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# Sustainability As Partner to Economic Regeneration: The Impact Assessment of the New Jersey State Plan


- Economy
- Environment
- Infrastructure
- Community Life
- Intergovernmental Coordination

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State Planning Commission

Office of Smart Growth

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**NEW JERSEY OFFICE OF SMART GROWTH**


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# PREFACE

## ASSESSING NEW JERSEY'S FUTURE

**Relaxing on benches in Donaldson Park, Highland Park.**
Jon Erickson

The *Impact Assessment of the New Jersey Interim State Development and Redevelopment Plan* is the underlying document that sets the framework for State Plan finalization and adoption. According to the State Planning Act, the impact assessment must cover five basic areas of investigation, each of which has several subareas. The impact assessment must also provide projections for future time periods and for different geographic regions of the state. The impact assessment must inform the state's policymakers and citizens about the differences between historic conditions (labeled TREND) and State Plan goals and policies (labeled PLAN).

The Center for Urban Policy Research (CUPR), a unit of the Edward J. Bloustein School of Planning and Public Policy at Rutgers University, was selected to undertake the overall evaluation. CUPR's models have projected the disparities between historic conditions and State Plan goals and policies across a variety of variables. A team of expert reviewers knowledgeable about the state's growth patterns has commented on the TREND and PLAN population and employment projections at the municipal level, including overall growth and differences between TREND and PLAN.

Using these growth differences, the next step is for the State Planning Commission to gather public opinion. The Commission will base decisions about the State Plan on the results of the impact assessment and on comments received from the public.

Although the impact assessment is an important baseline document, it is the State Plan itself that will be the blueprint for New Jersey's future. The State Plan must conceptualize New Jersey in its totality while addressing the needs of the State's 566 municipalities. The State Plan must adopt strategies for growth that balance economic, environmental and quality-of-life interests across a diverse state that encompasses fragile ecosystems, urban industrial areas, and rural agricultural land. It must also establish development incentives that facilitate implementation of such strategies. In short, the State Plan must take New Jersey through the next several decades: it must provide a guide to improving the state's economy, environmental conditions,

developmental infrastructure, quality of life, and intergovernmental communication.

***This report is more than an impact statement. It is a picture of growth over the next twenty years with an extended lens focused on 2028.***

Building a successful future for New Jersey is the most important goal of the plan and the planning process. A healthy economy, protected environments, good transportation systems, attractive places to live, a reasonable cost of living and governments that respond to community needs are components of the ideal future the State Plan aims to achieve. Can New Jersey achieve these goals without the State Plan?

The impact assessment measures two alternative futures for New Jersey: one in which growth is managed according to strategies in the State Plan, and one in which growth occurs in the absence of the State Plan. This report presents both alternatives and suggests which of the two scenarios would most benefit the state.

This report is more than an impact statement. It is a picture of growth over the next eighteen to twenty years with an extended lens focused on 2028.

The atmosphere of this third impact assessment is one defined by viewing the future from a position 90 percent through the most severe recession since the Great Depression. It is referred to as the "Great Recession." This recession, which has had an almost identical effect on the nation as it has on New Jersey, has caused a significant loss of employment that will take half of the projection period to recover from and will slow population, household, and housing-unit growth over the next two decades.

Major changes have occurred in New Jersey since the State Plan was first conceived and the first impact assessment was completed. Along with Florida, Maryland, and Oregon, over the past forty years, New Jersey has in many ways jointly led the nation in efforts to plan for the future. New Jersey effectively shapes planning in its 566 municipalities in virtually every area of regulation, from *Mt. Laurel's* command to the Global Warming Response Act's requirement to reduce the state's carbon footprint. As the latest iteration of the *Impact Assessment of the New Jersey State Plan* shows, New Jersey has been more successful in protecting its remaining landscapes, reining in sprawl, producing affordable housing, and improving its economic competitiveness than states that do not engage in growth management. This is not local news; it has been confirmed in the Lincoln Institute of Land Policy's new evaluation of the effectiveness of growth-management regulations.[1]

Nevertheless, New Jersey also continues to struggle in many of these areas with implementation of its programs. It still has conflicts over authorization and creation of affordable housing, revitalizing its inner cities, encouraging economic competitiveness, and protecting its waterways and wetlands. It has just begun to seriously ponder energy conservation and carbon footprint. In these economic times, the question of the effectiveness of the State Plan has never been more relevant—whether and how the State Plan contributes to the future of New Jersey's economy is up to its lawmakers and its communities. This report will help them decide whether the State Plan should continue to be a part of its future.

[1] Gregory K. Ingram, Armando Carbonell, Yu-Hung Hong, and Anthony Flint, *Smart Growth Policies: An Evaluation of Programs and Outcomes* (Cambridge, MA: Lincoln Institute of Land Policy, 2009).

# Executive Summary

## INTRODUCTION

The third impact assessment of the New Jersey *State Development and Redevelopment Plan* is undertaken at a time when techniques and procedures for analyzing this complex document are more sophisticated than those available in 2000, and when the document itself more clearly defines policies for growth and implementation. However, the charge given to the third impact assessment is essentially the same as that given to the first two: to assess the economic, environmental, community life, and intergovernmental coordination implications of the State Plan over a 20-year period. (The assessment period for this analysis is 2008–2028.) The purpose of the assessment is to guide policymakers in determining whether the Plan's policies will be beneficial to the state's future.

***The findings of the impact assessment presented in this report indicate that the State Development and Redevelopment Plan can create a positive development future for New Jersey.***

The State Planning Act (P.L. 1989, c. 332, N.J.S.A. 52: 18A202.1g et seq.) requires the impact assessment to be undertaken as part of the process of preparing the *State Development and Redevelopment Plan*. The assessment must be completed before the State Plan is finalized and voted upon by the State Planning Commission.

The impact assessment measures two alternative futures for New Jersey: one in which growth is managed according to the strategies in the State Plan (PLAN) and one in which growth continues according to historical trends (TREND). The third impact assessment draws upon the experience and knowledge the Center for Urban Policy Research (CUPR) at Rutgers University has acquired during ten additional years of conducting similar analyses nationwide. The assessment also draws upon ten years of data collection and GIS analysis by the New Jersey Office of Smart Growth (OSG). The result is a fundamentally revised, more comprehensive assessment. The new presentation format includes illustrative material, including photographs, maps, and tables. Tabular materials present data on the impacts of the TREND and PLAN scenarios and highlight differences between the two alternative scenarios by portion of the state, type of municipality (urban, inner-suburban, outer-suburban, rural), planning area, and center versus non-center locations. Naturally forming—as opposed to designated—centers are used in this analysis. These naturally forming centers have higher density than surrounding areas and have been and will be locations of future residential and nonresidential growth. The assessment uses current information about the state to establish a baseline for 2008 and then projects the impacts of each scenario for 20 years into the future. Although various methods may be used in making such projections, the best procedures available for conducting this task have been employed in the analysis.

The findings of the impact assessment presented in this report indicate that the *State Development and Redevelopment Plan* can create a positive development future for New Jersey. Development under the State Plan (PLAN) will produce economic benefits similar to those produced under TREND conditions. However, PLAN will direct more development into new and existing centers and less development into rural and environmentally sensitive areas. This will subsequently attract investment and expand the tax base of communities with new and existing centers. The Plan therefore will conserve land, slow the increase in housing prices, and substantially reduce the need for expanded local public services in rural and environmentally sensitive areas. Quality of life in the state will also improve, and governance will be improved by more effective intergovernmental coordination resulting from engagement between local, county, regional and state governments as a result of the processes and procedures instituted by the Plan.

# ECONOMIC ASSESSMENT

## OVERALL CONDITIONS

Although some policymakers have been concerned that the State Plan will cause people to be driven from the state for economic reasons, this has not been the result in the past, and is not likely to result in the future. At the state and half-state+ levels, growth will be essentially the same. In fact, continuing to build infrastructure to support growth in centers actually has the potential to grow the economy of New Jersey even further.

Both PLAN AND TREND growth alternatives will accommodate 745,777 new people, 266,000 new households, and 262,000 new jobs (not including agricultural jobs or self-employment) over the 20-year period 2008–2028. Growth in New Jersey during the second and third decades of the millennium will be somewhat slower than it was during the 1990s and 2000s. The state's current growth rate is the result of a relatively diminished economy, lower immigration increases, and considerably more outmigration. These forces will diminish somewhat but will still be felt for most of the projection period. New Jersey will grow about 0.43 percent annually in population, 0.43 percent annually in households, and 0.33 percent annually in employment. Population and households will continue to grow faster in the southern half compared with the northern half of the state. Employment growth will also be more in the southern portion of the state; the northern portion will trail the southern portion in employment-growth numbers, but not nearly as much as the difference in population and households. The state will be less industrial and more service-oriented than it is today; property values and income will rise at a much slower rate than in the 1990s and 2000s. All of these base conditions will occur with or without the State Plan.

*National and regional forces shape New Jersey's economic growth. PLAN and TREND development scenarios are impacted by these forces equally. PLAN's goals and policies will not cause population or jobs to be driven from the state.*

## POPULATION

New Jersey's 2008 population is five times larger than it was in 1900. At close to 1,160 people per square mile, New Jersey is the most densely populated state in the United States—a title that it has held since 1970. New Jersey's annual growth rate is one-half the national growth rate yet somewhat more than the growth rates of its neighboring states. New Jersey's population reached 8,682,661 in 2008, having increased from 8,414,347, or by 268,314, since 2000. It will grow by 745,777 during the period 2008–2028. The full population increase projected for New Jersey can be accommodated in the state under both TREND and PLAN development. This also holds true for the state's two halves.[2] However, the growth taking place below the regional level will be different under the two scenarios.

Generally speaking, under PLAN development, much more growth will occur in urban communities (20 percent), in communities with more densely developed planning areas (25 percent), and in communities with urban, regional, and/or town/village centers (30 percent).[3]

*Plan development will cause a population increase of nearly 146,000 more than TREND in urban/inner suburban communities, 80,000 more in densely developed communities, and 35,000 more in communities with urban, regional, and/or town centers.*

[2]The two halves, or regions of New Jersey, are defined by New Jersey counties as follows: northern New Jersey encompasses eleven counties—Bergen, Essex, Hudson, Hunterdon, Middlesex, Morris, Passaic, Somerset, Sussex, Union, and Warren; southern New Jersey encompasses ten counties—Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Monmouth, Ocean, and Salem).

[3]Urban, inner-suburban, outer-suburban, and rural communities are defined by Rutgers University, Center for Government Services municipal classifications.

## EMPLOYMENT

Total employment—the number of jobs located in a geographic area—is a key indicator of the scale of an area's economic base. As of 2008, New Jersey's total employment was approximately 4.0 million—not including agricultural and self-employment—a decrease of 23,400 jobs since 2000. New Jersey will lose 170,000 jobs from 2008 to 2010. It will recover some jobs (+36,000) from 2011 to 2013. From 2011 through 2019, New Jersey will recover the other 134,000 jobs lost from 2008 to 2010. It will produce an additional 262,000 jobs by 2028. The gross increase of jobs from 2011 to 2028 is 396,000 jobs. The net increase from 2008 is 262,000 jobs.

*PLAN development will increase the number of jobs by 10 percent in urban/inner suburban communities (23,240 more) and cause more jobs to be formed in communities with urban, regional, and/or town centers and locations with more densely developed planning areas over the course of the 20-year projection period.*

Overall, TREND and PLAN growth futures will create approximately the same number of net jobs (262,000). The primary difference between TREND and PLAN futures will be the location of new jobs in the state. Under PLAN versus TREND, about 23,240 more new jobs will be found in urban/inner-suburban communities. Approximately 6,000 more new jobs will locate in communities with more densely developed planning areas and those characterized by urban, regional, or town centers, rather than in communities with less densely developed planning areas and without large centers. Since many of the new jobs will be in areas of excess labor, the jobless rate in urban and rural centers will be reduced over time.

PLAN's goal is to concentrate development in centers; a portion of this development is nonres-

idential growth. PLAN will be able to steer more employment growth to the more densely developed communities of the state.[4]

## HOUSEHOLD GROWTH AND INCOME

Households are the unit of measure of housing occupancy and the basic source of income supporting local expenditures. There are currently 3,157,454 million households in New Jersey, a figure that will grow by 266,000 over the period 2008–2028. The projected growth in number of households for the state and its two major regions is the same under the TREND and PLAN scenarios. Households will grow at a rate (0.43 percent annually) that is about the same as the population growth rate (0.43 percent annually). More than 70 percent of the growth in number of households will take place in the southern region of the state (136,000).

Under PLAN, there will be noticeable differences in the locational growth of households below the regional level. Compared with TREND projections, PLAN policies will produce 53,500 more household growth in urban/inner-suburban communities and significant differences in communities with more densely developed planning areas (an additional 9,000 households), and in communities characterized by the presence of urban, regional, and/or town centers (an additional 12,000 households).

There will be similar growth in household income under TREND and PLAN at the state and half-state levels. This will not be true below the regional level. PLAN's policies will produce significant income growth in urban/inner-suburban communities, somewhat more significant growth in income in communities with more densely developed planning areas, and in communities with urban, regional, and/or town centers. An $8 billion gain in household income in urban/inner-suburban communities under PLAN will accompany the extra 53,500 households in these areas.

*PLAN development will result in 53,500 more households in urban/inner suburban communities. This will produce additional household income of $8 billion in these areas.*

## EQUALIZED VALUATION

Property value relates to the economic health of political jurisdictions. New Jersey, as of 2008, has $1.35 trillion in equalized real property value. Of that $1.35 trillion total, residential parcels had a market value of $1.01 trillion (75 percent), nonresidential parcels were worth $295 billion (22 percent), and vacant land and farm parcels were worth nearly $30 billion (3 percent).[5]

Over a 20-year projection period, TREND and PLAN futures will have equivalent real property tax base growth of approximately $1.275 trillion. About 57.5 percent of this growth ($733 billion) will take place in the northern region of the state; the remainder ($542 billion) will be found in the southern region of the state. TREND real property growth will be very uneven, however. Rural and outer-suburban communities will expand their property tax bases by 115 percent and 110 percent, respectively, under this scenario. Inner-suburban communities will expand their tax base by 90

[4]More densely developed planning areas encompass State Plan planning areas 1, 2, and 3; less densely developed planning areas encompass State Plan planning areas 4 and 5. Communities with urban, regional, and/or town centers are communities with naturally forming/formed large centers; communities with village, hamlet, or no centers are referred to as "communities without large centers."

[5]New Jersey Department of Community Affairs, Division of Local Government Services.

percent, and urban communities will expand their tax bases by 85 percent.

*Under both growth scenarios, the State Plan will expand its property tax base by $1.275 trillion. PLAN development will expand the property tax base of urban/inner suburban communities by 93 percent; TREND development will expand tax bases in these combined areas by 88 percent.*

Under the PLAN scenario, there will be a purposeful relocation of development and an accompanying real property value shift to urban and inner-suburban communities. Experiencing somewhat less of a shift will be communities with more densely developed planning areas, and communities with urban, regional, and/or town centers.

## FISCAL IMPACTS

Fiscal impacts determine whether growth pays for itself. The fiscal impact assessment compares the public-service costs versus revenues raised from accommodating new residents and workers under the two alternative growth scenarios. As New Jersey grows into the future, most development will continue to be residential in nature. Due to the value of the new development, this will contribute to base fiscal surpluses under either growth scenario. Under TREND development, by 2028, local governments will experience a fiscal surplus of $65 million annually; under PLAN development, the fiscal surplus will be $181 million annually. By containing population and jobs around already developed inner-suburban communities and by redirecting a share of growth to closer-in (urban) or more distant communities (rural) with urban, regional, and/or town centers, the State Plan, by 2028, will provide an annual $116 million (current dollars) fiscal advantage to local governments. This advantage reflects the ability under PLAN to draw on usable excess operating capacity in already developed communities and to benefit from their existing tax structure. Local costs under PLAN development will be somewhat higher than under TREND, but revenues will be higher still, leading to more of a surplus in fiscal impacts under PLAN development. While both growth scenarios will cause the state slight fiscal profits, PLAN development will increase these profits by $116 million annually.

*PLAN development will reduce fiscal impacts attributable to growth by $116 million annually in municipalities, counties, and school districts. PLAN's fiscal impact savings will be more in urban and inner-suburban communities, in communities with more densely developed planning areas, and in communities with large centers.*

# ENVIRONMENTAL ASSESSMENT

## DEVELOPABLE LAND

Land consumption also remains a significant statewide issue. As in 2000, the present (2009) analysis concludes that sufficient undeveloped and unrestrained land remains available for all projected development, despite the continued growing influence of regulatory programs on land-use regulation, such as the Highlands Act. As in 2000, the State Plan will reduce land consumption by a significant measure.

As of 2008, New Jersey has accommodated 8.68 million people, 3.25 million households, and 4.0

million jobs on approximately 1.35 million acres.[6] Of the state's 4.8 million acres, 1.5 million remain undeveloped and unprotected, two-thirds of which are forests and one-third of which are agricultural lands. A 20-year development future under the TREND scenario will convert 112,600 of the remaining 1.5 million acres to provide land for 266,000 households and 262,000 jobs. Development under the PLAN scenario will convert approximately 52,315 acres to accommodate a similar number of households and jobs, a saving of 60,000 acres. Overall, new development under TREND conditions will require over 115 percent more land than is required under the PLAN scenario.

Almost all of the saved developable acreage will be located in outer-suburban and rural communities, in communities with less densely developed planning areas, and in communities without urban, regional, and/or town/village centers.

*PLAN development will save 60,000 acres of land that typically would be converted by TREND development.*

## AGRICULTURAL LAND

New Jersey continues to experience significant conversion of agricultural land. As in 2000, the 2009 analysis shows that PLAN development will slow the agricultural land loss in the state. Of the total land converted for development under TREND conditions (112,600), approximately 33,000 acres will be agricultural land. Under PLAN conditions, approximately 16,021 acres of agricultural land will be converted. In the aggregate, approximately 17,000 acres of agricultural land will be saved under the compact development measures of the State Plan. Under the PLAN scenario, 60 percent of agricultural land committed to development under the TREND scenario will be saved in rural/outer-suburban communities. An almost similar percentage can be saved in communities with less densely developed planning areas and in communities without urban, regional, and/or town/village centers. In absolute number of acres, more agricultural land will be saved in outer-suburban communities, in communities with less densely developed planning areas, and in communities without large centers.

*PLAN development will save 17,000 acres of agricultural land, or more than one out of every two acres that would be converted by development under TREND conditions.*

## ENVIRONMENTALLY FRAGILE LAND

New Jersey also loses environmentally fragile land to development. Approximately 80,000 acres of the land converted for development under TREND (112,600) will be environmentally fragile land. The land converted, which include forests, steep slopes, and critically sensitive watersheds, could be permanently damaged. PLAN development will convert 45 percent of this amount, or approximately 36,000 acres. Thus, all future development objectives will be met under the State Plan while saving about 43,000 acres of environmentally fragile land.

*PLAN development will save more than 43,000 acres of environmentally fragile land.*

[6] U.S. Department of Commerce, Bureau of the Census, 2009. Annual Estimates of Resident Population. www.census.gov/popest/states/tables/NST-EST2008-01.xls

# INFRASTRUCTURE ASSESSMENT

## ROADS

There are approximately 45,538 centerline miles of public and private local roadways in the state. TREND development to the year 2028 will require an additional 2,660 centerline miles of local roadway. PLAN development will require the addition of only 2,100 centerline miles of local roadway. Three-quarters of the amount saved (560), or approximately 375 centerline road-miles, will be in communities with less densely developed planning areas. Plan-guided development will require 560 fewer centerline miles of local roadway. Under the PLAN scenario, a statewide saving of approximately $4.44 billion in local road infrastructure costs will be achieved because development will be directed to existing neighborhoods (through redevelopment and infill) and to outer-area centers.

*PLAN development will save 560 centerline miles of local roadway and $4.44 billion in local road costs.*

## TRANSIT

Approximately 10.4 percent of workers 16 and older in New Jersey use transit for trips to work (2008). There are currently 373,321 worktrip transit users in the state.[7] More than three-quarters of those users (286,200) are in the northern part of the state. The State Plan, with its systems of centers, encourages new growth in moderate- and high-density population areas. Over the period from 2008 to 2028, TREND development density will create a demand for 28,500 new worktrip transit users. PLAN development density will create a demand for 32,000 new worktrip transit users—12.3 percent more than the demand for public transit that would be created under the TREND development scenario. The vast bulk of this increase in demand will occur in the northern half of the state, in urban and inner-suburban communities, in communities with more densely developed planning areas, and in communities with urban, regional, and/or town/village centers.

*Under PLAN development, the work trip transit-use increase will be 12.3 percent more than that of TREND development.*

## WATER AND SEWER

Both housing costs and public-service operating costs are affected by the costs of providing basic development infrastructure. The two alternative scenarios will produce different levels of demand for water and sewer infrastructure. Development under PLAN conditions will be close-in, contained, and somewhat denser compared with development under TREND conditions. For example, there will be more multifamily units under PLAN development. PLAN development will therefore reduce the cost of water and sewer infrastructure.

The savings in water and sewer demand under PLAN conditions will be 2.5 million and 1.4 million gallons per day, respectively, from 2008 to 2028. The difference in demand may not seem significant until the hardware (infrastructure) and cost implications are considered. In the case of

[7] U.S. Department of Commerce, Bureau of the Census, 2007 *American Community Survey*, One Year Estimates. www.census.gov.

water and sewer lateral costs, the use of existing infrastructure and the construction of more multifamily housing units under PLAN development will produce fewer water and sewer laterals (16,080 each) and cost savings of $0.18 billion and $0.31 billion, respectively, between 2008 and 2028. Taking into account both water and sewer cost savings, $0.50 billion will be saved under PLAN development.

*PLAN development will provide a saving of $0.50 billion in water and sewer infrastructure costs.*

# COMMUNITY LIFE ASSESSMENT

## QUALITY OF LIFE

The community life assessment consists of two elements: (1) quality of life, and (2) housing supply, demand and costs.

Quality of life is determined by how people relate to their environment. A community's environment can be measured empirically. Quality of life is measured in communities by 26 regional and 18 local factors that make up an index created specifically for this project. The regional index depicts quality of life through county ratings of wealth, education attainment, housing costs, weather, taxes and government spending, and so on. The local index depicts quality of life through local ratings of economic well-being, housing value and ownership, property tax base and rates, public safety, school achievement, and community amenities. The above sets of factors create a combined quality-of-life rating (from one to five) for each community. All households and jobs in a community under the TREND scenario or the PLAN scenario will be affected by the quality of life at those locations.

The current quality-of-life rating in New Jersey is 3.030 out of 5.000. A combined quality-of-life rating of 3.062 out of 5.000 is observed when the quality-of-life measures described above are applied under TREND development conditions. Applying the same measures under PLAN development conditions (taking into account the effects of population redistribution under PLAN) results in an overall quality-of-life rating of 3.056 out of 5.000. These ratings for the year 2028 represent increases over the quality-of-life rating of 3.030 for 2000. The ratings reveal that both development scenarios (TREND and PLAN) will improve the quality of life of the state's residents: the quality-of-life rating will increase by 1 percent under TREND and by 0.8 percent under PLAN. The difference between the TREND and PLAN scenarios is the minimally lower quality of life that will be experienced by the portion of new population moving to the urban/inner-suburban communities and by some of those moving to existing rural centers in the relatively short term.

*Quality of life will improve in the future under both TREND and PLAN development. Households that seek redeveloping neighborhoods under PLAN development may experience a slightly slower rate of improvement in quality of life in the short term.*

## HOUSING SUPPLY, DEMAND, AND COSTS

People cannot enjoy life unless they have an affordable place to live. There must be a way to provide shelter at reasonable cost to meet the demand of future household growth. The projected

increase in household demand over the period 2008–2028 is 266,000 households.

In the case of both TREND and PLAN development, household demand will foster a housing-unit increase of 264,200. The slightly fewer units than household growth are taken from vacant units. Supply will comprise an additional 206,000 single-family homes (one- to four-unit structures), and 58,000 multifamily units (structures of five or more units) under both TREND and PLAN.

Housing affordability, due to the recession, will remain essentially stable over the period 2008–2028. Positive change in the general affordability of the housing stock (i.e., a decrease in price related to a decrease in income) will characterize the future. PLAN's increase in housing affordability will be slightly more than under TREND development. The percentage of the state's households able to afford housing will remain about the same at 76 percent under TREND and move from approximately 76 percent to 77 percent under PLAN. PLAN's slightly better position reflects the population increment moving to urban, regional, and/or town centers where housing prices will be somewhat lower, given the densities of urban communities and centers, and the housing mix that will be found there. For some period of time into the future, good housing prices will be found in outer-suburban and rural areas.

*PLAN development, because it offers more variety in housing types, will increase housing affordability slightly relative to TREND development.*

# INTERGOVERNMENTAL COORDINATION ASSESSMENT

Where there is more coordination, more actions are achieved with less effort. As a result of coordination, governments are better able to serve their constituencies. In a 2006 survey, county planning directors were asked to rate the frequency and quality of contact between themselves and other levels and units of government before and after the State Planning process was implemented. They were also asked to provide their views on municipality-to-municipality and municipality-to-state contacts. While it is true that their responses indicate only a momentary judgment and are subject to change over time, the county planning directors nonetheless provide insight into intergovernmental coordination effects under the State Planning process as it has evolved.[8]

County planning directors reported improvements in the frequency of contact between all levels of government viewed and improvements in the quality of contact between counties and local governments. The most significant improvements in the frequency of contact have occurred in the southern part of the state; the most significant improvements in the quality of contact have occurred in the central part of the state.

# CONCLUSIONS

The study team conducted a total of 14 impact assessments in the five major impact areas and their subareas. The results of the assessment reveal that the State Plan will offer significant improvement to the State of New Jersey in many of the measured indices; it will be a neutral factor in the remainder. The State Plan will save as much as

[8] Rutgers University, Center for Urban Policy Research, "County Intergovernmental Coordination Survey."

$4.44 billion in capital costs for local road infrastructure and $0.5 billion in water and sewer infrastructure over the next 20 years. It will also save as much as $116 million per year in reduced fiscal impacts statewide for municipalities and school districts. New Jersey residents will also reap the benefits of slightly more affordable housing with the State Plan. Given these results and those that reveal savings in land consumption and improvements in quality of life and intergovernmental coordination, the study team concludes that the State Plan will help to make New Jersey a better place in which to live and work. More specific conclusions are found below.

*Under PLAN development, county governments will experience more contracts and better relationships with state, other county, and local governments. Governments will also experience an increase in municipality-to-municipality and municipality-to-state interactions under the State Plan.*

## ECONOMIC ASSESSMENT

The *State Development and Redevelopment Plan*, if carried forth to implementation, will sustain the economy of the state; maintain growth in all regions; redevelop urban communities, communities with more densely developed planning areas, and communities with urban, regional, and/or town centers to a greater extent than they would be under traditional development conditions; and strike an appropriate balance between economic and conservation measures. Under the State Plan, jobs will be created in all locations in the state, but especially in locations with the highest rates of unemployment. This is particularly necessary under current recessionary conditions. Further, the State Plan will help reduce the fiscal deficits of most local public-service providers (i.e., municipalities, school districts, and counties) and save operating costs because growth is directed to the more established and mature public-service providers.

## ENVIRONMENTAL ASSESSMENT

The *State Development and Redevelopment Plan* contains measures that will protect the environment and improve environmental quality. Lands in a variety of categories are protected, and the quality of the state's natural environments will be improved or left basically unchanged.

Land savings are important to the environmental future of the state. One category of land saved is agricultural land, which is typically considered to be prime developable land. The PLAN scenario will save more than 50 percent of developable lands, agricultural lands, and environmentally fragile lands that otherwise would be lost. At the same time, it will allow development to occur on other less-valuable and pristine lands. There are costs that accompany land preservation. Implementation of the State Plan will require the elected officials and citizens of New Jersey to address the equity concerns of farmland owners. If both of these conditions—preserving agricultural land and acknowledging the costs of farmland preservation—are addressed, there will be no negative impacts on the agricultural industry in New Jersey.

Much of the protection of natural resources attributable to the State Plan is the result of directing future development in and around locations of existing development or to new centers in outlying areas. These centers are targeted by the State Plan for growth; adjacent remaining areas are designated as limited-growth areas. The emphasis on center-oriented development (both existing and future) will contribute significantly to the land savings discussed above.

**Fishing at Longport.**
Jon Erickson

## COMMUNITY LIFE ASSESSMENT

Quality of life in New Jersey, to the extent that it can be measured, will improve in the future. Housing demand will be basically met by housing supply over the next twenty years. Both housing costs and income will rise very slowly into the future. Housing affordability under the State Plan will be better than under TREND conditions because of somewhat less expensive housing and a greater variety of housing choice in urban communities, in communities with more densely developed planning areas, and in communities with urban, regional, and/or town centers. In general, quality of life will improve in New Jersey under both TREND and PLAN over time. Households that move to redeveloping areas will, in the short term, experience a lower quality of life than they would have experienced in the rural fringe areas. This is due to conditions currently found in the redeveloping neighborhoods (housing deterioration, higher crime rates, lower graduation rates in schools, and so on). However, those conditions will gradually improve over time.

## INTERGOVERNMENTAL COORDINATION ASSESSMENT

The State Plan is the result of a long negotiation process. County planning directors have credited State Plan procedures and processes with improving both the quantity and the quality of various types of governmental interaction. Planning directors report significant increases in the number of contacts between most governmental agencies and an improvement in the quality of contact between county and local agencies. The study team concludes that intergovernmental coordination is improved as a result of the State Plan endeavor.

## SUMMARY

No impact assessment can measure every variable, but overall, the assessment has carefully and consistently measured all relevant areas for which it has been charged, and the results are clear. The goals, policies, and strategies of the State Plan will produce noticeable improvements in the state's economy, environment, infrastructure, community life, and intergovernmental coordination.

# The State At 2010

## INTRODUCTION

Comprising approximately 7,790 square miles, New Jersey is the fourth smallest state in the country. However, according to population estimates for 2008, the state is the eighth most populous. New Jersey's current population in 2008 (8.68 million) is 4.6 times what it was in 1900 (1.88 million). The state contains approximately 3 percent of the nation's population, and, at just under 1,160 people per square mile, it is the nation's most densely populated state.[9] New Jersey's population is expected to increase to 9.43 million by the year 2028—an increase of approximately 8.6 percent. With its 21 counties, 566 municipalities, and 605 school districts, New Jersey has the highest density of local governments in the United States.

**The library mall, Princeton.**
Jon Erickson

[9] U.S. Department of Commerce, Bureau of the Census. 2009. American Fact Finder. www.census.gov.

New Jersey is a state of abundant resources, and it offers a highly desirable quality of life. However, New Jersey, like most states, has suffered during the "Great Recession" which, according to the National Bureau of Economic Research, began in this state in December 2007, ending a 61-month period of expansion. In 2007, the average monthly unemployment rate in New Jersey was 4.2 percent. However, in 2008, New Jersey's unemployment rate rose substantially, and in July 2009 it had reached a 15-year high of 9.3 percent. Since the onset of the Great Recession, New Jersey has lost approximately 170,000 jobs. New Jersey also lost an additional 23,400 jobs from December 2000 to December 2007.[10]

In 2008, residential housing permits totaled 19,000—the lowest number since 1992. In 2009, to June, they totaled 9,000. This continued a trend of decline, as 25,400 were issued in 2007, while 34,323 were issued in 2006. Nonresidential construction activity decreased by 60 percent in 2008 and 70 percent in 2009.[11]

For New Jersey residents, personal income rose by 3.2 percent in 2008. The personal income increase was down from 5.9 percent in 2007 and 7.3 percent in 2006. The rate of inflation was 3.7 percent. Retail sales totaled $146.9 billion for the year 2008 and are projected to decrease to $144.5 billion in 2009.[12]

[10] U.S. Department of Labor, Bureau of Labor Statistics, 2009. Economy at a Glance: New Jersey. www.bls.gov.

[11] State of New Jersey, Department of Labor and Workforce Development. *Residential Building Permits Summary.*

[12] State of New Jersey, Department of Labor and Workforce Development. *Total Personal Income by State.*

New Jersey's gross state product (GSP) in 2008 was approximately $390.4 billion, down from $391.3 billion in 2007 and up from $386.9 billion in 2006.[13]


**NJ TRANSIT bus service, downtown Newark.**
Jon Erickson

New Jersey is a state of many contrasts. Its northeastern corner contains the Gold Coast, a continuously redeveloping urban area bordering the Hudson River. Urban forms of transportation (ferry, light-rail, bus) are prevalent in this corner of the state. Until 2008, it was an area of above-average household and employment growth, and relatively significant household incomes and buying power. Bergen County, the state's most populous county, is particularly distinguished by its household income when compared with the household income of the state, the New York metropolitan region, and the country as a whole. Hudson County contains Jersey City. One of the few major cities in New Jersey to increase in population for three straight decades (1980s, 1990s, and 2000s) is Jersey City. This area is accessed by the Palisades Parkway, the New Jersey Turnpike, U.S. Route 1, and NJ Route 21. To the west of the Gold Coast, in Essex, southern Passaic, and Union counties, is the heart of the New York City–influenced urban core of the state. Three of the state's largest cities are found here, as well as 54 inner-suburban towns, townships, and cities. These are areas of relatively slow growth in number of households and in jobs, yet there has been some increase in population due primarily to immigration from abroad. This has slowed considerably since 2008. Access in these areas is provided by Interstates 80 and 280 and a host of older state and county roadways. The Gold Coast and other northeastern New Jersey counties are part of the state's "mature urban core."[14]

Further west, but still in the northern part of the state, are two mostly developed suburban counties, Morris and Somerset, and three developing counties, Hunterdon, Sussex, and Warren. The first three of these counties form a portion of the suburban "wealth belt" of the state. This development pattern is also established in Hunterdon County, but it is only beginning, and is thus less pronounced, in Warren and Sussex counties. This area is linked by Interstates 287, 80, and 78.[15]

Mercer, Middlesex, Monmouth, and Ocean counties, located in central New Jersey, are oriented to either the New Jersey Turnpike or the Garden State Parkway. Mercer and Middlesex counties are areas of significant employment growth and are also part of New Jersey's wealth belt. They are linked by the New Jersey Turnpike and a vastly improved Route 1. Monmouth and Ocean counties are areas of primary residential growth. These counties are the job and

[13] State of New Jersey, Department of Labor and Workforce Development. *Gross Domestic Product for New Jersey.*

[14] James Hughes and Joseph Seneca, "The Emerging Wealth Belt: New Jersey's New Millennium Geography." *Rutgers Regional Report,* 17 (September 1999), 2.

[15] Ibid, 2.

housing breadbasket of the state. With the additions of Burlington County, located west of Monmouth and south of Mercer, these areas historically account for significant numbers of residential and nonresidential building permits. More residential building permits were issued in Ocean County over the last decade than in any other county. However, Hudson has more residential building permits for the last five years. Monmouth and Ocean counties are divided and linked by the Garden State Parkway. Almost all of the new "big suburbs" (Brick, Dover, Woodbridge, Edison, Hamilton, and Middletown Townships) are located in central New Jersey.[16]

In the Philadelphia metropolitan area, Camden and Gloucester counties serve much the same role as that served by Essex and Passaic counties in the New York metropolitan area. All of these counties contain urban and suburban enclaves that have grown as a result of the influence of the two major cities. There is, however, one major characteristic that distinguishes the New York metropolitan area from the Philadelphia metropolitan area. Housing is relatively less expensive in New Jersey communities in the immediate New York metropolitan area, whereas this is not the case in the Philadelphia metropolitan area. Thus, not counting the size of these two cities (which also plays a part), the population commuting from New Jersey to Philadelphia is smaller than the population commuting from New Jersey to New York. Nonetheless, Gloucester County is an area of rapid residential development. Camden County and Gloucester County communities—as well as Burlington County communities—are enclaves for residents employed in Trenton and the Philadelphia metropolitan area. These areas are linked by Interstates 195 and 295.

Atlantic and Cape May counties are located in the southeastern section of the state. Even before casino gambling, Atlantic City was its own labor market, unrelated to either Atlantic or Cape May counties. With the advent of casino gambling in 1978, Atlantic County experienced a boom in its residential markets. Residential growth influenced by the casinos has also spread to Cape May County, especially the northern portion of the county. Atlantic County, once thought to be an extension of the retirement communities of southern Ocean County, has become a bedroom county for casino workers. Cape May County, once viewed as a source of non-school-oriented seasonal development, is experiencing significant year-round residential growth. Atlantic City is under siege nationally by expansions of Las Vegas and Native American casinos. It is under siege regionally from slot machines at New York and Pennsylvania race tracks and from the growth of gambling casinos in Bethlehem and Chester, Pennsylvania.[17]

**Historical icon built 1882: Lucy the Elephant, Margate.**
Jon Erickson

[16] New Jersey Department of Community Affairs, Divison of Codes and Standards, 2009. *New Jersey Construction Reporter.* www.state.nj.us/dca/codes.

[17] George Sternlieb and James Hughes, *The Atlantic City Gamble.* Cambridge, MA: Harvard University Press, 1983.

Historically, Salem and Cumberland counties, located in the southernmost portion of the state, have been slow-growth areas. Until recently, Atlantic County absorbed most of the Atlantic City–generated growth, much as Gloucester County did for Philadelphia–generated growth. However, Salem and Cumberland counties are now experiencing, at their northeastern and northwestern edges, respectively, spillover growth from the southeastern and southwestern parts of the state. Before the housing bubble burst, one could see road signs pointing to new residential subdivisions in these areas.

# NEW JERSEY'S STATE PLANNING ACT AND PLAN

In 1985, in response to a loss of natural resources and increasing pressure to provide affordable housing, the Legislature of the State of New Jersey adopted the State Planning Act (N.J.S.A. 52:18A-196 et seq.). In the Act, the Legislature declared that the state of New Jersey needs sound and integrated "statewide planning" to "conserve its natural resources, revitalize its urban centers, protect the quality of its environment, and provide needed housing and adequate public services at a reasonable cost while promoting beneficial economic growth, development and renewal."[18] Under the Act, the State Development and Redevelopment Plan was to be the culmination of a statewide process that involved the active participation of state agencies and local governments in the preparation of the State Plan by the State Planning Commission.

[18] *New Jersey State Planning Act,* 1985, 1.

# THE STATE PLANNING ACT

The State Planning Act directs that ten important actions be taken including the following:

The State Planning Act points to the need for sound and integrated statewide planning and the coordination of statewide planning with local and regional planning organizations in order to conserve its natural resources, revitalize its urban centers, protect the quality of its environment, provide needed housing and adequate public services at a reasonable cost, while promoting beneficial economic growth, development and renewal (N.J.S.A. 53:18A-196);

The State Planning Act establishes a 17-member State Planning Commission to be representative of State government departments, county and municipal jurisdictions and members of the public (N.J.S.A. 52:18A-197);

The State Planning Act creates the Office of State Planning to assist the State Planning Commission in performing its duties and established the Executive Director of that Office as the Secretary to and Chief Executive of the State Planning Commission (N.J.S.A. 52:18A-201);

The State Planning Act identifies as one of the major responsibilities of the State Planning Commission the development of the *State Development and Redevelopment Plan* to serve as a tool for assessing suitable locations for infrastructure, housing, economic growth and conservation (N.J.S.A. 52:18A-196 ( c));

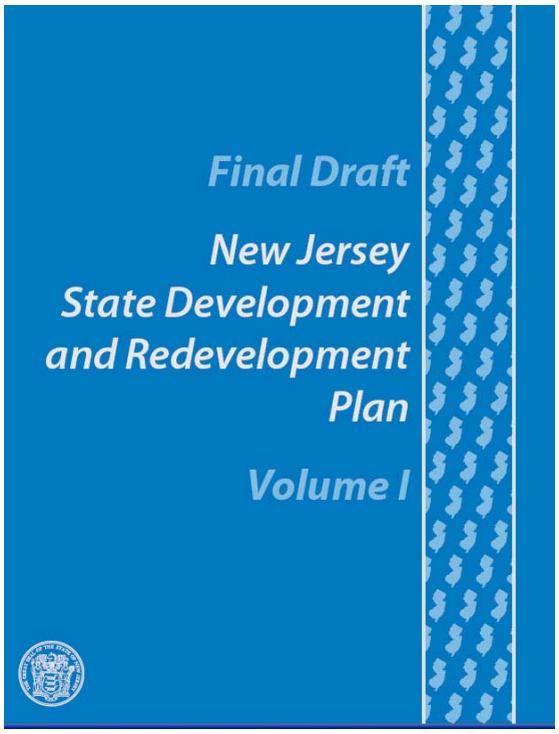
The State Planning Act directs that the *State Development and Redevelopment Plan* should be a coordinated, integrated and comprehensive plan for the growth, development, renewal and conservation of the state and its regions and which shall identify areas for growth, agriculture, open space, conservation and other appropriate designations leading to the development of the State Plan Policy Map (N.J.S.A. 52:18A-199 (a));

The State Planning Act requires that the *State Development and Redevelopment Plan* represent a balance of development and conservation objectives best suited to meet the needs of the state by taking into account a wide scope of substantive concerns including land use, housing, economic development, transportation, natural resource conservation, agriculture and farmland retention, recreation, urban and suburban redevelopment, historic preservation, public facilities and services, and intergovernmental coordination (N.J.S.A.52:18A-200(f));

The State Planning Act authorizes and outlined a Cross-Acceptance process as a means of developing the *State Development and Redevelopment Plan* to be conducted as a process of review, revision and re-adoption of the *State Development and Redevelopment Plan* on a three-year cycle (N.J.S.A. 52:18A-202 and 52:18A-199);

The State Planning Act elevates and enhances the role of county planning by empowering county planning boards to negotiate the plan Cross-Acceptance process so that county planning boards are in effect encouraged to subject municipal plans and zoning ordinances to a new level of scrutiny (N.J.S.A. 52:18A-202 (b);

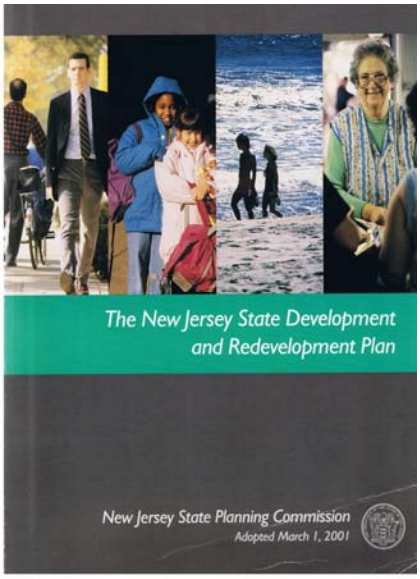
The State Planning Act invites the State Planning Commission to influence future development and redevelopment by directing it to review and make recommendations to the Governor and the State Legislature with respect to the "necessity, desirability and priority of state infrastructure investments" (N.J.S.A. 52:18A—199 (f);




The State Planning Act responds to the New Jersey Supreme Court's *Mt. Laurel* decisions announcing that it was in part a response to the judicial decisions requiring municipalities to provide opportunities for low- and moderate-income housing, while simultaneously expecting that a sound and comprehensive planning process would facilitate the provision of equal social and economic opportunity to benefit all of New Jersey's citizens so as to counteract a situation whereby concentrations of the poor and minorities were residing in older urban areas in ways that jeopardized the future well-being of this state (N.J.S.A. 52:18A-196 (g) (h)).

