

New Jersey State Development and Redevelopment Plan: Infrastructure Needs Assessment



— 2008–2028 —

TREND SCENARIO

- PROJECTIONS

PLAN SCENARIO

- IMPACTS ON PROJECTIONS

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Key Findings

- The State Plan defines infrastructure as those capital facilities and land assets under public ownership, or operated or maintained for public benefit, that are necessary to support development and redevelopment and to protect public health, safety and welfare.
- The **Infrastructure Needs Assessment** is intended to serve as one of many sources of information, together with the Cross-acceptance process, the monitoring and evaluation (State Plan indicators and targets) program, reports on plan implementation, and the deliberations of the State Planning Commission, contributing to the development of the State Plan and its attendant goals, objectives, policies and mapping.
- This report compiles estimated costs for selected infrastructure systems for the 20 year period beginning 2008, based on current trends which reflect the current status of implementation of the State Development and Redevelopment Plan. While the definition of infrastructure in the State Plan is comprehensive, this report focuses the largest areas of infrastructure investment identified in the 1992 and 2000 Infrastructure Needs Assessments. As a consequence, the findings of this assessment cannot be directly compared to the prior Infrastructure Needs Assessments.

Trend Estimated Costs	PLAN IMPACTS ON ESTIMATED COSTS State Plan impacts on estimated infrastructure costs are limited due to the repair as opposed to new construction emphasis of current New Jersey infrastructure policy.
\$139.1 billion (78%)	Transportation and commerce infrastructure systems <ul style="list-style-type: none"> • support the economy of New Jersey by helping to produce goods and move goods, people and information • most costs are for maintaining and upgrading existing systems to correct existing deficiencies or to keep existing infrastructure in service
38.9 billion (22%)	Public health and environment infrastructure systems <ul style="list-style-type: none"> • include water supply, wastewater disposal and other systems that protect public health and environmental quality • greatest share of future needs is for wastewater disposal
\$178.1 billion	Estimated infrastructure costs for key systems through 2028

- Estimated costs for transportation facilities are based primarily on the NJDOT FY09-FY18 Statewide Capital Investment Strategy, extrapolated ten years based on the assumption that a similar magnitude of needs will exist from 2019 through 2028, and adding a cost factor for local streets of \$3.7 billion from the 2000 Infrastructure Needs Assessment multiplied by 1.25 derived from the Census Construction Price Index change from 2001 to 2007 (most recent year for which the index is available).
- Estimated costs for Water Supply, Sewer and Stormwater facilities are from the USEPA Clean Watersheds Needs Survey, 2004 Report to Congress.
- Estimated costs for Parks and Recreation are from the NJDOT FY09-FY18 Multimodal Programs (non-freight, non-transit projects) and from the 2008-2012 New Jersey State Comprehensive Outdoor Recreation Plan, November 2007, comprising reported capital improvement needs for State parks and reported requests to the New Jersey Green Acres program from local government and conservation agencies for a four-year period (2003 through 2006) of \$1.93 billion multiplied by five periods.
- As part of the State Plan, the Assessment is revised and updated as part of the Cross-acceptance process. It does not substitute for functional plans and annually updated capital plans and budgets of municipal, county, regional and state agencies. The Assessment neither evaluates nor endorses plans and proposals for specific projects.

- The State Plan, through its Goals, Statewide Policies, State Plan Policy Map and other provisions, establishes a framework for strategic decision-making. Municipal, county, regional and state agencies that incorporate capital planning in their decision-making process will help to achieve the Goals of the State Plan, and will help government agencies in New Jersey comply with the Government Accounting Standards Board Statement 34 that establishes new national Generally Accepted Accounting Principles for government agencies that manage infrastructure.
- In part due to the inherently networked nature of infrastructure systems, but in large part due to the way proposed projects are documented, the objective to relate the TREND Infrastructure Needs Assessment to the geographic objectives and policies of the State Development and Redevelopment Plan remains difficult to achieve due to the rehabilitation emphasis of current infrastructure policy. Efforts to increase the differences in infrastructure emphases of the Infrastructure Needs Assessment relative to the Goals of the of the State Plan should include:
 - A much more expansive infrastructure development policy at the State level
 - Implementing advanced information technologies (such as GIS, Internet and advanced modeling capabilities) and data exchange among state and local agencies and with the public to more accurately locate and track needs for and impacts of potential capital investments.
 - Maintaining a unified and routinely updated series of municipal and small area (based on Planning Areas) demographic and economic forecasts based on consistent time frames and assumptions, on which future infrastructure needs may be based.
 - Implementing the State Plan, including Plan Endorsement efforts.
 - Maintaining and enhancing the State Plan monitoring and evaluation (indicators and targets) program.
 - Including a consistent base of detailed capital planning and infrastructure needs information in all county reports provided in the State Plan Cross-acceptance process.

Summary of Estimated Infrastructure Costs, 2008 – 2028

	TREND ESTIMATED COSTS
TOTAL ESTIMATED COSTS	\$178,055,526,581
TRANSPORTATION AND COMMERCE	\$139,109,000,000
Roads, Bridges and Tunnels	109,169,000,000
Public Transportation	22,912,000,000
Freight, including Ports	1,960,000,000
Aviation, including Air Freight	760,000,000
Other Transportation Facilities	4,308,000,000
HEALTH AND ENVIRONMENT	\$38,946,526,581
Wastewater Disposal	10,962,000,000
Water Supply	7,961,600,000
Stormwater Management	9,931,000,000
Parks and Recreation	10,091,926,581

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Definitions

- **Backlog Need** — “Backlog need” is defined as an “infrastructure need” that corrects existing deficiencies related to infrastructure capacity and condition to serve the existing population. Examples include improvements to bridges that do not meet federal structural safety standards and must be repaired (condition), or a commuter rail line that does not have sufficient rolling stock to adequately serve the number of commuters on its lines (capacity).
- **Capital Facility** — “Capital Facility” means any Capital Improvement constructed or erected, for occupancy, use or ornamentation, that requires permanent location on, below or above the ground, or an addition to an existing capital structure having a permanent location on or below the ground, as well as real property on which that improvement is located.
- **Capital Improvement** — A “capital improvement” is any structure, fixture, edifice, byway, parking lot, service facility, and any other capital facility.
- **Capital Plan** — A “Capital Plan” or “Capital Improvement Plan” or “Capital Improvement Program” is a schedule or timetable of all future Capital Improvements to be carried out during a specific time period and listed in order or priority, together with cost estimates and the anticipated means and sources of financing each project.
- **Infrastructure and Infrastructure Systems** — The State Planning Commission defines the term “infrastructure” and “infrastructure systems”, respectively, as those capital facilities and land assets under public ownership, or operated or maintained for public benefit, that are necessary to support development and redevelopment and to protect the public health, safety and welfare. Infrastructure systems include transportation, energy, telecommunications, farmland retention, water supply, wastewater disposal, storm water management, shore protection, open space and recreation, recreation facilities, solid waste management, public health care, public education, higher education, arts, historic resources, public safety, justice, corrections, public administration, and public housing.

In these respects, infrastructure is the “overhead” of capital that needs to be invested to maintain our society and our economy. Investments in infrastructure are investments in the future of our economy, environment, government and culture. These investments promote economic development and protect the public’s health, safety and welfare. To assure consistency among all levels of government in how infrastructure is defined, the following criteria are recommended:

- Facilities and assets that are publicly owned or that serve the public.
- Systems of facilities and assets whose needs are generated by and which are necessary to support development and redevelopment encouraged by the *State Development and Redevelopment Plan*.
- Facilities and assets that may influence the form or the location of development and redevelopment.
- Capital facilities with a high fixed cost (> \$50,000) and a long service life (> 10 years).

