to Manhattan. Capital investment by the public sector in improvements to terminals, vessels and supporting facilities is anticipated. Additional analysis of future needs will be conducted and examine the role of ferry services for everyday travel needs and ferry system availability when emergencies limiting normal trans-Hudson transportation system capacities occur.

## HBLR Core System Capacity

The current Hudson Bergen Light Rail alignment from north of Liberty State Park to Hoboken Terminal operates on a combination of local streets and dedicated right of way in a manner which limits the number of trains that can be operated. The success of the current service requires that NJ TRANSIT, working within the spatial limits of the existing alignment, consider slightly lengthening existing 2-car trains to accommodate additional passengers. This will accommodate growth in the medium term, but looking past 2020, it is likely capacity issues both in terms of the number of trains that can be operated and their length and passenger capacity will require further action.

## Light Rail System Extensions

Northern Branch – This is the extension of the Hudson Bergen Light Rail system from its present terminus in North Bergen into Bergen County through four communities ending in Englewood. This project is the subject of a Final Environmental Impact Statement being prepared for submittal to FTA.

Hudson Bergen Light Rail Route 440 Extension – This is an extension of the Westside Branch across highway 440 in Jersey City, which will serve a large scale, mixed use redevelopment project.

## Resiliency Investments

Making critical assets less vulnerable to weather conditions and other incidents has recently gained added attention. NJ TRANSIT is both repairing assets damaged by Superstorm Sandy and also making them more resilient. Going beyond repair and hardening actions, there is a need for additional layers of protection from anything that impairs the normal functioning of the transportation network. The specific nature and scale of these investments is being investigated and involves not just actions by individual agencies but collective coordinated actions. In addition to repairs and resiliency improvements being made because of Superstorm Sandy, more projects are expected to be identified and advanced in future years.

## Sustaining Capital Investments

### Access Link

To best serve those customers who are disabled and cannot use NJ TRANSIT's fixed route services, NJ TRANSIT operates a customized service using vans, small buses and cars which functions within the fixed route service areas to comply with Federal law to provide mobility to these people. Vehicles, in addition to the technology required for communications, routing, tracking and managing these services, is another capital need which must be addressed.

### Community Mobility

NJ TRANSIT administers Federal and state funds that go to counties, communities, and non-profit organizations to enable them to serve targeted population mostly of elderly and disabled people. A

good portion of these funds are used, as in the case above, to purchase vehicles and technology to support the operation of these services.

## Technology

There are at least four types of technology that are important to the long term success of NJ TRANSIT. First, there is technology for improved transit service information assembly, processing and distribution to customers. NJ TRANSIT is making more use of apps for smart phones. In addition, future ticketing purchases will rely on technological innovations. Second, there is another array of technology which is used to track, monitor and manage transit operations. NJ TRANSIT has installed tracking equipment on its new buses which allows management to know where they are as well as feed into the customer information systems. An example of using technology to better manage bus services comes from building off the Automatic Passenger Counting (APC) software. NJ TRANSIT uses APC data to analyze passenger loads and provide improved service by matching specific passenger loads with the on time performance of lines. Third, there is technology which improves vehicles and facility operations. Examples of these are technologies which improve fuel efficiency or use solar power. Finally, there is technology for improved safety and security. NJ TRANSIT is actively uses video technologies to improve our ability to offer a safe and secure environment on our transit system.

## Regional Rail Supporting Facilities

Under any assumptions to add more train service, NJ TRANSIT will need to expand yard space to store trains not in active service and maintenance facilities to handle a larger fleet of rail passenger cars and locomotives. Some of these additional facilities would involve expansion of existing rail yards but some additional facilities will require identifying new locations. The exact needs will depend on the future rail service plans, maintenance practices and other factors that cannot yet be determined until other decisions about train service needs and capacity are made first.

## Station Upgrades and Improvements

Approximately 100 of the 164 rail stations will require additional investment to provide all high level platforms on the rail system to address ADA requirements and also accommodate a projected aging population. About 82 stations have only low level platforms. These platforms require people boarding or alighting from trains to step up or down. Platform maintenance is a challenge and NJ TRANSIT plans to replace the remaining low level platforms with high level platforms over time. Hoboken Terminal, opened in 1907, will be an especially challenging project because of its historic designation. Making the physical changes for high level platforms will require an innovative approach must balance access needs and the historic design of the current platforms and overhead canopies.

Newark Penn Station was opened in 1935 and requires extensive rebuilding. The necessary improvements will maintain functionality, expand capacity to handle projected passenger growth, facilitate better transfers between modes, and improve connections to downtown Newark. NJ TRANSIT has begun the work of rebuilding the platforms by working on platform “E” which is the westernmost platform and is closest to the Gateway Complex. Amtrak and NJ TRANSIT are now partnering in a series of linked studies to determine short and longer term needs and establish a station improvement program. The initial work efforts are focusing on internal pedestrian circulation and platform capacities.