# THE STATE PLAN

## Goals of the State Plan




**Cover of 2001 *New Jersey State Development and Redevelopment Plan.***
New Jersey State Planning Commission

The following statements summarize the State Plan's overall planning goals:

1. Revitalize the state's cities and towns.
2. Conserve the state's natural resources and systems.
3. Promote beneficial economic growth, development, and renewal for all residents of New Jersey.
4. Protect the environment and prevent and clean up pollution.
5. Provide adequate public facilities and services at a reasonable cost.
6. Provide adequate housing at a reasonable cost.
7. Preserve and enhance areas with historic, cultural, scenic, and recreational value.
8. Ensure sound and integrated planning and implementation statewide.
9. Increase energy efficiencies and reduce greenhouse gas emissions.

On June 12, 1992, the 17-member State Planning Commission—which included both members of the public and state agency representatives—unanimously adopted the state's *Development and Redevelopment Plan*. The major thrust of that and successor plans was to guide public and private development toward compact, mixed-use land forms that make the most efficient use of existing and planned infrastructure, as well as other systems, to meet present and future growth projections. A second State Plan was adopted in 2000. A third State Plan will be adopted in 2010.

## Policies of the State Plan

In March 2009, the New Jersey State Planning Commission and Office of Smart Growth released an interim version of the third State Plan that promoted sustainable development, contained a new section on global warming, and proposed indicators to measure progress in reducing the state's carbon footprint. In March 2009, a working draft of the Final Plan was released to the Impact Assessment team to analyze the effects of this Plan on the State of New Jersey. A revised Draft Final Plan will be formally released by the State Planning Commission prior to public hearings.

The March 2009 Draft Final Plan (the Third State Plan), as did its two predecessors, contains two major sections: Statewide Policies (SP)—Volume II, and the State Plan Policy Map (SPPM)—Volume III. An accompanying plan map serves as the geographic expression of the state's policies. The third *New Jersey State Development and Redevelopment Plan* also contains an overview of the State Plan and the

State Planning Commission Findings (Volume I). This volume contains the Goals of the Plan.

The Statewide Policies section presents 20 comprehensive planning challenges and policies for achieving them. This section also identifies the parties responsible for implementing policies and achieving particular outcomes (state agencies, nonprofit or business groups, and local governments). The overall policies involve *equity* (1.0), *comprehensive planning* (2.0), *public investment priorities* (3.0), *infrastructure investments* (4.0), *economic development* (5.0), *housing* (6.0), *urban revitalization* (7.0), *transportation* (8.0), *historic, cultural, and scenic resources* (9.0, *air resources* (10.0), *water resources* (11.0), *open lands, natural systems, and recreation* (12.0), *energy resources* (13.0), *waste management, recycling, and brownfields* (14.0), *agriculture* (15.0), *coastal resources* (16.0), *planning regions established by statute* (17.0), *special resource planning areas* (18.0), *designing more sustainable built environments* (19.0), and *climate change* (20.0).

The State Plan Policy Map (SPPM) divides the state into five planning areas—metropolitan, suburban, fringe, rural, and environmentally sensitive—and five center types—urban, regional, town, village, and hamlet. These areas define various levels of development intensity and infrastructure service and help define priorities for investment.

The state's 21 counties and 566 municipalities were asked over the period 2005–2008 to conduct an extensive review of their own land-use plans and the ordinances and regulations enacted to implement those plans. This cross-acceptance exercise included comprehensive negotiations on numerous policy issues and map changes between the State Planning Commission and local governments.

## Structure of the State Plan

The State Plan's Structure consists of six main components including the following:

- ***Vision Statement***—Provides a description of New Jersey's future in 2030 when the goals of the State Plan are expected to be achieved along with the likely major challenges facing the state during that period

- ***Goals***—Reiterates the goals contained in the State Planning Act

- ***Statewide Policies***—Provide more specific guidance for state, regional, county and municipal government officials on a wide range of public policy issues in 20 different public policy categories

- ***State Plan Policy Map***—Provides the geographic component, identifying and locating Planning Areas, Centers, and other geographical features that are important to the State Plan's guidance function

- ***Resource Planning and Management Structure***—Promotes the preferred forms for future growth and development in New Jersey, including the promotion of growth and development in already developed areas where infrastructure capacity already exists and designing and locating compact, mixed-use communities surrounded by protected natural landscapes on the metropolitan fringe and still rural and environmentally sensitive areas of New Jersey

- ***Monitoring and Evaluation***—Identifies key indicators and targets for achieving the State Plan's goals and summarizes the findings of the Infrastructure Needs Assessment and Impact Assessments

**Top: World War II Memorial, Trenton; Middle, Korean War Memorial, Atlantic City; Bottom, War Memorial, Scotch Plains.**
Jon Erickson

# CONCEPTS OF THE STATE PLAN

## THE IMPACT ASSESSMENT OF THE STATE PLAN

**Housing development in Edison.**
Jon Erickson

This impact assessment of the New Jersey *State Development and Redevelopment Plan* is the culmination of a year-long analysis to re-create the state's growth patterns and to evaluate how they may be altered as a result of the implementation of the State Plan. The analysis views the Plan's effects in four substantive areas, each with multiple subparts: economic assessment, environmental assessment, community life assessment, and intergovernmental coordination assessment. A unique aspect of this impact assessment is that multiple areas are viewed simultaneously, and the findings are used in the aggregate to evaluate the statewide and regional effects of two alternative growth scenarios. [19]

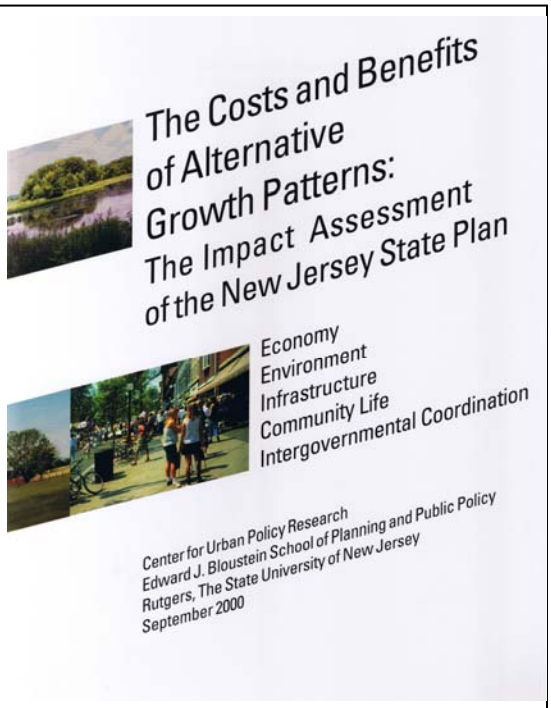
[19] Herbert Simmens, "Letter to the Citizens of New Jersey," New Jersey Office of State Planning (March 29, 2000).

Another unique aspect of the evaluation is that it requires the summation of impacts in every New Jersey community to determine statewide effects. The models, in most assessment areas, consider 566 community outcomes before they produce results for the statewide impact assessment. Further, there are multiple evaluations within most assessment categories. The evaluation is based on several fields in each of the four assessment categories.

The impact assessment applies a series of integrated models to formulate assessments in the various substantive areas. The databases and forecasting routines used in the models determine the results of the analysis. The Center for Urban Policy Research (CUPR) at Rutgers University interprets the results.

This is done by drawing upon information from two disparate growth scenarios. The two scenarios are described as "TREND" and "PLAN." TREND depicts a "business as usual" scenario and is determined from the best retrospective information to depict future conditions. The PLAN scenario is derived from a careful appraisal and interpretation of the State Plan to depict a future based on the plan.

Each evaluation depends on how TREND and PLAN unfold at the community level. Under the two alternative futures, household and job growth create the demand for land, requirements for infrastructure, needs for housing and public services, forthcoming fiscal constraints on communities, and the need for preparation for growth by various levels of government. This is why accurate projections are so important. Which future poses fewer negative impacts for communities experiencing growth and for communities experiencing decline? The task of the impact assessment is to determine the answer to that question and to report the findings.




**Cover of 2000 *Impact Assessment of the New Jersey State Development and Redevelopment Plan.***
Rutgers, The State University of New Jersey

Information is presented for each of the basic substantive impact areas according to the following template:

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**INTRODUCTION—CORE QUESTIONS**

**BACKGROUND**

- **Policy Statements from the Plan**

**IMPACT ASSESSMENT: METHODS**

- **Expected Differences between TREND and PLAN**
- **Critical Assumptions**
- **Scope and Depth of Analysis**

**IMPACT ASSESSMENT: FINDINGS**

- **TREND Findings**
- **PLAN Findings**
- **PLAN versus TREND Findings**
- **Comparison to Previous Impact Assessment Findings**
- **Conclusions and Implications of the Findings**

**PRINCIPLES FOR FUTURE MONITORING BY THE OFFICE OF SMART GROWTH**

- **Monitoring Variables**

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Information is presented for each of three large commuting regions; by type, level of development, and center orientation of communities; and for the years 2008 and 2028.

# ECONOMIC ASSESSMENT

An analysis of economic factors has always been the primary focus of the State Plan Impact Assessment. In the initial draft of the State Planning Act, the State Plan's impacts were considered to be primarily economic. As the Act sought legislative approval and interest group support, additional components of impact assessment seemed essential, given the encompassing nature of the State Plan and its likely broad-based effects.

Pharmaceutical giant Merck & Co., Inc., in Whitehouse.

From its conception, there has always been concern that the State Plan, despite being potentially beneficial to the environment and the quality of life of New Jersey's citizens, could negatively affect the state's economy. A multiplicity of goals—helping to preserve lands, revitalizing ailing cities, moving to a more diverse set of transportation options, using infrastructure more effectively, providing better and less expensive public services, and meeting citizens' needs for affordable housing and responsive government—could provide conflicting messages to the economy of a state second only to Maryland in the wealth of its citizenry. Never is this more true when the State is finally beginning to come out of the "Great Recession."

The assessment of impacts of the State Plan is undertaken to ensure that the Plan does not injure the state's economy. More efficient use of New Jersey's natural resources and more vibrant inner cities should not come at the expense of the main economic indicators of the state's prosperity. During the course of such an assessment, questions emerge as to what the appropriate indicators of economic well-being are, and what factors will determine whether or not the state is injured. Much of this is *not* specified in the original State Planning Act. The Act calls for general inquiries into population, jobs, income, and tax base growth. The initial impact assessment, however, established most of the ground rules for such an evaluation. The impact assessment considered losses in jobs, income, or tax base at the state level, or significant shifts in these indices at the regional level, as unhealthy for the state. Conversely, at the municipal and county levels, additional population, jobs, income, and tax base for declining municipalities and counties were a positive outcome. Growth in these economic indices in these locations directly supported revitalization goals for urban communities and indirectly supported conservation objectives and strategies for rural communities. Thus, the substantive composition and locational rules of the impact assessment were established.

Only the format of the assessment remained to be decided. Again, the format was structured in outline form by the State Planning Act, which called for specific periods of projection and geographical levels for display of results. It could also be inferred from the Act that, after a brief introduction to the subject matter, a discussion of methods and data was required, as well as an analysis of TREND and PLAN

findings, their differences, and the implications of the findings for the future of New Jersey. In addition, the Office of State Planning in the 2000 Impact Assessment asked the study team to provide specific recommendations on monitoring variables to be used for the future, and the study team has provided a comparison with the prior Impact Assessments as a component of all future assessments.[20]

The results of the economic impact assessment—specifically the findings of TREND and PLAN futures as they relate to differences in population, employment, income, tax base, and the costs of providing local services—are found in the following pages.

The first of five major areas of assessment as it relates to the State Plan concerns economic impact. Of the eight goals of the State Plan, Goal 3 relates directly to the economy:

**GOAL 3**

**Promote beneficial economic growth, development, and renewal for all residents of New Jersey**

The 1992, 2000, and 2009 economic assessments all deal with population, employment, household income, equalized valuation and fiscal impact. This evaluation of the 2009 State Plan examines the projected changes for the period from 2008–2028 due to growth under TREND versus PLAN conditions. Information on development differences is presented by region and by both density and type of communities.

[20] Center for Urban Policy Research, *Impact Assessment of the New Jersey State Development and Redevelopment Plan: Trend Projections,* August 24, 2009.

# POPULATION

**Relaxing in Van Vorst Park, Jersey City.**
Matt Crosby

## INTRODUCTION—CORE QUESTIONS

This section of the impact assessment deals with growth in population under historic (TREND) conditions versus population growth that would occur with the New Jersey State Plan (PLAN). Population growth differences between the two development scenarios are examined at the state, regional, community, planning area, and centers levels. The most basic questions to be answered are:

- ***Will the Plan affect in-state population growth numbers?***
- ***Will population at the state or regional levels be altered relative to the basic differences in the growth objectives pursued by the PLAN regimen versus the TREND regimen?***
- ***Will PLAN achieve its goal of directing population differently below the regional level—i.e., to the more developed communities, planning areas, and concentrated development locations?***

# BACKGROUND

**Residents walking along Kirkpatrick Street in New Brunswick.**
Jon Erickson

In order to establish a context for the discussion of population trends in the state of New Jersey and its regions and counties for the period 2008–2028, some key characteristics of the state's population growth pattern should be understood. New Jersey is a developed state with a population of 8.68 million in 2008. From 2000 to 2008, New Jersey's population grew 3.2 percent. Since 2000, New Jersey has experienced population gains offsetting decreases due to increasing outmigration from the state to other locations nationwide. However, until mid-decade, those losses were far more than offset by both immigration and natural population increases (births minus deaths).[21]

New Jersey is expected to experience population growth during the period from 2008 to 2028 of 40 percent less than it did in the previous two decades. It will grow by 745,777 to 9.43 million. This is due to several factors. First, New Jersey is near the epicenter of the Great Recession. Second, the state has relatively high taxes and wages. Third, the state has failed to actively retain its pharmaceutical industry. Fourth, the state is losing its competitiveness as a site for corporate leasing headquarters. Fifth, the state is no longer attracting immigrants.[22]

New Jersey is currently growing at approximately one-half the national growth rate. Of the 50 states, 23 will experience greater growth than New Jersey in the period from 2008 to 2028. Population growth in the state of New Jersey, while still far behind that of California, Florida, Texas, Arizona, Nevada, and Georgia, is somewhat more than the 20 slower-growing states and higher than the population growth in the neighboring states of New York, Pennsylvania, and Connecticut. For the period 2008–2028, New Jersey's population is projected to increase by 8.6 percent. This amounts to 0.43 percent annually.[23]

New Jersey will grow in population, but its lack of economic competitiveness will cause both the outmigration rate to increase and immigration to decrease. New Jersey, after 2018 will recoup its job losses, and its population growth will be positive, but its rate of population growth will not increase significantly over time.[24]

[21] Ibid.

[22] Ibid.
[23] Ibid.
[24] Ibid.

## Policy Statements from the Plan

### 2.0 Comprehensive Planning

**The State Plan is a comprehensive plan as it is comprised of a vision, goals, strategy, statewide policies, a Resource Planning and Management Structure, along with implementation steps and a way to monitor and evaluate actions taken pursuant to the State Plan. It is a legislatively directed initiative to guide State government's executive branch while improving the coordination and integration of State government plans with those of regional, county, and municipal jurisdictions.**

**THE CHALLENGE:**

***To draw upon the numerous functional plans to State Departments and agencies as well as the numerous regional, county, and municipal plans to develop a State Plan that is comprehensive and respectful, while also pointing to strategic directions for the State of New Jersey's Executive Branch and its regional, county, and municipal jurisdictions.***

**POPULATION IN NEW JERSEY**

| *Year* | *Population* |
|---|---|
| **1950** | 4,835,329 |
| **1960** | 6,066,782 |
| **1970** | 7,171,112 |
| **1980** | 7,365,011 |
| **1990** | 7,730,188 |
| **2000** | 8,414,350 |
| **2010** | 8,731,343 |

*Source:* U.S. Census of Population and Housing, *Historic Population Counts,* 2009.

# IMPACT ASSESSMENT—METHODS

**Farmer's Market in the downtown area, Highland Park.**
Jon Erickson

Population and household projections reflect the Great Recession. The Great Recession has produced the largest loss of employment that most of all persons living today have experienced in their lifetime. From December 2007 to June of 2009 the United States lost 6.5 million private-sector employees from a base of 138.2 million, or 4.7 percent. It is estimated that nationwide it will take until 2018 to return to the employment level of 2000. New Jersey lost 170,000 private-sector jobs from January 2008 to June of 2009. This is from a base of 4.0 million in January 2008, or 4.0 percent. The state lost an additional 23,400 jobs from 2000 to 2008. New Jersey could take until 2020 to return to its 2000 job level.[25]

According to the Harvard University Joint Center for Housing Studies,

[25]Ibid.

> Housing demand has withered under the weight of crushing job losses, house price deflation, and tighter credit standards. First-time homebuyers are struggling to meet restricted underwriting guidelines, household growth is well below long-term trends, and immigration has slowed; as a result, the share of homes for sale and vacancies stand at near-record levels despite sharp decreases in housing production.[26]

With regard to the latter, housing starts are projected nationwide at a level of 500,000 annually for 2009 and 600,000 for 2010. This is 20 to 30 percent of the 2005 level. Single-family sales nationwide are at 380,000 and 540,000 annually for 2009 and 2010, respectively—29.2 and 41.5 percent, respectively, of similar nationwide sales in 2005. Contrasted with employment, housing-unit trends are not 1-for-1 losses to the household inventory. *Households* are *occupied* housing units. Vacancy in housing units can increase; households can also double up. The above trends, wherein births are growing at a reduced rate, deaths are slightly decreasing due to improved health, immigration increase is slowing nationally yet impacting specific states much more so than others (New Jersey), and net outmigration from the Northeast is increasing (especially in New Jersey), all contribute to a slowing of population and household growth in the long run. Even though New Jersey has lost jobs in the past, since the Depression it has never lost population. This certainly will also be true in the future. Population and household growth will continue, but slowly, and New Jersey will grow at a reduced rate while attempting to recoup some of its job losses.[27]

**PROJECTED POPULATION GROWTH**
**—**
**STATE OF NEW JERSEY, 2000–2028**

| *Year* | *Population* | *Change from Prior Period* |
|---|---|---|
| **2000** | 8,414,350 | |
| **2004** | 8,620,770 | 206,420 |
| **2008** | 8,682,661 | 61,891 |
| **2013** | 8,804,367 | 121,706 |
| **2018** | 8,973,685 | 169,319 |
| **2023** | 9,185,948 | 212,263 |
| **2028** | 9,428,438 | 242,490 |
| | ***Change (2008-2028):*** | **745,777** |

*Source:* U.S. Department of Commerce, Bureau of Census, *Population Projections: 2008.* www.census.gov/population/
Disaggregations and refined projections by Center for Urban Policy Research, Rutgers University.

Population projections use all of the latest U.S. Census population estimates, including 2008 municipal numbers released July 1, 2009. This sets the change from 2000 to 2008 for all municipalities. The years 2000 and 2008 are used to establish the growth increment for this period by municipality. This increment forms the gross distribution of the projections from 2008 to 2028. The numbers at the local level are controlled at the state level by projections of births, deaths, immigration, and net migration (outmigration for New Jersey) and completed using regression analysis. Population is used to generate households, and households are fed into the land-fit analysis; afterward, if they don't fit, they are sent to a small reallocation pool and there re-tallied as households and readjusted to population after the correct population-to-household multipliers are reapplied depending on the location to which they are sent.[28]

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[26] Harvard University Joint Center for Housing Studies, *The State of the Nation's Housing* (Cambridge, MA: Harvard University, July 2009).

[27] Ibid.

[28] Center for Urban Policy Research, *Impact Assessment of the New Jersey State Development and Redevelopment Plan: Trend Projections,* August 24, 2009.

Each individual municipality is inspected for reasonableness in terms of the scale of the change from 2008 to 2028. Where projections cause severe changes that appear unwarranted, either excessively positive or excessively negative, they are dampened to bring them within a range of acceptability.

The unique aspect of this analysis, in addition to the aforementioned analysis by each and every community for reasonableness, is that the entire community's population is regenerated for the projection date, and the population number at the projection date is the number from which the original number at the beginning of the projection period is subtracted. Thus, projections of changes in population to household ratios over time are allowed to affect the end date such that changes within the community are also affecting the resultant population/household increment. This is the most accurate way of completing local population and household projections and in fact, the preferred way to undertake such local projections.

## EXPECTED DIFFERENCES BETWEEN TREND AND PLAN

The purpose of the State Plan is to foster population growth in established areas of the state, particularly in central-city and inner-suburban locations. This is in concert with the State Plan's general goal of limiting growth in rural areas. It is anticipated that the TREND and PLAN scenarios will have essentially the same population and household growth at the state and half-state levels (north and south), but significantly different growth by type of community and State Plan planning area. It is also anticipated that under the PLAN regimen there will be more growth in communities with more densely developed planning areas and in communities with urban, regional, and/or town/village centers, and that there will be less growth in these areas under the TREND regimen.

## CRITICAL ASSUMPTIONS

Population growth is projected through 2028 using the same formula for the TREND and PLAN scenarios. Population is converted to households using population-to-employment ratios that reflect a steadying of household size over the projection period for all age cohorts. Due to the population-diminishing effects of reduced immigration and increased outmigration, overall population growth will slow over the period.

**Luxury single-family home on large lot.**
Matt Crosby

## SCOPE AND DEPTH OF ANALYSIS

Population projections are undertaken for New Jersey's 566 municipalities under TREND conditions, using observed 2000–2008 trends to project a 2028 future. Population is converted to households and then to housing units and allowed to consume land in a community, or comparable (type and income) regionally located communities, until the land is almost exhausted. Projected employment is also simultaneously "fit" within communities. The "developable" land supply in each community is reduced to account for lands likely erroneously classified as developable. After both housing units and employment are assigned, a population change number is determined for the community.

# IMPACT ASSESSMENT—FINDINGS

## TREND FINDINGS

TREND projections for New Jersey show the population growing from 8.68 million in 2008 to 9.43 million in 2028, an increase of 745,777. The majority of the population growth will take place in the southern half of the state (64.6 percent), in suburban communities (70.4 percent), and in communities with urban, regional, and/or town centers (77.6 percent). A considerable amount of development will occur in communities with less densely developed planning areas (24.9 percent). There will be a gain of 17.8 percent in population in urban communities (table 1).

**TABLE 1. TREND Findings—Population**

| | *2000* | *2008* | *2013* | *2028* | *Change 2008-2028* |
|---|---|---|---|---|---|
| **New Jersey** | 8,414,347 | 8,682,661 | 8,804,367 | 9,428,438 | 745,777 |
| **Regions** | | | | | |
| North | 5,184,772 | 5,266,160 | 5,309,292 | 5,530,458 | 264,298 |
| South | 3,229,575 | 3,416,501 | 3,495,076 | 3,897,980 | 481,479 |
| **Type of Community** | | | | | |
| Urban | 2,661,039 | 2,650,676 | 2,672,385 | 2,783,699 | 133,023 |
| Inner Suburban | 3,884,972 | 4,007,299 | 4,050,076 | 4,269,423 | 262,124 |
| Outer Suburban | 1,414,241 | 1,534,860 | 1,577,781 | 1,797,868 | 263,008 |
| Rural | 454,095 | 489,826 | 504,125 | 577,448 | 87,622 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 7,304,977 | 7,506,412 | 7,597,835 | 8,066,620 | 560,208 |
| Rural, Env. Sensitive | 1,109,370 | 1,176,249 | 1,206,533 | 1,361,818 | 185,569 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 6,837,789 | 7,027,076 | 7,121,500 | 7,605,675 | 578,599 |
| All Others | 1,576,558 | 1,655,585 | 1,682,868 | 1,822,763 | 167,178 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## PLAN FINDINGS

Under the State Plan, population growth in New Jersey will be the same as at the state and regional levels. Thus, under the PLAN scenario, the population will increase by 745,777 during the period 2008-2028 (table 2). What is clearly different under the PLAN regimen is that the growth will take place in urban/inner-suburban communities, in communities with more densely developed planning areas, and in communities with more densely developed planning areas; and in communities with urban, regional, and/or

town centers. PLAN development will have 1.4 times the amount of population growth taking place in urban/inner-suburban communities (145,864) as under TREND development. Population growth will also be higher in communities with more densely developed planning areas (639,897) and in communities with urban, regional, and/or town centers (614,244).

**TABLE 2. PLAN Findings—Population**

| | *2000* | *2008* | *2013* | *2028* | *Change 2008-2028* |
|---|---|---|---|---|---|
| **New Jersey** | 8,414,347 | 8,682,661 | 8,804,367 | 9,428,438 | 745,777 |
| **Regions** | | | | | |
| North | 5,184,772 | 5,266,160 | 5,309,292 | 5,530,457 | 264,297 |
| South | 3,229,575 | 3,416,501 | 3,495,076 | 3,897,980 | 481,479 |
| **Type of Community** | | | | | |
| Urban | 2,661,039 | 2,650,676 | 2,680,244 | 2,831,857 | 181,181 |
| Inner Suburban | 3,884,972 | 4,007,299 | 4,066,021 | 4,367,129 | 359,830 |
| Outer Suburban | 1,414,241 | 1,534,860 | 1,562,020 | 1,701,287 | 166,427 |
| Rural | 454,095 | 489,826 | 496,083 | 528,165 | 38,339 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 7,304,977 | 7,506,412 | 7,610,839 | 8,146,309 | 639,897 |
| Rural, Env. Sensitive | 1,109,370 | 1,176,249 | 1,193,528 | 1,282,129 | 105,880 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 6,837,789 | 7,027,076 | 7,127,317 | 7,641,320 | 614,244 |
| All Others | 1,576,558 | 1,655,585 | 1,677,050 | 1,787,118 | 131,533 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## PLAN VERSUS TREND FINDINGS

Under both the PLAN and TREND regimens, the population increase projected for New Jersey is retained in New Jersey (745,777). Population is not driven from the state due to development realities of either the PLAN scenario or the TREND scenario. This is also true for the three large regions of New Jersey. There is considerable difference, however, in the growth that will take place below the regional level under the two scenarios. Under the PLAN scenario, more growth will occur in urban/inner-suburban communities (145,864 more), in communities with less densely developed planning areas

***Under PLAN development, more population growth will be in urban and inner-suburban communities.***

(79,688 more), and in communities without large centers (35,645 more) (table 3).

**TABLE 3. PLAN versus TREND Findings—Population**

| | TREND Change 2008-2028 | PLAN Change 2008-2028 | PLAN Change Minus TREND Change 2008-2028 |
|---|---|---|---|
| **New Jersey** | 745,777 | 745,777 | 0 |
| **Regions** | | | |
| North | 264,298 | 264,297 | 0 |
| South | 481,479 | 481,479 | 0 |
| **Type of Community** | | | |
| Urban | 133,023 | 181,181 | 48,158 |
| Inner Suburban | 262,124 | 359,830 | 97,706 |
| Outer Suburban | 263,008 | 166,427 | -96,581 |
| Rural | 87,622 | 38,339 | -49,282 |
| **Planning Area** | | | |
| Metro, Suburban, Fringe | 560,208 | 639,897 | 79,688 |
| Rural, Env. Sensitive | 185,569 | 105,880 | -79,689 |
| **Centers** | | | |
| Large Centers (Urban, Regional, Town) | 578,599 | 614,244 | 35,645 |
| All Others | 167,178 | 131,533 | -35,646 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## COMPARISON TO THE PREVIOUS IMPACT ASSESSMENT FINDINGS

Population growth predictions for the period from 2008 to 2028 are only 82 percent of what they were under the 2000 evaluation. Other findings are the same, however. Under the plan regimen, there is no redirection of population out of the state or its major regions, and significant growth is projected for urban/inner-suburban communities, communities with more densely developed planning areas, and communities with urban, regional, or town centers.

## CONCLUSIONS AND IMPLICATIONS OF THE FINDINGS

Projections under both TREND and PLAN show population-related development contained within the state's bounds and its two halves (based on counties stipulated earlier in the text). This allows for a straightforward comparison of the two development scenarios for the projected future.

# PRINCIPLES FOR FUTURE MONITORING BY THE OFFICE OF SMART GROWTH

Population projections for various types of areas should be compared with actual findings at 10-year intervals, two or three years after the decennial census has been taken. This is also the time interval recommended for subsequent impact assessments. Population comparisons taken at these intervals will reflect meaningful change and fresh data available from the most recent census. Having benefited from reasonably recent data, there is no reason to conduct another impact assessment until after 2020.

## MONITORING VARIABLES

***Population growth in urban areas and centers compared with growth in nonurban, noncenter places.***

$\Delta$ *population in centers*
*vs.*
$\Delta$ *population in noncenters*

# EMPLOYMENT

## INTRODUCTION— CORE QUESTIONS


**KOS headquarters facility in Cranbury.**
Jon Erickson

This section of the impact assessment concerns employment projections under existing development (TREND) conditions versus State Plan-inspired (PLAN) conditions. It will be determined if the State Plan will cause jobs to be driven from the state. It will also determine whether the plan will be successful in directing jobs to locations that had been losing jobs. The most basic questions to be answered here are:

- **Will the plan affect state employment growth numbers?**
- **Will employment at the state or regional levels be altered relative to the basic differences in growth objectives pursued by PLAN versus TREND regimes?**
- **Will PLAN achieve its goal of directing employment differently below the regional level; i.e., to communities with more densely populated planning areas and to communities with urban, regional, and/or town centers?**

## BACKGROUND

In 2008, New Jersey is a state with 4,000,500 nonagricultural jobs, a number that, prior to 2000, had grown approximately 1 percent annually. Generally speaking, absolute job growth (numerical increase) has been most significant in the northern half of the state and least significant (except for Atlantic City) in the southern half of the state. Relative job growth (percentage increase) is about the same in the northern and southern parts of the state.[29]

**Seton Hall Law School from the north end of the Hilton Hotel, Newark.**
Jon Erickson

New Jersey's jobs are primarily in the services sector. Service-producing jobs—transportation, communication, and utilities; wholesale and retail trade; finance, insurance, real estate; and services—total 3.33 million, or 70 percent of all jobs. Goods-producing jobs—mining, construction, and manufacturing—make up 486,000, or 15 percent, of total jobs. There are now 33 percent more government jobs in New Jersey (648,000) than goods-producing jobs.[30]

### Policy Statements from the Plan

#### 5.0 Economic Development

**Promote beneficial economic growth to improve New Jersey's quality of life and standard of living by encouraging economic development through facilitating access to capital, supporting research and development, promoting appropriate education and training, building strategically upon the State's economic and geographic strengths, and influencing the location of employment activities in proximity to affordable and workforce housing, accessible to multi-modal transportation alternatives with facilities that are planned and constructed in environmentally sound ways, and in accordance with the vision and goals of the State Plan.**

**THE CHALLENGE:**

***To develop and implement a long-term, coherent and effective economic development strategy that can take advantage of New Jersey's strengths, respond to the current economic downturn, overcome the difficulties posed by multiple government jurisdictions, and is consistent with the vision and goals of the State Plan and the social equity considerations of the concept of Sustainability.***

[29]U.S. Department of Commerce, Bureau of Census, *Current Population Survey.*

[30]Ibid.

# IMPACT ASSESSMENT—METHODS

**New Jersey Department of Environmental Protection, Trenton.**
Jon Erickson

Employment projections are also based on the Great Recession impacting the State of New Jersey. This means that in January 2008 (4,000,500), the state had 23,400 fewer jobs than it did in 2000 (4,023,900). It also means that the state may lose at least an additional 170,000 jobs during 2008–09 and 2010. This may be conservative because the state has lost 160,000 jobs from January 2008 to June 2009 (18 months), and it has another 18 months to go on its prediction of a 170,000-jobs loss. The state is projected to gain 36,000 jobs from 2011 to 2013 (12,000 jobs each year for three years). This provides a net loss of 134,000 jobs from 2008 to 2013; an additional gain of 120,000 jobs from 2014 to 2018 (24,000 jobs each year for five years); 105,000 jobs from 2018 to 2023 (21,000 containing another smaller recession); and 171,000 jobs from 2023 to 2028. This is shown below in tabular form:[31]

**PROJECTED EMPLOYMENT GROWTH**
**—**
**STATE OF NEW JERSEY, 2000–2028**

| *Year* | *Employment* | *Change from Prior Period* |
|---|---|---|
| **2000** | 4,023,900 | |
| **2004** | 4,021,400 | -2,500 |
| **2008** | 4,000,500 | -20,900 |
| **2013** | 3,866,500 | -134,000 |
| **2018** | 3,986,500 | 120,000 |
| **2023** | 4,091,500 | 105,000 |
| **2028** | 4,262,500 | 171,000 |
| | ***Change (2008-2028) :*** | **262,000** |

*Source:* U.S. Department of Labor, Bureau of Labor Statistics, *Total Non-Farm Employment, 2000-2008.* Disaggregations and refined projections by Center for Urban Policy Research, Rutgers University.

Employment projections at the municipal level are extrapolated into 2008 to 2028 growth using municipal data from the 1990s and 2000s. Specifically, information was used for the years 1990 to 1999 and 2003 to 2007.

Employment projections were controlled at the State level by the aforementioned totals. Employment projections were individually viewed within a county to control for excessive positive or negative outcomes. If either of these conditions was found within a county, adjustments were made to dampen the extremes. In all cases, negative values had to be dampened more than positive values.

[31]Center for Urban Policy Research, *Impact Assessment of the New Jersey State Development and Redevelopment Plan: Trend Projections,* August 24, 2009.

The employment projections were also controlled by county using NJDOL relative distributions of county employment projections to which were applied reduced state change control totals. Thus, the relative positions of the counties were maintained although the increment of change was lessened due to the ongoing recession.

The effect of National Stimulus efforts or other means of jump-starting employment growth is relatively small thus far because projects are just getting started. The projected Stimulus employment increase, much of which is in the construction industry, may slow a decline of primarily construction employment or even some nonconstruction employment that is already on a pace ahead of projected declines.

## EXPECTED DIFFERENCES BETWEEN TREND AND PLAN

It is anticipated that there will not be significant differences between TREND and PLAN employment numbers at the state or regional levels. There should be significant differences between TREND and PLAN employment growth by type of community (urban, inner-suburban, outer-suburban, and rural), State Plan planning area (metro, suburban, and fringe versus rural and environmentally sensitive), and State Plan centers (urban, regional, and town centers versus all other locations). If the State Plan is achieving its goals, there should be more employment development under the PLAN scenario in urban versus rural communities; in communities with more densely developed planning areas versus communities with less densely developed areas; and in urban, regional, and/or town centers versus communities without large centers.

## CRITICAL ASSUMPTIONS

Employment projections for 2008 and 2028 are the same for the TREND and PLAN scenarios at the regional (north and south) and state levels. Under TREND conditions, employment projections at the municipal level are controlled by relative employment distributions at the county level. Under PLAN conditions, municipal employment projections flow from population projections and experience the desired relationships between population and employment growth reflective of the Plan.

***New Jersey has now [4th quarter 2009] lost more jobs than it gained during the expansion of 2003-2008. — Rutgers Economic Advisory Service (R/ECON™), Forecast, October 2009***

## SCOPE AND DEPTH OF ANALYSIS

Employment projections are made for each of the state's 566 municipalities under both TREND and PLAN conditions. Projections are completed by allowing households (including vacancy) and employment to consume available land in parallel. Under the TREND and PLAN scenarios, relationships between the existing number of households and the existing or desired number of jobs reserve land for future employment (under the TREND or PLAN regimens, respectively) relative to the projected amount of household growth in each scenario. Employment growth consumes land according to structure space per employee (including vacancy) and relationships of structure space to land space (including a platting coefficient).

# IMPACT ASSESSMENT—FINDINGS

## TREND FINDINGS

At the state level, there is a gross change in non-agricultural employment of about 262,000 jobs, from 4.0 million in 2008 to 4.26 million in 2028. Under TREND conditions, northern New Jersey will gain the most jobs, more than 166,805. Southern New Jersey will gain 95,195 jobs. There will be 75 percent more growth in jobs in the northern region (table 4). In percentage terms, the southern and northern portions of the state will each gain 6.5.

Under historical or TREND growth, urban and inner suburban areas will grow by 214,182 jobs, while rural/outer suburban New Jersey will gain 47,818 jobs. Inner-suburban communities will have 49.9 percent of the job growth, followed by urban communities with 31.9 percent of the growth. Outer-suburban communities will have 14.6 percent of the job growth, and rural communities will have 3.7 percent.

**TABLE 4. TREND Findings—Employment**

| | *2000* | *2008* | *2013* | *2028* | *Change 2008-2028* |
|---|---|---|---|---|---|
| **New Jersey** | 4,023,900 | 4,000,500 | 3,866,500 | 4,262,500 | 262,000 |
| **Regions** | | | | | |
| North | 2,645,899 | 2,546,961 | 2,461,648 | 2,713,766 | 166,805 |
| South | 1,378,001 | 1,453,539 | 1,404,852 | 1,548,734 | 95,195 |
| **Type of Community** | | | | | |
| Urban | 1,370,247 | 1,275,232 | 1,232,517 | 1,358,773 | 83,541 |
| Inner Suburban | 1,992,337 | 1,994,590 | 1,927,780 | 2,125,231 | 130,641 |
| Outer Suburban | 525,680 | 582,378 | 562,870 | 620,519 | 38,141 |
| Rural | 135,635 | 148,300 | 143,333 | 157,977 | 9,677 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 3,703,132 | 3,639,705 | 3,517,790 | 3,878,068 | 238,363 |
| Rural, Env. Sensitive | 320,768 | 360,795 | 348,710 | 384,432 | 23,637 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 3,387,472 | 3,332,544 | 3,220,917 | 3,550,793 | 218,250 |
| All Others | 636,428 | 667,956 | 645,583 | 711,707 | 43,750 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

# PLAN FINDINGS

Under the PLAN regimen, there will be a similar growth of 262,000 jobs at the state level during the period 2008-2028. There will also be similar employment growth in the northern half (approximately 167,000 jobs) versus the southern half of the state (approximately 95,000 jobs) (see table 5). PLAN does not drive jobs from the state or from individual regions because of any lack of available land that might be caused by planning-area or center-development objectives.

Under the PLAN scenario, urban/inner-suburan communities will gain 237,421 jobs and rural/outer-suburban communities will gain 24,579 jobs. PLAN development directs

***Under PLAN development, center locations will gain approximately 225,000 jobs.***

significantly more employment growth to both communities with more densely developed planning areas and communities with urban, regional, and/or town centers. Under the PLAN regimen, 244,583 new jobs will be in communities with more densely developed planning areas, and 224,508 new jobs will be in communities with urban, regional, and/or town centers (table 5).

**TABLE 5. PLAN Findings—Employment**

| | *2000* | *2008* | *2013* | *2028* | *Change 2008-2028* |
|---|---|---|---|---|---|
| **New Jersey** | 4,023,900 | 4,000,500 | 3,866,500 | 4,262,500 | 262,000 |
| **Regions** | | | | | |
| North | 2,645,899 | 2,546,961 | 2,461,648 | 2,713,766 | 166,805 |
| South | 1,378,001 | 1,453,539 | 1,404,852 | 1,548,734 | 95,195 |
| **Type of Community** | | | | | |
| Urban | 1,370,247 | 1,275,232 | 1,232,517 | 1,373,408 | 98,176 |
| Inner Suburban | 1,992,337 | 1,994,590 | 1,927,780 | 2,133,836 | 139,245 |
| Outer Suburban | 525,680 | 582,378 | 562,870 | 601,582 | 19,204 |
| Rural | 135,635 | 148,300 | 143,333 | 153,675 | 5,375 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 3,703,132 | 3,639,705 | 3,517,790 | 3,884,288 | 244,583 |
| Rural, Env. Sensitive | 320,768 | 360,795 | 348,710 | 378,212 | 17,417 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 3,387,472 | 3,332,544 | 3,220,917 | 3,557,051 | 224,508 |
| All Others | 636,428 | 667,956 | 645,583 | 705,449 | 37,492 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## PLAN VERSUS TREND FINDINGS

At the state and regional levels, job-growth numbers under the PLAN and TREND scenarios are identical. At the municipal level there are significant differences. There is much more growth under the PLAN scenario than under the TREND scenario in urban/inner-suburban communities (23,239 more), in communities with more densely developed planning areas (6,220 more), and in communities with urban, regional, and/or town centers (6,258 more) (table 6). The State Plan's goal is to maximize development in urban communities and central places. A portion of this development is nonresidential growth; the PLAN scenario clearly is able to encourage this type of growth in these areas. Notwithstanding the redistributive nature of PLAN's policies, not more than 20 percent of the employment destined for a community under TREND will take place in that community under PLAN.