- Facilities and assets that are directly and substantially related to protecting public health, safety and welfare.
- **Infrastructure Need** — For the purposes of this assessment, need for infrastructure is a measure of the extent to which desired levels of service and standards of quality for infrastructure systems are achieved and maintained given estimates and projections of demand. In a financial context, “infrastructure need” refers to the extent to which costs for infrastructure exceed expected revenues.
- **Land Assets** — “Land assets” are infrastructure components that provide for the preservation and public control of existing land resources that are sensitive to, and necessary to support, growth and development in other locations, and include, but are not limited to, parks, open space and farmland retention.
- **PLAN** — Projections to the State’s future using the State Plan’s goals, objectives, and strategies to guide future growth
- **Present Need** — “Present need” is defined as an “infrastructure need” consisting of “backlog needs” and “rehabilitation needs” for existing infrastructure.
- **Prospective Need** — “Prospective need” is defined as an “infrastructure need” consisting of needs to provide and maintain new infrastructure to serve anticipated future development and redevelopment and to respond to changes in standards of service between the date of the needs assessment and the horizon year (2000 - 2020).
- **Rehabilitation Need** — “Rehabilitation need” is defined as an “infrastructure need” associated with recurring, periodic improvements and/or replacements of capital facilities necessary to keep existing and anticipated infrastructure in service, at least through the horizon year of the needs assessment. “Rehabilitation needs” are distinct from, and do not include, routine operations and maintenance costs. For example, rehabilitation needs would include a roadway-resurfacing project that may take place every 10 years, but would not include routine street cleaning and patching.
- **Revenues** — As defined by the United States Census Bureau, “revenues” are “all amounts of money received by a government from external sources — net of refunds and other correcting transactions — other than from issuance of debt, liquidation of investments, and as agency and private trust transactions. Note that revenue excludes noncash transactions such as receipt of services, commodities or other receipts in kind.
 - **Anticipated Revenue** — In this assessment, “anticipated revenue” refers only to currently authorized sources and levels of government funding that will be available for capital projects.
 - **Projected Revenue** — In this assessment, “projected revenue” refers to an extension of existing authorized sources and levels of revenue, or replacements thereof, into the future.
- **State Development and Redevelopment Plan or State Plan** — The New Jersey *State Development and Redevelopment Plan* prepared and adopted pursuant to the State Planning Act, N.J.S.A. 52:18A-196 et seq., unless otherwise specified.
- **TREND** — Projections to the future using primarily historical growth to guide future growth.

*NEW JERSEY STATE DEVELOPMENT
AND REDEVELOPMENT PLAN:
INFRASTRUCTURE NEEDS ASSESSMENT
— TREND SCENARIO, 2008 - 2028
(PROJECTIONS)
— PLAN SCENARIO, 2008-2028
(IMPACTS ON PROJECTIONS)*

I. Purpose of the Assessment

This third *Infrastructure Needs Assessment, 2008 — 2028* compiles and summarizes information provided by state agencies since the adoption of the second Infrastructure Needs Assessment by the New Jersey State Planning Commission in March 2001.¹

A. Why Is the Assessment Prepared?

Investment in capital facilities and other infrastructure is one of the most powerful tools available to implement comprehensive plans for development and redevelopment.

The New Jersey State Planning Act recognizes the importance of infrastructure by promoting development where infrastructure capacity exists or may be readily provided and discouraging development where capacities are limited. The State Planning Act links the state's annual capital budget recommendations to the *New Jersey State Development and Redevelopment Plan*, and makes the Infrastructure Needs Assessment an integral part of the State Plan.

An ultimate objective of the State Planning Act is to allow government at all levels to devise more effective, efficient and desirable growth and infrastructure policies. Specifically, the State Planning Act and related legislation encourages state and local agencies to:

- coordinate capital plans with comprehensive and functional plans,
- increase the time horizon for capital planning,
- base capital budget on long-term capital plans, and
- use consistent and coordinated capital planning methods.

TREND projections show the magnitude of costs for a 20-year future. PLAN projections/impacts point to the relative frugality of New Jersey's infrastructure spending. They also show the limited impacts of PLAN development policies if there is no infrastructure investment related to growth likely to be impacted by PLAN's development patterns.

“[The State Planning Commission shall]...Prepare and adopt as part of the [State Development and Redevelopment] plan a long-term Infrastructure Needs Assessment, which shall provide information on present and prospective conditions, needs and costs with regard to State, county and municipal capital facilities, including water, sewerage, transportation, solid waste, drainage, flood protection, shore protection and related capital facilities...”

N.J.S.A. 52:18A-199b.

¹ *New Jersey State Development and Redevelopment Plan: Infrastructure Needs Assessment*. New Jersey State Planning Commission, March 2001. OSG Publication #154. www.nj.gov/dca/divisions/osg/docs/infrastructureassessment030101.pdf

B. How Is the Assessment To Be Used?

Develop and promote procedures to facilitate cooperation and coordination among State agencies and local governments with regard to the development of plans, programs and policies which affect land use, environmental, capital, and economic development issues.

N.J.S.A. 52:18A-199b.

The Commission [on Capital Budgeting and Planning] shall each year prepare a State Capital Improvement Plan containing its proposals for State spending for capital projects, which shall be consistent with the goals and provisions of the State Development and Redevelopment Plan adopted by the State Planning Commission.

N.J.S.A. 52:95-3a.

The Infrastructure Needs Assessment served as one of many sources of information, together with the Cross-acceptance process, the monitoring and evaluation (State Plan indicators and targets) program, reports on plan implementation, and the deliberations of the State Planning Commission itself, contributing to the development of the State Plan and its attendant Goals, objectives, policies and mapping.

As part of the State Plan, the Assessment is revised and updated as part of the Cross-acceptance process. Therefore, it does not and should not substitute for functional plans and annually updated capital plans and budgets of municipal, county, regional and state agencies. The Assessment describes, but neither evaluates nor endorses, plans and proposals for specific projects.

The State Plan, through its Goals, Statewide Policies, State Plan Policy Map and other provisions, establishes a framework for strategic decision-making. ***Municipal, county, regional and state agencies that incorporate this decision-making process in their capital planning will help to achieve the Goals of the State Plan, and will help government agencies in New Jersey comply with the Government Accounting Standards Board Statement 34 that establishes new national Generally Accepted Accounting Principles for government agencies that manage infrastructure.***

II. Methodology

The recommendations of the infrastructure needs assessment are based on best available statewide information regarding the conditions, needs, costs, and revenues available for infrastructure systems. This section describes the general methodological approach to the assessment; specific methods and sources vary by infrastructure system and type of analysis.

The scope of this Assessment is limited to the key infrastructure systems delineated in the State Planning Act.

A. Infrastructure Systems

The State Plan defines *infrastructure* as *those capital facilities and land assets under public ownership, or operated or maintained for public benefit, that are necessary to support development and redevelopment and to protect public health, safety and welfare.*

The State Planning Act specifies that the Infrastructure Needs Assessment should address “water, sewerage, transportation, solid waste, drainage, flood protection, shore protection and related capital facilities.” This Assessment combines the consideration of drainage and flood protection infrastructure into Storm Water Management while dividing transportation into five component systems. A broader definition used in the prior 1992 and 2000 Infrastructure Needs Assessments can incorporate as many as 27 infrastructure systems on which smart growth is dependent, including energy, farmland retention, public recreation open space land, public recreation facilities, public education, higher education, public libraries, arts, corrections and human services, telecommunications, public health care, public safety, justice, historic resources, public administration and public housing.