## Bus Supporting Facilities

NJ TRANSIT has garages which date back to when trolley cars were operating. These facilities have been upgraded and will continue to require investment to maintain their functionality as the bus fleet is continually upgraded employing new technology, engines and new propulsion systems using different fuels. Also, bus sizes are changing and NJ TRANSIT may seek to operate more forty-five foot long buses, articulated buses, and possibly double deck buses on select interstate services. As the mix of vehicles change, existing bus facilities may no longer be able to adequately accommodate them. This approach fits with NJ TRANSIT's focus on maintaining a bus fleet that is consistent with FTA's focus on keeping the fleet's average age within prescribed limits.

It is important to recognize that expansion of bus services and adding more buses to the fleet will require the locating and funding additional bus garages and layover locations. NJ TRANSIT's existing bus garages are filled to their practical capacity in the inner counties where most services are centered. This is also where the older bus garages are located.

## Additional Light Rail Supporting Facilities

At some future point maintenance and train storage facilities may need to be expanded. This is viewed as a longer range need which cannot yet be predicted as to timing or scale of need.

## Multimodal Facilities

To provide more flexibility of choice for travelers and a more efficient use of available public transit capacity, NJ TRANSIT expects to increase the number of multi-modal facilities, permitting transfer between transit modes. In some cases this will allow greater service frequency for transit users traveling between the point of origin and the desired destination, plus flexibility on the return journey. This applies to existing facilities such as the Wayne Park and Ride, located off Routes 23/46/I-80. An example of a future candidate is along the Routes 46/3 corridor, possibly in the middle of the Routes 3 & 21 interchange.

## Access to Public Transit

NJ TRANSIT works with NJDOT, other levels of government and the private sector to enhance and improve access to the locations where people get on and off NJ TRANSIT's services. These projects include pedestrian and bicycle access and park and rides. More emphasis is now placed on a multimodal approach, so, for example, bicycle access will get a proper level of attention.

## Rail, Bus and Light Rail Equipment

NJ TRANSIT has large fleets of buses, railroad cars and locomotives, and light rail vehicles. Currently, the entire fleet is in a state of good repair and meets FTA guidelines for useful equipment life. To continue in this pattern, NJ TRANSIT has budgeted funds to permit regular ongoing annual replacement of equipment as it approaches the end of its useful life. As noted under bus supporting facilities, the size of the bus fleet and mix of vehicles types is expected to change to address future market demand, changes in technology and regulatory requirements. This approach also permits NJ TRANSIT to procure newer propulsion and fuel systems for vehicles and the railroad equipment as they are proven to be feasible,



reliable, and cost effective. This creates a sustainable financial, maintenance and new order quantity program. It is expected this practice will continue into the future.

### **Other Support Equipment**

To operate a statewide system of the scale being provided in NJ, a large number of support vehicles are required, including specialized trucks, vans and autos for use by NJT maintenance and operations staff and its police.

### **Additional Information**

The following tables provide an overview of the NJ TRANSIT system and key assets vital to providing transit services in the NJTPA region and across the state.



NJ TRANSIT is New Jersey's public transportation corporation. Covering a service area of 5,325 square miles, NJ TRANSIT is the nation's third largest provider of bus, rail and light rail transit, linking major points in New Jersey, New York and Philadelphia. On 236 bus routes and 11 rail lines statewide, NJ TRANSIT provides nearly 223 million passenger trips each year. NJ TRANSIT also administers several publicly funded transit programs for people with disabilities, senior citizens and people living in the state's rural areas who have no other means of transportation. In addition, the agency provides support and equipment to privately-owned contract bus carriers.



## RAIL OPERATIONS

Commuter Rail Lines ..... 12  
(NJ TRANSIT also operates service for MTA's Port Jervis Line)

Rail Network Directional Route Miles ..... 1,001.8

### Rail Fleet

	Owned and Operated by NJT	Owned by Metro-North Operated by NJT	Total
Locomotives	206	15	221
Diesel Locomotives	91	15	106
Electric Locomotives	97	0	97
Dual Mode Locomotives	18	0	18
Cars	1,081	65	1,146
Electric Multiple Units	230	0	230
Push-Pull Rail Cars	851	65	916

### Rail Non-Revenue Maintenance Fleet

Railroad and Construction Equipment	160
Rail Non- Revenue Equipment Cars	72
Rail Non- Revenue Diesel Locomotives	9

### Rail Passenger Facilities

Stations	164
Commuter Parking Capacity	over 63,000

### Rail Layover Yards and Maintenance Facilities

Storage Yards Owned and Used by NJT	12
Non-NJT Owned Storage Yards Used	3
Maintenance Facilities	1