**TABLE 6. PLAN versus TREND Findings—Employment**

| | TREND Change 2008-2028 | PLAN Change 2008-2028 | PLAN Change Minus TREND Change 2008-2028 |
|---|---|---|---|
| **New Jersey** | 262,000 | 262,000 | 0 |
| **Regions** | | | |
| North | 166,805 | 166,805 | 0 |
| South | 95,195 | 95,195 | 0 |
| **Type of Community** | | | |
| Urban | 83,541 | 98,176 | 14,635 |
| Inner Suburban | 130,641 | 139,245 | 8,604 |
| Outer Suburban | 38,141 | 19,204 | -18,937 |
| Rural | 9,677 | 5,375 | -4,302 |
| **Planning Area** | | | |
| Metro, Suburban, Fringe | 238,363 | 244,583 | 6,220 |
| Rural, Env. Sensitive | 23,637 | 17,417 | -6,220 |
| **Centers** | | | |
| Large Centers (Urban, Regional, Town) | 218,250 | 224,508 | 6,258 |
| All Others | 43,750 | 37,492 | -6,258 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## COMPARISON TO THE PREVIOUS IMPACT ASSESSMENT FINDINGS

Employment growth projections for the period from 2008 to 2028─262,000 new jobs at the state and regional levels─are only approximately 33 percent of the employment projections for the period 1990-2010. As was the case in the 2000 and 1992 Impact Assessments, significantly more jobs are found in urban/inner-suburban communities, in communities with more densely developed planning areas, and in communities with urban, regional, and/or town centers under the PLAN scenario.

## CONCLUSIONS AND IMPLICATIONS OF THE FINDINGS

Under the PLAN regimen, jobs are directed to locations with high unemployment rates. This is not merely a *redirection* of a few jobs. In a number of cases, jobs redirected to these locations double the employment growth that would have taken place there; in several other cases, local employment decline is reversed. This is a direct result of the goals, policies, and development standards of the State Plan.

# PRINCIPLES FOR FUTURE MONITORING BY THE OFFICE OF SMART GROWTH

Employment growth in urban/inner-suburban communities, or in densely developed communities that contain regional centers, or in towns that are or will be centers, should be monitored at 10-year intervals to ensure that growth is occurring. Monitoring should compare rates of employment growth in urban/inner-suburban communities and in communities with urban, regional, and/or town centers with rates of growth in rural/outer-suburban communities and in communities without large centers.

## MONITORING VARIABLES

***Employment growth in urban and center-oriented communities compared with growth in rural and noncenter communities.***

- Δ *employment in communities with centers*

*vs.*

- Δ *employment in communities without centers*

# HOUSEHOLD INCOME

**New market and affordable housing in Perth Amboy.**
Jon Erickson

## INTRODUCTION—CORE QUESTIONS

Households are the primary holders of income in New Jersey, and their individual wealth determines New Jersey's economic position relative to other states. Households are the unit of measure of housing occupancy and the basic source of income supporting local consumer expenditures. Levels of household income also define and differentiate neighborhoods and communities. If overall household income can rise in a declining area, it can contribute to an area's rebirth. Core questions in this impact assessment as they relate to household income are as follows:

- **Will PLAN affect aggregate household income growth in the state?**
- **Will aggregate household income at the state or regional level be diminished due to PLAN policies or goals as they relate to development location or land preservation?**
- **Will PLAN achieve its goal of directing more household income into urban communities, communities with more densely developed planning areas, and communities with urban, regional, or town centers than would be *possible* under TREND conditions?**

## BACKGROUND


**Main Street in Oldwick.**
Matt Crosby

Geographically, New Jersey's household growth will take place unevenly in the future under the TREND scenario. The suburban portion of the state alone will experience about the same magnitude of growth as the entire growth of the southern portion of the state. Urban and inner-suburban communities will grow slowly, while outer-suburban and rural communities will grow significantly.

Aggregate household income in the state of New Jersey as of 2008 is approximately $190 billion, with 60 percent of it concentrated in the northern part of the state. Another 40 percent of income is held by households in the southern part of the state.[32]

As of 2007, New Jersey's median household income was $64,470, higher than every state except Maryland. In the United States, the median household income was $48,451.[33]

## Policy Statements from the Plan

### 1.0 Equity

**Equity, as a State Plan fundamental policy principle, should serve as a guide to the implementation of the State Plan to be considered and taken into account with respect to the implementation of all State Plan policies.**

**THE CHALLENGE:**

***To preserve the Equity concept as it pertained to land values in previous State Plans, but to add to it by incorporating concepts of social equity and environmental justice as aspects of Sustainability.***

[32]U.S. Department of Commerce, Bureau of Census, *Current Population Survey.*
[33]Ibid.

**Walking area along Sinatra Drive, Hoboken.**
Matt Crosby

# IMPACT ASSESSMENT—METHODS

Household projections are undertaken using population projections and historical population-to-household ratios. These ratios represent a number that is divided into population to produce households. These numbers are almost equivalent to average household size except that they include a projection of the non-household population in their totals. As such, population-to-household ratios are slightly smaller than average household size numbers.

Households are taken into the future using the above methods and fit to individual communities using vacant land estimates, existing densities, and a redevelopment factor. The amount of vacant land in a community has been reduced by lands inaccurately classified as developable through the GIS analysis. If there is no fit, a small pool of reallocation is redirected to communities of similar socioeconomic characteristics in the same portion of the State. This is more often a function of restricted Highlands or

***New Jersey's median household income is second only to Maryland in the United States.***

Pinelands growth rather than the inability to contain normally projected household growth. In the southern portion of the state there were no households in the reallocation pool; in the northern portion of the state there were fewer than 1,000 households in the reallocation pool. This reallocation pool is much smaller than any other pool produced by land-fit analysis of future projections of households or housing units. Accordingly, the projections are more accurate as many fewer households had to be reallocated to other locations because they did not meet the land fit.

**PROJECTED HOUSEHOLD GROWTH**
**—**
**STATE OF NEW JERSEY, 2000–2028**

| *Year* | *Households* | *Change from Prior Period* |
|---|---|---|
| **2000** | 3,064,645 | |
| **2004** | 3,158,797 | 94,152 |
| **2008** | 3,251,044 | 92,247 |
| **2013** | 3,293,448 | 42,404 |
| **2018** | 3,353,564 | 60,116 |
| **2023** | 3,429,599 | 76,034 |
| **2028** | 3,516,762 | 87,163 |
| | ***Change, 2008-2028:*** | **265,718** |

*Source:* U.S. Department of Commerce, Bureau of Census, *Population Projections: 2008.* www.census.gov/population/
Disaggregations and refined projections by Center for Urban Policy Research, Rutgers University.

## EXPECTED DIFFERENCES BETWEEN TREND AND PLAN

It is anticipated that, as was the case with population growth, household and household income growth under PLAN will be the same as TREND at the state and regional levels but significantly greater than TREND in urban/inner-suburban communities and in communities that are more densely developed and have urban, regional, or town centers. Greater household and household income growth in these areas will result from PLAN's attraction of households to these locations.

## CRITICAL ASSUMPTIONS

Similar overall demographic and economic forces impact both TREND and PLAN growth. Differences in the location of households and the resultant household income of places are due primarily to the effects of the policies of PLAN. All projections of income are in current dollars.

## SCOPE AND DEPTH OF ANALYSIS

Household projections are undertaken for the state's 21 counties and 566 municipalities. Projections are made for a 20-year period using the most current estimates of the relationship between population and households over time. TREND projections reflect the best estimate of historical conditions extended into the future. PLAN projections react specifically to the goals and policies of the PLAN scenario. Information is presented for multiple time periods and multiple geographies for comparison purposes.

# IMPACT ASSESSMENT—FINDINGS

## TREND FINDINGS—HOUSEHOLDS

As of 2008, New Jersey had 3,251,044 households, which will grow by 265,718 households by the year 2028 to a total of 3,516,762 households. This represents a growth of 8.2 percent over the 20-year period. Of the 265,718 new households, approximately 90,000 will be located in the northern region and 176,000 in the southern region.[34]

Households in northern New Jersey will grow by 4.6 percent over the 20-year period, or 2.3 percent annually; in southern New Jersey households will grow by 13.6 percent over the 20-year period, or 0.68 percent annually. Under TREND development, households in urban/-inner-suburban communities will grow by 5.5 percent (138,201); households in rural/outer-suburban communities will grow by 17 percent (127,517).

Under TREND development, household growth in communities with more densely developed planning areas will amount to 198,933 households; in communities with less densely developed planning areas (rural and environmentally sensitive), growth will amount to 66,785 households, or one-third the number of more densely developed planning areas (table 7A).

**TABLE 7A. TREND Findings—Households**

| | *2000* | *2008* | *2013* | *2028* | *Change 2008-2028* |
|---|---|---|---|---|---|
| **New Jersey** | 3,064,645 | 3,251,044 | 3,293,448 | 3,516,762 | 265,718 |
| **Regions** | | | | | |
| North | 1,872,758 | 1,956,781 | 1,971,155 | 2,046,853 | 90,072 |
| South | 1,191,887 | 1,294,263 | 1,322,293 | 1,469,909 | 175,646 |
| **Type of Community** | | | | | |
| Urban | 950,754 | 979,384 | 985,550 | 1,018,022 | 38,638 |
| Inner Suburban | 1,443,039 | 1,525,726 | 1,541,615 | 1,625,289 | 99,563 |
| Outer Suburban | 516,765 | 574,949 | 590,556 | 672,749 | 97,800 |
| Rural | 154,087 | 170,985 | 175,727 | 200,701 | 29,717 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 2,659,832 | 2,809,932 | 2,841,678 | 3,008,865 | 198,933 |
| Rural, Env. Sensitive | 404,813 | 441,112 | 451,770 | 507,897 | 66,785 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 2,493,334 | 2,636,443 | 2,669,246 | 2,841,999 | 205,556 |
| All Others | 571,311 | 614,601 | 624,202 | 674,763 | 60,161 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

[34]Rutgers University, Center for Urban Policy Research projections (2009).

Under the TREND regimen, growth in communities with urban, regional, and/or town centers will amount to 205,556 households; growth in communities with other types of centers or no centers will amount to 60,161 households (table 7A). Under TREND development, growth in communities with regional, urban, and/or town centers and growth in those communities without large centers will be almost identical.

## TREND FINDINGS—HOUSEHOLD INCOME

Household income in the state of New Jersey in 2008 totaled $297 billion. Recognizing real income gain (factoring inflation) and also considering household growth impact, aggregate household income in the state will grow by $191.27 billion, or 65 percent, by 2028. Under TREND conditions, of the $191.27 billion in income growth, approximately $109 billion will take place in the northern region and $82.4 billion in the southern region (table 7B).

Under TREND conditions there will be a 60 percent gain in household income in urban/inner-suburban communities ($130.36 million). On the other hand, there will be a gain of $61 billion in household income in rural/outer-suburban communities (table 7B). Under the TREND regimen, there will be a gain in household income in communities with more densely developed planning areas and in communities with urban, regional, and/or town/village centers of $158 billion and $148 billion, respectively (table 7B). In communities with less densely developed planning areas and in communities without large centers, there will be a gain of household income of $33 billion and $43 billion, respectively (see table 7B).

**TABLE 7B. TREND Findings—Household Income (in Current $Billions)**

| | *2000* | *2008* | *2013* | *2028* | *Change 2008-2028* |
|---|---|---|---|---|---|
| **New Jersey** | 224.52 | 297.03 | 322.94 | 488.30 | 191.27 |
| **Regions** | | | | | |
| North | 144.93 | 187.93 | 202.78 | 296.76 | 108.83 |
| South | 79.58 | 109.10 | 120.17 | 191.54 | 82.44 |
| **Type of Community** | | | | | |
| Urban | 50.64 | 65.77 | 71.41 | 105.75 | 39.98 |
| Inner Suburban | 116.93 | 152.30 | 164.51 | 242.69 | 90.38 |
| Outer Suburban | 45.23 | 62.52 | 68.80 | 109.91 | 47.38 |
| Rural | 11.71 | 16.43 | 18.22 | 29.95 | 13.52 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 192.73 | 253.55 | 275.06 | 411.69 | 158.14 |
| Rural, Env. Sensitive | 31.79 | 43.48 | 47.88 | 76.61 | 33.13 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 175.05 | 231.15 | 251.29 | 379.40 | 148.25 |
| All Others | 49.46 | 65.87 | 71.65 | 108.89 | 43.02 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

# PLAN FINDINGS— HOUSEHOLDS

Household growth at the state and regional levels is the same under the PLAN scenario as it is under the TREND scenario. This amounts to a total growth of 265,718 households, with 90,072 in northern New Jersey and 175,646 in southern New Jersey (table 8A).

Significant differences between TREND and PLAN exist below the regional level. Under PLAN development, urban/inner-suburban communities will grow by 7.5 percent during the period 2008-2028 (191,702); rural/outer-suburban communities will grow by 9.4 percent (70,015 households) (table 8A).

Under the PLAN scenario, households will grow by 227,894 in communities with more densely developed planning areas (metro/suburban/-fringe) and by 37,823 in communities with less densely developed planning areas. Households will grow by 217,962 in communities with urban, regional, and/or town centers, and by 47,756 in communities without large centers (table 8A). In all comparisons below the regional level, PLAN reverses the TREND distribution of new households during the projection period.

**TABLE 8A. PLAN Findings—Households**

| | *2000* | *2008* | *2013* | *2028* | *Change 2008-2028* |
|---|---|---|---|---|---|
| **New Jersey** | 3,064,645 | 3,251,044 | 3,293,448 | 3,516,762 | 265,718 |
| **Regions** | | | | | |
| North | 1,872,758 | 1,956,781 | 1,971,155 | 2,046,853 | 90,072 |
| South | 1,191,887 | 1,294,263 | 1,322,293 | 1,469,909 | 175,646 |
| **Type of Community** | | | | | |
| Urban | 950,754 | 979,384 | 988,307 | 1,035,300 | 55,916 |
| Inner Suburban | 1,443,039 | 1,525,726 | 1,547,395 | 1,661,512 | 135,786 |
| Outer Suburban | 516,765 | 574,949 | 584,767 | 636,474 | 61,524 |
| Rural | 154,087 | 170,985 | 172,978 | 183,476 | 12,491 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 2,659,832 | 2,809,932 | 2,846,300 | 3,037,827 | 227,894 |
| Rural, Env. Sensitive | 404,813 | 441,112 | 447,148 | 478,935 | 37,823 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 2,493,334 | 2,636,443 | 2,671,226 | 2,854,405 | 217,962 |
| All Others | 571,311 | 614,601 | 622,222 | 662,357 | 47,756 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

# PLAN FINDINGS— HOUSEHOLD INCOME

Household income growth at state and regional levels is the same under PLAN as it is under TREND. Household income growth at the state level will be $191.27 billion. More than one-half (57 percent) of this income growth will take place in the northern region ($109 billion), and 43 percent will take place in the southern region ($82 billion) (table 8B).

Below the regional level, there are significant differences between the TREND and PLAN development scenarios. The household income of urban/inner-suburban communities will grow by 63.4 percent ($138.34 billion) over the projection period under PLAN conditions; the household income of rural/outer-suburban communities will grow by 67 percent ($52.93 billion). A somewhat larger aggregate increase in household income growth under PLAN conditions is evidenced for communities with more densely developed planning areas (metro/suburban/fringe), which will grow by $162 billion, and for communities with urban, regional, and/or town centers, which will increase by $150 billion under PLAN (table 8B). The State Plan augments the inflow of income to urban/inner-suburban communities and contributes significantly to the inflow of income to communities with more densely developed planning areas and those communities with urban, regional, and/or town centers.

**TABLE 8B. PLAN Findings—Household Income (in Current $Billions)**

| | *2000* | *2008* | *2013* | *2028* | *Change 2008-2028* |
|---|---|---|---|---|---|
| **New Jersey** | 224.52 | 297.03 | 322.94 | 488.30 | 191.27 |
| **Regions** | | | | | |
| North | 144.93 | 187.93 | 202.78 | 296.76 | 108.83 |
| South | 79.58 | 109.10 | 120.17 | 191.54 | 82.44 |
| **Type of Community** | | | | | |
| Urban | 50.64 | 65.77 | 71.63 | 107.77 | 42.00 |
| Inner Suburban | 116.93 | 152.30 | 165.18 | 248.64 | 96.34 |
| Outer Suburban | 45.23 | 62.52 | 68.20 | 104.55 | 42.03 |
| Rural | 11.71 | 16.43 | 17.93 | 27.33 | 10.90 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 192.73 | 253.55 | 275.54 | 415.99 | 162.44 |
| Rural, Env. Sensitive | 31.79 | 43.48 | 47.40 | 72.30 | 28.83 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 175.05 | 231.15 | 251.50 | 381.27 | 150.12 |
| All Others | 49.46 | 65.87 | 71.44 | 107.03 | 41.15 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

# PLAN VERSUS TREND FINDINGS: HOUSEHOLDS

The projected household growth for the state and the sum of its two major defining regions is the same under the PLAN and TREND scenarios (265,718). Households will grow in absolute magnitude at 35 percent of the level of population increase, slightly more than half of which (57 percent) will take place in the northern region of the state. Under the PLAN scenario, there are noticeable differences in the locational growth of households below the regional level. Over the projection period, PLAN policies will produce significantly more household growth in urban/inner-suburban communities (a 138,201 household gain turned into a 191,701 household gain—an increase of 53,500 households); in more densely developed planning areas (a 29,000-household gain); and in communities with urban, regional, and/or town centers (a 12,400-household gain) (table 9A). Overall, under PLAN development, a maximum of 20 percent of the household growth destined for individual communities under TREND will *not* take place in those communities.

**TABLE 9A. PLAN versus TREND Findings—Households**

| | *TREND Change 2008-2028* | *PLAN Change 2008-2028* | *PLAN Change Minus TREND Change 2008-2028* |
|---|---|---|---|
| **New Jersey** | 265,718 | 265,718 | 0 |
| **Regions** | | | |
| North | 90,072 | 90,072 | 0 |
| South | 175,646 | 175,646 | 0 |
| **Type of Community** | | | |
| Urban | 38,638 | 55,916 | 17,277 |
| Inner Suburban | 99,563 | 135,786 | 36,223 |
| Outer Suburban | 97,800 | 61,524 | -36,275 |
| Rural | 29,717 | 12,491 | -17,225 |
| **Planning Area** | | | |
| Metro, Suburban, Fringe | 198,933 | 227,894 | 28,962 |
| Rural, Env. Sensitive | 66,785 | 37,823 | -28,962 |
| **Centers** | | | |
| Large Centers (Urban, Regional, Town) | 205,556 | 217,962 | 12,405 |
| All Others | 60,161 | 47,756 | -12,406 |

*Source:* Rutgers University, Center for Urban Policy Research projections.

# PLAN VERSUS TREND FINDINGS: HOUSEHOLD INCOME

There is similar growth in household income under the PLAN and TREND scenarios at the state and regional (north versus south) levels. This is *not* true below the regional level. PLAN's policies produce significant income growth in urban/inner-suburban communities (nearly $8 billion) in communities with more densely developed planning areas ($4.3 billion), and in communities with urban, regional, and/or town centers ($1.9 billion) (table 9B). The State Plan's policies generate significant future income in locations where this would not occur under the TREND scenario.

**TABLE 9B. PLAN versus TREND Findings— Household Income (in Current $Billions)**

| | *TREND Change 2008-2028* | *PLAN Change 2008-2028* | *PLAN Change Minus TREND Change 2008-2028* |
|---|---|---|---|
| **New Jersey** | 191.27 | 191.27 | 0.00 |
| **Regions** | | | |
| North | 108.83 | 108.83 | 0.00 |
| South | 82.44 | 82.44 | 0.00 |
| **Type of Community** | | | |
| Urban | 39.98 | 42.00 | 2.02 |
| Inner Suburban | 90.38 | 96.34 | 5.96 |
| Outer Suburban | 47.38 | 42.03 | -5.35 |
| Rural | 13.52 | 10.90 | -2.62 |
| **Planning Area** | | | |
| Metro, Suburban, Fringe | 158.14 | 162.44 | 4.30 |
| Rural, Env. Sensitive | 33.13 | 28.83 | -4.30 |
| **Centers** | | | |
| Large Centers (Urban, Regional, Town) | 148.25 | 150.12 | 1.87 |
| All Others | 43.02 | 41.15 | -1.87 |

*Source:* Rutgers University, Center for Urban Policy Research projections.

**Recently constructed row houses in Atlantic City**
Jon Erickson

## COMPARISON TO THE PREVIOUS IMPACT ASSESSMENT FINDINGS

Household growth over the period 2008-2028 is at only 57.5 percent of the growth projected for the period 2000-2020. Households were not projected in the 1992 evaluation.

As was the case in 2000 and 1992, household growth and household income growth under the two development alternatives do not vary at the state or regional level but *do* vary significantly below the regional level.

Household income growth projected for the period 2008-2028 is much larger than prior periods because an inflation factor is included here that was not used in prior evaluations.

## CONCLUSIONS AND IMPLICATIONS OF THE FINDINGS

Under both the TREND and PLAN scenarios, the southern half of the state will gain almost twice as many households as the northern half of the state during the period 2000-2028. The southern half of the state will grow by 175,646 households; the northern half will grow by 90,072 households. Because household incomes are much lower in the southern part of the state, even though the southern half will grow at twice the level of households in the northern half, household income growth in the southern portion will be only 80 percent of the household income growth of the north.

Under the TREND regimen, there will be more income growth in rural/outer-suburban communities; in communities with less densely developed planning areas; and in communities without large centers. The reverse is true under the PLAN regimen, with noticeable future income growth in urban/inner-suburban communities, in communities with more densely developed planning areas, and in communities with urban, regional, and/or town centers.

What are the implications of these findings? The implications are clear. Income growth that is necessary to support future retailing in the state will be led by the growth in the state's northern region. Under the PLAN regimen, significantly more of this income growth will be directed to urban/inner-suburban communities.

# PRINCIPLES FOR FUTURE MONITORING BY THE OFFICE OF SMART GROWTH

Household growth numbers are dependent on trends in household size. Changes in household size influence headship rates, which convert the growth of population into the growth of households. In 2013, when there is full information available from the U.S. Census Public Use Microdata Sample (PUMS), headship rates should be recalculated and household projections checked. Household income should be verified by detailed U.S. Census information also available in 2013. Household income projections should also be checked at that time.

## MONITORING VARIABLES

***Household headship rates should be calculated by 10- to 20- year age cohorts.***

***Household and household income projections should be rerun using revised information on headship rates from U.S. Census PUMS data in 2013.***

*NEW HEADSHIP RATES x Δ POPULATION = Δ HOUSEHOLDS*

*NEW HOUSEHOLD INCOME x Δ HOUSEHOLDS = Δ HOUSEHOLD INCOME*

# EQUALIZED VALUATION

## INTRODUCTION—CORE QUESTIONS

**Skyline of the Atlantic City marina area.**
Jon Erickson

Real property value, both residential and nonresidential, determines the tax base of a community. It is the primary basis for the support of operational public services at the local level. Residential property value represents the most significant portion of intergenerational wealth.[14] In many cases, most of a family's inheritance comes from resources accrued from the escalating value of residential property. Revenues drawn from nonresidential properties offset both municipal and school district costs, although for the most part these properties contribute only to municipal costs. Nonresidential real property value is thus a key ingredient in paying for local public-services costs. Both types of property have their own characteristic revenue-raising benefits.[35]

[35] Robert W. Burchell, David Listokin, and William Dolphin, *Development Impact Assessment Handbook* (Washington, DC: Urban and Institute, 1994), 96.

Given the individual benefits of property value discussed above, it is obvious that an expanding property tax base is good for communities. This leads to the equalized valuation core questions regarding the impact of the State Plan:

- **Will the State Plan affect the overall growth of real property in the state?**
- **Will real property value below the regional level be altered due to basic differences in PLAN versus TREND futures?**
- **Will PLAN achieve its goal of a more even distribution of real property tax base growth in urban versus suburban and rural communities?**

## BACKGROUND

**New residential development along Wigwam Brook in Jamesburg.**
Jon Erickson

As of 2008, the equalized real property value in New Jersey was just over $1.35 trillion, or $155,082 per capita. Real property value increased by 145 percent from 2000 to 2008 ($548 billion to $1.35 trillion). Bergen County accounts for 13.6 percent of the total real

property value, ahead of the individual counties of Monmouth (9.5 percent), Middlesex (8.2 percent), Ocean (8.1 percent), and Morris (7.6 percent). Currently, New Jersey's "wealth belt" counties (Hunterdon, Mercer, Middlesex, Monmouth, Morris, and Somerset) comprise a 1.5 to 1.0 ratio with the "mature urban core" counties (Essex, Passaic, and Union), constituting over 52 percent of real property value. With these two groupings, 42 percent of New Jersey's counties contain 52 percent of the state's real property value. Thirty years ago the "mature urban core" counties contained 22 percent of New Jersey's real property value; today, their share amounts to only 17 percent. Approximately 75.0 percent—$1.01 trillion—of the $1.35 trillion equalized real property value is residential; 22 percent ($295.4 billion) is nonresidential; and 3 percent ($29.2 billion) is vacant or farmland. In New Jersey, net taxable equalized real property value grew by $737 billion during the period 2000 ($609,519,990,931) to 2008 ($1,346,526,223,853).[36]

The 2006 equalized real property value per capita varied from $59,985 (Cumberland County) to $210,435 (Morris County). In 2000 equalized real property value per capita varied from $34,000 (Cumberland County) to $103,000 (Morris County). Actually, in both years (2000 and 2008), Cape May County had the highest equalized real property value per capita ($150,000 and 571,181, respectively), but these are highly inflated figures because they do not take into account seasonal owner-occupants in the per capita calculation.[37]

## Policy Statements from the Plan

### 3.0 Public Investment Priorities

**Accommodate New Jersey's projected population and employment growth, development and redevelopment through a set of public investment priorities that are consistent.**

**THE CHALLENGE:**

***To devise a general guide for State, regional, county and municipal decision-makers to influence public investment decisions in ways that will be consistent with the State Plan's vision and goals and without loss to population and employment growth, development and redevelopment.***

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[36] Rutgers University, Center for Government Services, *2008 Draft New Jersey Legislature District Data Book*. (New Brunswick, NJ: Center for Government Services.)

[37] New Jersey Department of Community Affairs, Division of Local Government Services, Property Valuation Classification, www.state.nj.us/dca/lgs/taxes/taxmenu.shtml

# IMPACT ASSESSMENT—METHODS

**Older restoration of town houses near the square in Jersey City.**
Matt Crosby

Projections of equalized real property value are undertaken using unique values of single-family units (one to four units), apartment units (five units or more), commercial, industrial, and agricultural and vacant land for each community. Not included in the totals are government and other non-taxable properties. The number of single-family and multifamily units is derived from the U.S. Census count of single and multifamily units, together with the Division of Local Government Services estimates of real property value by type of property. This is necessary because the latter source has only parcel information and not unit information for individual properties. For multifamily properties, units cannot be determined from parcel information.

A 2008 base is established by projecting units (residential) and structures (nonresidential) to 2008. However, caution must be exercised when using this estimate. The ongoing recession has severely affected home prices, and the subprime mortgage market downturn has increased the number of foreclosures. The U.S. Department of Housing and Urban Development has estimated that in New Jersey over 69,000 houses are in foreclosure and 4.26 percent of all residential addresses are either vacant for over 90 days or are in foreclosure. The Center for Responsible Lending estimates that by the end of 2010, in addition to the number of foreclosures, another 1.8 million homes in neighborhoods surrounding foreclosed homes will lose value. This drop will be approximately $19.3 million, or $10,800 per affected home. This unregistered decrease is not included in the overall analysis.[38]

Foreclosure rates vary significantly by county and municipality. The lowest rates are for Morris and Hunterdon counties (with less than a 2 percent foreclosure rate on all mortgages) to the highest rates in Essex and Cumberland counties (rates greater than 6 percent). Every urban county has a rate of greater than 5 percent. A number of New Jersey's mature urban cities (Newark, Camden, Paterson, East Orange, and Irvington) have foreclosure rates above 10 percent. As indicated above, foreclosures have negative impact on the value of nearby homes. The Center for Responsible Lending estimates the average loss in proximate home value per unit in New Jersey is $10,857; this is above any decrease in home value resulting from a weak housing market. The number of homes affected by foreclosures in New Jersey is estimated to be 1,781,424. The impact is particularly strong in

[38] United States Department of Housing and Urban Development, HudUser, Neighborhood Stabilization Program, 2009. www.huduser.org/Databases/nsp/nsp_fc_m-n.html, and Center for Responsible Lending, New Jersey Foreclosure – Impact and Opportunities. 2009. www.responsiblelending.org/mortgage-lending/tools-resources/factsheets/nj-fact-sheet.pdf

Essex and Hudson counties, where almost 5,000 home foreclosures occurred in 2005 and 2006. In those two counties the decrease in house values and tax base as a result of subprime mortgage foreclosures is over $2.8 billion. Accordingly, overall equalized real property value for the State of New Jersey has increased while a number of cities have experienced a decrease in home values.[39]

## EXPECTED DIFFERENCES BETWEEN TREND AND PLAN

TREND and PLAN growth in equalized real property value can vary at the state, regional, and subregional levels. The determining factor is where the growth will take place under each scenario. Given the current distribution of growth under TREND conditions, and the higher level of real property value in developing rural communities, TREND would exhibit somewhat more growth in equalized property value during the period 2008–2028. This expected difference favoring TREND can be altered by the presence, in rural communities, of centers, which might lower values somewhat due to densities and housing types, and/or by the economic resurgences of certain urban communities. Overall, expected differences between the two development scenarios are small due to the number of countervailing forces acting simultaneously.

## CRITICAL ASSUMPTIONS

Net taxable equalized real property value projections by units of property type are compiled using information from U.S. Census estimates and the 2007 Division of Local Government Services' property tax information. It is assumed that the one- to four-unit dwellings in the U.S. Census are situated on the parcels listed as residential in the 2007 Division of Local Government Services databases and make up the aggregate net taxable equalized real property value found in this publication. Using this procedure, the number of residential units per parcel arrived at is almost equivalent to one. It is further assumed that the total of units listed as multifamily (five or more units) in the 2008 U.S. Census estimates make up the value listed as apartments on the Division of Local Government Services Web site. The number of units in the census divided by the number of apartment parcels is the number of units per parcel of multifamily development.[40]

For nonresidential uses, the aggregate equalized real property value and number of commercial and industrial parcels are linked to employment through multipliers of employees per 1,000 square feet.

# IMPACT ASSESSMENT—FINDINGS

## TREND FINDINGS

On average, under TREND conditions, real property value in the state of New Jersey will grow by $1.275 trillion from 2000 to 2020. Growth for the 20 year period in the northern region will be $0.73 trillion or 57.5 percent of the projected real property value growth in the state. Growth in the southern region will be $0.54 trillion or 42.5 percent (table 10).

[39]Center for Responsible Lending, New Jersey Foreclosure–Impact and Opportunities. 2009. www.responsiblelending.org/mortgage-lending/tools-resources/factsheets/nj-fact-sheet.pdf.

[40] New Jersey Department of Community Affairs, Division of Local Government Services, Property Valuation Classification. www.state.nj.us/dca/lgs/taxes/taxmenu.shtml.

**TABLE 10. TREND Findings—Household Equalized Real Property Value (in Current $Millions)**

| | *2000 (2000$)* | *2008* | *2013* | *2028* | *Change 2008-2028* |
|---|---|---|---|---|---|
| **New Jersey** | 584,284 | 1,357,339 | 1,638,994 | 2,632,757 | 1,275,417 |
| **Regions** | | | | | |
| North | 372,575 | 822,953 | 989,053 | 1,556,174 | 733,221 |
| South | 211,709 | 534,387 | 649,941 | 1,076,583 | 542,196 |
| **Type of Community** | | | | | |
| Urban | 113,510 | 291,995 | 348,823 | 537,379 | 245,384 |
| Inner Suburban | 320,338 | 728,635 | 877,351 | 1,385,288 | 656,653 |
| Outer Suburban | 119,612 | 266,293 | 326,099 | 557,820 | 291,527 |
| Rural | 30,824 | 70,416 | 86,721 | 152,269 | 81,853 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 484,392 | 1,111,583 | 1,339,846 | 2,139,283 | 1,027,700 |
| Rural, Env. Sensitive | 99,892 | 245,756 | 299,148 | 493,473 | 247,717 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 448,798 | 1,061,074 | 1,280,242 | 2,050,648 | 989,574 |
| All Others | 135,486 | 296,265 | 358,752 | 582,108 | 285,843 |

*Source:* Rutgers University, Center for Urban Policy Research projections, 2000-2028.

Under TREND conditions, the largest increment of real property value growth will take place in urban/inner suburban communities ($0.9 trillion or 70 percent) with the remaining $0.373 trillion growing in rural/outer suburban communities (30 percent) (table 10).

Under the TREND scenario, real property value will increase by about a 4:1 ratio in communities with more densely developed planning areas ($1.03 trillion, or 81 percent) compared to communities with less densely developed planning areas ($0.25 trillion) and similarly disproportionate in communities with urban, regional, and/or town centers ($0.99 trillion, or 78 percent) compared to communities without large centers ($0.29 trillion, or 22 percent) (table 10).

# PLAN FINDINGS

PLAN increases in equalized real property value will be the same at the state and regional levels as those observed under TREND conditions, due in large part to the share of housing units and businesses allocated to urbanized communities under PLAN development. In general, urban real property values are lower than those of suburban communities, yet higher than those of rural communities. The overall growth in equalized real property value under PLAN development will also be $1.275 trillion.

Under the PLAN scenario, as under TREND, approximately 57.5 percent increase in real property value will take place in the northern region of the state ($0.73 trillion) and the remaining 42.5 percent will take place in the southern region ($0.54 trillion) (table 11).

**TABLE 11. PLAN Findings—Household Equalized Real Property Value (in Current $Millions)**

| | *2000 (2000$)* | *2008* | *2013* | *2028* | *Change 2008-2028* |
|---|---|---|---|---|---|
| **New Jersey** | 584,284 | 1,357,339 | 1,638,994 | 2,632,757 | 1,275,417 |
| **Regions** | | | | | |
| North | 372,575 | 822,953 | 988,541 | 1,556,174 | 733,221 |
| South | 211,709 | 534,387 | 650,453 | 1,076,583 | 542,196 |
| **Type of Community** | | | | | |
| Urban | 113,510 | 291,995 | 349,745 | 548,905 | 256,910 |
| Inner Suburban | 320,338 | 728,635 | 881,284 | 1,423,849 | 695,214 |
| Outer Suburban | 119,612 | 266,293 | 322,878 | 524,036 | 257,744 |
| Rural | 30,824 | 70,416 | 85,087 | 135,966 | 65,550 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 484,392 | 1,111,583 | 1,342,455 | 2,165,003 | 1,053,420 |
| Rural, Env. Sensitive | 99,892 | 245,756 | 296,539 | 467,754 | 221,998 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 448,798 | 1,061,074 | 1,281,340 | 2,062,122 | 1,001,049 |
| All Others | 135,486 | 296,265 | 357,654 | 570,634 | 274,369 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

Under PLAN conditions, the greatest growth in real property value takes place in the urban communities of the state – $0.95 trillion, or three times the level of growth in rural/outer suburban communities under TREND development ($0.325 trillion). Growth in real property value under PLAN conditions will be 13.4 percent less in rural/outer suburban communities ($0.323 trillion versus $0.373 trillion) (see table 11). Growth in real property value under the PLAN scenario will be slightly more pronounced (2.5 percent) in communities with more versus less densely developed planning areas, ($1.053 trillion versus $1.027 trillion, respectively) and somewhat more pronounced (1.2 percent) in communities with as opposed to without urban, regional, and/or town centers ($1.01 trillion versus $0.99 trillion, respectively) (see table 11).

## PLAN VERSUS TREND FINDINGS

Over a 20-year projection period, PLAN and TREND futures will produce a similar increase in real property value associated with the change in residential and nonresidential development. This growth will favor undeveloped areas under TREND conditions. Rural/outer suburban communities will expand their tax base by 15 percent more under TREND development, whereas urban/inner suburban communities will experience 5 percent less (table 12). Communities with less densely developed planning areas, and those without large centers will expand their property tax base more (12–14 percent). Communities with more densely developed planning areas (2.5 percent) and communities with urban, regional, and/or town centers (1.2 percent) will grow much more slowly (table 12).

**TABLE 12. PLAN versus TREND Findings—
Household Equalized Real Property Value
(in Current $Millions)**

| | *TREND Change 2008-2028* | *PLAN Change 2008-2028* | *PLAN Change Minus TREND Change 2008-2028* |
|---|---|---|---|
| **New Jersey Regions** | 1,275,417 | 1,275,417 | 0 |
| North | 733,221 | 733,221 | 0 |
| South | 542,196 | 542,196 | 0 |
| **Type of Community** | | | |
| Urban | 245,384 | 256,910 | 11,526 |
| Inner Suburban | 656,653 | 695,214 | 38,561 |
| Outer Suburban | 291,527 | 257,744 | -33,784 |
| Rural | 81,853 | 65,550 | -16,303 |
| **Planning Area** | | | |
| Metro, Suburban, Fringe | 1,027,700 | 1,053,420 | 25,719 |
| Rural, Env. Sensitive | 247,717 | 221,998 | -25,719 |
| **Centers** | | | |
| Large Centers (Urban, Regional, Town) | 989,574 | 1,001,049 | 11,474 |
| All Others | 285,843 | 274,369 | -11,474 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

Under PLAN conditions, somewhat more development will take place and associated real property values will increase in urban/inner suburban communities (5 percent) as well as communities with more densely development planning areas (2.5 percent) and those with urban, regional, and/or town centers (1.2 percent). This will expand somewhat the growth of the property tax base of urban/inner suburban communities, communities with more densely developed planning areas, and communities with urban, regional, and/or town centers.

## COMPARISON TO THE PREVIOUS IMPACT ASSESSMENT FINDINGS

This variable was not considered individually in the 1992 evaluation. It was considered in the 2000 evaluation. It is, however, a logical extension of the calculation of household and employee growth common to both evaluations. In the current evaluation, households are projected to increase by 43 percent less during the 20-year period 2008 to 2028 (266,000 households) than they were during the 20-year period 2000 to 2020 (462,000 households). In the current evaluation, the number of employees is projected to grow by 67 percent less during the period from 2008 to 2028 (802,000

employees) than during the period from 2000 to 2020 (602,000 employees). Both of the above reflect the effects of the "Great Recession."

As both residential and nonresidential development increased significantly in value from 2003 to 2008, it is conceivable that the combined effect of the value increase adds approximately 50 percent more in real property value in today's dollars than would have been projected in the earlier evaluation. This potential addition of property value is present at the same magnitude under TREND and PLAN conditions.

## CONCLUSIONS AND IMPLICATIONS OF THE FINDINGS

At the state and regional levels, TREND and PLAN development generate similar amounts of tax base growth. Below the regional level, the PLAN scenario directs slightly more tax base to those locations in need of tax base augmentation. Urban/inner suburban communities, communities with more densely developed planning areas, and communities with urban, regional, and/or town centers will do slightly better under PLAN conditions. The State Plan will somewhat mitigate the schism between urban and suburban property values. The implications to be drawn from this are that there will be more of a dampening of concentrations of wealth and poverty under a PLAN future than would exist under a TREND future.

## PRINCIPLES FOR FUTURE MONITORING BY THE OFFICE OF SMART GROWTH

The key monitoring variable in determining PLAN'S impact is the change in equalized property real property value per capita in urban versus rural communities, in communities with more versus less densely developed planning areas, and in communities with as opposed to without urban, regional, and/or town centers. This can be done by monitoring residential and nonresidential building permits by municipality and by location within communities.

## MONITORING VARIABLES

***Growth in tax base per capita by the type of location (urban/inner suburban communities (x),***

***communities with more densely developed planning areas (y), and communities with urban, regional, and/or town centers (z)***

***versus***

***rural/outer-suburban communities ($x^1$), communities with less densely developed planning areas ($y^1$), and communities without large centers ($z^1$).***

# FISCAL IMPACTS

## INTRODUCTION—CORE QUESTIONS


**An emergency fire department vehicle, Hillsborough.**
Jon Erickson

Fiscal impact is the public-service costs versus revenues of future development. Fiscal impact *analysis* measures how a public-service jurisdiction will fare in the future in terms of the magnitude of revenues raised to pay for the level of costs incurred.[41]

On the cost side of the ledger are operating, statutory, and capital costs. On the revenue side are property tax, nontax, and intergovernmental transfer revenues. These are estimated for the jurisdiction in which development is taking place. For non-educational costs—police, fire, public works, general government, recreation, and culture—the jurisdiction is the municipality, and for educational costs, including those involved with both instruction and administration, it is the school district. The county is also involved in the provision of non-municipal, non-school-district local public services. These include health, welfare, incarceration, courts, parks, roads, and so on. When costs are subtracted from revenues, the net fiscal impact on the community's fisc is determined.[42]

Taking into consideration an array of local circumstances, the increment of development is evaluated as producing either a positive or negative impact over time. Factors considered are the amount, type, size, and value of projected development; the existing value and composition of real estate in the community; and the locality's, school district's, and county's basic fiscal indices, such as tax rate, equalization ratio, tax base per capita, and levels of intergovernmental and nontax revenues per capita. The combined municipal, school district, and county impacts are estimated to determine whether a development is a net contributor to or a net drain on the revenues of a community.

Usually, residential types of development of conventional size and price (single-family homes, town houses, and garden apartments) are net fiscal drains; open spaces (agricultural, forest, and parklands) are fiscally cost-neutral; and nonresidential types (office, industrial, and retail) are net contributors to the local fisc. This generality applies to a development's potential impact on the municipality, the school district, and the county.[43]

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[41] Robert W. Burchell, David Listokin, and William Dolphin, *Development Impact Assessment Handbook* (Washington, DC: Urban and Institute, 1994), 28.

[42] Michael Siegel et al., *Development and Dollars: An Introduction to Fiscal Impact Analysis in Land Use Planning* (Washington, DC: National Resources Defense Council, 2000), 6.

[43] Robert W. Burchell, David Listokin, and William Dolphin, *Development Impact Assessment Handbook* (Washington, DC: Urban and Institute, 1994), 30.