B. Conditions, Needs and Costs

The discussion of conditions, needs and costs is grouped together for each infrastructure system.

Data was requested and researched concerning the availability, capacity, deficiencies and proposed improvements for each infrastructure system from federal, state, regional and local government agencies, as well as studies by private organizations. Federal or state statutes or rules require many state agencies to periodically collect and analyze information on state, county, municipal and private infrastructure systems. In many cases, data and analyses provided by local agencies and private organizations were not complete or compatible statewide. In most cases, counties failed to provide information on infrastructure conditions, needs and costs in their Cross-acceptance reports. In many cases, state agency data is being refined and updated through the development of new databases and digital spatial data sets that are not yet complete. Therefore, while many sources of information were collected and reviewed, the most current statewide data provided by state agencies in master plans and capital budget request provided the most comprehensive and methodologically consistent basis for the analyses of conditions, needs and costs in the Infrastructure Needs Assessment.

To the extent adequate data are available, the Infrastructure Needs Assessment attempts to:

1. estimate *needs* in terms of both:
 - *units* of service or capacity (classrooms, millions of gallons per day, acres) for capital facilities and land assets, and
 - dollar *costs* (adjusted to 1999 constant dollars), without regard to funding source,
2. define needs as:
 - *present* needs, consisting of *backlog* needs to correct existing deficiencies to serve existing residents and jobs and *rehabilitation* needs for recurring, periodic improvement or replacement of capital facilities to keep existing infrastructure in service, and

- **prospective** needs, consisting of needs to provide and maintain new infrastructure to serve anticipated future development and redevelopment and to respond to changes in standards of service.

Need is the amount of infrastructure determined to be necessary to achieve and maintain desired levels of service and standards of quality, given estimates and projections of demand. Levels of service tend to be defined for capital facilities in terms of the relationship of demand to designed capacity. Standards of quality tend to be defined in terms of societal objectives, such as swimmable and fishable water quality and thresholds of cancer risk, although they are expressed in terms of tangible measurements achievable using current (though evolving) technologies.

On a statewide basis, each infrastructure system responds to a variety of needs. The sensitivity of these systems to locations and patterns of growth and development may vary for different components within each system. For example, site components such as post offices, rail stations, theaters and hospitals have different effects depending on whether they are integrated within or isolated from “downtown” neighborhoods. System components such as a road, rail line, sewer line and greenway cross over and transcend the characteristics of particular areas, and may promote growth in inappropriate areas if access to these systems is not properly managed.

Costs are estimated using techniques appropriate for each infrastructure system, which relate needs to estimates of costs for units and/or similar systems. Generally, costs documented in state agency master plans or capital budget requests are considered TREND scenario costs.

C. Recommendations

The 1992 Infrastructure Needs Assessment was the State Planning Commission’s first attempt to:

- provide a conceptual and informational framework for future reassessments and for shorter-term determinations of specific needs, and
- recommend an approach to infrastructure decision-making that may lead to reductions in future needs and to better use of existing and future infrastructure systems.

Due to changes in methodologies used for each source of information, it is not possible to accurately compare the results of the 1992, 2000, and 2009 infrastructure needs assessments. Also, since the Infrastructure Needs Assessment summarizes information to a statewide scale, it cannot be directly employed to evaluate local changes to the State Plan Policy Map. However, more detailed, contemporary information collected by the Office of Smart Growth regarding the capacity of sewer, water supply, transportation and other critical facilities is considered in evaluating specific map changes through Plan Endorsement. Therefore, new recommendations to improve coordination, facilitated by improvements in technologies for collecting and analyzing data, are specified in the concluding section of this report to improve the rigor of the methodology and thus the overall effectiveness of this effort.

D. Differences between TREND and PLAN

The Impact Assessment of the State Plan points to a 20.9% decrease in road costs; a 5.4% decrease in vehicle miles traveled; an 8.6% decrease in water and sewer lateral costs; and a 12.4% increase in transit use. These cost decreases have very limited impacts on the TREND Infrastructure Needs Assessment because: (a) over 95% of road costs are for repairs or refurbishments; (b) transit projects involve repair or new equipment to make up for current deficiencies; (c) the savings in water and sewer water lateral decreases are passed on to the owners of the structures or taken as profits by the developer rather than appear as government cost reductions; and (d) vehicle miles traveled reductions are relatively slight when associated transit increases are taken into account.

III. Transportation and Commerce

This section of the infrastructure needs assessment addresses the infrastructure systems that most directly support the *economy* of New Jersey by helping in the production of goods and in the movement of goods, people, and information.

The transportation system includes roads, bridges and tunnels; ports and railroads for freight movement; aviation facilities; public transportation, including bus, rail and ferry and their associated terminals; and other transportation facilities. Other systems supporting commerce include energy, telecommunications, and farmland retention (to maintain a land base for agricultural production), are not included in this Infrastructure Needs Assessment.

Summary of Estimated Transportation and Commerce Infrastructure Costs, Trend, 2008 – 2028

	TREND ESTIMATED COSTS
TRANSPORTATION AND COMMERCE	\$139,109,000,000
Roads, Bridges and Tunnels	109,169,000,000
Public Transportation	22,912,000,000
Freight, including Ports	1,960,000,000
Aviation, including Air Freight	760,000,000
Other Transportation Facilities	4,308,000,000

Estimated costs for transportation facilities are based primarily on the NJDOT FY 2009-2018 Statewide Capital Investment Strategy, doubled based on the assumption that a similar magnitude of needs will exist from 2019 through 2028, and adding a cost factor for local streets of \$3.7 billion from the 2000 Infrastructure Needs Assessment multiplied by 1.25 derived from the Census Construction Price Index change from 2001 to 2007 (most recent year for which the index is available).

Prominent among New Jersey’s estimated infrastructure investment backlog is its bridges, as many as 37% of New Jersey bridges have been deemed to be structurally deficient or functionally obsolete. In addition, driving on New Jersey roads in need of repair is estimated to cost New Jersey motorists as much as \$554 per motorist per year in extra vehicle repairs and operating costs.

Most TREND costs for Transportation and Commerce infrastructure are for maintaining and upgrading existing systems to correct existing deficiencies or to keep existing infrastructure in service

TREND costs, as specified here, are not likely to be reduced significantly by PLAN actions because only a small portion of the above calculated costs relate to growth costs that would be altered as a result of differences in future land use patterns.

A. Roads, Bridges and Tunnels

New Jersey's roads and bridges continue to be among the most heavily traveled in the nation. "Vehicle miles of travel" (VMT) remains the chief measure of highway use. Nearly two million miles of traffic per year per mile continue to traverse New Jersey roads, more than three times the national average. Since 1960, the rate of increase of VMT traffic has far outpaced the rates of population and job growth. Vehicle travel on New Jersey's highways increased 29% from 1990 to 2007.

Vehicle Miles Traveled (Annual)	Billions
1991	59.288
1992	59.249
1993	59.726
1994	60.466
1995	61.013
1996	62.164
1997	63.280
1998	64.616
1999	65.919
2000	67.172
2001	68.497
2002	69.812
2003	71.262
2004	72.678

Source: NJDOT Fact Book, 2007

The New Jersey Department of Transportation reports that it manages 13,469 miles of roadway in the state (center line miles). However, over 70 percent of New Jersey's streets and highways are local roads under local jurisdiction. According to the 2009 Report Card on America's Infrastructure published by the American Society of Civil Engineers, 78% of New Jersey's major roads are in poor or mediocre condition. Sixty-four percent (64%) of New Jersey's major urban highways are congested. New Jersey transportation systems have a deferred maintenance backlog of \$13 billion.