### Rail Infrastructure

Undergrade Bridges	570
Overhead Bridges	100
Moveable Bridges	12
Track Miles Maintained (Not including Amtrak's Northeast Corridor)	544.4
Interlockings	106
Signals	1,336
Grade Crossings	330
Switches	1,271
Miles of Catenary	264
Substations	51



## BUS OPERATIONS

### Bus Fleet

NJ TRANSIT Bus/Private Carrier	Owned and Operated by NJT	Purchase Transportation	Private Carrier	Total
Cruiser*	1,076	0	518	1,594
Suburban**	249	0	0	249
Articulated	85	0	0	85
Transit***	776	204	106	1,086
Minibuses/WHEELS	0	13	0	13
<b>Subtotal</b>	<b>2,186</b>	<b>217</b>	<b>624</b>	<b>3,027</b>

\*Includes 78 CNG & 4 Hybrid buses

\*\* Includes 2 Hybrid buses

\*\*\* Includes 3 Hybrid buses

Local and Community Service Fleet	Total
Access Link	367
Vanpool	208
<b>Subtotal</b>	<b>575</b>

**Total Bus Fleet** ..... 3,602

### Total Non-Revenue Maintenance Fleet

Bus Support Vehicles (Tow and Service Trucks) ..... 19

### Bus Passenger Facilities

Stations	30
Stops	over 18,500
Commuter Parking Capacity	over 17,600

### Bus Maintenance Facilities

Maintenance Facilities	15
Heavy Maintenance Facilities	2

### Bus Layover Areas (Loops Owned and Maintained)

..... 10



## LIGHT RAIL OPERATIONS

Light Rail Lines ..... 3

### Light Rail Network Directional Route Miles

Hudson-Bergen Light Rail	107.1
Newark Light Rail	36.5
River LINE	13.9
<b>Total</b>	<b>56.7</b>

### Light Rail Fleet

	Owned and Operated by NJT	Owned by NJT Operated via Contract
Hudson-Bergen Light Rail	0	52
Newark City Subway	21	0
River LINE	0	20
<b>Total Cars</b>	<b>21</b>	<b>72</b>

### Light Rail Non-Revenue Maintenance Fleet

Light Rail Railroad and Construction Equipment ..... 11

### Light Rail Passenger Facilities

Stations	61
Commuter Parking Capacity	over 6,700

### Light Rail Layover Yards and Maintenance Facilities

..... 5

### Light Rail Infrastructure

Undergrade Bridges	35
Overhead Bridges	52
Moveable Bridges	0
Track Miles Maintained	107
Interlockings	50
Signals	285
Grade Crossings	120
Switches	282
Miles of Catenary	51
Substations	22

# Appendix F – Acronyms

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- NJTPA – North Jersey Transportation Planning Authority
- RPSD – Regional Plan for Sustainable Development
- SSP – State Strategic Plan
- MAP-21 – Moving Ahead for Progress in the 21<sup>st</sup> Century
- RTP – Regional Transportation Plan
- ITS – Intelligent transportation system
- TDM – transportation demand management
- PANYNJ – Port Authority of New York and New Jersey
- RCIS – Regional Capital Investment Strategy
- FHWA – Federal Highway Administration
- FTA – Federal Transit Administration
- MPO – Metropolitan Planning Organization
- VMT – vehicle miles travelled
- EPA – Environmental Protection Agency
- NJDOT – New Jersey Department of Transportation
- DVRPC – Delaware Valley Regional Planning Commission
- SJTPO – South Jersey Transportation Planning Organization
- NYMTC – New York Metropolitan Transportation Council
- HUD – United States Department of Housing and Urban Development
- USDOT – United States Department of Transportation
- ADA – Americans with Disabilities Act
- CMP – Congestion Management Process
- SAFETEA-LU – Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users
- CMAQ – Congestion Mitigation and Air Quality
- JARC – Job Access Reverse Commute
- TMA – Transportation Management Association
- SOV – single occupancy vehicle
- TIP – Transportation Improvement Program
- PATH – Port Authority Trans-Hudson
- SLR – Sea level rise
- EWR – Newark Liberty International Airport
- CHSTP – Coordinated Human Services Transportation Plan
- NJDHTS – New Jersey Division of Highway Traffic Safety
- AARP – American Association of Retired People
- UPWP – Unified Planning Work Program

- STIP – State Transportation Improvement Program
- TTF – Transportation Trust Fund (for New Jersey)
- TOD – Transit Oriented Development
- TNJ – Together North Jersey
- PIRG – Public Interest Research Group
- CNT – Center for Neighborhood Technology
- MSA – Metropolitan Statistical Area
- ACS – American Community Survey
- PABT – Port Authority Bus Terminal
- GWBBS – George Washington Bridge Bus Station
- SHSP – Strategic Highway Safety Plan