The core questions for the fiscal impact component of the State Plan are:

- **Are TREND and PLAN costs of public services versus revenues generated the same at regional and state levels?**
- **Does PLAN relative to TREND result in fiscal savings or costs in particular types or locations of communities?**
- **Does PLAN relative to TREND contribute to or reduce disparities between communities in terms of services provided versus taxes levied?**

## Policy Statements from the Plan

### 4.0 Infrastructure Investments

**Provide public infrastructure and related services more efficiently by restoring, maintaining and investing in infrastructure systems to guide growth, to promote development and redevelopment in Metropolitan and Suburban Planning Areas (Planning Areas 1, 2) and in centers in appropriate locations and ways in the Fringe, Rural and Environmentally Sensitive Planning Areas (Planning Areas 3, 4, 5), while discouraging development in the environs adjacent to or surrounding those centers, appropriately phased and timed in accordance with the vision and goals of the State Plan.**

**THE CHALLENGE:**

***To more efficiently and effectively plan, design, invest in, construct and maintain public infrastructure and related services in ways that are consistent with the vision and goals of the State Plan as a means of meeting New Jersey's infrastructure needs for the 21st Century.***

## BACKGROUND

**A new affordable attached-housing unit in Clinton.**
Jon Erickson

The 566 communities in 21 counties in New Jersey occupy all the land that exists in the state. New Jersey comprises 249 boroughs, 247 townships, 52 cities, 15 towns, and 3 villages.[44] No New Jersey municipality straddles more than one county, and there is no unincorporated land in the state. All of the municipal entities provide an array of noneducational public services, including general government, police, fire fighting, public works, recreation and culture.

Counties provide other public services (welfare, jails, health, etc.) not typically provided at the local level.

New Jersey has 605 school districts. Of these, 189 districts operate a full K–12 school system serving a single municipality. An additional 192 districts operate K–6 or K–8 elementary schools

[44] New Jersey State League of Municipalities. *The 1992 New Jersey Municipal Almanac,* 34.

and participate in 49 regional junior high/high school districts. Another 107 districts operate only K–8 schools and send high school students elsewhere on a tuition basis. In 20 cases, there are combined regional elementary and high school districts. In another 26 cases, there are no school districts: they are non-operating, and all students go elsewhere for primary and secondary education on a tuition basis. Finally, in addition to the above, each of the 21 counties operates a vocational school district, and 8 of the 21 counties operate special-service school districts to which the other 13 counties may send students with special needs. Governor Jon Corzine recently signed legislation to give county school superintendents the authority to eliminate "non-operating" school districts.[45]

To say that New Jersey is a cross-weave of public-service jurisdictions is to just begin to understand the state. To accommodate 566 municipalities' quest for governmental form, New Jersey passed (1) a Township Act in 1798, with revisions in 1899 and 1989; (2) a Borough Act in 1878, rescinding it in 1897; (3) a City Act in 1897, with minor revisions in 1899 and more significant ones in 1988; (4) a Town Act in 1888, with slight revisions in 1895 and more major ones in 1988; (5) a Village Act in 1891, repealing it in 1961. Further, in the late eighteenth century, New Jersey passed a Home Rule Act to codify the powers of local governments and to establish all of the above forms of local government on the same legal footing. The above legal rulings were spurred by the first municipalities to be incorporated as cities in 1784 (the cities of Burlington, New Brunswick, and Perth Amboy); as townships in 1798 (Alexandria Township); as towns in 1845 (Belvidere Town); as boroughs in 1868 (Washington Borough); and as villages in 1892 (Ridgefield Park).[46]

In New Jersey, public services are provided in municipalities that vary in size from more than 100 square miles (Hamilton Township, Atlantic County; Washington Township, Burlington County; and Jackson Township, Ocean County) to 0.1 square mile (East Newark Borough, Hudson County; Loch Arbour Village, Monmouth County; Shrewsbury Township, Monmouth County). Public services are delivered in municipalities that range in population density from about 42,000 persons per square mile (West New York Town, Hudson County; Union City, Hudson County; and Guttenberg Town, Hudson County) to fewer than 10 persons per square mile (Washington Township, Burlington County; and Walpack Township, Sussex County).[47]

Public services are provided and consumed on a daily basis in all of these diverse locations. A wide array and scope of services for the most part meet the educational and noneducational needs of the population. They are delivered in large and small, developed and developing, and rich and poor locations with an amazing amount of competency and consistency, and they are funded through a bundle of revenues, the distribution of which varies often by the jurisdiction's residents' ability to pay. This is the context within which the state's fiscal future—with and without the State Plan—will be evaluated.

[45] Ernest Reock, *A Plan for School District Consolidation in New Jersey.* New Brunswick, NJ: Rutgers University Center for Government Services, 1995.

[46] New Jersey State League of Municipalities, op.cit.
[47] Ibid.

# IMPACT ASSESSMENT—METHODS


**Transportation vehicle picking up passengers at senior residence in Highland Park.**
Jon Erickson

An analysis of the fiscal impacts of public-service provision involves three basic steps: the calculation of (1) costs, (2) revenues, and (3) net fiscal impact. This is done for the primary local service providers (municipalities, school districts, and counties) using their information on basic fiscal indices.

## MUNICIPAL, SCHOOL DISTRICT, AND COUNTY COSTS

In order to calculate future per capita local costs, information on expenditures is taken from municipal and county budgets summarized in the New Jersey Department of Community Affairs, Division of Local Government Services, *Property Tax Information* (2008—the most current year available for non-valuation data). This information is available for all 566 municipalities and is reported as expenditures for municipal, school, and county functions plus capital improvements, debt service, and deferred charges. The annual expenditure for municipal and county services is then divided between services rendered to local residences and businesses, using information on the distribution of land parcel value and numbers between residences (single-family and apartments) and businesses (commercial and industrial). The percentage value and parcel distribution for residential properties are averaged and applied to the expenditures for municipal and county services and divided by the existing population to derive noneducational expenses incurred by residents. This is the first component of future per capita local costs. As a subset of this procedure, the remaining portion of municipal and county costs is divided by the existing amount of "at-place" employment, and the results are expressed as the cost per employee.[48]

An abbreviated procedure is used to determine the second component of future per capita local costs. An additional cost per capita is developed by dividing school expenditures (both local and regional) reported in the Division of Local Government Services by the existing resident population, as determined specifically for this impact assessment.

The third component of future per capita local costs is county costs paid by the municipality and also reported by the Division of Local Government Services. This value is also divided by the local resident population determined for the impact assessment.

The next step is to translate the three components of future per capita local costs into future aggregate local costs, including school expenditures. The three residential components of per capita costs are summed and multiplied by the number of future residents expected from residential development. The remaining com-

[48] New Jersey Department of Community Affairs. 2009.

ponent, municipal and county costs per employee, is multiplied by the number of workers from future nonresidential development. These are in the form of future local employment projections. Future local public costs are the sum of per capita local public costs (municipal, school district, and county) multiplied by the new increment of residents and the sum of per-worker local public costs (municipal and county), multiplied by the new increment of workers. This calculation is performed for the full growth increment in each municipality under each development scenario.

**Pumper parked at the fire department lot in Union.**
Jon Erickson

## MUNICIPAL, SCHOOL DISTRICT, AND COUNTY REVENUES

Revenues for the municipality, school district (both local and regional), and county are calculated as follows. The values of residential and nonresidential property are individually multiplied by the combined *municipal, school district, and county components* of the total equalized real property tax (as reported by the Division of Local Government Services) to determine local property tax revenues. Property tax revenues are then supplemented by other revenues as follows. Nontax local revenues are expressed per capita and projected into the future relative to the increment of population. Intergovernmental transfers are expressed per existing $1,000 of equalized real property value and also projected into the future relative to the increment of real property value that the future development represents. Total municipal, school district, and county revenues are the sum of property tax, nontax, and intergovernmental transfer revenues. The property tax share of all revenues is also obtained from information reported by the Division of Local Government Services.

## NET FISCAL IMPACT

Net fiscal impact is the subtraction of total local public costs from total local public revenues (municipality, school district, and county). It involves separate calculations for residential and nonresidential development, even though the overall fiscal impact is the result of the summation of the two individual impacts. The difference between total local revenues and total local costs for the municipality is the net fiscal impact of the increment of development on the municipality. This difference is summed for the 566 municipalities for each development scenario, and the differences in the summed values represent the differences in fiscal impact occasioned by the TREND and PLAN alternative futures.

## EXPECTED DIFFERENCES BETWEEN TREND AND PLAN

**Office space complex in Route 22 area of Bridgewater.**
Matt Crosby

At the state and regional levels, there is no way to predict the relationship between expected development and future fiscal impacts. On one hand, the analysis controls for essentially equivalent population and employment growth at the state and regional levels. On the other hand, this growth in households and employment will be distributed very differently in terms of its location within regions of the state. This will also affect resulting fiscal impacts. The State Plan encourages the growth of significant numbers of households and jobs in the more developed urban and inner-suburban communities of the state. These communities usually have both higher public-service costs and public-service revenues per capita. This is true due to higher property-tax rates in these areas. Thus, one would expect higher public-service costs and possibly even higher tax-generated revenues under PLAN conditions. Since the TREND development scenario and the PLAN development scenario each contain significant amounts of highly valued residential and nonresidential development as a component of future growth, the likelihood is that both future growth scenarios will produce a somewhat positive fiscal impact. Although actual conditions will vary considerably, it is anticipated that moderate positive differences in net fiscal impact will be observed at the state and regional levels under PLAN conditions, but a variety of differences in fiscal impact will be observed below the regional level.

## CRITICAL ASSUMPTIONS

The most critical assumption in the analysis of the fiscal effects of land development is that costs and revenues are initially balanced on both sides of the cost–revenue equation. In most budgets, at the outset, costs must equal revenues. This principle enters into the calculation of the local real property tax rate. The real property tax rate, when applied to the tax base, closes the gap between future anticipated expenditures and all other revenues.

Another critical assumption is the full charging of each new resident, worker, and schoolchild. All new residents, workers, and schoolchildren to a community are fully charged at their current rates under both the TREND scenario and the PLAN scenario. (They are charged at the site and under fiscal circumstances pertaining to that locale.) A final assumption is that all fiscal comparisons take place under financial indices reflective of current conditions. Thus, expenditures, tax rates, and most other fiscal variables enter the financial projections under today's conditions. This assumption acknowledges that there are no changes in the forces that impact the local service sector, and inflation on both sides of the equation is equal.

## SCOPE AND DEPTH OF ANALYSIS

A fiscal impact analysis is undertaken for the growth that is impacting each of the 566 municipalities under both TREND and PLAN development scenarios. Fiscal impact analysis includes all municipal, school district, and county costs and revenues that local governments will occasion. This analysis further acknowledges all of the regional school district relationships of which the municipality is a part. The analysis also takes into account full operating, debt service, and capital costs on the cost side of the equation, and the array of tax, nontax, and intergovernmental transfer revenues on the revenue side of the equation.

# IMPACT ASSESSMENT—FINDINGS

# TREND

## Fiscal Parameters—TREND Costs

For the 2009 analysis, statewide per capita costs, averaged and weighted for the communities in which development will take place under TREND conditions, are approximately $4,138 per capita annually for local services. Per-employee costs are $1,329 annually for all local services (table 13).

**TABLE 13. Cost and Revenue Per Capita—TREND/PLAN (2008 $)**

| | TREND per Person | TREND per Employee | PLAN per Person | PLAN per Employee |
|---|---|---|---|---|
| **Cost per Person/Employee** | $4,138 | $1,329 | $4,001 | $1,444 |
| **Revenues per Person/Employee** | $4,692 | $1,219 | $4,328 | $1,206 |

*Source:* Rutgers University, Center for Urban Policy Research.

## Fiscal Parameters—TREND Revenues

For the 2009 analysis, annual revenues per capita are $4,692 for all local sources.

Per-employee revenues are $1,219 annually from all local sources (table 13).

### *Costs*

The aggregate local cost of providing public services for nearly 746,000 new residents is approximately $3.43 billion. The aggregate cost includes all municipal, school district, and county services that would be required by the new residents and workers. The costs are current costs, i.e., the costs were calculated under the assumption that all development over the period would occur according to today's fiscal parameters (2008 dollars).

Public service costs in the southern region of the state total $2.01 billion and approximately $1.43 billion in the northern region.

Just about 55 percent of future public-service costs will take place in urban/inner suburban communities ($1.89 billion); and 45 percent will occur in rural/outer suburban communities ($1.54 billion). Approximately three quarters of future public-service costs will take place in communities with more densely developed planning areas ($2.56 billion) and one quarter in communities with less densely developed planning areas ($0.87 billion).

Slightly more than 77 percent of future public expenditures will take place in communities with urban, regional, and/or town/village centers ($2.66 billion); slightly less than one-quarter will take place in communities without large centers ($0.78 billion) (table 14).

**TABLE 14. TREND Findings—Fiscal Impacts (in Current $Millions)**

| | *Costs 2028* | *Revenues 2028* | *Net Fiscal Impact 2028* |
|---|---|---|---|
| **New Jersey** | 3,434 | 3,499 | 65 |
| **Regions** | | | |
| North | 1,427 | 1,428 | 1 |
| South | 2,007 | 2,071 | 64 |
| **Type of Community** | | | |
| Urban | 617 | 490 | -126 |
| Inner Suburban | 1,275 | 1,253 | -22 |
| Outer Suburban | 1,167 | 1,327 | 160 |
| Rural | 375 | 429 | 53 |
| **Planning Area** | | | |
| Metro, Suburban, Fringe | 2,564 | 2,571 | 8 |
| Rural, Env. Sensitive | 870 | 928 | 57 |
| **Centers** | | | |
| Large Centers (Urban, Regional, Town) | 2,658 | 2,663 | 4 |
| All Others | 776 | 836 | 60 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## *Revenues*

Revenues under TREND conditions for development during the period 2008-2028 will be $3.50 billion. By region, the distribution of revenues will be approximately the same as distribution costs: $2.07 billion (59 percent) in the south and $1.43 billion (41 percent) in the north.

By type of community, 20 percent of the revenue gain will occur in urban/inner suburban communities ($1.74 billion); 50 percent in rural/outer suburban areas ($1.76 billion).

Revenues in communities with more densely developed planning areas are 2.75 times the revenues in communities with less densely developed planning areas (approximately $2.57 versus $0.93 billion); this is also true of communities with urban, regional, and/or town/village centers and communities without large centers (again, revenues in the first category are approximately 3.2 times revenues in the second category: $2.66 versus $0.84 billion).

## *Net Fiscal Impact*

Under the TREND scenario, development during the period 2008-2028 will cause an annual fiscal surplus of $65 million by the final year of the projection period. The surplus will occur almost fully in the southern region (+$64 million); and barely in the northern region (+$1.0 million). It will occur in rural/outer suburban communities (+$213 million) but not in urban/inner suburban communities (-$148 million). It will occur in communities with more densely developed planning areas (+$8 million) and in communities with less densely developed planning areas (+$57 million); and in communities with (+$4 million) and without (+$60 million) urban, regional, and/or town centers.

The surplus in communities with less densely developed planning areas versus those communities with more densely developed planning areas will be about 7 to 1. The surplus will actually be higher in communities with urban, regional, and/or town centers versus communities without large centers – 15 to 1.

# PLAN

## Fiscal Parameters— PLAN Costs

For the 2008-2028 analysis, statewide per capita costs, averaged and weighted for the communities in which development will take place under PLAN conditions, are $4,001 annually for per capita local services. Per-employee costs are $1,444 for local services (table 13).

## Fiscal Parameters— PLAN Revenues

For the 2008-2028 analysis, local annual revenues per capita are $4,328 annually. Per-employee revenues are $1,206 from all local sources (table 13).

## *Costs*

Overall costs under PLAN will be $3.36 billion per year. That amount is the annual cost of providing the full array of local services – municipal, school district, and county. Costs under PLAN will reflect the differing development that will take place in particular types of locations; aggregate costs will be higher in the southern part of the state ($1.87 billion) and lower in the northern part of the state ($1.50 billion). Costs will be considerably higher in urban/inner suburban communities ($2.53 billion); in communities with more densely developed planning areas ($2.86 billion); and in communities with urban, regional, and/or town centers ($2.76 billions) (table 15).

## *Revenues*

Overall revenues under PLAN will reach $3.54 billion. These revenues represent the sum of property tax, nontax revenues, and intergovernmental transfers. Revenues under PLAN will be somewhat higher in the southern portion of the state ($2.05 billion) than in the northern portion ($1.50 billion); they are nearly three times higher urban/inner suburban communities ($2.61 billion) than in rural/outer suburban communities ($0.93 billion). They are over six times higher in communities with more densely developed planning areas ($3.06 billion) versus communities with less densely developed planning areas ($0.49 billion). They are 4.5 times higher in communities with urban, regional, and/or town centers ($2.89 billion) versus those communities without large centers ($0.65 billion).

**TABLE 15. PLAN Findings—Fiscal Impacts (in Current $Millions)**

| | *Costs 2028* | *Revenues 2028* | *Net Fiscal Impact 2028* |
|---|---|---|---|
| **New Jersey** | 3,362 | 3,544 | 181 |
| **Regions** | | | |
| North | 1,495 | 1,495 | 0 |
| South | 1,867 | 2,049 | 182 |
| **Type of Community** | | | |
| Urban | 832 | 751 | -81 |
| Inner Suburban | 1,695 | 1,862 | 167 |
| Outer Suburban | 679 | 767 | 89 |
| Rural | 157 | 164 | 7 |
| **Planning Area** | | | |
| Metro, Suburban, Fringe | 2,861 | 3,055 | 194 |
| Rural, Env. Sensitive | 501 | 489 | -13 |
| **Centers** | | | |
| Large Centers (Urban, Regional, Town) | 2,757 | 2,892 | 135 |
| All Others | 605 | 652 | 47 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## *Net Fiscal Impact*

The net fiscal impact under the PLAN scenario will be a surplus of $181 million annually. Development under this scenario will produce for local governments $181 million more in revenues than it will occasion in costs. The positive fiscal impact under this scenario will be all in the southern portion of the state ($182 million) with none in the northern portion of the state. The positive net fiscal impact under PLAN will be more prominent in rural/outer suburban communities (+$96 million). It will be more pronounced in communities with non-densely developed planning areas (+$194 million); and in communities with urban, regional and/or town centers (+$135 million) (table 15).

# PLAN VERSUS TREND FINDINGS

## *Costs*

Costs under PLAN development ($3.36 billion) in 2028 will be 2.1 percent less (tables 15 and 16) than they would be under TREND development ($3.43 billion).

## *Revenues*

Revenues under PLAN conditions ($3.54 billion) in 2028 will be 1.15 percent higher (tables 15 and 16) than they would be under TREND conditions ($3.50 billion).

**TABLE 16. PLAN versus TREND Findings—Fiscal Impacts (in Current $Millions)**

| | *PLAN Costs Minus TREND Costs 2028* | *PLAN Revenues Minus TREND Revenues* | *PLAN Net Fiscal Impact Minus TREND Net Fiscal Impact* |
|---|---|---|---|
| **New Jersey** | -72 | 45 | 116 |
| **Regions** | | | |
| North | 68 | 67 | -1 |
| South | -139 | -22 | 117 |
| **Type of Community** | | | |
| Urban | 216 | 261 | 45 |
| Inner Suburban | 419 | 609 | 189 |
| Outer Suburban | -488 | -560 | -71 |
| Rural | -218 | -265 | -46 |
| **Planning Area** | | | |
| Metro, Suburban, Fringe | 297 | 484 | 186 |
| Rural, Env. Sensitive | -369 | -439 | -70 |
| **Centers** | | | |
| Large Centers (Urban, Regional, Town) | 99 | 229 | 130 |
| All Others | -171 | -184 | -14 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

### *Net Fiscal Impact*

PLAN's net fiscal impact will be $116 million more positive than the net fiscal impact under TREND conditions (table 16). PLAN's fiscal impact will reduce operating costs to local governments by $116 million annually by the time full buildout takes place in 2020. Significant cost reductions over TREND development will occur in the southern region (+$117 million); in urban/inner suburban communities (+$234 million); in communities with more densely developed planning areas (+$186 million); and in communities with urban, regional, and/or town centers (approximately $130 million) (table 16). In rural/outer suburban communities, communities with less densely developed planning areas, and in communities without large centers, the deficit increases somewhat more as the new population is accommodated by higher-cost service systems.

A $181 million fiscal surplus will be realized under the PLAN development scenario. This amounts to nearly three times the surplus that will occur under TREND. This increase is the result of greater use of the existing service structure in more densely developed communities. Also, in more densely developed communities, the real property tax is significantly higher than it is in less densely developed communities, and although overall costs may be somewhat higher, revenues will be proportionately higher. There will be significant revenue as opposed to cost reductions attributable to development in such communities.

## COMPARISON TO THE PREVIOUS IMPACT ASSESSMENT FINDINGS

The 1992 and 2000 State Plan assessments showed both TREND and PLAN to have a negative fiscal impact. PLAN development in both assessments was less negative than TREND development. How do the results of the 1992 and 2000 assessment and current analysis compare? Both earlier analyses show negative overall fiscal impacts associated with growth. Both earlier analyses show that steering growth toward urban/inner suburban areas causes fiscal deficit associated with growth to shrink. The current analysis, having the spike-up of property values from 2005 to 2008 indicates that both TREND and PLAN growth produces positive fiscal impacts but PLAN produces more positive impacts. In this case, PLAN development takes advantage of the superior revenue-cost relationships that characterize mature versus newly developed service produces. These are the same basic findings present in the two earlier evaluations.

## CONCLUSIONS AND IMPLICATIONS OF THE FINDINGS

All of the classical findings of fiscal impact analysis are borne out in this study. Overall, residentially driven growth is costly, especially if it takes place in communities that do not have sophisticated public-service systems. In these cases there are dramatic changes that must be undertaken to adjust to the service demands of increasing development. At population sizes between 5,000 and 15,000, communities must provide reasonably sophisticated police and fire-fighting services and have educational systems that deal with school district demand for a student body of 1,000 to 3,000. In addition, government administration must be experienced, recreation and cultural services must be complete, and public works departments must be

full-time and have regularly appointed tasks. Governments in these locations must accommodate the public-service needs of both residential and nonresidential development using full-time staffs, which frequently have union representation. As such, the price tag for benefits is high and the cost of providing public services is expensive.

On the other hand, once a critical mass has been reached (above 25,000 in population) there are few service areas that must be either initiated in whole or significantly expanded. Government services can be provided by adding the increment of population to a staff that need not expand to a level that small public service staffs might have to. This is done within a context of revenues that maximize the yield from real property valuation, and in addition, draw on more than property tax revenues to meet the costs of local government. While costs may be higher in such locations, revenue yields from property tax and non-property tax sources are even higher. PLAN steers development into locations with established service providers. In those locations, the system is large enough to absorb demand without directly causing a comparable increase in costs. Further, in these locations, the revenue structure is more varied and can better support the costs of growth.

## PRINCIPLES FOR FUTURE MONITORING BY THE OFFICE OF SMART GROWTH

The costs of development are better borne by mature service providers. At the local level, these are municipalities whose population size is greater than 25,000 and whose school district enrollment is more than 5,000. More than 200 of New Jersey's 566 communities have a population below 5,000. In almost all of these communities, the school district serves fewer than 1,000 pupils. Of this group, those communities that are growing find that the costs of responding to growth are high because existing levels of public services are low. To minimize future local public-service costs, one must transfer some of the growth of these communities into larger, more mature service-providing communities. The variable to be monitored to confirm that growth is not taking place out of proportion in the small jurisdictions of the rural service providers is the share of growth taking place in municipalities of population size less than 5,000 versus the share of growth taking place in municipalities of population size greater than 25,000.

## MONITORING VARIABLES

***Proportion of population growth occurring in communities of population size less than 5,000 as a share of population growth taking place in communities of population size greater than 25,000.***

$$\frac{\Delta \text{ population in communities} < 5{,}000 \text{ population}}{\Delta \text{ population in communities} > 25{,}000 \text{ population}} = \leq 1$$

# ENVIRONMENTAL ASSESSMENT

The second major area of assessment as it relates to the State Plan concerns environmental impact. Of the eight reorganized goals under the new State Plan, two relate directly to the environment. Those goals are:

**GOAL 2**

**Conserve the state's natural resources**

**GOAL 4**

**Protect the environment, and prevent and clean up pollution**

## AIR POLLUTION AND WATER POLLUTION

The 1992 evaluation also looked at both air and water pollution under TREND and PLAN conditions. These analyses were not specifically required by the State Planning Act. As such, the 2000 and 2009 Impact Assessments did not include sections on air/water pollution. Climate change and carbon footprint were also not factors in 1992 or 2000 and were not required to be part of the 2000 or 1009 analyses. Nevertheless, important findings can be restated or made as they relate to the above areas.

## Air Pollution

The 1992 evaluation found that transportation-based air pollution would decline appreciably over the projection period, mainly due to anticipated decreases in pollutants resulting from cleaner fuels, more efficient engines, more stringent emission inspections, and the fact that a larger portion of the fleet would be equipped with anti-pollution devices. These factors (i.e., reductions in non-methane hydrocarbons, carbon monoxide, and nitrous oxide) accounted for 99.85 percent of the 40 percent improvement in transportation-based air pollution over the 20-year projection period. The differing land use patterns of PLAN versus TREND accounted for only 0.15 percent of the projected improvement in transportation-based air pollution.

The conclusions of the 1992 and 2000 evaluations regarding air pollution hold true today. These involve (1) significant improvements in pollution levels as a result of improved emission controls, cleaner fuels, and more efficient engines; and (2) less significant impacts on air pollution attributable to changes in the location or configuration of development. The air pollution analysis will not be repeated in the current evaluation because of the magnitude of effects of development patterns on transportation-based air pollution. If the analysis were repeated here, the outcome would be similar. A small contribution to improvements in transportation-based air pollution (a small fraction of one percent) would occur due to the differing development patterns of PLAN development. In other words, PLAN development would improve air quality slightly.

## Water Pollution

The 1992 evaluation also analyzed differences in water pollution levels resulting from the two different future development scenarios. That element of the evaluation was specifically concerned with the uncontrolled nonpoint-source pollution that would be generated by new development. This analysis was not repeated in the 2000 Impact Assessment nor will it be repeated here for the following reasons. The 1992 evaluation considered soil types, differences in density and imperviousness levels, and projected schedules of TREND and PLAN development at the county level. The land use and the soil group determined the relative quality (level of pollutants) of stormwater runoff. Since all of the operating characteristics of the 1992 water pollution model and most of the data were county level, they are basically incompatible with the majority of the analyses undertaken in the 2000 and 2009 evaluations. The more current evaluations were done at the municipal level. The coarseness of data and models makes the earlier analyses incompatible with the specific regimens of the two development scenarios and unsuitable for presentation by differing household/employment changes and densities of individual communities. This microanalysis was a big part of the 2000 evaluation and an even bigger part of the 2009 evaluation.

Yet, the essential difference between the prior water pollution and air pollution analyses was that while air pollution was not affected by development patterns, water pollution was considerably impacted. In the 1992 evaluation, an average of 30 percent fewer tons of uncontrolled nonpoint-source water pollutants could be directly attributed to the land development patterns of PLAN. Higher densities, less overall impervious surface, and more clustering of land uses in older urban communities, typically located far from headwaters, contributed to fewer water pollution impacts under PLAN.

The findings of the 1992 evaluation indicated most of the water pollution generated (97 percent) was in the form of organic matter (biochemical oxygen demand [BOD]) and plant nutrients (total nitrogen [TN]). Total phosphorous (TP), zinc (ZN), and lead (PB) were relatively minor contributors. Projected PLAN development saved 4,560 tons of nonpoint-source water pollutants from the 15,163 tons of pollutants generated by TREND. While the analysis was coarse-grained, there were findings that indicated that PLAN development patterns could significantly alter the magnitude of future uncontrolled nonpoint-source pollutants. There is no reason to believe that, given the similarly pronounced local road and land savings associated with PLAN under the current evaluation (2009), water pollution reductions would not be at least at the same percent-age savings as observed in the 1992 evaluation. While not specifically analyzed here, it is clear that significant savings in uncontrolled nonpoint-source-based water pollution (on the order of 30 percent less) can be realized from the type of development patterns produced by the PLAN regimen. Plan development will improve water pollution significantly.

## Climate Change

Although many of the solutions to the climate crisis will have to be implemented by international authorities, governments at all levels are beginning to take action on the climate crisis. On June 21, 2007, New Jersey passed the Global Warming Response Act (GWRA), an aggressive bill that set targets to reduce greenhouse gas emissions by 20 percent (to 1990 levels) by 2020 and caps emissions at 80 percent of 2006 levels by 2050. It requires the New Jersey Department of Environmental Protection (NJDEP) along with the Board of Public

Utilities (BPU), the Department of Transportation (NJDOT), and the Department of Community Affairs (DCA) to develop a strategy to meet or exceed New Jersey's 2020 Stabilization Target for returning the State to 1990 greenhouse gas emission levels. NJDEP has been tasked with biennial monitoring, reporting and recommending action as needed.

In response to the GWRA, the current State Plan includes a new chapter on the State Plan's ability to curb New Jersey's contribution to emissions that cause global climate change.

**Johnson & Johnson Headquarters, New Brunswick: Going solar**
Matt Crosby

The *New Jersey Draft Global Warming Response Act Recommendation Report* states that as a result of the ever-increasing emissions of carbon dioxide the surface of the earth has warmed by over 1.3 degrees Fahrenheit. The report also notes that according to recent modeling efforts, regardless of any prospective policy changes, the average temperatures in New Jersey and surrounding states will rise 2.5 to 4.0 degrees Fahrenheit in the winter and 1.5 to 3.5 degrees Fahrenheit in the summer.

The causes of anthropogenic climate change are multifarious—but all stem from a single source: the burning of carbon and its release into the atmosphere. The system that modern civilization has built is wholly dependant on the burning of massive amounts of fossil fuels for its sustenance. Cheap fossil fuels and a lack of concern about carbon emissions perpetuated wasteful practices in many aspects of U.S. society throughout the last 50 years.

A New Jersey Transit bus on Main Street, Metuchen
Jon Erickson

According to Professor Clinton Andrews of Rutgers University, "Increased use of transit-oriented development has the potential to reduce auto trips, and therefore carbon emissions, but the relationship is difficult to quantify. The presence of heavy rail seems to cause some reduction in auto use, but only on the order of five to six percent. The existence of pedestrian facilities and quality design features is also necessary to encourage people to forms of transportation other than driving. The presence of transit aside, there is some evidence that increasing the overall network density of an area reduces auto travel and carbon emissions. This suggests that even in the absence of transit, encouraging denser, village-style development

could contribute to a reduction in automobile use,"[49] and as a result, a smaller carbon footprint. In New Jersey, transportation accounts for the largest single sector of the state's carbon footprint, representing 35 percent of emissions, compared with 26 percent for the nation as a whole. It is also projected to be the fastest-growing sector for the foreseeable future. The vast majority, 78 percent, of emissions from the transportation sector are attributable to gasoline burned in private automobiles. If vehicle miles travelled can be reduced it is possible to reduce climate change and the state's carbon footprint.

In a prior study,[50] highly detailed modeling attempted to determine the travel behavior of those who lived in more dense versus less dense counties. The results, in the form of regression coefficients, determined average trips per person in privately owned vehicles and by transit in certain types of counties. These regression coefficients are used in this analysis in the form of average trips per household, again in various types of counties.

The climate change/carbon footprint assessments are undertaken by pairing travel miles and travel costs of those who live in counties of different development types with those households likely to locate in a particular county. Those who live/commute in denser counties tend to make fewer automobile trips and use transit more; those who live in rural counties behave just the opposite—i.e., they make more trips using an automobile and very few using transit. This analysis assumes that those who will locate to a county of a particular type will alter their travel habits consistent with those who already live in that county.

**TABLE E-1. Predicted Average Daily Miles of Travel by Mode Group and Urban Classification**

| *Mode Group* | *Urban* | *Inner Suburban* | *Outer Suburban* | *Rural* |
|---|---|---|---|---|
| Personally Owned Vehicle (POV) | 13 | 22 | 32 | 22 |
| Transit | 7 | 19 | 0 | 0 |

Source: Burchell, Robert W., William R. Dolphin, and George Lowenstein. 2002. "Quality of Life in the United States." In Robert W. Burchell et al., *TCRP Report 74, The Costs of Sprawl 2000*. Washington, DC: National Academy Press.

The following tables show the result of the analysis.

Under TREND conditions vehicle miles traveled (VMT) increase by 4,729,714 from 2008 to 2028 (table E-2). Those using automobiles (privately owned vehicles or POVs) account for 4,561,758 vehicle miles traveled.

Under PLAN conditions vehicle miles traveled increase by 4,161,057 (table E-3). Those using automobiles account for 3,638,713 vehicle miles traveled.

PLAN development exhibits 568,657 fewer vehicle miles traveled than TREND development, including the fact that there are 354,400 more transit trips under PLAN development. PLAN reduces vehicle miles traveled, which then reduces the impact on climate change and the scale of the State's carbon footprint.

[49]Clinton Andrews, Ph.D. presentation to Edward J. Bloustein School of Planning and Public Policy, October 2008.

[50]Burchell, Robert W., William R. Dolphin, and George Lowenstein. 2002. "Quality of Life in the United States." In Robert W. Burchell et al., *TCRP Report 50, The Costs of Sprawl 2000.* Washington, DC: National Academy Press.

## TABLE E-2. TREND Findings: Annual VMT in Personally Owner Vehicles and Transit (in thousands)

| | *POV 2008* | *Transit 2008* | *Total 2008* | *POV 2028* | *Transit 2028* | *Total 2028* | *POV Change* | *Transit Change* | *Total Change* |
|---|---|---|---|---|---|---|---|---|---|
| **New Jersey** | 46,668,881 | 2,690,391 | 49,359,272 | 51,230,639 | 2,858,347 | 54,088,986 | 4,561,758 | 167,956 | 4,729,714 |
| **Regions** | | | | | | | | | |
| North | 26,092,187 | 1,651,852 | 27,744,039 | 27,489,026 | 1,708,981 | 29,198,007 | 1,396,839 | 57,130 | 1,453,969 |
| South | 20,576,693 | 1,038,540 | 21,615,233 | 23,741,613 | 1,149,366 | 24,890,978 | 3,164,919 | 110,826 | 3,275,745 |
| **Type of Community** | | | | | | | | | |
| Urban | 8,811,264 | 527,170 | 9,338,433 | 9,253,454 | 553,625 | 9,807,079 | 442,190 | 26,456 | 468,646 |
| Inner Suburban | 22,543,048 | 2,163,222 | 24,706,269 | 24,017,625 | 2,304,722 | 26,322,346 | 1,474,577 | 141,500 | 1,616,077 |
| Outer Suburban | 12,559,055 | 0 | 12,559,055 | 14,711,130 | 0 | 14,711,130 | 2,152,076 | 0 | 2,152,076 |
| Rural | 2,755,515 | 0 | 2,755,515 | 3,248,430 | 0 | 3,248,430 | 492,915 | 0 | 492,915 |
| **Planning Area** | | | | | | | | | |
| Metro, Suburban, Fringe | 38,746,056 | 2,591,994 | 41,338,050 | 42,029,205 | 2,752,355 | 44,781,560 | 3,283,149 | 160,361 | 3,443,510 |
| Rural, Env. Sensitive | 7,922,824 | 98,397 | 8,021,222 | 9,201,434 | 105,992 | 9,307,426 | 1,278,609 | 7,595 | 1,286,204 |
| **Centers** | | | | | | | | | |
| Large Centers (Urban, Regional, Town) | 36,500,064 | 2,209,156 | 38,709,220 | 39,953,728 | 2,349,466 | 42,303,194 | 3,453,664 | 140,311 | 3,593,975 |
| All Others | 10,168,817 | 481,236 | 10,650,052 | 11,276,911 | 508,881 | 11,785,792 | 1,108,094 | 27,645 | 1,135,739 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## TABLE E-3. PLAN Findings: Annual VMT in Personally Owner Vehicles and Transit (in thousands)

| | *POV 2008* | *Transit 2008* | *Total 2008* | *POV 2028* | *Transit 2028* | *Total 2028* | *POV Change* | *Transit Change* | *Total Change* |
|---|---|---|---|---|---|---|---|---|---|
| **New Jersey** | 46,668,881 | 2,690,391 | 49,359,272 | 50,307,593 | 3,212,735 | 53,520,329 | 3,638,713 | 522,344 | 4,161,057 |
| **Regions** | | | | | | | | | |
| North | 26,092,187 | 1,651,852 | 27,744,039 | 27,041,797 | 1,904,882 | 28,946,679 | 949,610 | 253,030 | 1,202,640 |
| South | 20,576,693 | 1,038,540 | 21,615,233 | 23,265,796 | 1,307,853 | 24,573,649 | 2,689,103 | 269,313 | 2,958,416 |
| **Type of Community** | | | | | | | | | |
| Urban | 8,811,264 | 527,170 | 9,338,433 | 9,308,943 | 619,523 | 9,928,466 | 497,679 | 92,354 | 590,033 |
| Inner Suburban | 22,543,048 | 2,163,222 | 24,706,269 | 24,294,299 | 2,593,212 | 26,887,511 | 1,751,251 | 429,990 | 2,181,241 |
| Outer Suburban | 12,559,055 | 0 | 12,559,055 | 13,766,173 | 0 | 13,766,173 | 1,207,118 | 0 | 1,207,118 |
| Rural | 2,755,515 | 0 | 2,755,515 | 2,938,179 | 0 | 2,938,179 | 182,664 | 0 | 182,664 |
| **Planning Area** | | | | | | | | | |
| Metro, Suburban, Fringe | 38,746,056 | 2,591,994 | 41,338,050 | 41,751,848 | 3,093,397 | 44,845,245 | 3,005,792 | 501,403 | 3,507,195 |
| Rural, Env. Sensitive | 7,922,824 | 98,397 | 8,021,222 | 8,555,746 | 119,338 | 8,675,084 | 632,921 | 20,940 | 653,862 |
| **Centers** | | | | | | | | | |
| Large Centers (Urban, Regional, Town) | 36,500,064 | 2,209,156 | 38,709,220 | 39,431,718 | 2,640,203 | 42,071,921 | 2,931,654 | 431,047 | 3,362,701 |
| All Others | 10,168,817 | 481,236 | 10,650,052 | 10,875,875 | 572,532 | 11,448,408 | 707,059 | 91,297 | 798,355 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

# LAND CONVERSION

The 1992 and 2000 environmental assessments primarily dealt with land consumption caused by development. In 2008, land consumption still figures significantly into the health of the environment in New Jersey. As in 1992 and 2000, the assessment determines how much developable, agricultural, and environmentally fragile land will be lost during the period from 2008–2028 due to growth under TREND versus PLAN conditions. As in the economic assessment, information on development differences is presented by region and both density and type of communities.

In a small, mostly developed, high-density state, a concern regarding future growth is the amount of land lost in the process of development. Sixty percent (60 percent) of New Jersey's remaining agricultural land has been lost since 1950; 30 percent of the state's wetlands have been lost since 1900. Planners and developers must understand how much developable land remains and how much they will require for future development. In a state where the primary effects of air pollution are nonpoint-source-based and water pollution is increasingly an issue of salinity, land concerns loom large. For the most part, it is believed that air and water pollution are matters that can be addressed by technology, but the conversion of land through development cannot. Land will continue to be converted at levels that far exceed the space necessary to house the growth increment of households and jobs in a given period. This is a key issue today in the State of New Jersey.


**Truck moving earth to ready land for development in Edison**
Jon Erickson

# INTRODUCTION—CORE QUESTIONS

Land conversion is the process by which vacant, undeveloped, or less-intense land uses are converted to a more intense land use such as the residential development of agricultural land. There are a number of mechanisms that can be used to prevent undesirable land conversion including agricultural zoning, purchase or transfer of development rights, and open space acquisition programs. The State Plan, which contains provisions for most of these, is intended to direct new development in such a manner as to effectively control land conversion.

The core questions to be answered here are:

- **Is land conserved due to development under PLAN versus TREND conditions?**

- **If land is conserved, does it vary significantly by region?**

- **Does the land saving vary significantly by maturity, density, or development concentration of communities?**

- **Does the plan create opportunities for redevelopment and continued revitalization of the state's urban areas and centers?**

**A new construction site is prepared for development in Hillside.**
Jon Erickson

## BACKGROUND

Accommodating a population increase of about 745,777 people and 262,000 jobs over the period 2008–2028 will require approximately 264,171 housing units and 138 million square feet of nonresidential space.

Given an assumption that one unit of residential space is equal in units to 1,000 square feet of nonresidential space, an additional amount of nonresidential units are required. This amounts to 138,000 additional units. Northeastern United States land conversion averages indicate that for every combined unit developed, 0.305 acres of land are consumed. For New Jersey, the average is close to 0.390 acres.[51]

Thus, for the combined 402,066 (264,171 + 137,895) units of residential and nonresidential space needed for future development, almost 112,622 of the approximately 1.5 million remaining acres would be consumed. Close to 60 percent of these 112,622 acres would be agricultural and environmentally fragile land. Residential development would consume approximately two-thirds of this land conversion. Thus, under projected growth conditions, over the next 20 years, about 14 percent of the remaining land would be developed. While there may be some difficulty accommodating development in specific locations of the state, for the most part, projected TREND development can be accommodated by the land remaining in the state with about six times as much land remaining as will be consumed. The above are just back-of-the-envelope calculations; more involved procedures employ models, as will be discussed below.

Land conversion due to development is projected using a simulation model. This model translates households and employment projections to the demand for residential and nonresidential land. The model accounts for both vacancy of structures and inefficient use as well as other land development requirements, such as zoning laws, which force the consumption of additional land. The model uses different development locations and densities for TREND versus PLAN growth, calculates the land converted under each development alternative, and expresses these, as well as their differences, in acres. The land conversion model requires a

[51] Burchell et al., "Land Conversion in the United States," *The Costs of Sprawl 2000* (Washington, DC: Transportation Research Board, National Academy of Science Press, 2002.

basic unit of geography that can be divided into more and less densely developed areas. The basic geographic unit in this analysis is the municipality. The more or less densely developed areas within a municipality are historic development locations under TREND conditions and a varying combination of State Plan Planning Areas, naturally forming centers, and environs under PLAN conditions. The model employs historic information to determine the location and density of development under the TREND scenario and the State Plan Policy Map and associated development standards for centers and environs to determine the location and density of development under the PLAN scenario.