Jurisdiction	Center line miles
All New Jersey Roads Total:	49,263
NJDOT (Total)	13,469
<i>Lanes</i>	<i>8,371</i>
<i>Shoulders</i>	<i>4,503</i>
<i>Ramps</i>	<i>595</i>
Other Roads (Total)	409
<i>NJ Turnpike Authority</i>	<i>323</i>
<i>South Jersey Transportation Authority</i>	<i>47</i>
<i>Palisades Interstate Parkway</i>	<i>11</i>
<i>Bridge Authorities</i>	<i>28</i>
County	6,392
Municipality	28,344
Parks	649

At present, 15% of State, 31% of County/Municipal, 59% of NJ TRANSIT and 38% of private bridges are older than 75 years. The average age of the bridges in New Jersey is 49 years. According to the 2009 Report Card on America's Infrastructure published by the American Society of Civil Engineers, 36% of New Jersey's bridges are structurally deficient or functionally obsolete, which raises the specter of a tragic highway bridge collapse occurring in New Jersey like that which occurred on the I-35 West bridge in Minnesota. The ownership of the 6,904 bridges in New Jersey is diverse, and call for creative measures to be able to monitor conditions and pay for repairs and replacement:

Bridge Owners	Bridges
Atlantic City Expressway	55
Beesley's Point Bridge Commission	2
Burlington County Bridge Commission	7
Cape May County Bridge Commission	5
Counties	2,431
Delaware and Raritan Canal	42
Delaware River and Bay Authority	2
Delaware River Joint Toll Bridge Commission	20
Delaware River Port Authority	4
Dingmans Ferry	1
Margate Bridge	4
Municipalities	41
New Jersey Department of Transportation	2,346
New Jersey Sports and Expo Authority	2
New Jersey Turnpike Authority	1,008
NJ TRANSIT (TOTAL)	661
<i>undergrade bridges</i>	<i>541</i>
<i>overhead bridges</i>	<i>108</i>
<i>moveable bridges</i>	<i>12</i>
Orphan	124
Palisades Interstate Parkway	15
Park Commission	1
Port Authority of NY & NJ	68
Private	18
State Parks	44
Federal	3
TOTAL BRIDGES	6,904

For the eight years from 1999 through 2006, NJDOT construction contracts totaled \$3.87 billion for 777 projects.

Fiscal Year	Projects	\$ millions
1999	82	325.3
2000	101	440.6
2001	102	472.6
2002	96	472.5
2003	91	505.8
2004	89	296.8
2005	124	720.3
2006	92	638.1
TOTAL:	777	\$3,872.0

Estimated TREND costs for roads, bridges and tunnels are based primarily on the NJDOT FY 2009-2018 Statewide Capital Investment Strategy, adjusted based on the assumption that a similar magnitude of needs will exist from 2019 through 2028, and adding a cost factor for local streets of \$3.7 billion from the 2000 Infrastructure Needs Assessment multiplied by 1.25 derived from the Census Construction Price Index change from 2001 to 2007 (most recent year for which the index is available).

Category	Desired Annual Investment Target Statewide \$ (millions)	20-year Total Need \$ (millions)
Road Assets	\$391.6	\$7,832
Congestion Relief	3,099.6	61,992
Bridge Assets	1,030.5	20,610
Local System Support	705.5	14,110
Local Streets	n/a	4,625
TOTAL:		\$109,169

The priority for the roads assets category is to improve pavement smoothness by implementing a life-cycle cost approach that completes life-extension treatments including preventive maintenance, rehabilitation and full reconstruction of the roadway. Highway pavement resurfacing will focus on fixing deteriorated sections of New Jersey’s interstate highway network. Funding for highway capacity increase projects (major widenings and construction of new highways) is limited to less than 4% of the total program in order to provide funding for lower-cost congestion relief projects and “Fix-it-First” projects. As a result of the above, the impact of a PLAN regimen would have very limited impacts on the magnitude of the above projected costs.

The congestion relief category includes major widenings planned for the New Jersey Turnpike and the Garden State Parkway. However, a reduced level of investment is expected for implementing major interchange and widening projects on the state highway system. Investment for congestion relief is also targeted to land-use planning and deployment of Intelligent Transportation Systems (ITS) strategies that can have positive effects on mobility and congestion-reduction.

For bridge assets, the State Capital Investment Strategy aims to slow the growth in the number of State and local bridges that are deemed structurally deficient. The State Capital Investment Strategy recognizes that the need for bridge preservation in New Jersey is critical, and focuses on preventative maintenance, rehabilitation and selective replacements. Bridge investments range from funding for high-cost bridges to implementation of a variety of rehabilitation programs, including safety upgrades for movable bridges.

The local systems support category invests in the county and municipal transportation network, where needs such as bridges, safety and congestion reduction are critical.

B. Public Transportation

New Jersey continues to be among the states most extensively served by public transportation in the nation, with public transit ridership exceeding 241 million in 2006. AMTRAK intercity rail, NJ Transit local and commuter rail and bus, the Newark subway, the Port Authority Trans-Hudson (PATH) rail in the New York area, SEPTA and PATCO rail service in the Philadelphia area, and the Hudson-Bergen Light Rail, Newark City Subway and RiverLINE light rail systems provide a convenient and expansive transit network. However, as gasoline and diesel prices increased, the limitations of New Jersey’s current public transportation system became increasingly evident.

	Ridership (2006)
Bus	156,900,000
Rail	68,800,000
Light Rail	15,400,000
Total	241,100,000

Operations Statistics (2006)	Bus	Rail	Light Rail
Bus routes/Rail lines/Light rail lines	238	11	3
Directional route miles	3,538	997	107
Actual annual vehicle revenue miles	66,999,015	56,124,820	2,659,681
Passenger miles	937,967,653	1,917,085,947	62,780,761
Buses owned & operated by NJ TRANSIT	2,035	n/a	n/a
Buses operated/leased to private carriers	973	n/a	n/a
Locomotives in service	n/a	133	n/a
Revenue cars in service	n/a	900	n/a
Light rail fleet	n/a	n/a	93
Bus stops/Rail stations/Light rail stations	20,000	162	52

For the eight years from 1999 through 2006, NJ Transit construction contracts totaled \$1.57 billion for 249 projects.

Fiscal Year	Projects	\$ millions
1999	50	744.7
2000	41	148.9
2001	27	121.7
2002	30	90.6
2003	45	107.4
2004	30	95.4
2005	14	83.0
2006	12	181.6
TOTALS:	249	\$1,573.3

NJ TRANSIT’s capital program seeks to make public transportation the preferred choice of travel, advancing many initiatives that modernize the transit system while improving service reliability, frequency and connectivity to meet forecasted market growth and travel demand. These include integrating bus, rail and light rail services to create a more seamless and convenient travel experience for customers, which in turn includes adjusting schedules to minimize wait times when possible. Enhancements at primary transfer and transit centers are planned, as well as modernized signs, shelters and express services. Exclusive bus lanes and new technology will be applied to allow buses to bypass traffic during peak periods to enhance service.

The NJDOT FY 2009-2018 State Capital Investment Strategy seeks to address and achieve a “state of good repair” for the mass transit network, reliability and sustainability of service, and infrastructure rehabilitation (including replacement of bus and rail equipment). The program provides for:

- replacement of 1,145 transit-style buses serving intercity routes in NJ TRANSIT’s fleet over the next five years (NJ TRANSIT cruiser and articulated buses were recently replaced);
- delivery of 12 multilevel railcars each month, on average, providing customers with a more comfortable and relaxing ride;
- track replacement;
- bridge and tunnel inspections and improvements;
- major railroad bridge rehabilitation projects including the 100+ year old Newark Drawbridge and Lower Hack Bridge,
- replacement of the timber approaches of the Coast Line’s Shark River Drawbridge;
- replacement of bridges along the Raritan Valley Line;
- replacement of the Northeast Corridor Portal Bridge.
- security improvements;
- signal system upgrades;
- overhead power line and electric substation upgrades;
- rail station improvements at Ridgewood Station (accessibility), Newark Penn Station, South Amboy Station, Elizabeth Station, New Brunswick Station Platform Extension and Elevator Improvements,

Short Hills Pedestrian Tunnel Repairs, STARS Station Rehabilitation, and system-wide station and facility inspections and repairs;

- completion of construction of the Trenton Station rehabilitation and Hoboken Ferry Terminal; and
- planning and engineering for other critical initiatives, including a new trans-Hudson tunnel, Northern Branch Rail Service the Hudson-Bergen Light rail 8th street Extension, Passaic/Bergen Rail project, Lackawanna Cut-off first phase and other planned investments to expand core capacity of the railroad to allow for more frequent service. Engineering and property acquisition will continue for the Tunnel project.

Category	Desired Annual Investment Target Statewide \$ (millions)	20-year Total Need \$ (millions)
Mass Transit Assets	\$1,145.6	\$22,912
TOTAL:		\$22,912

As in the case of cost reductions due to PLAN savings in road miles and vehicle miles traveled, cost increases due to increased ridership have minimal effect on projected increases in transit capital costs. Most of the costs listed above relate to repair of existing equipment and upgradings of current levels of service.

C. Freight, including Ports

A rational and efficient goods movement system is crucial to maintaining a healthy state economy. Moving over 621 million tons of freight in 2003, goods movement and distribution is New Jersey’s fourth largest industry. Unlike transit and most private automobile travel in New Jersey, trucking, rail freight and marine freight movements are dictated by what happens outside the state as much as, or more than, by what happens within the state. The globalization of manufacturing, distribution and marketing of goods, the increasing use of “just in time” inventory practices by manufacturers, overnight package deliveries and the changing combinations of transportation modes and links that make up a goods movement trip today from origin of manufacture to consumer destination, all have important implications for the state’s transportation system.

New Jersey freight tonnage (2003)	Millions of tons
Total	621
Truck	466
Rail	42
International Water	112
Air	1

According to the 2009 Report Card on America’s Infrastructure published by the American Society of Civil Engineers, New Jersey’s ports handled 127 million tons of waterborne traffic in 2005, ranking it 5th in the nation.

The multimodal category of the NJDOT FY 2009-2018 State Capital Investment Strategy is a varied category that is made up of programs that support the economy and promote a better quality of life. While this category includes bicycle and pedestrian projects, it primarily involves goods movement improvements and maritime programs.

Category	Desired Annual Investment Target Statewide \$ (millions)	20-year Total Need \$ (millions)
Multimodal	\$98.0	\$1,960
TOTAL:		\$1,960

D. Aviation, including Air Freight

New Jersey has 46 public use airports (43 general aviation airports and 3 air carrier commercial airports) that in total accommodate more than 2.5 million general aviation operations each year.

Twenty-nine of the State’s public-use airports are privately owned and 17 are publicly owned. The New Jersey Department of Transportation (NJDOT) has general oversight of all public-use airports as well as the more than 400 restricted-use aeronautical facilities, including 76 private use airstrips, 327 heliports, 13 balloon ports and 6 seaplane bases. In addition to commercial aircraft, approximately 4,700 non-airline civil aircraft are based in New Jersey.

Commercial airport responsibilities are divided among the Port Authority of New York and New Jersey for Newark-Liberty International Airport and Teterboro; the South Jersey Transportation Authority for Atlantic City International Airport; and Mercer County for Mercer County Airport. Newark-Liberty, which offers nonstop connections to more than 40 international destinations, is the region’s most heavily trafficked airport.

The airport assets category of the NJDOT FY 2009-2018 State Capital Investment Strategy seeks to achieve, preserve and ensure the continued viability of the core airport system in New Jersey.

Category	Desired Annual Investment Target Statewide \$ (millions)	20-year Total Need \$ (millions)
Airport Assets	\$38.0	\$760
TOTAL:		\$760

E. Other Transportation Facilities

These facilities include administration buildings and other capital facilities and services related to transportation not classified elsewhere. The magnitude of transportation facilities and services provided results in a significant need for administration buildings and other transportation-related construction and improvements that are not associated with any single transportation system.

The transportation support facilities assets category of the NJDOT FY 2009-2018 State Capital Investment Strategy seeks to maintain the current condition levels of facilities while minimizing the increase in backlog of substandard conditions at some facilities.

Category	Desired Annual Investment Target Statewide \$ (millions)	20-year Total Need \$ (millions)
Transportation Support Facilities Assets	\$215.4	\$4,308
TOTAL:		\$4,308

IV. Health and Environment

This section addresses the infrastructure systems that protect public health and the quality of the environment.

These systems include wastewater disposal, water supply, storm water management, open space and recreation lands. Shore protection, solid waste management, and public health care infrastructure are not addressed in this assessment.

Summary of Estimated Health and Environment Infrastructure Costs, Trend, 2008 - 2028

	TREND ESTIMATED COSTS
HEALTH AND ENVIRONMENT	\$38,946,526,581
Wastewater Disposal	10,962,000,000
Water Supply	7,961,600,000
Stormwater Management	9,931,000,000
Parks and Recreation	10,091,926,581

The effect of PLAN on water supply appears primarily as a savings in the number of water and sewer laterals that serve prospective development. Since these are put in by the developer, they are savings to either ultimate consumers or appear as extra profit for the developer. These costs are not included in the water supply costs listed above and cannot be taken as a savings against them.

A. Wastewater Disposal

Wastewater treatment is essential to protecting the environment, and influence where and what types of future development and redevelopment occur.

According to the 2009 Report Card on America's Infrastructure published by the American Society of Civil Engineers, New Jersey has \$9.15 billion in wastewater infrastructure needs.

The United States Environmental Protection Agency Needs Survey for wastewater treatment, prepared every four years, is among the most comprehensive and detailed reports available concerning wastewater disposal infrastructure needs. The *Clean Watersheds Needs Survey 2004 Report to Congress*, published in January 2008, estimates the following needs for New Jersey:

CATEGORY OF NEED	2004 TOTAL NEEDS (MILLIONS OF JANUARY 2004 DOLLARS)			
	ALL SYSTEMS	SYSTEMS FOR SMALL COMMUNITIES (10,000 OR FEWER)	USEPA STATE UNDOCUMENTED NEEDS	TOTAL NEEDS
I. Secondary Wastewater Treatment	\$2,902	\$44	\$637	\$3,583
II. Advanced Wastewater Treatment	431	56	30	517
III.-A. Infiltration/Inflow Correction	340	59	3	402
III.-B. Sewer Replacement/Rehabilitation	755	167	168	1,090
IV.-A. New Collector Sewers and Appurtenances	616	125	68	809
IV.-B. New Interceptor Sewers and Appurtenances	332	55	10	397
V. Combined Sewer Overflow Correction	3,772	5	387	4,164
Total I. – V.	\$9,148	\$511	\$1,313	\$10,962

The categories of needs are described as follows:

- ***I. Secondary Wastewater Treatment***
The minimum level of treatment that must be maintained by all treatment facilities except those facilities granted waivers of secondary treatment for marine discharges under section 301(h) of the Clean Water Act. Treatment levels are specific in terms of the concentration of conventional pollutants in the wastewater effluent discharged from a facility after treatment. Secondary treatment typically requires a treatment level that will produce an effluent quality of 30 mg/L of both BOD5 and total suspended solids, although secondary treatment levels required for some lagoon systems may be less stringent than this. In addition, the secondary treatment must remove 85 percent of BOD5 and total suspended solids from the influent wastewater. Needs necessary to achieve a secondary treatment level should be included in this category. Needs to address failing septic and decentralized wastewater treatment systems were reported in Category I in previous surveys.
- ***II. Advanced Wastewater Treatment***
A level of treatment that is more stringent than secondary treatment or produces a significant reduction in nonconventional or toxic pollutants present in the wastewater treated by a facility. Needs reported in this category are necessary to attain incremental reductions in pollutant concentrations beyond basic secondary treatment. Advanced treatment may include additional process units to increase the level of treatment to the level of potable, or less than potable but greater than that normally associated with surface discharge needs. For 2004, this category may also include additional process units to increase level of treatment to allow for water reuse.
- ***III-A. Infiltration/Inflow (II) Correction***
Control of the problem of penetration into a sanitary or combined sewer system of water from the ground through such means as defective pipes or manholes (infiltration) or from sources such as drains, storm sewers, and other improper entries into the system (inflow). Included in this category are costs for correction of sewer system infiltration/inflow problems. Costs also are reported for preliminary sewer system analysis and for detailed sewer system evaluation surveys.
- ***III-B. Sewer Replacement/Rehabilitation***
Reinforcement or reconstruction of structurally deteriorating sanitary or combined sewers. This category includes cost estimates for rehabilitation of existing sewer systems beyond those for normal

maintenance. Costs are reported if the corrective actions are necessary to maintain the structural integrity of the system.

- **IV-A. New Collector Sewers and Appurtenances**
Pipes used to collect and carry wastewater from a sanitary or industrial wastewater source to an interceptor sewer that will convey the wastewater to a treatment facility. The needs in this category include the costs of constructing new collector sewer systems and appurtenances.
- **IV-B. New Interceptor Sewers and Appurtenances**
Major sewer lines receiving wastewater flows from collector sewers. The interceptor sewer carries wastewater directly to the treatment facility or to another interceptor. The needs in this category include costs for constructing new interceptor sewers and pumping stations necessary for conveying wastewater from collection sewer systems to a treatment facility or to another interceptor sewer. Costs for relief sewers should be included in this category.
- **V. Combined Sewer Overflow (CSO) Correction**
Measures used to achieve water quality objectives by preventing or controlling periodic discharges of a mixture of stormwater and untreated wastewater (CSOs) that occur when the capacity of a sewer system is exceeded during a rainstorm. This category does not include costs for overflow control allocatable to flood control or drainage improvement, or for treatment or control of stormwater in separate storm and drainage systems.

This report also estimates that needs for wastewater treatment for small communities (10,000 or fewer people) comprise \$573 million, or approximately 6 percent of the total need, in New Jersey. Of this need, \$351 million is needed for systems serving between 3,500 and 10,000 people, \$168 million for systems serving between 1,000 and 3,500 people, and \$53 million for systems serving under 1,000 people.

Combined sewer overflows remained a concern in 37 urban wastewater collection systems in New Jersey through 2004.

The USEPA report also estimated a need for an additional 11 wastewater treatment facilities (over the existing 155 facilities in 2004) and 23 wastewater collection systems (over the existing 562 collection systems in 2004).

The New Jersey Environmental Infrastructure Trust, FY2009 Interim Financing Program Eligibility Lists for Clean Water, estimates needs for Total Eligible Project Costs totaling \$822,596,002.

B. Water Supply

High quality drinking water is critical to promoting human health and protecting the environment. In addition, the 2007 Drinking Water Infrastructure Needs Survey and Assessment published (on a five-year cycle) by the United States Environmental Protection Agency reports that maintenance, repair and anticipated improvements to New Jersey's drinking water systems are estimated to cost more than \$8 billion over the next 20 years, not inclusive of operation and maintenance costs:

PROJECT TYPE	ESTIMATED COST (MILLIONS OF 2007 DOLLARS)	
	ALL SYSTEMS	COMMUNITY WATER SYSTEMS SERVING 10,000 OR FEWER PEOPLE
Transmission/Distribution	\$4,722.9	\$672.3
Source Development and Rehabilitation	307.1	87.2
Treatment	1,850.4	222.9
Storage	1,056.7	195.8
Other (e.g.telemetry, security)	24.7	6.3
TOTAL:	\$7,961.6	\$1,184.5

The 20-year needs in New Jersey reported by system size are:

SYSTEM SIZE	ESTIMATED COST (MILLIONS OF 2007 DOLLARS)
Large (serving more than 100,000 persons, either through direct connections or as a wholesale water system)	\$3,636.5
Medium (serving 3,301 to 100,000 persons)	3,502.2
Small (3,300 or fewer persons)	619.4
NPNCWS (Not-for-profit Noncommunity Systems)	203.6
TOTAL:	\$7,961.6

Historic trends reported for New Jersey’s estimated needs are variable, in large part due to changes in the methodologies employed to document needs by and for each state. The below table normalizes estimates of needs from each prior survey to 2007 dollars:

YEAR	ESTIMATED COST (MILLIONS OF 2007 DOLLARS)
1995	\$5,230.9
1999	\$4,805.3
2003	\$8,280.6
2007	\$7,961.6

The New Jersey Environmental Infrastructure Trust, FY2009 Interim Financing Program Eligibility Lists for Drinking Water, using Total Eligible Project Costs, lists projects with needs totaling \$559,853,734.

According to the 2009 Report Card on America’s Infrastructure published by the American Society of Civil Engineers, New Jersey’s drinking water infrastructure needs an investment of \$6.92 billion over the next 20 years.

C. Stormwater Management

The United States Environmental Protection Agency needs survey for wastewater treatment is prepared every four years, with the 2009 assessment not yet available. The Clean Watersheds Needs Survey 2004 Report to Congress, published in January 2008, estimates the following needs for non-point source pollution control in New Jersey:

CATEGORY OF NEED	2004 TOTAL NEEDS (MILLIONS OF JANUARY 2004 DOLLARS)			
	ALL SYSTEMS	SYSTEMS FOR SMALL COMMUNITIES (10,000 OR FEWER)	USEPA STATE UNDOCUMENTED NEEDS	TOTAL NEEDS
VI. Storm Water Management Programs	94	60	147	241
VII. NPS Pollution Control Projects	0	0	9,531	9,531
VIII. Confined Animals – Point Source	0	0	78	78
IX. Mining-Point Source	0	0	8	8
X. Recycled Water Distribution	73	2	<0.5	73
TOTAL:	\$167	\$62	\$9,764	\$9,931

Categories of needs are described by USEPA as follows:

- **VI. Stormwater Management Program**
Stormwater is defined as runoff water resulting from precipitation. This needs category includes activities to plan and implement municipal stormwater management programs pursuant to National Pollutant Discharge Elimination System permits for discharges from municipal separate storm sewer systems. These include structural and nonstructural measures that reduce pollutants from runoff from commercial and residential areas that are served by the storm sewer, (2) detect and remove illicit discharges and improper disposal into storm sewers, (3) monitor pollutants in runoff from industrial facilities that flow into municipal separate storm sewer systems, and (4) reduce pollutants in construction-site runoff discharged to municipal separate storm sewers. Included is the control of stormwater pollution from diffuse sources that is ultimately discharged via a municipal separate storm sewer.
- **VII. NPS Pollution Control Projects**
Projects to control non-point sources are classified under a number of categories, defined below.
- **VIII. Confined Animal–Point Source**
Costs that address a combination of unit processes or best management practices designed to address water quality or public health problems caused by point source pollution from animal production activities that are subject to the concentrated animal feeding operations (CAFO) regulations.
- **IX. Mining–Point Source**
Costs that address a combination of unit processes or best management practices designed to address water quality and/or public health problems caused by point source pollution from mining and quarrying activities.
- **XI. Estuary Management**
This category includes costs associated with a limited number of estuary management activities that may not be appropriately included in other needs categories. Some typical estuary best management practices are habitat protection for aquatic species, fisheries/oyster bed/shellfish restocking or restoration, fish ladders, rejuvenation of submerged aquatic vegetation, artificial reef establishment, control of invasive introduced vegetative and aquatic species, and water control structures for flow regime and salinity. Most activities included in Comprehensive Conservation and Management Plans prepared for estuaries designated under section 320 would be considered point or nonpoint source technologies and should be included in the appropriate category.
- **X. Recycled Water Distribution**
This category includes costs associated with conveyance of the recycled water (wastewater reused after removal of waste contributed by humans) and any associated rehabilitation/replacement needs. Examples are costs for pipes to convey treated water from the wastewater facility to the property of the drinking water facility (either the drinking water distribution system or the drinking water treatment facility) and the purchase of the equipment for application of the effluent if the land on which it is to be

applied is publicly owned. The costs associated with additional process units to increase the level of treatment to the level of potable, or less than potable but greater than that normally associated with surface discharge needs, are reported in Category II.

CATEGORY OF NEED (CATEGORY VII)	2004 TOTAL NEEDS (MILLIONS OF JANUARY 2004 DOLLARS)		
	USEPA DOCUMENTED NEEDS	USEPA STATE UNDOCUMENTED NEEDS	TOTAL NEEDS
A Agriculture (cropland)	\$2	\$1,338	\$1,340
B Agriculture (animals)	4	75	79
C Silviculture	0	129	129
D Urban	181	5,363	5,544
E Ground water protection (unknown source)	502	2,272	2,774
F Marinas	1	0	1
G Resource extraction	<0.5	0	<0.5
H Brownfields	474	58	532
I Storage tanks	2	276	278
J Sanitary landfills	1,026	20	1,046
K Hydromodification	1,465	<0.5	1,465
L Individual/decentralized sewage treatment	67	<0.5	67
TOTAL:	\$3,724	\$9,531	\$13,255

Categories of needs for *VII. NPS Control Projects* are described by USEPA as follows:

- VII-A NPS Control: Agriculture (Cropland)**
All costs that address nonpoint source pollution control needs associated with agricultural activities such as plowing, pesticide spraying, irrigation, fertilizing, planting and harvesting. Some typical best management practices that could be used to address agriculture (cropland) needs are conservation tillage, nutrient management, irrigation water management, and structural best management practices (e.g., terraces, waterways).
- VII-B NPS Control: Agriculture (Animals)**
All costs that address NPS pollution control needs associated with agricultural activities related to animal production such as confined animal facilities and grazing. Some typical best management practices that could be used to address agriculture (animal) needs are animal waste storage facilities, animal waste nutrient management, composting facilities and planned grazing. If the facility has a National Pollutant Discharge Elimination System permit, these needs are classified as Category VIII, Confined Animal–Point Source.
- VII-C NPS Control: Silviculture**
All costs that address NPS pollution control needs associated with forestry activities, such as removal of streamside vegetation, road construction and use, timber harvesting, and mechanical preparation for the planting of trees. Some typical best management practices that could be used to address silviculture needs are preharvest planning, streamside buffers, road management, revegetation of disturbed areas and structural practices, and equipment (e.g., sediment control structures, timber harvesting equipment).
- VII-D NPS Control: Urban**
All costs that address NPS pollution control needs associated with new or existing development in urban or rural settings, such as erosion, sedimentation and discharge of pollutants (e.g., inadequately treated wastewater, oil, grease, road salts and toxic chemicals) into water resources from construction sites, roads, bridges, parking lots and buildings. Some typical best management practices that could be used to address urban needs are wet ponds, construction site erosion and sediment controls, sand filters and detention basin retrofit. Needs related to Federal or State highways generally would be reported under this category because State and Federal highways are State-owned. Needs associated with the portions of a road that go through an MS4 should be reported in Category VI, Stormwater

Management Program. Costs associated with managing urban runoff in areas not covered by applicable phase I or II stormwater NPDES permits should be reported in this category.

- **VII-E NPS Control: Ground Water Protection (Unknown Source)**
All costs that address ground water protection NPS pollution control needs such as wellhead and recharge area protection activities. Any need that can be attributed to a specific cause of ground water pollution, such as leaking storage tanks, soil contamination in a brownfield or leachate from a sanitary landfill, should be reported in that more specific category.
- **VII-F NPS Control: Marinas**
All costs that address NPS pollution control needs associated with boating and marinas, such as poorly flushed waterways, boat maintenance activities, discharge of sewage from boats, and the physical alteration of shoreline, wetlands and aquatic habitat during the construction and operation of marinas. Some typical best management practices that could be used to address needs at marinas are bulkheading, pumpout systems and oil containment booms.
- **VII-G NPS Control: Resource Extraction**
All costs that address NPS pollution control needs associated with mining and quarrying activities. Some typical best management practices that could be used to address resource extraction needs are detention berms, adit closures and seeding or revegetation. Any costs associated with facilities or measures that address point source discharges from mining and quarrying activities that have an identified owner should be included in Category IX, Mining–Point Source.
- **VII-H NPS Control: Brownfields**
All costs that address NPS pollution control needs associated with land that was developed for industrial purposes and then abandoned, which might have residual contamination. All costs for work at brownfields should be included in Category VII-H regardless of the activity. Some typical best management practices that could be used to address needs at brownfields are ground water monitoring wells, in situ treatment of contaminated soils and ground water, and capping to prevent stormwater infiltration.
- **VII-I NPS Control: Storage Tanks**
All costs that address NPS pollution control needs associated with tanks designed to hold gasoline or other petroleum products or chemicals. The tanks may be located above or below ground level. Some typical best management practices that could be used to address storage tank needs are spill containment systems; in situ treatment of contaminated soils and ground water; and upgrade, rehabilitation or removal of petroleum/chemical storage tanks. If these facilities or measures are part of addressing NPS needs at abandoned, idle and underused industrial sites (brownfields), the costs go in Category VII-H, Brownfields.
- **VII-J NPS Control: Sanitary Landfills**
All costs that address NPS pollution control needs associated with sanitary landfills. Some typical best management practices that could be used to address needs at landfills are leachate collection, on-site treatment, gas collection and control, capping and closure.
- **VII-K NPS Control: Hydromodification**
Costs that address NPS pollution control needs associated with best management practices for any alteration of the hydrologic characteristics of coastal and noncoastal waters, which in turn could cause degradation of water resources. Examples of such activities include channelization and channel modification, dams, and stream bank and shoreline erosion. In the case of a stream channel, hydromodification is the process whereby a stream bank is eroded by flowing water, typically resulting in the suspension of sediments in the watercourse. Some typical best management practices that could be used to address hydromodification needs are conservation easements, swales, filter strips, shore erosion control, wetland development or restoration and bank or channel (grade) stabilization. Any work involving wetland or riparian area protection or restoration is included under this category.
- **VII-L NPS Control: Individual/Decentralized Sewage Treatment**
Costs associated with the rehabilitation or replacement of individual or community sewage disposal systems and the treatment portion of other decentralized sewage disposal technologies. Costs related to the development and implementation of on-site management districts may be included (but not the costs of ongoing operations of such districts). If a publicly owned centralized collection and treatment system is constructed or if sewers are installed to connect the service area to an existing collection system, the costs should be separately reported in Categories I and IV-A, respectively. Public

ownership is not required for decentralized systems. Costs could include the limited collection systems associated with the decentralized system. This was a new category for CWNS 2004, costs were previously reported as Categories I, VII-D and VII-E.