**A new development site emerges in Piscataway.**
Jon Erickson

In order to understand potential land losses in New Jersey, one must first consider the scale of land resources that currently exists in the state compared with land that remains possible to develop. New Jersey comprises 4.8 million land acres, 1.55 million acres of which are developed.

As of 2008, close to 900,000 acres have been purchased under the state's Green Acres program. Another 400,000 acres are protected in state forests (208,000 acres) or in fish and wildlife management areas (192,000 acres), and an additional 100,000 acres are protected in state and county parks. Finally, about 171,000 acres are held under various forms of farmland protection. Of 4.8 million acres, 1.5 million remain undeveloped and unprotected. Approximately two-thirds of the latter are forestlands; about one-third are agricultural lands.[52]

The analysis that follows distinguishes between developable lands, agricultural lands, and environmentally fragile lands. Developable lands are those lands in the path of growth not protected by local, state, or federal environmental laws. Agricultural lands are lands that best support farming. They include cropland, pastureland, rangeland, forestlands, and other farm uses. Forestland portions of agricultural lands are those lands that act as a windbreak, watershed, or buffer to farming operations. These lands are classified as agricultural lands, even though they do not produce crops. Environmentally fragile lands are lands that are particularly vulnerable to the activities of nature and man. Water-based environmentally fragile lands are floodplains, wetlands, and critical sensitive watersheds; those environmentally fragile lands that are geologically based are steep slopes, sinkholes, and erosion-prone areas. Except for floodplains and wetlands, which are federally regulated, fragile lands are not universally regulated and deserve special consideration. Besides the fragile lands grouped with agricultural lands (forestlands), the vast majority of environmentally fragile lands have tree cover, which results in their being classified through aerial photography as woodlands. Since there is a great deal of overlap between fragile lands and forestlands, forest-

[52] Rutgers University, Center for Urban Policy Research, "Distribution of the One-Million-Acre Land Purchase" (computer file, 2009).

lands in this analysis serve as a prime surrogate for environmentally fragile lands.

The State Plan policies related directly to land are:

## Policy Statements from the Plan

### 12.0 Open Lands, Natural Systems, and Recreation

**Plan for the acquisition, management and protection of open spaces, natural systems and recreational areas for the purposes of preserving biological diversity, protecting water resources, wetlands, forested lands, critical slopes, scenic vistas. Reduce the amount of greenhouse gases to supplement and improve existing land acquisition, regulatory and management techniques in ways that are consistent with the vision and goals of the State Plan.**

**THE CHALLENGE:**

***To improve the protection of New Jersey's valuable and diverse open lands, natural systems and recreational open spaces in the face of increased population pressures, competing demands for alternative land uses and a highly fragmented institutional framework.***

# IMPACT ASSESSMENT—METHODS

**Large home subdivision finished and just occupied in Readington.**
Jon Erickson

Household projections within each municipality for the period 2008–2028 are divided by area-specific overall occupancy rates to obtain gross housing-unit projections that are then allocated by housing type within each community. Under TREND development, growth projections for municipalities flow from historically based information. Residential growth is allocated to a municipality according to historic development densities as determined by GIS land coverages and Census information, wherein the number of units in a residential area is divided by the amount of land these units occupy. Employment growth is also allocated to communities based on historic growth and development densities.

Under PLAN development, growth in a municipality takes place by first determining whether there are naturally formed centers in a community. These are locations that have 100 percent greater density than the average density of the county. Once this determination is made, development is allocated to remaining develop-

able areas in the community. Centers are naturally existing concentrations of households or jobs, or both, that relate reasonably well to proposed and identified centers and other areas that are like centers in character. Remaining developable areas are areas outside center boundaries—areas within a municipality, developed at densities lower than centers, but nonetheless permitting some level of development. To convert residential structures to the demand for raw land, observed densities of centers in specific planning areas are used. Densities are available for centers of various types (table 17). Densities are also available for remaining developable areas; very little development takes place in remaining developable areas—densities are relatively low. Reasonably significant development takes place in redevelopment areas—densities are relatively high. All calculations of density take into account additional land required for roads, street hardware, utilities, and open space. This amounts to an additional land requirement of 15 to 20 percent.

## LAND CONVERSION FOR NONRESIDENTIAL STRUCTURES

Employment growth is translated to the demand for nonresidential land through the use of historic employment densities. Although nonresidential structures are calculated and used elsewhere in this analysis, they are not used directly in the calculation of nonresidential land conversion. Historic employment densities (employees per acre under TREND development) or desired relationships between residential and nonresidential development and center employment densities (PLAN) determine the land consumed by employment housed in a particular community.

In this analysis for both residential and nonresidential development, land converted uses historic development densities for TREND development. It uses calculated center and remaining areas' densities for PLAN development. The latter is historic densities in a community. The primary differences between TREND and PLAN development are the densities for residential development and PLAN's differing employment density in nonresidential or mixed-use centers. In the course of this analysis, the term "nonresidential unit" will be used. As indicated in the section on employment impacts, this is the amount of space required to house future employment growth in units of 1,000 square feet. It is determined from industry standards of employment occupancy but is not used directly in the land conversion calculation.

**Ongoing nonresidential construction in Atlantic City.**
Jon Erickson

Development occurs under TREND conditions according to historical projections of households and employment for a 20-year projection future. Thus, TREND development is a detailed extraction of past growth to portray future levels and locations of growth. This flows directly from the population, household, and employment projections found in the economic portion of this impact assessment.

**TABLE 17. Standards for Centers: PLAN**

| | *Urban* | *Town* | *Regional Center PA-1, PA-2* | *Regional Center PA-3, PA-4, and PA-5* | *Village* | *Hamlet* |
|---|---|---|---|---|---|---|
| **Area** (in square miles) | | <2 | 1 to 10 | 1 to 10 | <1 | 10 to 50 acres (c.w.)<br><100 acres (no c.w.) |
| **Population** (#) | >40,000 | 1,000 to 10,000 | >10,000 | >5,000 | <4,500 | 25-250 |
| **Gross Population Density** (persons per square mile) | >7,500 | >5,000 | 5,000 | 5,000 | 5,000 | 3,000 |
| **Housing** (dwelling units) | | 500 to 4,000 | 4,000 to 15,000 | 2,000 to 15,000 | 75 to 2,000 | 10 to 100 |
| **Gross Housing Density** (dwelling units per acre) | | >3 | >3 | >3 | >3 | >2 |
| **Employment** (# of jobs) | >40,000 | 500 to 10,000 | >10,000 | >5,000 | 50 to 1,000 | |
| **Jobs:Housing Ratio** | >1:1 | 1:1 to 4:1 | 2:1 to 5:1 | 2:1 to 5:1 | 0.5:1 to 2:1 | |

*Notes:* Criteria are intended to be applied flexibly. Density criteria are relevant primarily to new centers and to the growth areas of existing centers, and are less relevant to the built-up portions of existing centers. Designation criteria refer to the center's planning horizon year (e.g., 2020 population rather than current population).

c.w.: community wastewater

*Source:* New Jersey State Planning Commission: *The New Jersey State Development and Redevelopment Plan: Draft Final Plan,* March 29, 2000.

# EXPECTED DIFFERENCES BETWEEN TREND AND PLAN

Land conversion to support an equivalent number of households and jobs at the state and regional levels should be less under the PLAN scenario than under the TREND scenario. This is true because under PLAN development, growth is directed to communities with more densely developed planning areas and to communities with urban, regional, and/or town centers. This is also true because PLAN development prescribes a greater amount of redevelopment than the TREND scenario does. This characteristic of PLAN development—consuming less land than the TREND scenario—should be visible at both the state and regional levels, and even more obvious at the local level. In the latter case, very significant differences should be apparent in rural/outer-suburban municipalities, in communities with less densely developed planning areas, and in communities without urban, regional, and/or town centers.

# CRITICAL ASSUMPTIONS

TREND residential densities are determined by GIS coverages; nonresidential densities are determined similarly, with the exception that under PLAN development, nonresidential and mixed-use centers exist. These centers take housing-unit and employment-structure growth before development in the rest of the community.


**Announcement of Green Acres Program utilization in Hamilton.**
Jon Erickson

Development under PLAN conditions occurs according to two individual factors. The first step under PLAN development is to allocate a component of future growth to centers. The model allocates growth to centers within a community. The State Plan Policy Map has created a series of five planning areas and six categories of centers where development can take place at different scales. Centers are naturally forming areas, the density of which is 100 percent greater than the surrounding county. The number of centers relates to the number of density concentrations; the scale of the center relates to the scale of the naturally forming area. The various planning areas receive growth in relation to the number and scale of centers. Both planning areas and centers are graduated from locations of the most densely developed (metropolitan planning area or PA-1) and the largest centers (urban, regional, and town) to the least developed (environmentally sensitive planning area or PA-5) and the smallest centers (village, hamlet). The concept behind the establishment of these differing development-receptive locations is that development will generally take place in the more densely developed locations PA-1 to PA-3 versus PA-4 and PA-5. Yet development is permitted in all planning areas in centers. Centers of varying types are found in most planning areas; however, the more densely developed planning areas contain the largest number of significant-sized centers. Thus, the State Plan envisions more urban and regional centers in PA-1 and PA-2 and more village and hamlet centers in PA-4 and PA-5. This would provide more overall growth to the former and less overall growth to the latter.

Each of the various types of centers has cores and surrounding community development areas defined by a center boundary. The concept is that the cores will have most of the public and private nonresidential services and the community development areas will contain the bulk of the residential development. Each center has defined limits of geographical scale as well as development standards associated with residential and nonresidential development.

The second step of the process under PLAN development is to allocate development to the remaining developable areas. Remaining developable areas are areas outside center boundaries that can accept residual development at normal local densities. Remaining developable areas exist only in PA-2 to PA-5. In PA-1, remaining developable areas' density is replaced with redevelopment areas that allow for development in excess of the density that would occur under TREND conditions. Remaining developable areas' density varies by planning area from 0.75 unit per acre in PA-2 to 0.1 unit per acre in PA-5 for the purposes of this analysis.

The remaining developable areas encompass a diversity of conditions, and they vary in form and function throughout New Jersey. In some

parts of the state, the remaining developable areas are predominantly infill or skipped-over development. In other parts of the state, the remaining developable areas already have limited development, such as scattered housing, retail, office space, or warehousing. In some counties, the remaining developable areas are already quite developed with a variety of low-density uses, such as larger-lot housing and private educational facilities. In the highway corridors, the remaining developable areas may even include highway-oriented facilities such as rest stops and large warehousing and distribution centers. The policy objectives for PA-3 to PA-5 call for the protection of the PA-2 remaining developable areas from development occurring in centers. Here, remaining developable areas should be primarily open land and form large contiguous areas of undisturbed lands or farmland.

## SCOPE AND DEPTH OF ANALYSIS

The analysis of comparative land conversion under TREND and PLAN conditions involves different levels of residential and nonresidential development being projected for each scenario for the state's 566 communities. Each community has a TREND density for residential and nonresidential development; each community has a composite residential and nonresidential density under the PLAN scenario according to the number and types of centers that are contained within the communities.

It should be understood that in some communities across the state, under PLAN development, development proceeds as if it were TREND development. These are communities without naturally formed centers. Thus, in this impact assessment, subscription to the PLAN in every community is not assumed.

***Under TREND conditions, growth in New Jersey will total 264,171 dwelling units and 138 million square feet of nonresidential space.***

# IMPACT ASSESSMENT—FINDINGS

## TREND FINDINGS

Under TREND conditions, growth in New Jersey will total 264,171 dwelling units and 138 million square feet of nonresidential space. The latter will accommodate a growth in employment of 262,000 jobs over the period 2008–2028. Nearly one hundred thirty-eight million (138 million) square feet of nonresidential space is equivalent to 138,000 units of nonresidential space at 1,000 square feet per unit. This combined growth of 402,066 units of residential and nonresidential development will be concentrated mostly in southern New Jersey (59 percent) rather than northern New Jersey (41 percent) (table 18A). Sixty (60) percent of this development will take place in urban and inner-suburban communities (241,675 development units); 40 percent in rural/outer-suburban communities (160,390 development units (table 18A). Eighty-one percent of this development will be in communities with more densely developed planning areas (326,443 development units), and 79 percent (318,201 development units) will occur in communities with urban regional or town centers. Nineteen percent of

future residential and nonresidential development (75,624 development units) will be in communities with less densely developed planning areas, and 21 percent (83,865 development units) in communities without large centers (table 18A).

Currently, there are approximately 1.5 million acres of undeveloped and unreserved land in New Jersey. TREND's consumption of a portion of 1.5 million acres is roughly proportional to current incidence; as will be seen, PLAN's consumption follows the conservation objectives of the State Plan. Under TREND conditions, 112,622 acres of land are converted to urban uses by 402,066 units of future development. Approximately 64.5 percent of this acreage will be converted in southern New Jersey (72,697 acres) and 35.5 percent in northern New Jersey (39,925 acres) (table 18B). More than 37 percent of this land conversion will take place in urban and inner-suburban communities (41,871 acres); 60 percent (67,730 acres) will take place in communities in more densely developed planning areas; and 67 percent (75,065 acres) in communities with urban, regional, and town centers (table 18B). The remaining land conversion will take place in rural/outer-suburban municipalities (63 percent, for a total of 70,757 acres); in communities with less densely developed planning areas (40 percent, or 44,892 acres), and in communities without large centers (33 percent, or 37,557 acres). Only 5.3 percent (5,981 acres) of land will be converted in urban communities (table 18B).

**TABLE 18A. TREND Findings—Residential and Nonresidential Development Units**

| | *2000* | *2008* | *2013* | *2028* | *Change 2008-2028* |
|---|---|---|---|---|---|
| **New Jersey** | 5,428,117 | 5,622,819 | 5,592,696 | 6,024,886 | 402,066 |
| **Regions** | | | | | |
| North | 3,339,776 | 3,382,620 | 3,349,469 | 3,547,244 | 164,624 |
| South | 2,088,341 | 2,240,200 | 2,243,227 | 2,477,641 | 237,442 |
| **Type of Community** | | | | | |
| Urban | 1,752,736 | 1,744,963 | 1,726,193 | 1,813,201 | 68,238 |
| Inner Suburban | 2,609,526 | 2,696,457 | 2,677,304 | 2,869,895 | 173,437 |
| Outer Suburban | 827,662 | 916,880 | 922,843 | 1,043,076 | 126,196 |
| Rural | 238,194 | 264,520 | 266,356 | 298,714 | 34,194 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 4,758,081 | 4,881,086 | 4,847,660 | 5,207,528 | 326,443 |
| Rural, Env. Sensitive | 670,036 | 741,734 | 745,036 | 817,357 | 75,624 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 4,492,658 | 4,625,458 | 4,597,806 | 4,943,659 | 318,201 |
| All Others | 935,459 | 997,361 | 994,890 | 1,081,226 | 83,865 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

**TABLE 18B. TREND Findings—**
**Undeveloped Land Converted (in Acres)**

| | *Change 2008-2013* | *Change 2008-2028* |
|---|---|---|
| **New Jersey** | 17,973 | 112,622 |
| **Regions** | | |
| North | 6,371 | 39,925 |
| South | 11,601 | 72,697 |
| **Type of Community** | | |
| Urban | 955 | 5,981 |
| Inner Suburban | 5,727 | 35,890 |
| Outer Suburban | 6,936 | 43,464 |
| Rural | 4,355 | 27,287 |
| **Planning Area** | | |
| Metro, Suburban, Fringe | 10,809 | 67,730 |
| Rural, Env. Sensitive | 7,164 | 44,892 |
| **Centers** | | |
| Large Centers (Urban, Regional, Town) | 11,979 | 75,065 |
| All Others | 5,993 | 37,557 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

# PLAN FINDINGS

Under PLAN conditions, there will be the same growth in New Jersey of 264,171 dwelling units and 137,895 units (1,000 square feet each) of nonresidential space. This amounts to 402,066 development units. Residential and nonresidential growth will be focused primarily in southern New Jersey (59 percent), with growth in northern New Jersey (41 percent) clearly lagging (table 19A). This is where the similarities between TREND and PLAN end. Under PLAN, 77.6 percent of this development will take place in urban or inner-suburban communities (312,261 development units), and 22.4 percent in rural/outer-suburban communities (89,804 development units) (table 19A). Further, nearly 90 percent will take place in communities with more densely developed planning areas (360,038 development units) and 83.3 percent in communities with urban, regional, and/or town centers (334,908 development units) (table 19A). Only 10.5 percent of the development units constructed over the period will be in communities with less-developed planning areas (42,028 development units) and 16.7 percent in communities without large centers (67,157 development units) (table 19A).

Under the PLAN scenario, future residential and nonresidential development in the state will convert approximately 52,315 acres over the period 2008–2028. Under PLAN conditions, 33,332 acres will be converted in the southern part of the state; 18,984 acres will be converted in the northern part of the state (table 19B). Under PLAN development, approximately 25,603 acres will be converted in urban and inner-suburban communities; 26,713 acres in rural/outer-suburban communities. Under the PLAN scenario, 35,212 acres will be converted in communities with more densely developed planning areas and 34,671 acres will be

converted in communities with urban, regional, and town centers (table 19B).

**TABLE 19A. PLAN Findings—Residential and Nonresidential Development Units**

| | *2000* | *2008* | *2013* | *2028* | *Change 2008-2028* |
|---|---|---|---|---|---|
| **New Jersey** | 5,428,117 | 5,622,819 | 5,592,696 | 6,024,885 | 402,066 |
| **Regions** | | | | | |
| North | 3,339,776 | 3,382,620 | 3,349,469 | 3,547,244 | 164,624 |
| South | 2,088,341 | 2,240,200 | 2,243,226 | 2,477,641 | 237,442 |
| **Type of Community** | | | | | |
| Urban | 1,752,736 | 1,744,963 | 1,729,102 | 1,839,923 | 94,960 |
| Inner Suburban | 2,609,526 | 2,696,457 | 2,683,320 | 2,913,758 | 217,301 |
| Outer Suburban | 827,662 | 916,880 | 916,737 | 993,184 | 76,304 |
| Rural | 238,194 | 264,520 | 263,538 | 278,020 | 13,500 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 4,758,081 | 4,881,086 | 4,852,297 | 5,241,124 | 360,038 |
| Rural, Env. Sensitive | 670,036 | 741,734 | 740,399 | 783,761 | 42,028 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 4,492,658 | 4,625,458 | 4,599,857 | 4,960,366 | 334,908 |
| All Others | 935,459 | 997,361 | 992,839 | 1,064,518 | 67,157 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

**TABLE 19B. PLAN Findings—Undeveloped Land Converted (in Acres)**

| | *Change 2008-2013* | *Change 2008-2028* |
|---|---|---|
| **New Jersey** | 8,349 | 52,315 |
| **Regions** | | |
| North | 3,029 | 18,984 |
| South | 5,319 | 33,332 |
| **Type of Community** | | |
| Urban | 414 | 2,596 |
| Inner Suburban | 3,671 | 23,007 |
| Outer Suburban | 2,493 | 15,623 |
| Rural | 1,770 | 11,090 |
| **Planning Area** | | |
| Metro, Suburban, Fringe | 5,619 | 35,212 |
| Rural, Env. Sensitive | 2,729 | 17,103 |
| **Centers** | | |
| Large Centers (Urban, Regional, Town) | 5,533 | 34,671 |
| All Others | 2,816 | 17,644 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## PLAN VERSUS TREND FINDINGS

**Horses on New Jersey farm**
Jon Erickson

PLAN versus TREND development will cause no difference in the increase of total future (2008–2028) residential and nonresidential development at the state or regional levels in New Jersey. PLAN development will increase by nearly 30 percent the amount of development projected for urban/inner-suburban communities (70,000 development units); it will decrease by 43.8 percent the amount of development projected for rural/outer-suburban communities (70,000 development units) (table 20A).

PLAN versus TREND development will increase by 10.5 percent the amount of development in communities with more densely developed planning areas (34,000 development units) and by 5.3 percent the development in communities with urban, regional, and/or town centers (17,000 development units) (table 20A). PLAN versus TREND demonstrably shifts the locus of development to sites in the midst of or near existing development.

***PLAN development in New Jersey saves 60,307 acres from development during the projection period 2000-2028.***

PLAN development in New Jersey saves 60,307 acres from development during the projection period 2008–2028. Twice as much land savings occur in the southern versus northern parts of the state; almost three times as much in rural/outer-suburban communities; 20 percent more in communities with less densely developed planning areas; and twice as much in communities with urban, regional, and town centers. The PLAN development scenario will save 39,365 acres from development in southern New Jersey, and 20,942 acres in northern New Jersey (table 20B). PLAN development will further save 32,518 acres in communities with more densely developed planning areas and 40,394 acres in communities with urban, regional, and town centers (table 20B). Thus, PLAN development, which redirects residential and nonresidential growth to urban communities, to communities with more densely developed planning areas, and to communities with urban, regional, and/or town centers, is able to save 53.5 percent of the land converted during the 2008–2028 development period. Very significant land savings are evidenced in all of the types of locations the State Plan is attempting to serve.

## TABLE 20A. PLAN versus TREND Findings— Residential and Nonresidential Development Units

| | *TREND Change 2008-2028* | *PLAN Change 2008-2028* | *PLAN Change Minus TREND Change 2008-2028* |
|---|---|---|---|
| **New Jersey** | 402,066 | 402,066 | 0 |
| **Regions** | | | |
| North | 164,624 | 164,624 | 0 |
| South | 237,442 | 237,442 | 0 |
| **Type of Community** | | | |
| Urban | 68,238 | 94,960 | 26,722 |
| Inner Suburban | 173,437 | 217,301 | 43,864 |
| Outer Suburban | 126,196 | 76,304 | -49,892 |
| Rural | 34,194 | 13,500 | -20,694 |
| **Planning Area** | | | |
| Metro, Suburban, Fringe | 326,443 | 360,038 | 33,595 |
| Rural, Env. Sensitive | 75,624 | 42,028 | -33,596 |
| **Centers** | | | |
| Large Centers (Urban, Regional, Town) | 318,201 | 334,908 | 16,707 |
| All Others | 83,865 | 67,157 | -16,708 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## TABLE 20B. PLAN versus TREND Findings— Undeveloped Land Converted (in Acres)

| | *TREND Change 2008-2028* | *PLAN Change 2008-2028* | *PLAN Change Minus TREND Change 2008-2028* |
|---|---|---|---|
| **New Jersey** | 112,622 | 52,315 | -60,307 |
| **Regions** | | | |
| North | 39,925 | 18,984 | -20,942 |
| South | 72,697 | 33,332 | -39,365 |
| **Type of Community** | | | |
| Urban | 5,981 | 2,596 | -3,385 |
| Inner Suburban | 35,890 | 23,007 | -12,883 |
| Outer Suburban | 43,464 | 15,623 | -27,841 |
| Rural | 27,287 | 11,090 | -16,198 |
| **Planning Area** | | | |
| Metro, Suburban, Fringe | 67,730 | 35,212 | -32,518 |
| Rural, Env. Sensitive | 44,892 | 17,103 | -27,789 |
| **Centers** | | | |
| Large Centers (Urban, Regional, Town) | 75,065 | 34,671 | -40,394 |
| All Others | 37,557 | 17,644 | -19,913 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## COMPARISON TO THE PREVIOUS IMPACT ASSESSMENT FINDINGS

In the 2000 State Plan Impact Assessment, in order to accommodate a projected 2000-2020 growth of 461,988 households and 802,576 jobs under TREND conditions, 354,655 acres were converted to urban uses. In the current evaluation, in order to accommodate a projected 2008–2028 growth of 265,718 households and 262,000 jobs under TREND conditions, 112,622 acres are converted. In the 1992 evaluation, 795,500 development units—residential (450,000 units) and nonresidential (345,500 units)—would consume 292,000 acres, or 0.367 acres per development unit. In the current State Plan evaluation, 402,066 development units would consume 112,622 acres under TREND conditions. In the 1992 evaluation, a similar amount of development under PLAN conditions (795,000 residential and nonresidential development units) would consume 164,500 acres, or approximately 0.20 acres per development unit. In the most recent analysis, under PLAN conditions, 402,066 development units consume 52,315 acres, or 0.13 acres per development unit. Savings under PLAN conditions in the 1992 analysis amounted to 127,600 acres, or 43.7 percent. In the 2000 evaluation, savings amounted to 122,000 acres, or approximately 39 percent; savings in the current evaluation amount to 60,300 acres, or about 53.5 percent. The higher percentage of land savings in the current evaluation may be attributable to the fact that under past modeling practices, almost one-third of the development under PLAN had to be assumed to take place as TREND development. This is neither the case nor the assumption in the current evaluation.

## CONCLUSIONS AND IMPLICATIONS OF THE FINDINGS

PLAN development provides a 60,307-acre saving of land converted over a 20-year development period, while accommodating the same level of residential and nonresidential development as TREND development. Under both scenarios of future development, similar numbers of housing units and amounts of nonresidential space are developed to accommodate projected household and employment growth. This is true at both the state and regional levels. Below the regional level (northern and southern New Jersey), development takes place differently and in different locations. Under PLAN, more development takes place at higher densities in urban/inner-suburban communities, in communities with more densely developed planning areas, and in communities with urban, regional, and/or town centers. This produces significant land savings in all of the locations where PLAN development is active.

## PRINCIPLES FOR FUTURE MONITORING BY THE OFFICE OF SMART GROWTH

Land conversion per development unit could be reduced by more than 50 percent if the regimen of the State Plan is followed. A goal of no more than one-quarter acre per development unit is certainly desirable. This goal can be achieved under the current guidelines for the development and redevelopment of centers.

## MONITORING VARIABLES

***The monitoring variable to be considered is the number of acres consumed by development divided by the amount of residential and nonresidential space developed (expressed in development units).***

***Δ acres of land***

***divided by***

***Δ residential/nonresidential units***

***= < 0.25 acres/unit***

# AGRICULTURE

**Pumpkins from nearby farms for sale along Main Street in Chester**
Matt Crosby

## INTRODUCTION— CORE QUESTIONS

Farmland preservation is a key component of New Jersey's Smart Growth Plan.[53] Farming is important to New Jersey's economy, and the food the industry produces is important for the health of its citizens, but the role of farmland in the State Plan is more extensive than its productive capacity.

Conserving farmland is an essential part of a sustainable development plan for New Jersey. According to the NJ Smart Growth Tool Kit, "Under the innovative conservation planning approach, land conservation is the central organizing principle around which livable communities are created . . . innovative conservation planning efforts help New Jersey grow in

[53] New Jersey Department of Community Affairs, Office of Smart Growth. *Draft—The New Jersey State Development and Redevelopment Plan 2009, Volume II: Statewide Policies* (Trenton, NJ; DCA 2009), 148.

ways that consume less land and strike a balance between preservation and growth."[54]

The core questions for agriculture in the State Plan are:

- **Will the State Plan save agricultural lands that would be lost under existing development trends?**
- **Can these lands be saved throughout the State of New Jersey, especially in rural areas facing development pressure and areas that lack rural centers?**
- **Is the agricultural land saving (if any) a significant component of all lands likely to be lost to development?**

**Cornfields under agricultural use in Princeton Township**
Jon Erickson

## BACKGROUND

Of the 4.7 million acres in the state, 1.7 million remain undeveloped and unprotected. Of that acreage, half is in agriculture and forestry. As the Agriculture Plan explains, "there is more to planning for agriculture than raising money to buy land or development rights. Farm*land* preservation must also be about farm*ing* preservation."[55]

New Jersey's agricultural sector is very different from the large-scale production agribusiness found in the heartland of the United States. New Jersey farmers concentrate on high-value produce, truck crops and agri-tourism, and direct-to-consumer marketing of farm products, leaving low-value production of grain and meat to the corporate farming operations of the Midwest and West. There are 10,327 farms in New Jersey as of 2007.[56]

Proximity to major northeastern markets and access to a wide variety of consumers are key advantages of New Jersey farmers. This is borne out in data about the operations of New Jersey farms. As of 2007 there were 9,800 full- and part-time farm operators. New Jersey farms averaged 93 acres in size in 1992 and as of 2007 averaged 78 acres in size. Nearly all are family-owned, and their output per acre is among the highest in the country. The average per-acre value of New Jersey

[54] New Jersey Department of Agriculture. *Innovative Conservation Planning.* www.state.nj.us/agriculture/innovativeconservationplanning.pdf.

[55] New Jersey Department of Agriculture, *Agricultural Smart Growth Plan for New Jersey* (Trenton, NJ: NJDOA, April 2006), 4.

[56] United States Department of Agriculture, Economic Research Service. *State Fact Sheets: New Jersey*. www.ers.usda.gov/State Facts/NJ.htm.

farmland in 1999, including land and buildings, was $8,370, the highest average value of farmland anywhere in the nation.[57]

## FARMLAND PRESERVATION BENEFITS

- **Helps keep municipal taxes down**
- **Increases property values**
- **Benefits the environment**
- **Adds to a community's character**
- **Is part of New Jersey's heritage**
- **Ensures that New Jersey residents continue to have access to an abundant supply of locally produced fresh food and agricultural products.**

New Jersey is one of the nation's top 10 producers of fruits and vegetables; the state ranks second in blueberry production, third in cranberry production, and fourth in peach production. Farmers can market certain vegetables, fruits, horticultural products, ornamentals, and berries directly. Many farmers in New Jersey are able to bypass middlemen and therefore net higher prices for products. Additionally, the cost of transporting farm products to markets is relatively low. The market value of agricultural products sold is $987 million, 86 percent of which comes from crop production and 14 percent of which comes from livestock production.

Although only 20 percent of the state's land—less than 1 million acres—is used for farming, agriculture is the third-largest industry in New Jersey. The $56 billion food and agriculture industry ranks behind only pharmaceuticals and tourism in the economic benefits it brings to the state. In 2007, New Jersey's 10,327 farms, occupying 733,450 acres—a decrease of 76,550 acres since 2002—generated cash receipts totaling $987 million. That was an increase of $44 million over 2000. In 2007, the top agriculture commodity was the nursery/greenhouse/sod industry, with cash receipts of $382 million. The next four agriculture commodities in cash receipts were horses and mules, with $94 million; peaches and chicken/eggs, both generating $33 million; and field crops, generating $65 million.[58]

Policies such as the Farmland Tax Assessment program (FTA), which assesses agricultural land at its current-use value rather than its higher speculative or development-use value, also help farmers keep production costs at manageable levels. Off-farm employment opportunities are abundant for New Jersey farmers, who are generally better educated than farmers elsewhere in the United States. This provides supplemental income for many farmers. In addition, some New Jersey farmers can subdivide their land and sell off small parcels to developers at prices well in excess of the prices in other states, another major advantage. Revenues raised through such sales are an alternative source of credit for financing new technology and production. As of 2008, 169,981 acres of farmland have been preserved under the New Jersey Farmland Preservation Program.[59]

[57] Ibid.

[58] Ibid.

[59] New Jersey Department of Agriculture, *Agricultural Smart Growth Plan for New Jersey* (Trenton, NJ: NJDOA, April 2006), 4.

## Challenges to Farmers

New Jersey farmers, however, face many disadvantages not experienced by their counterparts across the Northeast and the rest of the United States. Most of these are related to encroachment by development and the adverse effects of suburbanization. In most parts of the state, the farming component of the typical farm household's income is not sufficient to cover farm production and family expenses. To maintain viability, many farmers rely on other sources of revenue, such as off-farm income and proceeds from the sale of land and other farm assets.

New Jersey farmers' product mix reflects land constraints and the unique opportunities faced in the state. Over time, the agricultural product mix has become highly diversified rather than more specialized. The top three subsectors of New Jersey agriculture (livestock, vegetables, and nursery) accounted for about 80 percent of farmers' revenue in 1964, but only 60 percent in 2000. From 2000 to 2007 the mix of agricultural production changed with nursery, horses and mules, and blueberries accounting for approximately 60 percent of revenues, or $565.2 million of $945.9 million total receipts.[60]

## Challenges to Farming

As there are for individual farmers, there are many unique challenges impacting New Jersey agriculture as a whole. These forces have shaped the State Plan in New Jersey. The importance of agriculture is acknowledged in the State Planning Act, which specifically requires the New Jersey State Planning Commission to coordinate planning activities and establish statewide planning objectives in agriculture and farmland retention. The State's farmland plan speaks of an "important balance between the state's cities, suburbs and rural areas. Yet, past development has not adequately struck that balance, with a historical loss of 10,000 acres of farmland per year. From 1998 to 2002 the loss was approximately 5,000 acres of farmland per year; yet more recently the loss of farmland has returned to a level of approximately 10,000 acres a year.[61]

**A new subdivision on former farmland in Somerset, Franklin Township.**
Matt Crosby

Suburbanization, including population movement to rural areas, has resulted in the loss of farmland.

[60] The following is a historical description taken from the 1992 Impact Assessment. See Robert W. Burchell et al., *Impact Assessment of the New Jersey Interim State Development and Redevelopment Plan. Appendix Report I: Research Strategy*, 67–104; see also A.O. Adelaja, D. Kerr, and K. Rose-Tank, "Economic and Equity Implications of Land Use Zoning in Suburban Agriculture." *Journal of Agricultural Ethics* 2: 97–112 (1989), and United States Department of Agriculture, Economic Research Service, *State Fact Sheets: New Jersey*, www.ers.usda.gov/StateFacts/NJ.htm

[61] N.J.S.A. C. 40:55D-1 et. seq. **(CHECK!)**, 20; New Jersey Department of Agriculture, *Agricultural Smart Growth Plan for New Jersey* (April 2006), 5; United States Department of Agriculture, Economic Research Service, *State Fact Sheets: New Jersey*, www.ers.usda.gov/StateFacts/NJ.htm

From 1950 to 2007, land in farms in New Jersey dropped by about 60 percent—from 1.80 million to 0.73 million acres; the number of farms declined by two-thirds—from 26,900 to 9,800 farms. Since the early 1970s, the size of New Jersey farms has been decreasing, partly as a result of suburbanization pressure to subdivide farms, while the average size of farms in the rest of the country has been growing substantially. Since 1970 the average New Jersey farm shrank from 123 acres to 71 acres in 2009.[62]

In the major farming regions of New Jersey, adequate water resources and large, contiguous tracts of land with minimal land-use conflicts are essential to sustaining successful farming operations and farmland productivity. Agricultural management practices are utilized to protect prime fertile soils, water, and other natural resources. More-intensive farming operations and the growing encroachment of housing into lands once considered the domain of crops and livestock have produced the need for "right to farm" and other supportive ordinances necessary to ensure a future for the agricultural industry.

Crops and farmland offer habitat to birds, other wildlife, and a host of insects and small creatures that perform functions such as pollination and decomposition. Farmlands, when worked responsibly, filter pollutants from the water and air and play a role in flood prevention.

In addition to its economic significance, agriculture is an important contributor to New Jersey's quality of life. Agriculture generates positive externalities that are enjoyed by rural and urban residents, such as rural and pastoral scenery.

## New Jersey's Agricultural Economy

**Sheep grazing in Long Valley.**
Matt Crosby

Agricultural production and agriculture's contribution to New Jersey's economy have also diminished. From the mid-1960s to 2007, New Jersey's agricultural output declined by more than one-fifth. However, agriculture remains a significant economic activity, particularly in rural areas of New Jersey. According to the Agricultural Statistics Service, gross farm income of New Jersey farmers totaled $840 million in 2000 and $946 million in 2007, while net farm income increased from $275 million to $312 million. Statewide, farmers contributed more than $82 billion to the state's economy and spent more than $389 million on goods and services related to production, paid $52 million in property taxes, and made $26 million in principal and interest payments on outstanding debt. New Jersey farms directly employed more than 22,000 workers on a full-time-equivalent basis and indirectly supported another 17,500 workers.[63]

[62] United States Department of Agriculture, Economic Research Service, *State Fact Sheets: New Jersey*, www.ers.usda.gov/StateFacts/NJ.htm

[63] Ibid.

Retaining productive taxpaying farmland is critically important to all New Jersey residents for a number of reasons external to its economic value alone. For instance, farming is responsible for the largest portion of scenic vistas in the state. The preservation of farmland is key to retaining these vistas. The State Agricultural Development Committee (SADC) administers the Farmland Preservation Program. Between 1983 and 2000, the program has been instrumental in the permanent preservation of almost 60,000 acres of farmland. From 2000 to 2005 the farm acreage preserved increased to 166,000, more than doubling preserved acreage. This represents less than 17 percent of existing farmland; however, the other 83 percent remains unprotected.[64]

## Planning for Agriculture

**A local farmers market in East Brunswick.**
Jon Erickson

As the 2006 Agriculture Smart Growth Plan states, "Many New Jersey towns are fed up with …development and want to stop growth completely."[65] However, it is not within the state's economic or social interest to stop growth entirely. The Agriculture Smart Growth Plan states that "New Jersey should not stop growth, but it can plan for it in a way that protects the state's most valuable farmland and other natural resources and ensures the continued viability of its agricultural industry."[66] Underlying this statement is the fact that towns cannot stop growth because of constitutional guarantees of property rights, mitigated by the reality that towns already exercise strong regulatory authority over land use.

Specific policies related to agriculture are found for each planning area. PA-4 is the area where most farming takes place. The planning objective for PA-4 is protecting the rural character of the area by encouraging a pattern of development that promotes a stronger rural economy in the future while meeting the immediate needs of rural residents, and by identifying and preserving farmland and other open land. This objective is based on an acknowledgment that (1) agriculture is an important part of New Jersey life, as it contributes to the economy of the state as well as to the quality of life of state residents; and (2) to preserve open space through farmland retention, agriculture needs to be a viable economic activity.

In New Jersey as in other states, farmland protection is an essential component of comprehensive growth management programs. This portion of the environmental assessment evaluates losses of agricultural land due to the land conversion activities of residential and commercial development. The analysis focuses on potential land losses that would render agricultural activities in the state of New Jersey less viable and would cause the loss of positive externalities to the state. Farmland is principally located in the rural planning area (PA-4), although critical farmland can also be found in PA-3 and PA-4B as well.

Agricultural land conversion in the Impact Assessment measures lost prime agricultural land.

[64] http://www.nj.gov.agriculture/sadc/
[65] http://www.nj.gov/agriculture/divisions/anr/agriassist/smartgrowth/html
[66] Ibid.

The TREND model determines what share of available land in a community is agricultural and projects development at historical densities to determine what percentage of agricultural land will be converted. The PLAN model assesses land conversion by allowing development to consume land in centers in specific planning areas that have more or less agricultural lands as part of their developable land mix.

Under TREND, towns are already exercising strong growth management behavior, and in fact, redirecting that growth under PLAN will not have the effect of reducing development in New Jersey. A more balanced growth management scheme can be seen as regulatory reform while actually increasing development opportunities and allowing for economic growth in the state.

Without incentives to limit towns from enacting anti-growth regulations, most enact reactionary solutions to subdivision applications, such as large-lot zoning. Large lot zoning restricts development opportunities and economic growth, does not preserve farmland, and encourages a type of "meta-sprawl." As the Agriculture Plan states, "Downzoning spreads homes out in such a way that consumes more land, with none of the remaining land useable for farming, forestry or recreation."[67] The State Plan aims to modify that paradigm by giving communities the tools to plan and zone before subdivision applications are filed. It allows them to simultaneously allow the growth they want to see while affording them the tools to plan to preserve farmland in the state.

In the critical planning areas where agriculture is threatened, the Agriculture Plan states, "[G]rowth should be focused in existing and new rural centers where development is mixed in use and compact. Ideally, the areas outside of these centers are maintained for agriculture by using planning techniques that address landowner equity and support farming."[68]

***The New Jersey Courts have been vigilant in ensuring that the "benefits and burdens flowing from the implementation of the State Plan are borne on an equitable basis."***

*Equity* is a significant concern of the State Plan. Reducing densities and restricting development to preserve farming may conserve scenic vistas and allow for the continuation of an important part of the state's economic heritage, but there are real estate valuation implications of such measures. Likewise, shifting growth toward centers also has significant valuation implications. In order to balance the gains and losses landowners will face under PLAN, the state has designed a system to help equalize those inequities. This concept is contained in Transfer of Development Rights (TDR) and Purchase of Development Rights (PDR).

[67]Ibid.

[68]http://www.njfuture.org/Media/docs/transfer_rights_04.pdf

## Transfer of Development Rights (TDR) as a Method of Equitably Securing Agricultural Land

**Residential building under construction in Jersey City.**
Matt Crosby

The system, which allows for Transfer of Development Rights (TDR) and Purchase of Development Rights (PDR), assists with equity concerns that are a principal concern of the State Plan. As stated in the preamble of the Agricultural Plan, equity is a primary goal of the State Plan:

> Although preserving land is of central importance to achieving smart growth, the plan recognizes that land preservation can disproportionately impact property values. The New Jersey courts have been vigilant in ensuring that the "benefits and burdens flowing from implementation of the State Plan are borne on an equitable basis."

In one case in which a downzoning was overturned, the court invoked the equity provision of the State Plan in upholding the landowner's right to reasonable investment-backed expectations:

> It is the position of the State Planning Commission that the State Plan should neither be used in a manner that places an inequitable burden on any one group of citizens nor should it be used as a justification for public actions that have the effect of diminishing equity. It is also the position of the Commission that the achievement, protection and maintenance of equity be a major objective in public policy decisions as public- and private-sector agencies at all levels adopt plans and policies aimed at becoming consistent with the State Plan.[69]

New Jersey signed into law the State Transfer of Development Rights (TDR) Act on March 29, 2004.[70] This bill makes New Jersey the first state in the nation to authorize TDR on a statewide level. The legislative findings in the act are as follows:

> The Legislature finds and declares that as the most densely populated state in the nation, the State of New Jersey is faced with the challenge of accommodating vital growth while maintaining the environmental integrity, preserving the natural resources, and strengthening the agricultural industry and cultural heritage of the Garden State; that the responsibility for meeting this challenge falls most heavily upon local government to appropriately shape the land use patterns so that growth and preservation become compatible goals; that until now municipalities in most areas of the State have lacked effective and equitable means by which potential development may be transferred from areas where preservation is most appropriate to areas where growth can be better accommodated and maximized; and that the tools necessary to meet the challenge of balanced growth in an equitable manner in New Jersey must be made available to local government as the architects of New Jersey's future.[71]

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[69] http://www.state.nj.us/dca/divisions/osg/programs/dch/html
[70] Ibid.
[71] Ibid.

According to the Office of Smart Growth, "Transfer of Development Rights is a realty transfer system where development potential in a specified preservation area can be purchased by private investors for use in a targeted growth area. In exchange for a cash payment, landowners in the preservation area place a restrictive easement on the property that will maintain the resource into perpetuity. The land in the designated receiving area can then be developed at a higher density than allowed under the baseline zoning."[72]

The law states that a "sending zone shall be composed of land with one or more of the following characteristics": Agricultural land, woodland, floodplains, wetlands, threatened or endangered species habitat, aquifer recharge area, recreation or park land, waterfront, steep slopes, unique or aesthetic, architectural or historical structure; or other areas which shall remain at low densities for reasons of inadequate transportation, sewerage or other infrastructure, or for such other reasons as proscribed by the *State Development and Redevelopment Plan* or local or regional plans.

The TDR law further states that "A receiving zone shall be appropriate and suitable for development and shall be at least sufficient to accommodate all of the development potential of the sending zone, (1) the availability of all necessary infrastructure; (2) all of the provisions of the zoning ordinance including those related to density, lot size and bulk requirements; and (3) given local land market conditions as of the date of the adoption of the development transfer ordinance." The law states that the sending zones shall have adequate infrastructure to support development, but does not speak of "Centers" or any other measure in the State Plan that references where density is appropriate.

A future amendment to the TDR law should reference and incorporate the State Plan for describing appropriate receiving zones as it does for sending zones.

The State Plan policy addressing agriculture is:

## Policy Statements from the Plan

### 15.0 Agriculture

**Promote agriculture as an industry and preserve the agricultural land base by coordinating planning and innovative land preservation techniques to support agricultural sustainability in recognition of agriculture's valuable contributions to conserving the State's natural resources and its quality of life, while accommodating growth in rural areas in ways that are consistent with the State Plan's vision and goals.**

**THE CHALLENGE:**

***To promote agriculture as an economically viable industry in this highly urbanized state by defining and supporting appropriate agricultural niches, while also continuing to preserve the farmland base when agricultural land values often adversely compete with land values for residential and commercial development.***

[72]Ibid.

# IMPACT ASSESSMENT—METHODS

**A farm in Newtonsville.**
Jon Erickson

## EXPECTED DIFFERENCES BETWEEN TREND AND PLAN

TREND conditions in all planning areas show conversion of agricultural lands in equal measure with other types of developable land and at suburban and exurban prevailing densities. PLAN predicts that agricultural land will be converted at the prevailing density levels of centers. PLAN therefore predicts that less agricultural land will be converted to urban use given expected population growth. The analysis includes a projection of the demand for residential and nonresidential development from 2008–2028.

## CRITICAL ASSUMPTIONS

Farmland will be lost under both TREND and PLAN development scenarios. Under the TREND scenario, farmland is converted at historical development densities. Under the PLAN scenario, farmland is actively protected in the fringe (PA-3), rural (PA-4), and environmentally fragile (PA-5) planning areas. This is achieved primarily by guiding growth to centers in PA-3 to PA-5 and limiting development in the exurban and rural areas of PA-4 and PA-5. In the fringe planning areas (PA-3), development is favored and conflicts between center growth and agricultural land preservation are more frequently decided in favor of growth. In the rural planning areas (PA-4), development is directed to centers, and much of the undeveloped land is retained as agricultural as priority is given to farmland preservation. In the environmentally sensitive planning areas (PA-5), agricultural uses are considered of secondary importance if they conflict with preservation of environmentally fragile land. Of the three planning areas, retention of prime agricultural land and agricultural uses is given the greatest priority in the rural planning area (PA-4), where most prime agricultural land is located.

## SCOPE AND DEPTH OF ANALYSIS

Very little agricultural acreage is found in metropolitan planning areas (PA-1) and suburban planning areas (PA-2). Agricultural lands found in the fringe planning areas (PA-3) are not often considered prime. Agricultural lands found in the rural–environmentally sensitive planning areas (PA-4B), while of considerable environmental significance, are classified as agricultural rather than environmentally sensitive. Although the most significant difference in agricultural land conversion under the TREND and PLAN scenarios is in PA-4, agricultural land conversion occurs in other planning areas as well.

# IMPACT ASSESSMENT—FINDINGS

## TREND FINDINGS

Under the TREND scenario, approximately 30 percent (33,258 acres) of developed land (112,622 acres) will be taken from agricultural lands. Of that land converted, 75 percent is prime agricultural land and 25 percent is nonprime agricultural and environmentally fragile agricultural land, respectively.

**TABLE 21. TREND Findings—Agricultural Lands Converted (in Acres)**

| | *Change 2008-2013* | *Change 2008-2028* |
|---|---|---|
| **New Jersey Regions** | 5,307 | 33,258 |
| North | 1,872 | 11,734 |
| South | 3,435 | 21,524 |
| **Type of Community** | | |
| Urban | 134 | 841 |
| Inner Suburban | 1,323 | 8,292 |
| Outer Suburban | 1,710 | 10,718 |
| Rural | 2,139 | 13,406 |
| **Planning Area** | | |
| Metro, Suburban, Fringe | 2,569 | 16,099 |
| Rural, Env. Sensitive | 2,738 | 17,159 |
| **Centers** | | |
| Large Centers (Urban, Regional, Town) | 3,129 | 19,608 |
| All Others | 2,178 | 13,650 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

Of the 33,258 acres of agricultural lands converted to other uses, 21,524 acres, or 65 percent, is consumed in the southern part of the state; 11,734 acres, or 35 percent, will be lost in the northern part of the state (table 21). More than 72.5 percent of this agricultural land loss (24,124 acres) will take place in rural/outer-suburban communities, with most of the remaining 27.5 percent (25.0 percent, or 8,292 acres) in small suburban communities. There are almost no agricultural land losses in urban communities (table 21). Under TREND development, 17,159 acres, or 51.6 percent of the agricultural land losses, will take place in communities with less densely developed planning areas, and 13,650 acres, or 41 percent, will take place in communities without urban, regional, and/or town centers (see table 21).

***Under the TREND scenario, approximately 30 percent of developed land will be taken from agricultural lands.***

## PLAN FINDINGS

Under PLAN development, only 16,021 acres of agricultural land are consumed for development purposes. This is only 48 percent of the agricultural land losses experienced under TREND development. Sixty-five percent of these agricultural lands (10,433 acres) will be lost in the southern part of the state; 35 percent (5,588 acres) will be lost in the northern region (table 22). Under PLAN development, 7,193 acres, or nearly 45 percent of the agricultural land consumed, will be lost in communities with less densely developed planning areas; 5,581 acres, or 35 percent, will be lost in communities without large centers (table 22).

**TABLE 22. PLAN Findings— Agricultural Lands Converted (in Acres)**

| | *Change 2008-2013* | *Change 2008-2028* |
|---|---|---|
| **New Jersey** | 2,557 | 16,021 |
| **Regions** | | |
| North | 892 | 5,588 |
| South | 1,665 | 10,433 |
| **Type of Community** | | |
| Urban | 70 | 437 |
| Inner Suburban | 965 | 6,048 |
| Outer Suburban | 597 | 3,742 |
| Rural | 925 | 5,794 |
| **Planning Area** | | |
| Metro, Suburban, Fringe | 1,409 | 8,828 |
| Rural, Env. Sensitive | 1,148 | 7,193 |
| **Centers** | | |
| Large Centers (Urban, Regional, Town) | 1,666 | 10,440 |
| All Others | 891 | 5,581 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## PLAN VERSUS TREND FINDINGS

PLAN development saves approximately 17,237 agricultural acres, or 52 percent, of the agricultural lands likely to be lost. In the southern portion of the state, approximately 11,091 acres, almost 52 percent of lands likely to be converted, will be saved; in the northern portion of the state, approximately 6,145 acres, or 2 percent, will be saved (table 23).

## COMPARISON TO THE PREVIOUS IMPACT ASSESSMENT FINDINGS

In the 2000 evaluation, it was projected that a total of 125,000 farm acres would be consumed under TREND development and 57,000 acres under PLAN development—a difference of 68,000 acres, or 54.4 percent, for the 2000 to 2020 period. Approximately 33,258 in farm acreage is expected to be consumed during the current period of evaluation under the TREND scenario. The absolute savings under the PLAN scenario for the projection period 2008–2028 are 17,237 acres, or 52.0 percent; the relative savings are almost as high; the absolute land lost is much lower. The state is getting to a point where much of the remaining unprotected developable land is farmland—thus farmland losses to development are a large share of overall land losses.

## CONCLUSIONS AND IMPLICATIONS OF THE FINDINGS

PLAN development during the period 2008–2028 saves 17,237 acres of agricultural lands that would be consumed under the TREND regimen, while accommodating the same level of residential and nonresidential development. Similar numbers of housing units and nonresidential space are developed to accommodate projected households and employment growth under both future development scenarios. Under PLAN conditions, agricultural land saving is not as significant in communities with more densely developed planning areas.

**TABLE 23. PLAN versus TREND Findings— Agricultural Lands Converted (in Acres)**

| | TREND Change 2008-2028 | PLAN Change 2008-2028 | PLAN Change Minus TREND Change 2008-2028 |
|---|---|---|---|
| **New Jersey** | 33,258 | 16,021 | -17,237 |
| **Regions** | | | |
| North | 11,734 | 5,588 | -6,145 |
| South | 21,524 | 10,433 | -11,091 |
| **Type of Community** | | | |
| Urban | 841 | 437 | -405 |
| Inner Suburban | 8,292 | 6,048 | -2,244 |
| Outer Suburban | 10,718 | 3,742 | -6,976 |
| Rural | 13,406 | 5,794 | -7,612 |
| **Planning Area** | | | |
| Metro, Suburban, Fringe | 16,099 | 8,828 | -7,270 |
| Rural, Env. Sensitive | 17,159 | 7,193 | -9,966 |
| **Centers** | | | |
| Large Centers (Urban, Regional, Town) | 19,608 | 10,440 | -9,168 |
| All Others | 13,650 | 5,581 | -8,069 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

***PLAN saves 17,237 agricultural acres, or 52 percent, of the agricultural lands likely to be lost.***

Most of the land saved is in rural communities, in the southern part of the state, in communities with less densely developed planning areas, and in communities without urban, regional, and/or town centers.

# PRINCIPLES FOR FUTURE MONITORING BY THE OFFICE OF SMART GROWTH

Agricultural land is being consumed at a 0.3 to 1 rate in terms of total acreage converted for development purposes. For every acre taken under TREND development (112,622), 0.3 acres of farmland are lost (33,258). Under PLAN development, this is about the same level. Acres lost to development under PLAN are 52,315; agricultural lands lost are 16,021 acres. Agricultural land losses should be compared to overall land taken for development, and the resulting ratio should not exceed 0.3 to 1. The monitoring variable will ensure that agricultural lands are not consumed at greater than 30 percent of all developable land consumed.

## MONITORING VARIABLE

***Number of acres of agricultural lands converted as a share of all acres of land converted.***
***This number should not exceed 0.30 to 1.***

- ***Δ acres of agricultural lands converted***

***divided by***

- ***Δ acres of developable land converted***

***Fragile lands are not universally protected and deserve special consideration.***

## ENVIRONMENTALLY FRAGILE LAND

**Truss bridge over the Delaware River in Frenchtown**
Jon Erickson

Environmentally fragile lands are lands that are particularly vulnerable to the activities of nature and human beings.[73] They do not lend themselves well to development. The primary categories of water-based environmentally fragile lands are floodplains, wetlands and critical sensitive watershed; those that are geologically based are steep slopes, sinkholes and erosion-prone lands.[74] Except for floodplains and wetlands, which are protected through federal and state regulations, fragile lands are not universally protected and deserve special consideration. The effects of disturbing hillside, aquifers, streams and wetlands can range from safety hazards such as flooding or landslides to drought, poor water quality or the shortage of other valuable natural resources. Economic consequences include the cost of providing additional public facilities such as flood prevention devices or new water sources and loss of value in real estate, a problem in erosion-prone areas.

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[73] Robert W. Burchell et al., *Costs of Sprawl 2000* (TCRP Report #74 (Washington, DC: National Academy Press, 2002).
[74] Ibid.

The citizens of New Jersey face escalating threats to the state's biodiversity in the form of habitat loss. Each year, development claims thousands of acres of wetlands and forests, disrupting wildlife habitat and impacting rivers, streams, and watersheds. Twenty percent of wetlands have been lost since 1900. Wetlands work as natural sponges, soaking up and storing rain and runoff. This is a cost-effective way of improving water quality and managing stormwater. When wetlands are developed, water that would have been stopped or slowed may flood. Increased flooding destroys property and can cause lives to be lost. Furthermore, water birds rely on wetlands for food and sustenance; their population is declining in direct proportion to wetlands loss. Water birds require large undisturbed areas for nesting and breeding. The current decline in their numbers related to habitat loss may be irreversible. Even though wetlands protection is the poster child for curbing habitat loss, thanks to federal and state protection, New Jersey in the year 2000 is approaching its goal of "zero loss"—zero acres lost to ongoing development. Unprotected forestlands are the new significant sites of habitat loss.

Besides fragile lands within agricultural lands, the vast majority of nonagricultural, non-wetland fragile lands have some sort of tree cover, which results in their being identified as forestlands. Since there is a great deal of overlap between fragile lands and forestlands, forestland is often chosen as an indicator of environmentally fragile land. Since 1956, New Jersey has lost 8,000 forestland acres each year to other uses.

The core questions to be answered under this portion of the analysis are:

- **Will the State Plan (PLAN) save environmentally fragile lands that would be lost under existing development trends (TREND)?**
- **Can these environmentally fragile lands be saved throughout New Jersey, especially in the undeveloped and pristine areas of the state?**
- **Are the overall savings significant relative to the amount of environmentally fragile lands that would be consumed by development under TREND?**

# BACKGROUND

## Forests and Underground Aquifers

New Jersey has a total land area of 4,748,000 acres. There are about 1,864,300 acres classified as forestland in New Jersey, 75 percent of which is privately owned. Approximately 464,000 (956,073 acres in State or Federal Parks, Forests and Wildlife Management Areas) acres are in state forests, parks, and other public lands. New Jersey forestlands are unique; probably in no other state are there so many species of trees to be found, as well as such a wide variety of topography, soils, drainage, and vegetation, all in a relatively small area. From the Kittatinny Range to the Pine Barrens, three of the five major forest regions in the United States are found in New Jersey. Forestlands usually lie atop aquifer-recharge areas. An aquifer is a natural holding tank of geologic material that supplies groundwater to natural springs and water wells. Aquifer recharge is the process by which rainwater seeps down through the soil into an underlying aquifer. Half the water used by New Jersey residents on a daily basis is extracted from underground aquifers. The State

Plan envisions that development be limited in aquifer recharge areas, since urbanization affects the quality and availability of clean water.

**A stream in Bull's Island Park, Raven Rock.**
Jon Erickson

## Steep Slopes

**Severe slope in an inner-suburban setting: Essex Fells.**
Jon Erickson

In addition to providing filtering for water supplies, remaining forests in New Jersey are often found on steep slopes. Trees, roots and ground cover prevent soil erosion on such slopes. Soils in New Jersey's forests tend to be thin and shallow, dry, saline and/or acidic, all of which contribute to making such areas difficult to develop.

According to the New Jersey State Plan, one of five planning areas is the environmentally sensitive planning area (PA-5). The environmentally sensitive planning area covers more than 1 million acres throughout New Jersey and contains large contiguous land areas with valuable ecosystems, geological features, and wildlife habitats.[34] Most environmentally fragile lands are found in the Delaware Bay and other estuary areas, the Highlands region, the Meadowlands region, the Pinelands region, and coastal areas. Some have remained undeveloped or rural in character. Other areas, particularly New Jersey's coastal barrier islands, have experienced advanced levels of development but remain highly vulnerable to natural forces. Environmentally sensitive planning areas are characterized by watersheds, trout streams, and drinking water–supply reservoirs; recharge areas for potable water aquifers; habitats of endangered and threatened plant and animal species; coastal and freshwater wetlands; prime forested areas; scenic vistas; and other significant topographical, geological, or ecological features, particularly coastal barrier spits and islands.

Existing centers within the environmentally sensitive planning area often are the focus of residential and commercial growth and public facilities and services for their region; they also provide the backbone for the state's recreation and tourism industries. The wide diversity of natural and built systems has resulted in small rural towns such as High Bridge, Ogdensburg, and Hopatcong and villages such as Cape May Point, Far Hills, Bedminster, Mauricetown, Fortescue, Fairton, Leesburg, Stone Harbor, Seaside Heights, and Surf City. Environmentally

sensitive planning areas encompass regional centers, including Newton in the northwest and Wildwood on a barrier island in the southeast. These centers generally are linked to each other by rural roads and separated from other development by open spaces or linked to the mainland by state highways crossing coastal wetlands and waterways. Centers on the barrier islands are almost all sewered, whereas centers in other environmentally sensitive areas often are not sewered.

## Historic, Cultural, and Scenic Resources

The policy in the State Plan relating to the protection of historic, cultural, and scenic resources is:

**Loew's Theatre in downtown Jersey City.**
Matt Crosby

### Policy Statements from the Plan

#### 9.0 Historic, Cultural, and Scenic Resources

**Protect, enhance, and where appropriate, rehabilitate historic, cultural and scenic resources by identifying, evaluating and registering significant historic, cultural and scenic landscapes, districts, structures, buildings, objects and sites, and ensuring that new growth and development are compatible with historic, cultural and scenic values and in ways that are consistent with the vision and goals of the State Plan.**

**THE CHALLENGE:**

***To protect, enhance and, where appropriate, rehabilitate historic, cultural and scenic resources through appropriate means that will enhance not only the historic, cultural heritage and scenic resources, but also make significant contributions to the State's economy.***

**Convention Hall (view from land side), Asbury Park.**
Matt Crosby

# IMPACT ASSESSMENT—METHODS

**Facing the memorial in Battlefield Park, Princeton**
Jon Erickson

In order to calculate environmentally fragile lands lost, lands in PA-5 and PA5B converted for development purposes under the two growth scenarios are compared. PA-5 is the environmentally sensitive planning area; PA-5B is the environmentally sensitive/barrier island planning area. The environmentally sensitive planning area (PA-5) located in the northern half of the state contains the vulnerable steep slopes and scenic vistas of Morris, Somerset, and Passaic counties. In the extreme southern half of the state, in Cumberland and Salem counties, environmentally sensitive lands in the form of coastal wetlands are being protected in PA-5. Finally, again in the northern part of the state, PA-5 areas in Hunterdon, Warren, and Sussex counties are being protected to retain undeveloped prime forested areas and mature stands of plant species. PA-5B, located in the southern part of the state in Monmouth, Ocean, Atlantic, and Cape May counties, provides necessary protection for barrier islands, beaches, and coastal spits. In order to compare the alternative futures, each community will have household and job growth that it must accommodate under TREND or PLAN conditions. Household projections produce a demand for dwelling units that require development acreage according to prevailing residential densities. Employment projections produce a demand for nonresidential structures that require development acreage according to prevailing nonresidential densities. Under TREND and PLAN conditions, land is drawn from developable land that is either non-agricultural, agricultural, or environmentally fragile. None of these lands are protected by wetlands legislation, floodplains or coastal regulations, and so on. Those protected lands cannot be claimed for development.

TREND growth claims unprotected environmentally fragile land equal to its percentage incidence locally. The PLAN scenario claims unprotected environmentally fragile land according to the following schedule. First, for the share of PLAN development that occurs outside centers, its percentage incidence is converted as all land is converted. Second, for the share of development that occurs as center development, environmentally fragile land is converted according to the number of centers and their development densities that occur in PA-5 and PA-5B.

# EXPECTED DIFFERENCES BETWEEN TREND AND PLAN

It is expected that the environmental objectives of the PLAN growth alternative will save some environmentally fragile lands. The specific provision in the State Plan relating to the conservation of environmentally fragile lands is as follows: Protect and preserve large, contiguous tracts and corridors of recreation, forest, or other open space land that encompasses natural systems and sensitive

natural resources including endangered species, ground and surface water resources, wetland systems, natural landscapes of exceptional value, critical slope areas, and other significant environmentally sensitive features.

## CRITICAL ASSUMPTIONS

On the other hand, the density of remaining areas in PA-5 and PA-5B under the State Plan is sufficiently low (one unit per 10 acres) that lands used for development as opposed to occupied by development may diminish the overall land savings associated with PLAN development. Environmentally fragile lands are counted as lost (consumed) only if these lands are required for development and are designated as PA-5 or PA-5B lands unprotected by federal, state, and most local regulations. One unit on 10 acres under PLAN consumes 10 acres for development, even though only one acre (or less) is occupied by the structure. In this case, land used for development is 10 acres; land occupied by development is one acre.

## SCOPE AND DEPTH OF ANALYSIS

All of the residential and nonresidential development units can consume environmentally fragile land according to where growth is taking place (in a municipality) and the amount of environmentally fragile land that exists in that location (from Landsat).

## TREND FINDINGS

Overall, 79,364 environmentally fragile acres, as defined by forested land, are lost between 2008 and 2028 (table 24). Lands lost are mostly found in the southern part of the state (51,193 acres, or 65 percent). A lesser amount of environmentally fragile land will be lost in the northern part of the state (28,192 acres, or 35 percent). The northern portion of the state will experience only 34 percent of projected household growth over the two-decade period, and in the process will lose a similar amount of all environmentally fragile land converted.

**TABLE 24. TREND Findings— Environmentally Fragile Lands Converted (in Acres)**

| | Change 2008-2013 | Change 2008-2028 |
|---|---|---|
| **New Jersey** | 12,665 | 79,364 |
| **Regions** | | |
| North | 4,499 | 28,192 |
| South | 8,166 | 51,173 |
| **Type of Community** | | |
| Urban | 820 | 5,140 |
| Inner Suburban | 4,404 | 27,598 |
| Outer Suburban | 5,226 | 32,745 |
| Rural | 2,215 | 13,882 |
| **Planning Area** | | |
| Metro, Suburban, Fringe | 8,239 | 51,631 |
| Rural, Env. Sensitive | 4,426 | 27,733 |
| **Centers** | | |
| Large Centers (Urban, Regional, Town) | 8,850 | 55,457 |
| All Others | 3,815 | 23,908 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

Under TREND conditions, 46,627 acres of environmentally fragile lands will be consumed in rural/outer-suburban communities and 27,598 acres in inner-suburban municipalities. In urban communities, only a small amount of environmentally fragile land (5,140 acres) will actually be consumed due to lack of presence of, and demand for, development acreage in these areas.

***Under TREND development, 79,364 environmentally fragile acres are lost between 2008 and 2028.***

Under TREND conditions, 51,631 acres will be consumed in communities with more densely developed planning areas (communities that have mostly PA-1 and PA-2 areas within their bounds). About 27,733 acres will be consumed in communities with less densely developed planning areas (communities with predominantly PA-1, PA-2, or PA-3 areas within their bounds) (table 24). In the TREND scenario, more environmentally fragile land will be lost than any other category of land. Under TREND conditions, of the 112,622 total acres converted to urban uses during the period 2000 to 2028, approximately 79,364 acres, or 70 percent, will be unprotected environmentally fragile lands. Most of the environmentally fragile land (55,457 acres) will be lost in communities with large centers; less environmentally fragile land will be lost (23,908 acres) in communities without large centers (table 24).

## PLAN FINDINGS

Under the PLAN scenario, a total of 36,294 acres of environmentally fragile lands will be consumed or lost to development. Of lands lost, 22,899 acres, or 63 percent, will be lost in the southern part of the state; 13,395 acres, or 37 percent, will be lost in the northern part of the state. Approximately 73 percent, or 26,384 acres, will be lost in communities in the more intensely developed planning areas; 9,910 acres, or 27 percent, will be lost in communities in less intensely developed planning areas (table 25). Under PLAN, 24,231 acres, or 67 percent, of environmentally fragile lands will be lost in communities with urban, regional, and/or town/village centers; 12,063 acres (33 percent) will be lost in communities without large centers (table 25).

**TABLE 25. PLAN Findings— Environmentally Fragile Lands Converted (in Acres)**

| | Change 2008-2013 | Change 2008-2028 |
|---|---|---|
| **New Jersey Regions** | 5,792 | 36,294 |
| North | 2,138 | 13,395 |
| South | 3,654 | 22,899 |
| **Type of Community** | | |
| Urban | 345 | 2,160 |
| Inner Suburban | 2,706 | 16,958 |
| Outer Suburban | 1,896 | 11,880 |
| Rural | 845 | 5,296 |
| **Planning Area** | | |
| Metro, Suburban, Fringe | 4,210 | 26,384 |
| Rural, Env. Sensitive | 1,582 | 9,910 |
| **Centers** | | |
| Large Centers (Urban, Regional, Town) | 3,867 | 24,231 |
| All Others | 1,925 | 12,063 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

***PLAN development saves 43,070 acres of the 79,364 environmentally fragile acres lost under TREND development between 2008 and 2028.***

## PLAN VERSUS TREND FINDINGS

TREND development consumes 43,070 more environmentally fragile acres, or 2.2 times more than development under PLAN conditions. Approximately 28,274 acres are saved in the southern part of the state, and 14,796 acres are saved in the northern part of the state (table 26).

Approximately 29,450 acres are saved in rural/outer-suburban communities under PLAN development, and 13,619 acres are saved in urban/inner-suburban municipalities (table 26).

Approximately 25,248 acres are saved in developing communities in more densely developed planning areas; 17,823 acres are saved in communities in less densely developed planning areas. Finally, 31,226 acres are saved in communities with urban, regional, and/or town centers; 11,845 acres are saved in communities without large centers (table 26). Clearly, there is a significant saving of environmentally fragile land if development for the period 2008–2028 proceeds according to the PLAN regimen.

**TABLE 26. PLAN versus TREND Findings—**
**Environmentally Fragile Lands Converted (in Acres)**

| | TREND Change 2008-2028 | PLAN Change 2008-2028 | PLAN Change Minus TREND Change 2008-2028 |
|---|---|---|---|
| **New Jersey** | 79,364 | 36,294 | -43,070 |
| **Regions** | | | |
| North | 28,192 | 13,395 | -14,796 |
| South | 51,173 | 22,899 | -28,274 |
| **Type of Community** | | | |
| Urban | 5,140 | 2,160 | -2,980 |
| Inner Suburban | 27,598 | 16,958 | -10,639 |
| Outer Suburban | 32,745 | 11,880 | -20,865 |
| Rural | 13,882 | 5,296 | -8,586 |
| **Planning Area** | | | |
| Metro, Suburban, Fringe | 51,631 | 26,384 | -25,248 |
| Rural, Env. Sensitive | 27,733 | 9,910 | -17,823 |
| **Centers** | | | |
| Large Centers (Urban, Regional, Town) | 55,457 | 24,231 | -31,226 |
| All Others | 23,908 | 12,063 | -11,845 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## COMPARISON TO PREVIOUS IMPACT ASSESSMENT FINDINGS

About the same amount of environmentally fragile land will be consumed during current projections under both scenarios as was the case in the 2000 evaluation (80,000 acres, TREND; 37,000 acres, PLAN). In 1992, approximately 36,500 acres were expected to be consumed under TREND; 7,150 acres would be consumed under PLAN. The overall magnitude of land consumed varies between the two analyses because, first, under current technologies, environmentally fragile land is charted much more accurately, and second, over time it has become one of the few sources of developable land available. Currently, when land is consumed, it is either agricultural land or has some type of environmental limitation.

## CONCLUSIONS AND IMPLICATIONS OF THE FINDINGS

PLAN development, with its strong conservation element, steers growth to locations in a way that minimizes the amount of environmentally fragile land consumed. More than 43,000 acres can be saved in the course of normal development by building in more dense locations—more urban/inner-suburban communities and centers in all types of communities. Land that is saved need not be purchased to prevent the loss of critical habitats, aquifer-recharge areas, forestlands, and so on. Unfortunately, even under PLAN conditions, 36,300 acres of environmentally fragile lands will be lost to development during the 2008–2028 projection period.

# PRINCIPLES FOR FUTURE MONITORING BY THE OFFICE OF SMART GROWTH

The key monitoring variable in determining whether PLAN offers an effective land conservation strategy is the share of land taken for development that is environmentally fragile. This portion should not exceed 33 percent, or approximately 37,165 of 112,622 total acres consumed for development.

## MONITORING VARIABLES

***The number of acres of environmentally fragile lands converted, divided by the total lands converted, should not exceed 33 percent:***

***≤ 0.33 Acres of Environmentally Fragile Lands Converted***

***÷***

***Acres of Developable Land Converted***

# INFRASTRUCTURE ASSESSMENT

Infrastructure is defined as roads, bridges, mass transportation, airports, ports and waterways, water supply, waste treatment and disposal, energy supply, and communications. Infrastructure in the nation's cities and local jurisdictions is the support for the national economy. It is the foundation upon which industrial wealth is based; it is utilized by every citizen and all industries.[75] During the twentieth century, the United States invested massively in infrastructure: expanding ports, building road systems, creating airports, erecting dams, establishing power grids, and constructing water treatment facilities. In 1975, the United States spent 2.4 percent of its GDP on infrastructure. Japan stepped up infrastructure investment during the 1960s and 1970s, developing bullet trains, state-of-the-art highways, and signature airports and ports. Today, China spends about 9 percent of its gross domestic product on infrastructure development; India and Russia follow suit in attempts to ramp up new industry. As population growth and urbanization in developing countries strain inadequate infrastructure, mature, industrialized economies—in Western Europe, Canada and Australia—try to modernize aging systems and networks to remain competitive. The United States, meanwhile, must employ all efforts to stay ahead. In 2008, the Urban Land Institute's (ULI) *Infrastructure: Ante Up or Fall Behind on Infrastructure* warned that if more investment in certain crucial infrastructure areas was not entered into soon, the negative impacts on transportation efficiency, industrial productivity, and national competitiveness would severely cost the nation. According to ULI, if the United States was to improve its competitiveness and sustain its economic growth, there had to be continued investment in, and development of, basic local infrastructure.

Infrastructure investments also have multiplier effects, especially since some investments are dedicated to high-return activities of small firms. ULI recognized this with the admonition that immediate attention must be paid to developing programs to determine the most promising new investment areas for public works. Strategic economic development seeks to improve both the quality of life and the standard of living of a state's residents. It does this by targeting areas of critical capital spending to expand existing growth nodes and to encourage new enterprises in areas where they currently do not exist. Business location decisions are heavily influenced by factors in a state that encourage business growth. In addition to a skilled labor force, these factors include adequate public facilities and high quality of life. Clogged transportation arteries frustrate commuters and disrupt the delivery of goods and services. The absence of water and sewer curtails the construction of businesses and housing.

A movement builds behind a solution for funding new roads and transit, easing road congestion and reducing car emissions. The initiative depends on new technologies and should influence behavior change. It's called user fees. But these aren't your old-fashioned tolls, imposed at a uniform rate and limited to a few major roads. Twenty-first-century user fees

[75]Portions taken from *Infrastructure: Ante Up Or Fall Behind On Infrastructure,* by the Urban Land Institute; and Ernst & Young, *Infrastructure 2008: A Competitive Advantage*, co-published in April 2008 by the Urban Land Institute and Ernst & Young.

can entail the use of transponder technologies to track driving by satellite and charge not only by the mile, but also by how, when, and where you drive. The idea is you pay more for traveling on congested roads during rush hour; driving heavier vehicles, which cause more road wear and tear; owning less fuel-efficient, higher-emission cars; and going longer distances.

In a free enterprise economy a state's economic health depends upon growth. Growth produces jobs, housing, and commerce. Growth is needed to generate tax revenues to maintain roads, transit systems, water and sewer systems, and other infrastructure. The best approach is to neither limit growth nor passively accept its consequences; it lies in managing public investment in infrastructure and natural resources wisely and in viewing economic development strategically. The reality is that without growth the bills cannot be paid; conversely, with too much growth, the bills escalate. The key is to provide enough infrastructure in an efficient way to enable growth to take place when and where the public wants it.

# ROADS

## INTRODUCTION—CORE QUESTIONS

In 2007, New Jersey had 8,371 miles of lanes, 4,503 miles of shoulders, and 595 miles of ramps. Approximately 400 miles of roads in the state are under the jurisdiction of special authorities. Most of these roads are tolled; they are administered by the New Jersey Turnpike Authority, the New Jersey Highway Authority (Garden State Parkway), South Jersey Transportation Authority (Atlantic City Expressway), the Palisades Interstate Parkway, and Bridge Authorities. Other roads in the state account for more than 35,000 center line miles: 6,393 from county roads, 28,344 from municipal roads, and 649 from parks. The total of 13,469 centerline miles (NJDOT—lanes, shoulders, and ramps; 409 "other authority"-maintained roads; 6,392 county-maintained roads; 28,344 locally maintained roads; and 649 park-maintained roads) equals 49,263 center-line miles of roads in New Jersey. These road facilities serve the 5.7 million vehicles registered in the state, as well as traffic from other states. Some 65 billion vehicle-miles are traveled on the state's roads annually, a figure representing a 170 percent increase over the past 30 years (in the same time period, the state's population grew by only 27 percent and its labor force by 62 percent). Between 2003 and 2004, statewide annual vehicle-miles of travel (VMT) increased by about 2 percent, from 71.26 billion VMT to 72.68 billion VMT.

Of New Jersey's registered vehicles, 90 percent are passenger cars. Passenger car ownership has increased dramatically in the state. There is a contradiction in the number of road-miles statewide between statistical tabulations (36,000) and GIS-mapped findings (45,000) for the state, up 130 percent in the past 30 years. Today, there are 1.6 passenger cars per household in New Jersey; the majority of the state's households own two or more vehicles. With more than 35,900 miles of public roads, 6,300 bridges, and 51 public-use airports, New Jersey has the most comprehensive and integrated transportation system in the nation. More than 80 percent of the statewide daily VMT occurs in urban areas. Of these urban daily VMT, about 75 percent takes place exclusively in the New York–Northeast New Jersey metropolitan area and 15 percent occurs in the Philadelphia area. The remaining 10 percent of urban daily VMT is distributed among the western and southern metropolitan areas and among small urban centers.

New Jersey is defined by two principal roadways—the New Jersey Turnpike and the

Garden State Parkway. The New Jersey Turnpike, operated by the New Jersey Turnpike Authority, is a major north-south automobile and truck route, traversing New Jersey from the George Washington Bridge to the Delaware Memorial Bridge, generating nearly $590 million in toll revenue (2008). The New Jersey Turnpike is the roadway used to traverse the state in a direction linked with I-95 to other destinations on the east coast of the United States.

The Garden State Parkway, operated by the New Jersey Turnpike Authority, runs 173 miles through 50 municipalities in 10 counties, from the New York State line at Montvale to the Cape May ferry in Cape May. Established by the New Jersey State Legislature in 1952, the Parkway includes more than 360 exits and entrances. In 2008, the Garden State Parkway generated in excess of $295 million in tolls. The Garden State Parkway is the major north-south commuting route in the state, linking the less inexpensive housing markets of southern New Jersey with the lucrative employment markets of northern New Jersey. This roadway is also the principal carrier of New Jersey shore-goers in the summertime and Atlantic City visitors in all seasons.

In sum, New Jersey is a state with a significant number of lane-miles of different classes of roadways, from local to interstate. It is also a state that has been shaped by two major non-interstate roadways, the New Jersey Turnpike and the Garden State Parkway. Under any growth scenario, both of these two major roadways will be widened at their southern ends. Also, under any growth scenario, local roads will be added to accommodate growth in the extreme northern and southern portions of the state and along its western edge from north to south.

The core questions to be answered in the course of this analysis are:

- **Is it possible to save a significant number of lane-miles of new roads under PLAN development as opposed to TREND development?**
- **If so, what will be saved in revenues by not building these roads, and to whom will these savings accrue?**
- **In what types of location and where in the state will potential road-building savings occur?**

# BACKGROUND

Fears about climate change and the demand for green space help people in the state link sustainability concerns with land-use decisions and needed funding for infrastructure improvements. Carbon-footprint issues galvanize attention, particularly about transportation, which is responsible for fully one-third of all emissions. People begin to understand how better-planned, higher-quality infrastructure helps the environment. Less congestion, from pricing schemes and new road systems, not only speeds travel but also reduces pollutants from idling engines. Denser, pedestrian-friendly communities near mass transit and shopping amenities decrease car dependence. Rail and bus service produces lower carbon footprints than automobiles do. Public green space in urban and suburban environments becomes more coveted.

The New Jersey Department of Transportation (DOT) and NJ TRANSIT recognize New Jersey's growing population and changing transportation needs. In order to meet future needs, the agencies plan for both the short term and the long term.

Federal and state laws require NJDOT and NJ TRANSIT to develop a Long Range Transportation Plan (LRP). The LRP identifies how

New Jersey's transportation system can meet user expectations for the next 25 years. It establishes a vision and policy structure, sets forth strategies, provides a framework for directing investment, and identifies the financial resources to sustain the plan's vision.

As a statewide transportation policy document, *Transportation Choices 2030* sets the direction for future investments. The Regional Transportation Plans prepared by the state's three metropolitan planning organizations discuss how these strategies will be implemented in each region through specific studies and projects. This plan also satisfies federal and state legal mandates.

The integration of transportation and land-use planning, a significant component of smart growth, serves as the foundation for this long-range plan. Focusing development and redevelopment in centers that support public transit, walking and bicycling, and that shorten trips that must be made by car, is essential to achieving a sustainable transportation system. Continued investment in the following is also crucial to ensure New Jersey's continued growth and prosperity:

- Expanded and enhanced public transportation.
- Intelligent transportation systems (ITS) to improve operations.
- Facilities to move more freight by rail and policies that support moving freight during non-rush hours.
- Measures that shift travel out of cars, move trips to other times of the day and eliminate some auto trips.

## Policy Statements from the Plan

### 8.0 Transportation

**Improve transportation planning and management by enhancing interdepartment coordination on multiple government levels, and stabilizing transportation funding to maintain and repair existing transportation infrastructure to ensure public safety and regional mobility rather than engage in systems expansion. Integrate transportation and land-use decision-making, encouraging multi-modal transportation alternatives to automobiles and trucks, to reduce vehicle miles traveled (VMTS) and greenhouse gas emissions as well as the impacts of other environmental, historic and cultural and equity concerns that affect New Jersey.**

**THE CHALLENGE:**

***To fund the maintenance and operations of the existing transportation system in ways that ensure public safety and regional mobility; to transform that system to be less dependent on automobiles and trucks to reduce vehicle miles traveled (VMTs), energy consumption and greenhouse gas emissions.***

# 2030 GOALS AND OBJECTIVES: LONG-RANGE TRANSPORTATION PLAN

**I. Improve and maintain the transportation infrastructure**

- Maintain the structural integrity and smoothness of ride on the state's highway system
- Reduce structural deficiencies and functional obsolescence on the state's bridges
- Maintain public transportation vehicles and facilities in a state of good repair

**II. Integrate transportation and land use planning**

- Make transportation investments consistent with smart growth policies
- Establish partnerships at all levels of government and with the private sector to coordinate transportation and land-use decisions
- Encourage development and redevelopment around transit stations and services

**III. Increase safety and security**

- Reduce the number and rates of transportation-related deaths and injuries
- Control access to sensitive transportation facilities (as defined by NJDOT's Office of Transportation Security)
- Improve emergency response and recovery

**IV. Increase mobility, accessibility and the reliability of travel**

- Relieve congestion and delay for both highways and transit
- Expand the availability of public transit and increase the level of service
- Make walking and bicycling more practical
- Enhance connections between and among modes, especially access to transit
- Operate the transportation system efficiently
- Provide customers with real-time travel information
- Expedite incident management

**V. Enhance the environment**

- Promote environmental stewardship
- Lower transportation emissions
- Reduce negative environmental impacts
- Exceed the requirements of environmental regulations
- Incorporate context-sensitive solutions in transportation design
- Encourage greater energy efficiency

**VI. Optimize freight movement**

- Relieve congestion on heavily traveled truck routes
- Improve truck connections to the ports
- Increase the amount of freight shipped by rail by at least the same rate that the volume of overall goods movement increases
- Support the development and reuse of underutilized properties for freight purposes

**VII. Continually improve the process of providing transportation facilities and services**

- Involve customers in the decision-making process by providing clear information and a forum for discussion
- Improve customer satisfaction with NJDOT and NJ TRANSIT
- Deliver projects and services in a timely and cost-effective manner

**VIII. Operate the transportation system efficiently**

- Promote smooth flow of traffic on major roadways and transit lines
- Provide customers with real-time travel information
- Expedite incident management

*Source:* 2030 New Jersey Statewide Long-Range Transportation Plan

# IMPACT ASSESSMENT—METHODS

## OVERVIEW

The 2009 analysis of road infrastructure for both TREND and PLAN alternatives follows the earlier methodology found in the 2000 and 1992 assessments. There is no realistic way of doing a full-blown network model for New Jersey that moves from future projections of trips generated through distribution to assignment. At this time traffic modeling in New Jersey is split among regions, with differing approaches and modeling packages. There also is the issue of scale. The projections of population and households to 2028 are at the municipal level, making the municipality the unit of analysis for model construction.

## EXPECTED DIFFERENCES BETWEEN TREND AND PLAN

The CUPR ROAD model used in this analysis asserts that there is a connection between population density and the provision of road infrastructure. Furthermore, the model focuses on those roadway elements provided by municipal and county governments in support of development. As communities grow, local and collector streets are constructed. These roads support access to residential, commercial and industrial development. Population density has been found to be an excellent surrogate for the pressures of development and the need for local roads. The relationship between population density and road infrastructure is nonlinear and generally supports the concept of the efficiency of infill development over residential and commercial construction in empty fields.

If population goes predominantly to outer-suburban and rural communities under TREND, given a lack of roads in these locations, more roads will have to be built. If population goes more to urban and inner-suburban communities under PLAN, given a surplus of roads in these locations, fewer roads will have to be built.