The USEPA report also presented an analysis of NPS Control needs for categories A (Agriculture), D (Urban), and E (Ground Water Protection) by Watershed Management Area. Due to the different methodologies used, the state totals do not correspond with the state totals presented above:

Name of Watershed Management Area (WMA)	VII-A	VII-D	VII-E
	(\$000)	(\$000)	(\$000)
WMA 1 - Upper Delaware	159,780	567,142	
WMA 2 - Walkkill	42,277	160,876	
WMA 3 - Pompton, Pequannock, Wanaque, Ramapo	1,485	230,386	
WMA 4 - Lower Passaic, Saddle	369	183,387	
WMA 5 - Hackensack, Hudson, Pascack	481	160,405	
WMA 6 - Upper & Mid Passaic, Whippany, Rockaway	10,109	342,266	
WMA 7 - Arthur Kill	154	174,866	
WMA 8 - North & South Branch Raritan	136,675	319,826	
WMA 9 - Lower Raritan, South River, Lawrence	36,604	306,164	
WMA 10 - Millstone	95,770	181,656	
WMA 11 - Central Delaware	98,525	166,539	
WMA 12 - Monmouth	56,165	397,130	
WMA 13 - Barnegat Bay	9,443	425,197	333,499
WMA 14 - Mullica	7,108	185,042	553,694
WMA 15 - Great Egg Harbor	10,088	114,143	487,123
WMA 16 - Cape May	16,008	235,538	74,549
WMA 17 - Maurice, Salem, Cohansey	289,603	779,369	133,203
WMA 18 - Lower Delaware	138,825	242,666	
WMA 19 - Rancocas	6,698	58,510	276,770
WMA 20 - Assiscunk, Crosswicks, Doctors	81,329	103,901	61,378
Total	\$1,197,496	\$5,335,009	\$1,920,216

Flood control is also a component of storm water management. According to the 2009 Report Card on America's Infrastructure published by the American Society of Civil Engineers, there are 213 high hazard dams in New Jersey. A high hazard dam is defined as a dam whose failure would cause a loss of life and significant property damage. Three hundred fifteen (315) of New Jersey's 1,717 dams are in need of rehabilitation to meet applicable state dam safety standards. Two percent (2%) of high hazard dams in New Jersey have no emergency action plan (EAP). An EAP is a predetermined plan of action to be taken including roles, responsibilities and procedures for surveillance, notification and evacuation to reduce the potential for loss of life and property damage in an area affected by a failure or mis-operation of a dam. New Jersey has had dam safety programs in place continuously since 1912. The existing dam safety program was established under the 1981 Safe Dam Act amendments to the 1912 law. New Jersey's Dam Safety program is administered by NJDEP's Division of Engineering & Construction, Dam Safety Section, under the May 1985 Dam Safety Standards. The primary goal of the program is to ensure the safety and integrity of dams in New Jersey to in turn protect people and property from the consequences of dam failures. While a number of dam failures that resulted in the loss of life and extensive property damage have occurred in the United States, New Jersey has not experienced a catastrophic dam failure. However, there have been an increasing number of small dam failures, largely attributed to the lack of maintenance and inspection as well as the fact that many of the dams in the state are nearing the end of their design life. A complete, current assessment of dam rehabilitation needs is not available.

D. Parks and Recreation

Estimated costs for Parks and Recreation are from the NJDOT FY09-FY18 Multimodal Programs (non-freight, non-transit projects) and from the 2008-2012 New Jersey State Comprehensive Outdoor Recreation Plan, November 2007, comprising reported capital improvement needs for State parks and reported requests to the New Jersey Green Acres program from local government and conservation agencies for a four-year period (2003 through 2006) of \$1.93 billion multiplied by five periods.

According to the 2009 Report Card on America's Infrastructure published by the American Society of Civil Engineers, New Jersey reported an unmet need of \$210 million for its state public outdoor recreation facilities and parkland acquisition.

There is a potential saving of close to 40 percent of developable lands under the PLAN regimen. This land savings could be used to provide resources for additional parks and recreation. It would have to be purchased, so its availability would potentially serve to drive down the price of land. However, since much of the capital improvements for parks and recreation are not open space land purchases, the impacts of the land savings under PLAN would be limited.

V. Recommendations

A high quality of infrastructure is required to support economic growth as well as to protect public safety; these are interrelated and intertwined. The 2009 Report Card for America's Infrastructure published by the American Society of Civil Engineers (ASCE) notes that, nationwide, the same infrastructure issues exist in 2009 as in its first study in 1998. This is also true for this, the third Infrastructure Needs Assessment, the successor to the 1992 and 2000 Infrastructure Needs Assessments for the New Jersey State Development and Redevelopment Plan.

The ASCE report advances five "key solutions" as its recommendations:

- increase federal leadership in infrastructure;
- promote sustainability and resilience;
- develop federal, regional, and state infrastructure plans;
- address life cycle costs and ongoing maintenance;
- increase and improve infrastructure investment from all stakeholders.

The New Jersey State Development and Redevelopment Plan is an effort to provide state leadership in prioritizing infrastructure investments in accordance with a consensus vision, objectives and patterns for growth achieved through the State Planning Cross-acceptance process. New Jersey state agencies have already implemented "fix it first" policies that maintain infrastructure capacity where it already exists, and are beginning to identify and implement policies that promote "green" infrastructure investments. While the State Development and Redevelopment Plan has promoted sustainability from its beginnings, it has been less consistent in promoting resilience, defined as accounting for, or mitigating (by reducing risk and vulnerability), costs reasonably anticipated during the life of each infrastructure project, including disruption from natural or manmade hazards. Compartmentalization ("silos") of infrastructure investment decision making, both within and across state agencies and between local and state governments, is still a problem. Integrated, systemic practices to improve decision making for capital investments, advanced in the 1992 and 2000 Infrastructure Needs Assessments, are yet to be implemented, and data for decision making has not improved, and in many ways has become less available due to budgetary or security concerns, since these earlier assessments. Infrastructure, as "public" works, are not well enough coordinated by the public sector to guide opportunities for implementation by the private sector.

In part due to the inherently networked nature of infrastructure systems, but in large part due to the way proposed projects are documented, the objective to relate the TREND Infrastructure Needs Assessment to the geographic objectives and policies of the State Development and Redevelopment Plan remains impossible to achieve within a reasonable deployment of resources. Efforts to increase the geographic detail and operational usefulness of the Infrastructure Needs Assessment in the future to achieve the Goals of the State Plan should include:

- Implementing advanced information technologies (such as GIS, Internet and advanced modeling capabilities) and data exchange among state and local agencies and with the public to more accurately locate and track needs for and impacts of potential capital investments.
- Maintaining a unified and routinely updated series of municipal and small area (based on Planning Areas) demographic and economic forecasts based on consistent time frames and assumptions, on which future infrastructure needs may be based.
- Implementing the State Plan, including Plan Endorsement efforts.
- Maintaining and enhancing the State Plan monitoring and evaluation (indicators and targets) program.
- Including a consistent base of detailed capital planning and infrastructure needs information in all county reports provided in the State Plan Cross-acceptance process.