The CUPR ROAD model employed in this study was developed in 2005. The local road data used to construct the ROAD model were taken from the 2003 Streets USA files provided by ESRI. This dataset represents the New Jersey road system as of 2000, making it comparable to 2000 census information. Visual inspection of aerial photographs with both the local road files available from New Jersey Department of Transportation (NJDOT) and the Streets USA files showed that Streets USA was slightly more complete. There was a small set of new suburban developments in Streets USA that did not appear in the NJDOT database. The Streets USA database is an enhancement of the federally supported TIGER network, contains appropriate roadway identifiers, and paints an excellent picture of road infrastructure in New Jersey. Using GIS, local road links were identified and separated from the state and federal systems. The lengths of the road segments were measured and summed by municipality. The calculation was based on centerline road length, ignoring the number of lanes in the roadway. While the presence of state and federal highways, such as Route 18 and Route 1 in central New Jersey, is broadly connected to population geography and size, these roadways are not specifically local decisions. These highways are regional in scale and effect, planned and constructed by the state department of transportation to serve broad multi-county needs.

The ROAD model operates at the municipal level, keyed to the population projections developed for TREND and Plan. The general model is both simple and robust—street length

density is predicted by population density. Also, the relationship is nonlinear, suggesting interesting policy implications. A number of alternative statistical models have been tested, but remarkably, the model structure discussed below and used in earlier State Plan impact studies is found to be the most appropriate.

## CRITICAL ASSUMPTIONS

The ROAD model consists of four submodels, each of which is designed for a different set of New Jersey municipalities. The Base submodel operates on the bulk (490) of New Jersey's 566 municipalities. As shown in figure 1 below, fully 80 percent of municipalities have population densities of 5,000 per square mile or less. Only 13 have densities exceeding 15,000 persons per square mile. These very dense cities require a separate model design—the Dense City submodel.

**FIGURE 1. Population Density Groupings, New Jersey Municipalities, 2008**

| | *Frequency* | *Percentage* | *Valid Percentage* | *Cumulative Percentage* |
|---|---|---|---|---|
| 5,000 or less | 457 | 80.7 | 80.7 | 80.7 |
| 5,000 to 10,000 | 76 | 13.4 | 13.4 | 94.2 |
| 10,000 to 15,000 | 20 | 3.5 | 3.5 | 97.7 |
| Over 15,000 | 13 | 2.3 | 2.3 | 100.0 |
| Total | 566 | 100.0 | 100.0 | — |

New Jersey is also characterized by an extensive shoreline and a host of summer communities that have a large seasonal population. These "seasonal communities" have road systems built to support summer traffic, but have small year-round populations. Some of these are in the process of conversion from occasional to year-round occupancy, such as Egg Harbor Township, yet still reflect road systems that are overbuilt for populations counted by Census as year-round. For the purposes of this study, these recreational communities are defined as those with more than 10 percent of housing units classified as in occasional use as of Census 2000. They range from Harvey Cedars with 81 percent occasional use to Spring Lake Heights, Dover Township in Ocean County and Vernon at 11 percent. Some of these municipalities are converting from recreational to full-time, but still have embedded infrastructure from the earlier periods. The relationships between population and street density are different from the majority of New Jersey communities. These seasonal communities have an abundance of roads relative to their year round populations, and require a separate analytic approach—the Seasonal Community Submodel (figure 2).

| FIGURE 2. Seasonal Communities Occasional-Use Dwelling Units, New Jersey Municipalities, 2008 | | | | | |
|---|---|---|---|---|---|
| | | *Frequency* | *Percen-tage* | *Valid Percentage* | *Cumulative Percentage* |
| Valid | 10 percent or less | 505 | 89.2 | 89.2 | 89.2 |
| | More than 10 percent | 61 | 10.8 | 10.8 | 100.0 |
| | Total | 566 | 100.0 | 100.0 | |

Finally, there are five municipalities in New Jersey with less than 100 housing units. These are excluded from the model due to their size. Their road infrastructure is calculated using a ratio technique. The five towns municipalities are shown below (figure 3).

| FIGURE 3. Small Municipalities, New Jersey: Total Households, 2008 | | |
|---|---|---|
| *Municipality* | *County* | *Households* |
| ROCKLEIGH BORO | BERGEN | 80 |
| TETERBORO BORO | BERGEN | 8 |
| PINE VALLEY BORO | CAMDEN | 21 |
| TAVISTOCK BORO | CAMDEN | 7 |
| WALPACK TWP | SUSSEX | 34 |

To summarize, four different modeling approaches are used to project 2028 road needs. The four models are:

- ***Base Submodel***—The 490 municipalities with over 100 households that have population densities less than 15,000 persons per square mile and are not classified as seasonal.
- ***Dense City Submodel***—There are 13 municipalities with population densities in excess of 15,000 persons per square mile
- ***Seasonal Community Submodel***—There are 58 municipalities that have a significant number of dwelling units that are occupied seasonally.
- ***Small Community Submodel***—The five extremely small towns with less than 100 households require a straightforward ratio approach.

## Base Submodel

Given a power function analysis of municipalities that have a population density of 15,000 or less, are not a "recreational community," and are not extremely small, there is a strong fit of the power function. The statistical fit is very strong with an R-square of .88 (or 88 percent explained variation) (figures 4 and 5). The power function is estimated at:

$$\text{Local Road Density} = .305 * \text{Population Density}^{.457}$$

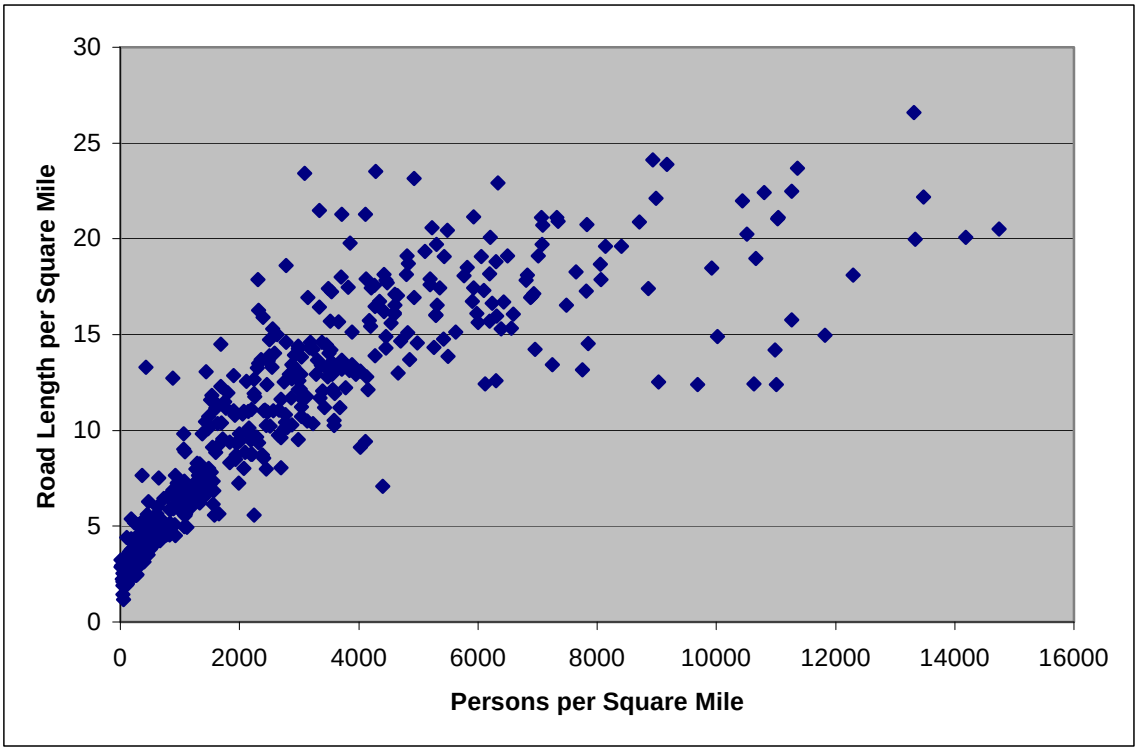
**FIGURE 4. Base Submodel Statistics**
**— Model Summary and Parameter Estimates —**

***Dependent Variable: Road Density***

| Equation | Model Summary | | | | | Parameter Estimates | |
|---|---|---|---|---|---|---|---|
| | R Square | F | df1 | df2 | Sig. | Constant | b1 |
| Power | .880 | 3563.078 | 1 | 488 | .000 | .305 | .457 |

*Note:* The independent variable is population density in 2008.

**FIGURE 5. Road Density versus Population Density — Base Submodel**




## Dense City Submodel

For the higher-density municipalities (N = 13), the pattern is generally the same as for the base municipalities. The 13 communities are listed below. They are typically older, containing heavily urban concentrations and development patterns featuring dense road systems.

| FIGURE 6. Thirteen Higher-Density Communities | | |
|---|---|---|
| | Municipality | County |
| 1 | CLIFFSIDE PARK BORO | BERGEN |
| 2 | FAIRVIEW BORO | BERGEN |
| 3 | EAST ORANGE CITY | ESSEX |
| 4 | IRVINGTON TWP | ESSEX |
| 5 | EAST NEWARK BORO | HUDSON |
| 6 | GUTTENBERG TOWN | HUDSON |
| 7 | HOBOKEN CITY | HUDSON |
| 8 | JERSEY CITY | HUDSON |
| 9 | UNION CITY | HUDSON |
| 10 | WEEHAWKEN TWP | HUDSON |
| 11 | WEST NEW YORK TOWN | HUDSON |
| 12 | PASSAIC CITY | PASSAIC |
| 13 | PATERSON CITY | PASSAIC |
| Total N | 13 | 13 |

The relationship is nonlinear; the power function shows an R- square of 73 percent, which is quite strong (figures 7 and 8):

$$\textbf{Local Road Density} = .436 * \textbf{Population Density}^{.391}$$

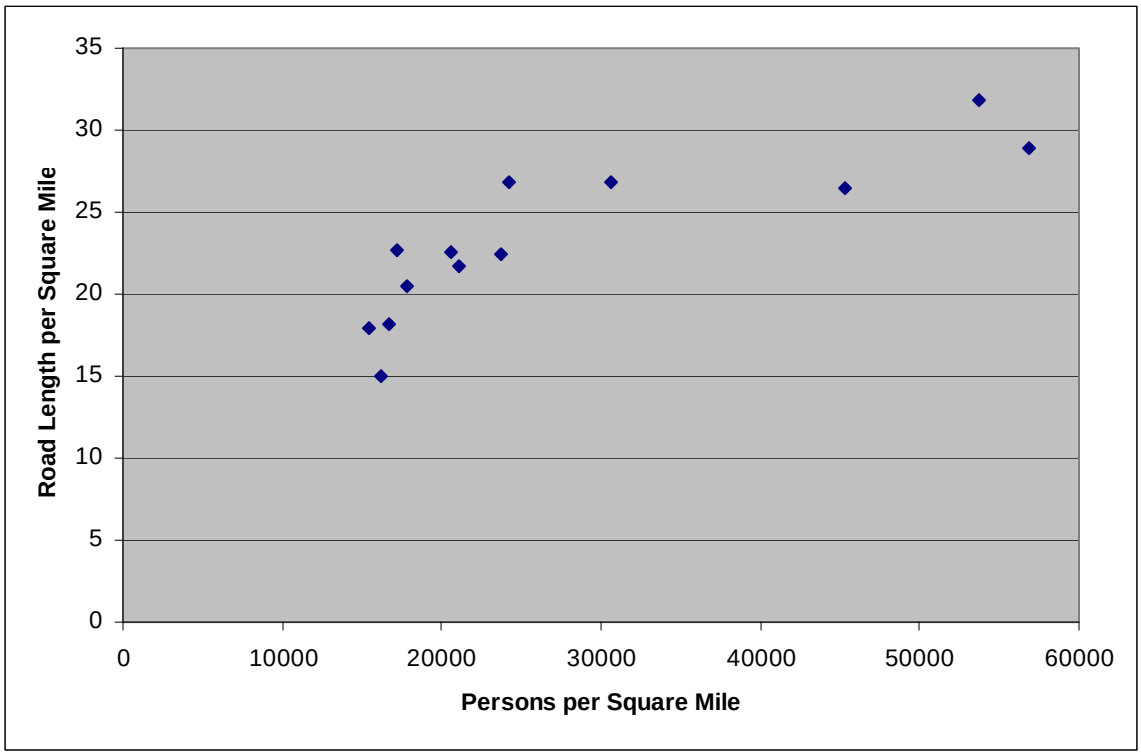
**FIGURE 7. Dense-City Submodel Statistics**
**— Model Summary and Parameter Estimates —**

***Dependent Variable: Road Density***

| Equation | Model Summary | | | | | Parameter Estimates | |
|---|---|---|---|---|---|---|---|
| | R Square | F | df1 | df2 | Sig. | Constant | b1 |
| Power | .728 | 29.442 | 1 | 11 | .000 | .436 | .391 |

*Note:* The independent variable is population density in 2008.

**FIGURE 8. Road Density versus Population Density — Dense City Model**




## Seasonal Community Submodel

In those municipalities that have sizeable seasonal populations, as do a number of towns along the New Jersey shoreline, a separate analysis is required. There are 61 seasonal communities where the Census-defined occasional use measure is greater than 10 percent. Of these 61 municipalities, three are very small, with fewer than 100 households in 2000. None of these have population densities greater than 15,000 persons per square mile. Most (54 municipalities) have densities less than 5,000 persons per square mile.

Once again, the nonlinear power function has the greatest explanatory power. The R-square is very strong with a 75 percent explanatory power. Interestingly, the optimal breakpoint defining a seasonal community is 10 percent or more occasional use. The model is less robust at higher occasional use percentages, reflecting the seasonal heritage of these communities even as they convert to full-time.

**Local Road Density = .245 * Population Density $^{.544}$**

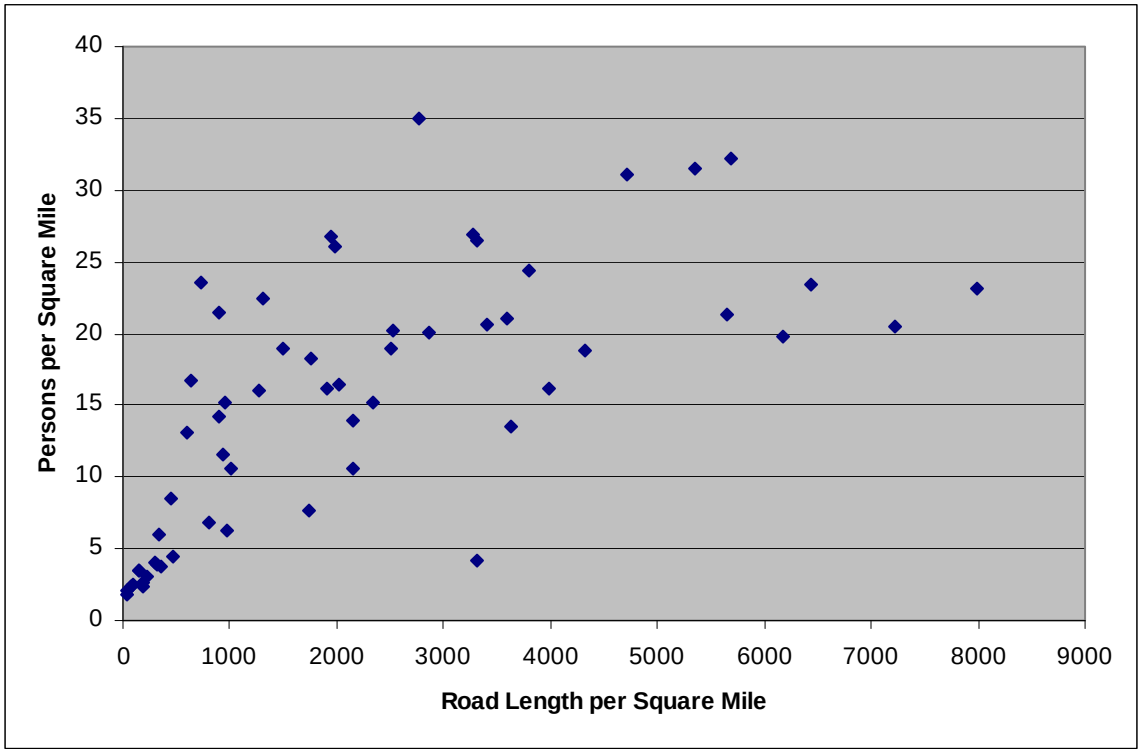
**FIGURE 9. Seasonal Community Submodel Statistics**
**— Model Summary and Parameter Estimates —**

***Dependent Variable: Road Density***

| Equation | Model Summary | | | | | Parameter Estimates | |
|---|---|---|---|---|---|---|---|
| | R Square | F | df1 | df2 | Sig. | Constant | b1 |
| Power | .747 | 165.263 | 1 | 56 | .000 | .245 | .544 |

The independent variable is population density in 2008.

**FIGURE 10. Road Density versus Population Density — Seasonal Submodel**




Finally, the set of five very small municipalities is modeled assuming the ratio of road lengths to population density found in 2008 will continue into the future. The statistics related to these communities are not shown due to their small number.

# IMPACT ASSESSMENT—FINDINGS

## TREND FINDINGS

### Road Miles

The CUPR ROAD model operates at the municipal level and offers projections of local road needs to future years. The model has been used both in New Jersey for State Plan evaluation as well as in other states and at a national level. Under TREND conditions, approximately 2,658 centerline miles of new local roadways will be required in New Jersey. Of these, 1,839 centerline road-miles will be built in the southern region (69 percent); 820 centerline miles in the northern region (31 percent (table 28A).

Of the 2,658 necessary new centerline road-miles, 1,780 will be built in rural/outer-suburban communities and 878 in urban/inner-suburban communities.

Under TREND conditions, 1,512 centerline miles will be required in communities with more densely developed Planning Areas and 1,146 centerline miles will be required in communities with less-developed Planning Areas.

Finally, TREND development will require 1,806 centerline miles in communities with large centers and 852 centerline miles in communities without large centers.

**TABLE 28A. TREND Findings—Road Miles**

| | *2000* | *2008* | *2013* | *2028* | *Change (Positive) 2008-2028* |
|---|---|---|---|---|---|
| **New Jersey** | 45,296 | 46,538 | 47,000 | 49,222 | 2,658 |
| **Regions** | | | | | |
| North | 22,004 | 22,419 | 22,555 | 23,222 | 820 |
| South | 23,292 | 24,119 | 24,444 | 25,999 | 1,839 |
| **Type of Community** | | | | | |
| Urban | 6,060 | 6,072 | 6,097 | 6,226 | 139 |
| Inner Suburban | 17,789 | 18,177 | 18,299 | 18,893 | 739 |
| Outer Suburban | 12,836 | 13,388 | 13,585 | 14,523 | 1,122 |
| Rural | 8,611 | 8,902 | 9,018 | 9,580 | 658 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 30,098 | 30,870 | 31,129 | 32,377 | 1,512 |
| Rural, Env. Sensitive | 15,198 | 15,668 | 15,870 | 16,845 | 1,146 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 31,536 | 32,350 | 32,666 | 34,186 | 1,806 |
| All Others | 13,760 | 14,188 | 14,333 | 15,035 | 852 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## Road Costs

Road costs in New Jersey amount to approximately $8 million in new centerline road miles. This is for a roadway of two lanes with a potential for parking on both sides and a bikeway on both sides.

Overall road costs under TREND development amount to $21.3 billion. Sixty-nine percent of this, or $14.7 billion, would be spent in the southern part of the state; the remaining 31 percent, or $6.6 billion, would be spent in the northern part of the state (table 28B).

About $14.25 billion, or two-thirds of roadway costs, would be spent in rural/outer suburban communities; $7.0 billion or 33 percent would be spent in urban/inner suburban communities. Twelve billion dollars would be spent in communities with more dense planning areas; $14.45 billion would be spent in communities with urban, regional, and/or town centers. Further, $9.2 billion would be spent in communities with less dense planning areas; $6.8 billion would be spent in communities without large centers.

**TABLE 28B. TREND Findings—**
**Road Costs (in Current $Millions)**

| | *Change (Positive) 2008-2028* |
|---|---|
| **New Jersey** | 21,266 |
| **Regions** | |
| North | 6,558 |
| South | 14,708 |
| **Type of Community** | |
| Urban | 1,113 |
| Inner Suburban | 5,913 |
| Outer Suburban | 8,973 |
| Rural | 5,267 |
| **Planning Area** | |
| Metro, Suburban, Fringe | 12,100 |
| Rural, Env. Sensitive | 9,166 |
| **Centers** | |
| Large Centers (Urban, Regional, Town) | 14,449 |
| All Others | 6,817 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

# PLAN FINDINGS

## Road Miles

Under PLAN conditions, approximately 2,102 centerline miles of new local roadways will be required in New Jersey. Of these, 1,593 centerline road-miles will be built in the southern region (76 percent); and 510 centerline miles in the northern region (24 percent) (table 29A). Of the 2,102 necessary new centerline road-miles, 983 will be built in rural/outer suburban communities, and 1,119 in urban/-inner suburban communities. Under PLAN conditions, 1,510 centerline miles will be required in communities with more densely developed planning areas, and 592 centerline miles will be built in communities with less densely developed planning areas. Finally, PLAN development will require 1,584 additional centerline miles in communities with urban, regional, and/or town centers and 519 additional centerline miles in communities without large centers (table 29A).

**TABLE 29A. PLAN Findings—Road Miles**

| | *2000* | *2008* | *2013* | *2028* | *Change (Positive) 2008-2028* |
|---|---|---|---|---|---|
| **New Jersey** | 45,296 | 46,538 | 46,911 | 48,730 | 2,102 |
| **Regions** | | | | | |
| North | 22,004 | 22,419 | 22,510 | 22,965 | 510 |
| South | 23,292 | 24,119 | 24,401 | 25,766 | 1,593 |
| **Type of Community** | | | | | |
| Urban | 6,060 | 6,072 | 6,110 | 6,297 | 196 |
| Inner Suburban | 17,789 | 18,177 | 18,339 | 19,123 | 923 |
| Outer Suburban | 12,836 | 13,388 | 13,511 | 14,110 | 703 |
| Rural | 8,611 | 8,902 | 8,952 | 9,201 | 280 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 30,098 | 30,870 | 31,138 | 32,434 | 1,510 |
| Rural, Env. Sensitive | 15,198 | 15,668 | 15,773 | 16,297 | 592 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 31,536 | 32,350 | 32,634 | 34,014 | 1,584 |
| All Others | 13,760 | 14,188 | 14,278 | 14,716 | 519 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## Road Costs

Under PLAN conditions, New Jersey's new local road costs will amount to $16.8 billion for the period 2008 to 2028. These costs will be highest in the southern region ($12.7 billion), and lowest in the northern region ($4.1 billion). Future local road costs under PLAN will be greatest in urban/inner suburban communities ($9.0 billion) and less in rural/outer suburban communities ($7.8 billion).

Local road costs will be higher in communities with more densely developed planning areas ($12.1 billion) and less in communities with less densely developed planning areas ($4.7 billion). Costs will be highest in communities with urban, regional, and/or town centers ($12.7 billion) and lowest in communities without large centers ($4.1 billion) (table 29B).

**TABLE 29B. PLAN Findings—**
**Road Costs (in Current $Millions)**

| New Jersey | *Change (Positive) 2008-2028* |
|---|---|
| **Regions** | 16,819 |
| North | |
| South | 4,078 |
| **Type of Community** | 12,741 |
| Urban | |
| Inner Suburban | 1,571 |
| Outer Suburban | 7,382 |
| Rural | 5,626 |
| **Planning Area** | 2,240 |
| Metro, Suburban, Fringe | |
| Rural, Env. Sensitive | 12,083 |
| **Centers** | 4,736 |
| Large Centers (Urban, Regional, Town) | |
| All Others | 12,670 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

# PLAN VERSUS TREND FINDINGS

## Road Miles

Under the PLAN scenario (i.e., growth in more densely developed municipalities and in communities closer to existing development), a saving of 556 centerline road-miles will be achieved. Each of the geographic regions will have reduced need for new centerline road-miles, particularly in the north (310 fewer); and 246 fewer in the southern region. In rural/outer suburban communities, 796 miles less of new centerline miles of local roads will be required; in urban/inner suburban communities, 241 miles more of centerline miles of local roads will be required.

In communities with less densely developed planning areas, there will be 554 fewer road-miles required; in communities with more densely developed planning areas, 2 fewer road-miles will be required. Finally, in communities with urban, regional, and/or town centers, 222 fewer road-miles will be required; in communities without large centers, 334 fewer road miles will be required (table 30A).

**TABLE 30A. PLAN versus TREND Findings—Road Miles**

| | *TREND Change 2008-2028* | *PLAN Change 2008-2028* | *PLAN Change Minus TREND Change 2008-2028* |
|---|---|---|---|
| **New Jersey** | 2,658 | 2,102 | -556 |
| **Regions** | | | |
| North | 820 | 510 | -310 |
| South | 1,839 | 1,593 | -246 |
| **Type of Community** | | | |
| Urban | 139 | 196 | 57 |
| Inner Suburban | 739 | 923 | 184 |
| Outer Suburban | 1,122 | 703 | -418 |
| Rural | 658 | 280 | -378 |
| **Planning Area** | | | |
| Metro, Suburban, Fringe | 1,512 | 1,510 | -2 |
| Rural, Env. Sensitive | 1,146 | 592 | -554 |
| **Centers** | | | |
| Large Centers (Urban, Regional, Town) | 1,806 | 1,584 | -222 |
| All Others | 852 | 519 | -334 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## Road Costs

Under PLAN conditions, road costs will be reduced by $4.44 billion (21 percent), from $21.27 to $16.82 billion. Cost reductions will be most significant in the northern region ($2.48 billion), in rural/outer suburban communities ($6.37 billion), in communities with less densely developed planning areas ($4.43 billion), and in communities without large centers ($2.67 billion) (table 30B). Road costs actually will increase in urban/inner suburban communities ($1.93 billion) and decrease reasonably in the southern region ($1.97 billion), in communities with more densely developed planning areas ($0.16 billion), and in communities with urban, regional and/or town centers ($1.78 billion) (table 30B). These results indicate that the State Plan will be successful in attempting to move significant road construction away from rural and undeveloped communities to communities that are more urban and more densely developed.

**TABLE 30B. PLAN versus TREND Findings—**
**Road Costs (In Current $Millions)**

| | *TREND Change 2008-2028* | *PLAN Change 2008-2028* | *PLAN Change Minus TREND Change 2008-2028* |
|---|---|---|---|
| **New Jersey Regions** | 21,266 | 16,819 | -4,447 |
| North | 6,558 | 4,078 | -2,480 |
| South | 14,708 | 12,741 | -1,967 |
| **Type of Community** | | | |
| Urban | 1,113 | 1,571 | 458 |
| Inner Suburban | 5,913 | 7,382 | 1,469 |
| Outer Suburban | 8,973 | 5,626 | -3,347 |
| Rural | 5,267 | 2,240 | -3,027 |
| **Planning Area** | | | |
| Metro, Suburban, Fringe | 12,100 | 12,083 | -16 |
| Rural, Env. Sensitive | 9,166 | 4,736 | -4,431 |
| **Centers** | | | |
| Large Centers (Urban, Regional, Town) | 14,449 | 12,670 | -1,778 |
| All Others | 6,817 | 4,149 | -2,668 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

***PLAN development saves New Jersey 556 centerline road miles and $4.44 billion in road costs between 2008 and 2028.***

## COMPARISON TO THE PREVIOUS IMPACT ASSESSMENT FINDINGS

In the current (2009) and in the 2000 analysis, the CUPR model focuses on centerline miles of local roads; the 1992 evaluation projected both state road lane-miles at the county level and local road lane-miles at the municipality level. Performing an impact assessment on the state primary roads is not useful at this time. Few new state primary road-miles are being added anywhere in the state. Instead, statewide effort and investment are being directed principally at the resurfacing of all roadways and the reconstruction of bridges, intersections, and roadways. Furthermore, the emphasis in this analysis and the difference between growth alternatives is the variation in population projections at the municipal level, where local and collector road programs are planned and developed. Local centerline road requirements are dependant upon variations in local population projections.

In terms of local needs, PLAN development requires fewer miles than TREND development in both the current evaluation and the 1992 evaluation. The population densities are higher overall under PLAN in all three assessments, and this fact is reflected in the estimation of required local road-miles. There are also substantial variations in road requirements across regions, types of communities, levels of development in communities, and types of centers characterizing communities. In most instances, in all three evaluations, the big savings relative to reduced road miles are found in rural/outer suburban communities, communities with less densely developed planning areas, and communities without large centers, under PLAN conditions.

## CONCLUSIONS AND IMPLICATIONS OF THE FINDINGS

New Jersey is already a heavily developed state. In the future, mostly repair and widening of existing roads will be required. Few new roads can be built in the state in inner-suburban and urban communities. Under both TREND and PLAN conditions, most new roads will be built in rural/outer suburban communities (Ocean, Atlantic, Burlington, Hunterdon, and Somerset Counties).

PLAN development will save 21 percent in road-miles and costs. This represents a savings of 556 road-miles of local roads and $4.44 billion in local road costs. PLAN development will achieve significant relative savings in a state that will be building few new roads in the future.

## PRINCIPLES FOR FUTURE MONITORING BY THE OFFICE OF SMART GROWTH

Monitoring local road development will require access to continually updated TIGER street files. Unfortunately, the road systems of new subdivisions are not always added to TIGER files in a timely fashion. Examining building permit data and targeting those communities where a large number of permits have been issued can assist in the development of an early warning system. The monitoring variable is new centerline miles of local roads divided by population added. This fraction should not exceed three-tenths of 1 percent.

## MONITORING VARIABLES

***New centerline miles of local roads divided by population added. The fraction should not exceed three-tenths of 1 percent.***

$\Delta$ ***centerline miles (local roads)***

***divided by***

$\Delta$ ***population***

$= < 0.0030$


**New Jersey Transit train**
©Adam E. Moreira, Wikimedia Commons gallery

# TRANSIT

## INTRODUCTION—CORE QUESTIONS

Transit is multiple-occupancy vehicular passenger services provided to the general public primarily via bus, rail, vanpool, and special-service vehicles. The "flexible funding" provisions of ISTEA and its successors, TEA-21 (the Transportation Equity Act for the 21st Century) and SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act—A Legacy for Users), refer to those programs whose funds may be used for either transit or highway projects.

The significance of these provisions cannot be overstated. The bill drafters intended to give planners and decision makers at state and local levels the authority to transfer funds in either direction between highways and transit, based on locally defined needs and goals. This freedom of financing greatly enhances the ability to use alternative solutions to achieve a more balanced transportation network. A key to determining whether the flexible funding provisions are affecting transportation investment decisions as the legislation's authors in Congress intended is to identify the amount of funding available for transfer and to establish to what extent local policy-makers actually do transfer those funds between highway and transit allocation. This process can inform us as to how well communities understand and are implementing these innovations in transportation decision making.

Under ISTEA, TEA-21 and SAFETEA-LU, money appropriated for most programs can be transferred to another one, with certain restrictions. The complexity of the conditions for transfer depends upon the program initially receiving the funding. During the first eight years of flexible funding, from FY1992 to FY1999, $33.8 billion in highway money from the Surface Transportation Program (STP) and

the Congestion Mitigation and Air Quality Improvement Program (CMAQ) alone was available for transfer. Of this amount, $4.2 billion was transferred from highway programs to transit projects administered by the Federal Transit Administration (FTA). This accounts for 12.5 percent of all STP and CMAQ money available over the eight years. New Jersey was the ninth of 50 states in percentage amount of such transfers (17.4 percent) and the sixth of 50 states in the dollar amount ($171.1 million). This was 1.5 times the median percentage amount and twice the average absolute amount transferred in other states. New Jersey clearly is aware of the significance of ISTEA and TEA-21 and the role of transit in transportation policy. Why is this so? New Jersey is served by a wide variety of transit modes that are vital to the state's economic and social well-being and its quality of life. Four of the top 10 cities nationwide with the highest percentage of workers using public transit are found in New Jersey (Newark, Jersey City, Elizabeth, and Atlantic City). Most of these services are provided by one carrier, NJ TRANSIT. This statewide organization is a quasi-public entity that covers a service area of 5,325 square miles and a service population of 7.7 million.

NJ TRANSIT is the nation's third-largest provider of bus, rail, and light-rail transit, covering a service area of 5,325 square miles; it links major points in New Jersey, New York, and Pennsylvania. The agency's fleet of 2,035 buses, 133 locomotives and 900 revenue train cars, and 13 light-rail vehicles serves more than 400,000 customers on 238 bus routes, 11 rail lines, and 3 light-rail lines statewide. NJ TRANSIT provides more than 223 million passenger trips encompassing about 2.92 billion passenger miles each year. NJ TRANSIT controls 997 miles of rail line and 107 miles of light-rail line accommodating 58.8 million trips a year.

Passengers use 162 different rail stations and 52 light-rail stations in 15 of New Jersey's 21 counties. The rail system has 11 different lines divided into three main divisions. The Hoboken Division operates lines to and from Hoboken Terminal on the Morris & Essex, Main/Bergen, Pascack Valley, and Boonton lines. The Newark Division includes the Northeast Corridor, North Jersey Coast, and Raritan Valley lines. The Atlantic City Rail Line operates service between Atlantic City and Philadelphia. The map of rail lines shows the "spoke" design of these lines, which radiate out from New York City.

Although NJ TRANSIT is the predominant bus operator in the state (2,035 buses), one-third of bus transportation in New Jersey is provided by 110 private companies (973 buses). Together, public and private carriers serve every region of the state, from small towns and suburbs to heavily populated cities. With 238 bus routes, NJ TRANSIT carries 164.3 million riders annually, collected from 20,000 bus stops throughout the state. This is three times the annual rail ridership in the state. In addition to direct NJ TRANSIT operations, there are a variety of other systems such as contract carriers funded by NJ TRANSIT, specialized fixed-route systems such as WHEELS serving train stations and employment centers, and demand-response systems for the elderly and disabled.

Ridership on NJ TRANSIT's New York City–centered rail system has grown by more than 65 percent since 1991 through expansion projects that increased ridership to a total of 130,000 daily riders in 2008. To handle the crowds, the agency added 400 cars and 57 locomotives over a five-year period (2003-2008).

Core questions relating to this portion of the analysis are:

- **Will PLAN development, because of its location and increased density, contribute to increases in transit use in the state?**

- **If these transit increases occur, are they meaningful in terms of their impact on trips via other modes?**

# BACKGROUND

With 8.7 million residents and nearly 1,160 people per square mile, New Jersey is the most densely populated state in the nation. Without a large array of mobility options, the state would experience gridlock.

The creation of transit hubs is vital to success. Relatively recently, NJT opened the Wayne Route 23 Transit Center and Mount Arlington Center, both intermodal facilities with convenient highway access and parking. In addition, NJT unveiled the newly renovated Hackensack Bus Terminal with improved customer amenities and the Trenton Transit Center, which was rebuilt and expanded to offer more amenities and improved connections between bus, light rail, and commuter rail services.

In renewing the Transportation Trust Fund, NJ TRANSIT invested more than $350 million during the last several years on new equipment such as multilevel railcars and modern buses, and is expanding maintenance facilities to improve reliability and efficiency. Funding from the New Jersey Turnpike Authority will help to advance the new mass transit tunnel in order to relieve congestion on the Turnpike's spurs and other highly congested areas.

## Access to the Region's Core

The mass transit tunnel project remains the state's number one transportation investment that will pay dividends for generations. When this critical regional project is complete, new trans-Hudson tunnels will double rail capacity between New Jersey and New York, opening new job markets and economic opportunities to maintain the region's competitiveness. In the short term, new modern equipment is providing more seats and linking travelers to work, educational, recreational, and cultural destinations.

These transit investments have contributed to the profound ridership increase and removed automobiles from the road while reducing energy consumption and more than a million tons of greenhouse gas emissions annually in New Jersey. Once the new mass transit tunnel project is completed, greenhouse gases will be reduced by another 20 percent, creating a legacy for this generation and beyond.

***Transit investments have contributed to the profound ridership increase and removal of automobiles from the road.***

# IMPACT ASSESSMENT—METHODS

Transit in New Jersey will be evaluated using two different models. The first is a regression-based model that predicts increases in the number of people using transit based on population density and proximity to a bus or train station. The model uses information on these three variables for all 566 municipalities. A regression equation predicting change in transit users (for the worktrip) in each municipality is created. Since density of a municipality varies according to population increases under a TREND or PLAN scenario, differences between the two should be noticeable. A second community-profile model predicts change in number of transit users according to current levels of transit use. This model keeps the percentage incidence of current transit users constant by municipality and assumes that those locating to a municipality under one or the other future development scenario will adopt a pattern of transit use consistent with existing levels. This generates different transit usage levels under each scenario.

## EXPECTED DIFFERENCES BETWEEN TREND AND PLAN

PLAN conceivably will place more population in older, mature municipalities that are both more densely developed and more likely to have transit service. Since bus or rail services are more likely to be available there, it is expected that residents will be more likely to use these services. Therefore, one can conclude that there probably will be more transit use under the PLAN development scenario.

## CRITICAL ASSUMPTIONS

The measure of transit use is the percentage of transit use by municipality for the worktrip, as found in the 2000 U.S. Census and derived from the Census Transportation Planning Package (CTPP). This is influenced by those tallied by the latest 3-year release of the *American Community Survey* (2008). No other statewide transit-use indicator exists at this time. The use of the worktrip to estimate transit mode choice is quite reasonable: The worker is more likely to consider transit as an option for the repetitive worktrip than for a recreational, shopping, or social trip.

## SCOPE AND DEPTH OF ANALYSIS

### *Community Profile Model*

The analysis of transit ridership predicts future transit use based on past use. Differing population projections under the TREND and PLAN scenarios by municipality multiplied by existing use percentages also by municipality will produce different levels of populations in communities and thus different levels of new transit users. Again, the individual component of transit use considered is worktrips in 2000, influenced by those tallied by the latest three-year release of the *American Community Survey.*

## TREND FINDINGS

As would be expected, transit use increases somewhat under TREND conditions—by 28,500 worktrip users, or 7.6 percent. This figure represents about 8 percent of the increase of all trips; almost 92 percent of all new worktrips will be made using an automobile. Not surprisingly, transit growth follows. Reported results reflect the Community Profile Method.

About 50 percent of the growth will take place in the northern half of the state; a similar amount will take place in the southern part of the state. Seventy percent of the 755,777 population growth will take place in the southern region; transit worktrip users will increase by 50 percent in this region (approximately 14,330).

Transit worktrip users under TREND conditions will increase more in urban/inner-suburban communities (19,564) than in rural/outer-suburban communities (8,914). Transit worktrip users will increase to a greater degree in the communities with more densely developed planning areas (25,526) as opposed to communities with less densely developed planning areas (2,953), and similarly in communities with urban, regional, and/or town centers (24,842) as opposed to communities without large centers (3,637) (table 31).

**TABLE 31. TREND Findings—Transit Use (Number of Transit Users in the Worktrip)**

| | *2000* | *2008* | *2013* | *2028* | *Change 2008-2028* |
|---|---|---|---|---|---|
| **New Jersey** | 363,578 | 373,321 | 376,837 | 401,800 | 28,479 |
| **Regions** | | | | | |
| North | 284,610 | 285,196 | 287,173 | 299,346 | 14,149 |
| South | 78,968 | 88,124 | 89,665 | 102,454 | 14,330 |
| **Type of Community** | | | | | |
| Urban | 196,154 | 197,128 | 198,714 | 206,799 | 9,671 |
| Inner Suburban | 136,118 | 141,994 | 143,062 | 151,888 | 9,893 |
| Outer Suburban | 28,144 | 30,551 | 31,293 | 38,270 | 7,719 |
| Rural | 3,162 | 3,648 | 3,769 | 4,843 | 1,195 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 351,282 | 360,167 | 363,372 | 385,693 | 25,526 |
| Rural, Env. Sensitive | 12,296 | 13,153 | 13,466 | 16,106 | 2,953 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 324,154 | 330,817 | 333,910 | 355,659 | 24,842 |
| All Others | 39,424 | 42,504 | 42,927 | 46,141 | 3,637 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## PLAN FINDINGS

Under PLAN conditions, most of the above-cited transit trends are increased by more than 12 percent (12.4 percent). Transit for worktrip users will increase by 32,000, or 8.6 percent overall. Approximately 16,600 of these additional worktrip users will be in the northern half of the state and 15,400 in the southern half. Approximately 25,282 of these additional worktrip users will be found in urban/inner-suburban communities, and 6,719 will be found in rural/outer-suburban communities. Reported results reflect the Community Profile Method. Nearly thirty thousand (30,000) transit users will emerge in communities with more densely developed planning areas, and 2,000 will emerge in communities with less densely developed planning areas. Finally, 28,316 transit worktrip users will be found in communities with urban, regional, and/or town centers; and 3,684 in communities without large centers (table 32).

**TABLE 32. PLAN Findings—Transit Use (Number of Transit Users in the Worktrip)**

| | *2000* | *2008* | *2013* | *2028* | *Change 2008-2028* |
|---|---|---|---|---|---|
| **New Jersey** | 363,578 | 373,321 | 377,434 | 405,321 | 32,000 |
| **Regions** | | | | | |
| North | 284,610 | 285,196 | 287,589 | 301,764 | 16,568 |
| South | 78,968 | 88,124 | 89,845 | 103,556 | 15,432 |
| **Type of Community** | | | | | |
| Urban | 196,154 | 197,128 | 199,141 | 209,408 | 12,281 |
| Inner Suburban | 136,118 | 141,994 | 143,544 | 154,995 | 13,001 |
| Outer Suburban | 28,144 | 30,551 | 31,047 | 36,543 | 5,992 |
| Rural | 3,162 | 3,648 | 3,703 | 4,375 | 727 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 351,282 | 360,167 | 364,069 | 389,949 | 29,782 |
| Rural, Env. Sensitive | 12,296 | 13,153 | 13,365 | 15,372 | 2,219 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 324,154 | 330,817 | 334,484 | 359,133 | 28,316 |
| All Others | 39,424 | 42,504 | 42,950 | 46,188 | 3,684 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## PLAN VERSUS TREND FINDINGS

PLAN versus TREND findings are as expected. Under the PLAN scenario, the worktrip transit use will increase 12.4 percent more than that of TREND development—an additional 3,521 transit worktrip users. Transit use will increase more in the northern (2,419) part of the state and less in the southern (1,102) part of the state. It will increase more in urban/inner-suburban communities (5,718), in communities with more densely developed planning areas (4,256), and in communities with urban, regional, and/or town centers (3,474). Transit use will be somewhat greater under PLAN conditions than under TREND conditions in each of the urban/rural-suburban, more densely developed, and more center-oriented communities examined in this impact assessment (table 33).

## COMPARISON TO PREVIOUS IMPACT ASSESSMENT FINDINGS

Neither the 1992 nor the 2000 State Plan Assessments contained the kind of statistical and GIS analysis of transit use found here. Instead, transit use was established using a normative model of the expected relationship between transit propensity and net residential density. However, in both the current evaluation and the 1992/2000 analyses, similar findings are evident—PLAN development is more likely to support transit use than is TREND development. In a dense and small state, where it is increasingly obvious that road building will not provide a way out of traffic congestion, the center-oriented compact development of the PLAN scenario offers increased opportunities for transit use to lessen congestion in the region by enhanced service in its more urbanized areas.

**TABLE 33. PLAN versus TREND Findings—Transit Use**
**(Number of Transit Users in the Worktrip)**

| | *TREND Change 2008-2028* | *PLAN Change 2008-2028* | *PLAN Change Minus TREND Change 2008-2028* |
|---|---|---|---|
| **New Jersey** | 28,479 | 32,000 | 3,521 |
| **Regions** | | | |
| North | 14,149 | 16,568 | 2,419 |
| South | 14,330 | 15,432 | 1,102 |
| **Type of Community** | | | |
| Urban | 9,671 | 12,281 | 2,610 |
| Inner Suburban | 9,893 | 13,001 | 3,108 |
| Outer Suburban | 7,719 | 5,992 | -1,728 |
| Rural | 1,195 | 727 | -468 |
| **Planning Area** | | | |
| Metro, Suburban, Fringe | 25,526 | 29,782 | 4,256 |
| Rural, Env. Sensitive | 2,953 | 2,219 | -734 |
| **Centers** | | | |
| Large Centers (Urban, Regional, Town) | 24,842 | 28,316 | 3,474 |
| All Others | 3,637 | 3,684 | 47 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## CONCLUSIONS AND IMPLICATIONS OF THE FINDINGS

PLAN development over the next 20 years will enable a 12.4 percent increase over TREND in transit use for the worktrip. In other words, by locating a portion of the future growth in population to the more densely developed planning areas from areas that are not as densely developed, transit use will increase by more than 12 percent. This change will not require extra-ordinary transit subsidy or punishing gasoline tariffs. Rather, more compact development patterns will create density to the point where transit use will become feasible, and current use patterns will be extended to new populations that will locate to these higher-density areas.

## PRINCIPLES FOR FUTURE MONITORING BY THE OFFICE OF SMART GROWTH

Transit use is best monitored by continually examining ridership numbers and by identifying opportunities for transit enhancement. The construction of transit-friendly developments and the commitment of NJ TRANSIT and other providers to offer increased transit services should be encouraged. This means that the Office of Smart Growth (OSG) must monitor center development and encourage infill activities in conjunction with the monitoring of transit provision.

## MONITORING VARIABLES

***The specific monitoring variable is increase in worker trips using transit under PLAN development versus historical growth.***

***If PLAN is working correctly, this ratio should be equal to or greater than 1.12.***

$\Delta$ ***worker trips using transit under PLAN***

***divided by***

$\Delta$ ***worker trips using transit under TREND***

$= \geq 1.12$

# WATER AND SEWER INFRASTRUCTURE

## INTRODUCTION—CORE QUESTIONS

### Water Infrastructure

At present, repairs and replacements of the state's water and sewage pipes and treatment plants are estimated at more than $20 billion. With the average age of sewer lines being over 70 years and the estimated life expectancy of pipe at 50 years, unanticipated failures may occur regularly in the near future. If the ever-increasing need to keep pace with regulatory discharge requirements is added to the age factor, the cost assessment increases to nearly $24 billion.

New Jersey's water needs outpace its current ability to fund projects by a large margin. For the Drinking Water State Revolving Fund (SRF) program, the state's most recent Intended Use Plan lists 181 projects at a total cost of at least $625 million.[76] In 2008, federal contributions to New Jersey's drinking water funding efforts decreased by 35.5 percent since the Drinking Water SRF was implemented in 1997 (51.9 percent when adjusted for inflation).[77]

For the Clean Water State Revolving Fund program, which goes toward wastewater infrastructure, the state's most recent Intended Use Plan lists 94 projects at a total cost of $892 million.[78] In 2008, the state received $27.8 million in federal funding[79]—enough to finance 3.1 percent of its needs.

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[76] *Clean Water Financing Priority System, Intended Use Plan, and Project Priority List* (New Jersey Department of Environmental Protection, Trenton, NJ, 2009); http://www.state/nj.us/dep/dwq/cwpl.htm

[77] Ibid.

[78] Ibid.

[79] Ibid.

**Repairing a water main break on a county road in Somerset County.**
Arlene Pashman

Federal contributions to New Jersey's wastewater funding efforts have decreased by 66.8 percent since the Clean Water SRF was fully implemented in fiscal year 1991, and 79.0 percent when adjusted for inflation.[80]

Public water supplies in New Jersey are currently provided by more than 656 community water systems (ranging from systems for individual subdivisions to large metropolitan systems) and 3,990 noncommunity water systems. The total number of public water systems in New Jersey is 4,646. A combination of reservoirs, river intakes, and well systems is used, with more than half the total supply drawn from groundwater. The New Jersey Department of Environmental Protection published a Statewide Water Supply Plan in 1996 that included a $1.087 billion action plan. A United States Environmental Protection Agency Drinking Water Infrastructure Needs Survey (DWINS), published in 1997, estimated 20-year needs from 1995 to 2015 in New Jersey to be $3.613 billion in 1995 dollars. Needs for all states totaled $136.7 billion. The 1996 Water Supply Plan updated a 1982 plan. Using a water balance model and projections of population growth to 2040, NJDEP analyzed surpluses and deficiencies among water supplies by watershed and advanced programs of management measures and capital improvements. Estimating a total safe yield for surface water supplies in New Jersey of approximately 850 million gallons per day and a total safe yield for groundwater supplies of approximately 900 million gallons per day, NJDEP projected that the total safe yield of 1,750 million gallons per day was generally sufficient to meet estimated 1990 demands of 1,500 million gallons per day but would not satisfy the projected 2040 demand of 1,790 million gallons per day for a population of 8,933,212. (This population is currently projected to be exceeded by nearly 500,000 by 2028.)

The Water Supply Plan included a number of studies and projects that were currently proposed, in progress, or completed since 1982, and contained $786.55 million in capital projects. Many of these capital projects involved private and other public funds, as the Water Supply Bond Fund contributed or is proposed to contribute $21.55 million toward these projects. The 1996 Federal Safe Drinking Water Act Amendments directed USEPA to conduct a survey of the infrastructure needs facing community public water systems. Noncommunity water systems, private individual water supply wells, and projects solely for future growth were not addressed by the survey. The first survey, released in 1997, was used to develop a formula to allot funds for Drinking Water State Revolving Fund grants to states.

The breakdown of costs in New Jersey reflects what is typical nationwide—i.e., the total costs for large systems are significantly higher but are the smallest on a per-household basis. Conversely, investments for small systems tend to have the highest per-household costs. Included in the costs presented below are $175.6 million (1995 dollars) in present needs to meet current Federal Safe Drinking Water Act requirements in New Jersey ($212.1 million for 20-year

[80] Ibid.

needs). Approximately $384.4 million in costs is estimated to meet needs associated with the adoption of proposed new Federal Safe Drinking Water Act regulations. It is estimated that an additional $1,127.8 million is required to address related needs in New Jersey, such as distribution system improvements (including transmission mains from source to treatment or from treatment to distribution systems). The needs identified in the NJDEP Statewide Water Supply Plan and the USEPA Drinking Water Infrastructure Needs Survey overlap, but not completely.

The USEPA study does not address non-community public water supplies or private individual water supply wells. The USEPA study addresses future needs that may result from changes in performance standards, but not future needs associated with new growth. In contrast, the NJDEP plan does not distinguish between capital projects needed for current needs and projects to meet future needs occasioned by projected growth. The impact assessment contained here estimates these latter needs.

## Sewer Infrastructure

In 2006, the date of the most recent nationwide needs assessment for wastewater treatment facilities, there were 145 sewage treatment plants and 516 collection systems in New Jersey, discharging approximately 1.5 billion gallons of waste water into New Jersey water resources. Domestic treatment systems account for 80 percent of these discharges. Systems are both publicly and privately owned. Thirty-seven combined sewer facilities, in which untreated sewage including bacteria, viruses, and other pathogens might be released from sanitary sewer systems with storm water runoff during high-flow (storm) periods, existed in New Jersey in 2006. In 1999, five municipal sewage treatment plants and 12 sewage collection systems were refused permission to connect new customers because of violations of water quality standards, a substantial reduction from 1992 when 89 treatment plants and 23 collection systems were faced with connection bans. The United States Environmental Protection Agency (USEPA), using data provided by the New Jersey Department of Environmental Protection (NJDEP), projected that by 2016 there will be 153 sewage treatment plants and 553 collection systems in operation. The total 2006 documented and modeled needs through 2016 are estimated by USEPA at $6.958 billion for New Jersey and $139.5 billion for the entire nation. Additional needs estimated by NJDEP increase the total to $8.026 billion. USEPA's 1996 Clean Water Needs Survey (CWNS) presented estimates of capital costs eligible for funding under the State Revolving Fund (SRF) program established in the 1987 Amendments to the Federal Clean Water Act (FCWA). The CWNS covers publicly owned municipal wastewater collection and treatment facilities, facilities for the control of combined sewer overflows (CSOs), activities designed to control storm water (SW) runoff and nonpoint-source (NPS) pollution, and programs designed to protect the nation's estuaries.

The CWNS defines a "need" as a cost estimate for a project eligible for funding under the State Revolving Fund program of FCWA to prevent or abate a public health or water quality problem. The cost estimates in the 1996 CWNS database were either reported by the states or modeled by USEPA. Reported needs include costs for facilities used in conveyance, storage and treatment, and recycling and reclamation of municipal wastewater. In addition, costs for structural and nonstructural measures and costs to develop and implement state and municipal storm water and nonpoint-source pollution programs were included. For the modeled categories, USEPA prepared cost estimates for eligible facilities and program activities. Needs estimates in the CWNS do not include annual

costs for operations and maintenance. They also do not include needs that are ineligible for federal assistance under Title VI of the FCWA, such as house connections to sewers and costs to acquire land that is not utilized in the treatment process. The 2007 USEPA cost estimate is included in the sewer cost impact assessment.

This section of the infrastructure impact assessment compares the impacts of growth on water and sewer usage and costs under two development scenarios—TREND and PLAN. Water and sewer infrastructure are among the components of infrastructure that must be provided to accommodate development. This analysis will determine the effect on water and sewer demand and cost when development occurs at different locations and in different configurations throughout the state. The result of this analysis will enable a comparison of water and sewer infrastructure usage and costs depending upon the development scenario.

The key questions examined in this section are as follows:

- **How do water and sewer infrastructure demands vary according to future development scenarios?**
- **How do water and sewer infrastructure costs similarly vary?**
- **Which development scenario will entail the least infrastructure development and most cost savings?**

**Stormwater sewer on County Road 634 in Somerset County.**
Arlene Pashman

# BACKGROUND

## Water and Sewer Service Structure

Water-based utility requirements are directly related to water and sewer demand. Water demand relates to the number of people in a dwelling unit or per 1,000 square feet of nonresidential space, also taking into consideration whether the properties they occupy have lawns that are watered regularly. Water service is people and property driven, and models or standards of water use take both of these types of demand into account. The specific means of obtaining and distributing water varies with the level of development of a community, and density is often the surrogate for level of development. Water hookups from public systems are primarily an urban or suburban service. This occurs regularly in PA-1 and PA-2 and can be expanded into fringe area (PA-3) centers. In environs of fringe planning areas, package water treatment facilities are often the norm. This is also the case for centers in rural (PA-4) and environmentally sensitive (PA-5) planning areas. Water service in environs of rural and environmentally sensitive planning

areas is provided by individually dug or drilled wells. These sources of water service, which vary by planning area, will be presumed to meet the needs of population and employment growth under the two growth scenarios. This distribution of type of service by type of planning area is shown in table 34.

**TABLE 34**

| PAs | Centers | Remaining Areas | Trend |
|---|---|---|---|
| Metropolitan (PA-1) And Suburban (PA-2) | Public water and sewer | Public water and sewer | Public water and sewer |
| Fringe (PA-3) | Public water and sewer with extended mains | Community package system | Public water and sewer and community package system equally represented |
| Rural (PA-4 and Environmentally Sensitive (PA-5) | Community package system | Individually drilled wells and installed septic systems | Community package system (30 percent) and individual wells/septic (70 percent) |

*Sources: New Jersey Office of State Planning, 2000, CUPR, Rutgers University.*

Sewer demand (sanitary sewers only) is a function of the number of gallons of occupant-driven water consumption that remains in the system and ultimately must be disposed of. While it parallels water demand, sewer demand involves lower amounts because the non-domestic water usually does not remain in the system for disposal. This remaining quantity varies from 60 percent to 97 percent of the total water consumption for residential and non-residential uses. Sewer hookups from public systems like those for water are primarily an urban or suburban service (PA-1 and PA-2). Otherwise, sewer services are delivered in package plants (PA-3) or via septic systems (PA-4 and PA-5).

The specific types of sewer service for centers and remaining areas follow similar declensions as those discussed for water service. Sewer service types that will be utilized to meet the demands of household and employment growth under the two scenarios are indicated in table 34.

## *Utility Demand*

The typical standard for domestic water consumption is about 75 gallons per day per person. (The national average per capita in 1999 was 72 gallons per day.) Nondomestic water use is approximately 10 to 50 percent of this number. Indoor water demand is calculated per capita; outdoor water use is calculated per unit. Outdoor water use varies by location: more in suburban and rural areas; less in urban areas. The two types of use combine to define an equivalent dwelling unit (EDU) for water and sewer use for each type of unit. In single-family attached and multifamily housing, the water and sewer demand is reduced to account for both reduction in household size and outdoor water consumption. The water and sewer demand by type of residential unit is presented in table 35.

To place nonresidential uses on a per-unit basis, each 1,000 square feet of nonresidential space is defined as a single unit. Using the relationship between employees and space occupancy that establish structure requirements when computing land conversion, the water and sewer demand is defined for each nonresidential unit. Water consumption is approximately 25 gallons per day per employee. Employees per 1,000 square feet are 3.0, 2.5, 1.5, and 1.0 for office, retail, industrial, and warehouse uses, respectively. In all uses except retail and industrial, individual employee requirements were used exclusively to establish water and sewer demand. For retail uses, demand was doubled to account for customer use of public restrooms. For industrial uses, product use and internal cleaning increased water consumption per

employee by about 50 percent. For all non-residential uses, outdoor water use is 2 to 3 percent of the total water demand.

Nonresidential demand numbers do not include fire equipment testing requirements (e.g., sprinkler systems). These are not included because there is a lack of nationwide uniformity of requirements for system testing in new construction.

## Water and Sewer Connections (Laterals)

Water and sewer interceptors, or mains, are connected to single or multiple residential and nonresidential units by laterals. The schedule relating laterals to units (table 36) has been incorporated into the water and sewer model.

**TABLE 35**

| | Water Demand | | | Sewer Demand | |
|---|---|---|---|---|---|
| | | Outdoor (gallons per unit) | | | |
| Structure Type | Indoor (gallons per person) | Urban | Rural/ Suburban | Indoor (gallons per person) | Outdoor (gallons per unit) |
| **Residential** | | | | | |
| Single-Family Detached | 75 | 30 | 50 | 75 | 0 |
| Single-Family Attached | 75 | 5 | 25 | 75 | 0 |
| Multifamily | 75 | 5 | 15 | 75 | 0 |
| **Nonresidential** | | | | | |
| Office | 75 | 2 | | 73 | 0 |
| Retail | 135 | 4 | | 131 | 0 |
| Industrial | 60 | 2 | | 58 | 0 |
| Warehouse | 30 | 1 | | 29 | 0 |

*Sources: New Jersey private water companies for water and sewer data, 2000. Data interpretation (2009) by Rutgers University, Center for Urban Policy Research.*

**TABLE 36**

| Structure Type | Laterals (Trunk Line Connections) |
|---|---|
| **Residential** | |
| Single-Family | 1 for 1 unit |
| Multifamily | 1 for 4 units |
| **Nonresidential** | |
| Office | 1 for 25 units (25,000 square feet) |
| Retail | 1 for 10 units (10,000 square feet) |
| Industrial | 1 for 10 units (10,000 square feet) |
| Multifamily | 1 for 50 units (50,000 square feet) |

*Source: Rutgers University, Center for Urban Policy Research, 2009.*

**Inadequate drainage in Green Brook.**
Arlene Pashman

The square footage per lateral cited for nonresidential connections corresponds to the nominal building size for that use. Water and sewer laterals are fully counted for each unit developed in planning areas. In the environs of rural and environmentally sensitive planning areas, housing is exclusively single-family detached, and these units are served by individual wells and septic systems. Individual wells and septic systems comprise approximately 30 percent of future growth. These are counted in the same fashion as water and sewer laterals for single-family houses (one for one unit) but are priced differently. Water and sewer lateral counts by municipality and planning area include wells and septic systems, which are each counted as single laterals.

## Water and Sewer Costs

Water and sewer services are provided to the vast majority of new users as a shared cost of the entire system at full capacity. This is commonly referred to as the hookup or "tap-in" fee. The "tap-in" fee and the shared cost of a unit's lateral comprise the cost of connecting to water and sewer systems.

**TABLE 37. Water and Sewer Costs—Residential Uses ($)**

| | Residential Water Costs | | | |
|---|---|---|---|---|
| | *Single Family Detached* | | *Single Family Attached* | |
| | *Tap-In* | *Lateral* | *Tap-In* | *Lateral* |
| Urban | 3,930 | 3,960 | 2,940 | 1,320 |
| Inner Suburban | 5,280 | 3,960 | 2,940 | 1,320 |
| Outer Suburban | 5,400 | 3,600 | 4,485 | 1,200 |
| Rural | 6,000 | 3,240 | 4,485 | 960 |
| | **Residential Sewer Costs** | | | |
| | *Single Family Detached* | | *Single Family Attached* | |
| | *Tap-In* | *Lateral* | *Tap-In* | *Lateral* |
| Urban | 8,430 | 3,300 | 6,330 | 990 |
| Inner Suburban | 10,560 | 3,300 | 6,330 | 990 |
| Outer Suburban | 11,250 | 3,000 | 7,200 | 1,200 |
| Rural | 12,900 | 2,700 | 9,660 | 960 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008–2028.

**TABLE 38. Water and Sewer Costs—Nonresidential Uses ($)**

| | Nonresidential Water Costs | | | | | |
|---|---|---|---|---|---|---|
| | *Office Tap-In* | *Office Lateral* | *Retail Tap-In* | *Retail Lateral* | *Warehouse Tap-In* | *Warehouse Lateral* |
| **Urban** | 471 | 474 | 786 | 792 | 549 | 555 |
| **Inner Suburban** | 633 | 474 | 1,056 | 792 | 738 | 555 |
| **Outer Suburban** | 648 | 432 | 1,080 | 720 | 756 | 504 |
| **Rural** | 1,008 | 390 | 1,680 | 648 | 1,176 | 453 |
| | **Nonresidential Sewer Costs** | | | | | |
| | *Office Tap-In* | *Office Lateral* | *Retail Tap-In* | *Retail Lateral* | *Warehouse Tap-In* | *Warehouse Lateral* |
| **Urban** | 1,011 | 396 | 1,686 | 660 | 1,179 | 462 |
| **Inner Suburban** | 1,266 | 396 | 2,112 | 660 | 1,479 | 462 |
| **Outer Suburban** | 1,350 | 360 | 2,250 | 600 | 1,575 | 420 |
| Rural | 1,854 | 324 | 3,090 | 540 | 2,163 | 378 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

The individual costs of water and sewer infrastructure are calculated by drawing from a variety of New Jersey and Northeast regional sources, specifically selected engineering firms and municipal authorities in the Middle Atlantic region. The costs of the four types of water and sewer services are calculated (public, public extended, package systems, and on-site treatment systems.

# IMPACT ASSESSMENT—METHODS

The CUPR Water And Sewer Demand Model forecasts the differential impacts of alternative land-use development patterns on water and sewer demand. It forecasts water and sewer demand as a function of future population and employment multiplied by use rates, combined with selected variables that have been shown to affect usage. Total population, the type of dwelling units served, and intensity of land use are among the most important factors influencing residential water and sewer demand. In general, the larger the population, the greater the proportion of single-family units; the larger the land area surrounding a dwelling unit, the larger the demand for service.

Different types of dwelling units have different water requirements associated with them. Single-family units, for example, require more water to meet landscaping needs and other outdoor water uses; multifamily units use less water for outdoor purposes. Demand for water is therefore generally higher in suburban and rural communities, where single-family homes predominate, than in urban communities, where multifamily development exists at higher ratios. Sewer demand, by contrast, depends on the amount of indoor water use. Generally, water used outdoors does not flow back into sewers.

To measure water demand, the model combines the two components of residential water use to arrive at total daily water demand: 1) daily per capita water use, which reflects indoor water use; and 2) daily per–housing unit water use, which reflects outdoor water use. Indoor uses include bathing, cooking, laundering, and toilet flushing. Outdoor uses include lawn watering, car washing, and other uses such as swimming pools.

The daily per capita water-use rate used in the model has been obtained from the New Jersey Department of Environmental Protection (NJDEP). It is widely accepted and cited in the literature as a standard per capita water-use rate. This rate is multiplied by total population for each municipality to arrive at indoor water demand by municipality. To calculate the per—housing unit water use per day, the model distinguishes among housing unit types. Water-use rates by housing unit type, which have been obtained from New Jersey water companies, are multiplied by the number of housing units by type in each municipality to arrive at total outdoor water use. Total indoor water use is then combined with total outdoor use to determine total residential water demand per municipality. Sewer demand is based on indoor water use, with the model assuming that a share of all water used indoors will flow into a sewer system. Nonresidential demand calculations are more straightforward. Water- and sewer-use rates by type of employee are combined with change in the number of employees to arrive at non-residential demand projections. Municipal residential and nonresidential water demand are added to arrive at a total municipal water demand projection associated with growth under the TREND scenario. The same is done to project total sewer demand. These are then aggregated to county and state levels.

## Water and Sewer Infrastructure Costs

Water infrastructure is made up of several components: the water source, the treatment facility, storage facilities, and the distribution system. The cost of supplying water to new developments varies because infrastructure needs differ depending on the type of planning area in which development is occurring. In rural and environmentally sensitive planning areas (PA-4 and PA-5), infrastructure typically is nonexistent or access is difficult. Therefore, new water infrastructure in the form of dug or drilled wells and septic systems is required. In urban and suburban communities, households generally can be hooked up to existing service. In fringe communities, community package systems may be required. The first step in determining water infrastructure costs, therefore, is to isolate the planning areas where development will take place.

When water treatment plants and distribution systems are designed, their size is determined by the number of houses or buildings they will serve, with costs calculated on the number of laterals required. Thus, for new residential development, the number and type of new dwelling units is projected. To calculate the number of laterals required to service the new dwelling units, a water cost model assumes that each single-family unit will require a lateral. Multifamily units have fewer laterals than the number of apartments. For the purpose of

estimating costs, one lateral is calculated for every four multifamily units. In actual practice, fewer hookups will probably be necessary to service multifamily units, but this measure is used as a rule of thumb. Overstating the number of hookups allows safe estimation of what size water treatment plant is required to service the new population. Thus, the second step in estimating water costs is calculating the number of laterals required to service projected new development. The number of laterals will equal the total number of single-family units plus the total number of multifamily units divided by four.

The water cost model assumes that new development in suburban and urban communities will be served by current water treatment facilities. According to NJDEP, new development in rural municipalities will generally require new wells, treatment facilities, and distribution systems. Where there are already facilities serving rural communities, they usually were built to serve a specific development. Thus, it can be assumed they are operating at capacity or are too far away to serve new developments cost effectively. Total water infrastructure costs are the sum of all rural and suburban/urban water infrastructure costs.

For both TREND and PLAN analyses, the model runs as described above and includes household dwelling type, planning area, municipality, development location, and the various costs associated with different types of infrastructure needs. The water cost model projects costs associated with residential and nonresidential development. The relationship between population and employment growth and water supply facility requirements is relatively straightforward. As noted, the number and type of residential dwelling units and nonresidential space are projected, enabling an estimate to be made of the water infrastructure costs associated with both types of development.

## EXPECTED DIFFERENCES BETWEEN TREND AND PLAN

A reasonable assumption is that under TREND development residential development patterns will continue to be characterized by relatively low-density development comprising predominantly single-family homes. If the PLAN development scenario directs new residential development to existing densely developed communities with town houses and multifamily units, water demand will be less under PLAN conditions than under TREND conditions. The model measures these differences by taking into consideration dwelling unit type and the differing locations where development is occurring under the TREND and PLAN scenarios.

Water supply infrastructure costs for development under TREND are expected to differ from the PLAN regimen in several ways. To the extent that new development under the TREND scenario occurs in rural municipalities rather than suburban and urban municipalities, water infrastructure costs will be higher due to the construction of water treatment plants, except as the number of units increases and per-unit costs are reduced. Costs will be lower when development occurs in rural communities on a large scale. The model is able to calculate these differences because it takes into consideration both type of development, which affects distribution system needs, and the location of development, which affects the cost for water treatment facilities.

Sewer infrastructure costs are expected to be the lowest for two kinds of development scenarios: small, scattered developments in rural communities where no extension of sewer service is predicted and development in communities where there are ample existing capacity and low backlog needs. In the former case, this pattern of development is served by individual septic systems, which, except in

northern parts of the state, cost less than extending public systems would. In the latter case, as a general rule, concentrated development reduces collector system costs. It seems unlikely that development under the TREND regimen will be so scattered that individual systems will suffice to service units. It seems more likely that increased cost savings will be realized under the more concentrated development patterns expected for PLAN development. However, cost savings will depend on where development is occurring. As discussed, sewer infrastructure needs are highly site-specific. Wherever systems are operating at or near capacity, new development may trigger much higher infrastructure costs if construction of new treatment facilities is required. Furthermore, if development occurs at sufficiently high densities, infrastructure costs may increase, because high-density development requires larger pipes, which are more expensive. The model is able to account for these differences by calculating the costs associated with development in specific municipalities, depending upon the location of growth projected under the TREND and PLAN scenarios.

## CRITICAL ASSUMPTIONS

A major assumption in the analysis is that the overall mix of residential development under the TREND scenario will be characterized by larger lot sizes and more single-family units than would be the case under the PLAN scenario. CUPR projections assume that, while there will be some movement toward a greater share of single-family attached and multifamily units under TREND, more of that pattern of development will occur under PLAN. Another assumption is that development will be encouraged in more-urban communities of the state. Therefore, outdoor water use should be less under the PLAN regimen.

The major assumption underlying the water cost model is that residential and nonresidential water infrastructure needs can be estimated according to the type of development and community where development is occurring. The model assumes that if new growth is occurring in rural and environmentally sensitive planning areas, access to infrastructure will be nonexistent or difficult. Individual wells will serve small scattered development, but new water infrastructure will be required to serve larger developments in rural areas. In communities characterized by large PA-1 and PA-2 tracts, the model assumes that units generally can be hooked up to existing service. Lands in municipalities have been assigned to planning area categories under both scenarios.

Cost assumptions for water infrastructure components—wells, distribution systems, water treatment facilities—for both the TREND and PLAN scenarios have been described above. The major assumption underlying the OSP sewer cost model is that the data collected in the Waste Water Management Plans accurately reflect sewer usage and infrastructure needs throughout the state.

## SCOPE AND DEPTH OF ANALYSIS

Water demand models can include hundreds of variables for forecasting need. One model projects water demand based on a parcel-by-parcel inventory by water service area of all anticipated land-use changes for each year, as well as the water-use factors associated with new land use. Models such as these require detailed data that are difficult to obtain for large geographic areas.

An effort to compare the effects of two development scenarios, not only on water and sewer demand, but also on scores of other measures—and on a statewide basis—requires

some simplification. Yet, the analysis includes variables that will highlight likely differences between the TREND and PLAN regimens. The CUPR water and sewer demand model will require data on the relevant variables at the municipal level. The scope of analysis will proceed on the municipal, regional, and state levels.

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***Under TREND conditions, the State will experience an increase in water and sewer demand of 94.22 million and 81.94 million gallons per day, respectively.***

# TREND FINDINGS

## Water and Sewer Demand

Under the TREND scenario, during the period from 2008 to 2028, the state will experience an increase in water and sewer demand of 94.22 million and 81.94 million gallons per day, respectively. Almost 56-57 percent (54.12 million gallons/45.53 million gallons) of future water and sewer demand will take place in the state's southern region, and 43-44 percent (40.10 million gallons/36.42 million gallons) in the northern region (table 39).

Under TREND conditions, approximately 60.5 percent (57.03 million gallons) of new water and 62 percent of new sewer demand (51.06 million

**TABLE 39. TREND Findings:**
**Household Water and Sewer Infrastructure—Increase for the Period 2008-2028**

| | Water Demand (millions of Gallons) | Sewer Demand (millions of gallons) | Water & Sewer Laterals (# each in 000) | Water Lateral Costs (billions of $) | Sewer Lateral Costs (billions of $) |
|---|---|---|---|---|---|
| **New Jersey** | 94.22 | 81.94 | 261.73 | 2.19 | 3.54 |
| **Regions** | | | | | |
| North | 40.10 | 36.42 | 83.26 | 0.66 | 1.09 |
| South | 54.12 | 45.53 | 178.47 | 1.54 | 2.45 |
| **Type of Community** | | | | | |
| Urban | 18.68 | 17.78 | 32.44 | 0.23 | 0.38 |
| Inner Suburban | 38.35 | 33.28 | 103.59 | 0.83 | 1.33 |
| Outer Suburban | 28.24 | 23.39 | 96.95 | 0.87 | 1.37 |
| Rural | 8.96 | 7.49 | 28.75 | 0.26 | 0.46 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 74.71 | 65.75 | 195.63 | 1.59 | 2.55 |
| Rural, Env. Sensitive | 19.52 | 16.19 | 66.10 | 0.60 | 0.99 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 74.11 | 64.84 | 202.56 | 1.67 | 2.69 |
| All Others | 20.11 | 17.11 | 59.17 | 0.52 | 0.86 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

gallons) will take place in urban or inner-suburban communities, and about 39.5 percent (37.20 million gallons) of new water demand in rural/outer-suburban communities. Thirty-eight percent (38%) of new sewer demand (30.88 million gallons) will take place in rural/outer-suburban communities. In addition, around 80 percent (74.71 million gallons/65.75 million gallons) of water and sewer demand will take place in communities with more densely developed planning areas (PA-1 to PA-3), and just under 80 percent (79%) (74.11 million gallons/64.84 million gallons) in communities with urban, regional, or town centers.

## Water and Sewer Laterals

Under existing development or TREND conditions, there will be a demand for approximately 261,730 new water laterals and an equivalent number of new sewer laterals. Each residential and nonresidential unit of development either has both a water and sewer lateral or shares a water and sewer lateral. Individual wells and septic systems and shares of package treatment plants are treated as equivalent to a single lateral. About 68 percent (178,470 each) of these water and sewer laterals will be required in the southern portion of the state and about 32 percent (83,260 each) in the northern part of the state. Close to 52 percent (136,030 each) of future water and sewer laterals will be required in urban/inner-suburban communities and 48 percent (125,700 each) in rural/outer-suburban communities. In addition, 75 percent (195,630 each) of future water and sewer laterals will be required in communities with more densely developed planning areas (PA-1 to PA-3), and 25 percent (66,100 each) in communities with less densely developed planning areas (PA-4 and PA-5). Finally, 77 percent (202,560 each) of future water and sewer laterals will be required in municipalities with urban, regional, and/or town centers; 23 percent (59,170 each) in municipalities without large centers.

### *Water and Sewer Lateral Costs*

To support the costs of development under TREND conditions, $2.19 billion will be required in water lateral costs and $3.54 billion in sewer lateral costs. Approximately 70 percent ($1.54 billion/$2.45 billion) of future water and sewer lateral costs will be required in the southern region; 30 percent ($0.66 billion/$1.09 billion) in the northern region (see table 39).

Of the $2.19 billion and $3.54 billion in future water and sewer lateral costs, respectively, about 48 percent ($1.06 billion/$1.71 billion) will be required in urban/inner-suburban communities and 52 percent ($1.13 billion/$1.83 billion) in rural/outer-suburban communities. Of the above future water and sewer lateral costs, 73 percent ($1.59 million/$2.55 billion) will occur in communities with more densely developed planning areas (PA-1 to PA-3); 27 percent ($0.60 billion/$0.99 billion) will occur in communities with less densely developed planning areas (PA-4 and PA-5). Finally, 76 percent ($1.67 billion/$2.69 billion) of future water and sewer lateral costs will occur in communities with urban, regional, and/or town centers; 24 percent ($0.52 billion/$0.86 billion) will occur in communities without large centers. Under the TREND scenario, more costs are in the southern part of the state, in rural/outer-suburban communities, in communities with more densely developed planning areas, and in communities with large centers.

# PLAN FINDINGS

## Water and Sewer Demand

Under PLAN conditions, between 2008 and 2028, the state of New Jersey will require an additional 91.68 million gallons of water capacity and 80.54 million gallons of sewer capacity per day. Between 56 and 58 percent (53.62 million gallons/45.44 million gallons) of future water and sewer capacity will be required in the southern region and 42-44 percent (38.06 million gallons/35.10 million gallons) in the northern region. Under PLAN development, approximately 77-78 percent (70.27 million gallons/62.79 million gallons) of future water and sewer capacity will be required in urban/inner-suburban communities, and 22-23 percent (21.41 million gallons/17.75 million gallons) in rural/outer-suburban communities. Water and sewer demand under the PLAN regimen will be more concentrated (87 percent—80.14 million gallons/70.92 million gallons) in communities with more densely developed planning areas and less concentrated (12-13 percent—11.55 million gallons/9.63 million gallons) in communities with less densely developed planning areas. Finally, future water and sewer demand under PLAN conditions will be more pronounced in communities with urban, regional, and/or town centers (83 percent—75.95 million gallons/67.03 million gallons) and less pronounced in communities without large centers (17 percent—15.73 million gallons/13.52 million gallons).

**TABLE 40. PLAN Findings:**
**Household Water and Sewer Infrastructure—Increase for the Period 2008-2028**

| | Water Demand (millions of Gallons) | Sewer Demand (millions of gallons) | Water & Sewer Laterals (# each in 000) | Water Lateral Costs (billions of $) | Sewer Lateral Costs (billions of $) |
|---|---|---|---|---|---|
| **New Jersey Regions** | 91.68 | 80.54 | 245.66 | 2.01 | 3.24 |
| North | 38.06 | 35.10 | 70.95 | 0.53 | 0.89 |
| South | 53.62 | 45.44 | 174.70 | 1.48 | 2.35 |
| **Type of Community** | | | | | |
| Urban | 23.73 | 22.54 | 42.85 | 0.30 | 0.50 |
| Inner Suburban | 46.54 | 40.25 | 129.56 | 1.05 | 1.67 |
| Outer Suburban | 17.39 | 14.36 | 60.98 | 0.55 | 0.86 |
| Rural | 4.02 | 3.39 | 12.27 | 0.11 | 0.20 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 80.14 | 70.92 | 207.55 | 1.67 | 2.67 |
| Rural, Env. Sensitive | 11.55 | 9.63 | 38.11 | 0.34 | 0.57 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 75.95 | 67.03 | 201.88 | 1.63 | 2.62 |
| All Others | 15.73 | 13.52 | 43.77 | 0.38 | 0.61 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## Water and Sewer Laterals

Under PLAN development, there will be a demand for approximately 245,660 new water laterals and an equivalent number of new sewer laterals (table 40). About 71 percent of these new water and sewer laterals (174,700 each) will be required in the southern portion of the state, and about 29 percent (70,950 each) in the northern portion. About 70 percent (172,410 each) of future water and sewer laterals will be required in urban/inner-suburban communities, and 30 percent (73,250 each) in rural/outer-suburban communities. Nearly 85 percent of future water and sewer laterals will be required in communities with more densely developed planning areas (207,550 each); slightly less than 15 percent (38,110 each) in communities with less densely developed planning areas. Eighty-two percent of future water and sewer laterals (201,880 each) will be required in communities with urban, regional, and/or town centers; 18 percent (43,770 each) in communities without large centers.

### *Water and Sewer Lateral Costs*

Under PLAN development, future water and sewer lateral costs will amount to $2.01 billion and $3.24 billion, respectively. Approximately three-quarters ($1.48 billion/$2.35 billion) of these water and sewer costs will be required in the southern part of the state and 25 percent ($0.53 billion/$0.89 billion) in the northern part. Two-thirds ($1.35 billion/$2.17 billion) of future water and sewer lateral expenditures will be in urban/inner-suburban communities; 33 percent ($0.66 billion/$1.06 billion) in rural/outer-suburban communities. Eighty-three percent ($1.67 billion/$2.67 billion) of water and sewer lateral costs will be in communities with more densely developed planning areas; 17 percent ($0.34 billion/$0.57 billion) will be in communities with less densely developed planning areas. Eighty-one percent ($1.63 billion/$2.62 billion) of water and sewer lateral costs will occur in communities with urban, regional, and/or town centers; 19 percent ($0.38 billion/$0.61 billion) in communities without large centers (table 40).

# PLAN VERSUS TREND FINDINGS

## Water and Sewer Demand

Overall water and sewer demand per day under PLAN versus TREND conditions is 2.7 percent less for water and 1.7 percent less for sewer (-2.54 million gallons/-1.40 million gallons, respectively). The largest volume of water and sewer saved under PLAN development is in the northern region (-2.04 million gallons/-1.31 million gallons); much less is saved in the southern region (-0.50 million gallons/-0.08 million gallons) (table 41).

Most water and sewer consumption saved in absolute terms (amounting to 16 percent of TREND consumption, -15.79 million gallons/-13.14 million gallons) will be saved in rural/outer-suburban communities. Most water and sewer consumption that will have to be accommodated (amounting to about 14 percent, +13.25 million gallons/+11.75 million gallons) will take place in urban/inner-suburban communities. Water and sewer consumption will be close to 25 percent higher in urban/inner-suburban communities under PLAN conditions (13.25 million gallons/11.75 million gallons). Water and sewer consumption will increase by about 7.27 percent in communities with more densely developed planning areas (5.43 million gallons/5.16 million gallons) and decrease by 40 percent (-7.97 million gallons/-6.56 million gallons) in communities with less densely developed planning areas. Finally, under PLAN conditions water and sewer consumption will increase by 2.5 and 3.3 percent, respectively (.84 million gallons/2.19 million gallons) in communities with urban, regional, and/or town

centers and decrease by 22 percent (-4.38 million gallons/-3.59 million gallons) in communities without large centers.

## Water and Sewer Laterals

Under PLAN versus TREND conditions, 16,080 fewer water and sewer laterals (and associated shares of package plants and individual wells/septic systems) will be needed. This is a reduction of future water and sewer laterals of about 6 percent. More than three-quarters (-12,310 each) of the water and sewer lateral redirection will take place in the southern region; the other one-quarter will take place in the northern region (-3,770) each.

Under PLAN conditions, water and sewer lateral demand will be reduced by significant numbers in rural/inner-suburban communities (-52,440 each). Urban/inner-suburban communities will experience a 26.4 percent increase in future water and sewer laterals (36,370 each). Overall, reductions outnumber increases. Under PLAN development, 6.1 percent more (11,920 each) water and sewer laterals will be required in communities with more densely developed planning areas; fewer laterals (-27,990 each) will be required in communities with less densely developed planning areas. Less (680 each) water and sewer laterals will be required in communities with urban, regional, and/or town centers; many fewer (-15,400 each) in communities without large centers.

**TABLE 41. PLAN versus TREND Findings: Household Water and Sewer Infrastructure—Increase for the Period 2008-2028**

| | Water Demand (millions of gallons) | Sewer Demand (millions of gallons) | Water & Sewer Laterals (# each in 000) | Water Lateral Costs ($ billions) | Sewer Lateral Costs ($ billions) |
|---|---|---|---|---|---|
| **New Jersey** | (2.54) | (1.40) | (16.08) | (0.18) | (0.31) |
| **Regions** | - | - | - | - | - |
| North | (2.04) | (1.31) | (12.31) | (0.12) | (0.20) |
| South | (0.50) | (0.08) | (3.77) | (0.06) | (0.10) |
| **Type of Community** | - | - | - | - | - |
| Urban | 5.05 | 4.77 | 10.40 | 0.08 | 0.13 |
| Inner Suburban | 8.19 | 6.98 | 25.97 | 0.21 | 0.34 |
| Outer Suburban | (10.85) | (9.04) | (35.97) | (0.32) | (0.51) |
| Rural | (4.94) | (4.10) | (16.47) | (0.15) | (0.26) |
| **Planning Area** | - | - | - | - | - |
| Metro, Suburban, Fringe | 5.43 | 5.16 | 11.92 | 0.07 | 0.12 |
| Rural, Env. Sensitive | (7.97) | (6.56) | (27.99) | (0.26) | (0.43) |
| **Centers** | - | - | - | - | - |
| Large Centers (Urban, Regional, Town) | 1.84 | 2.19 | (0.68) | (0.04) | (0.06) |
| All Others | (4.38) | (3.59) | (15.40) | (0.14) | (0.24) |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## Water and Sewer Lateral Costs under PLAN versus TREND Conditions

Overall, future water lateral cost will be reduced by 8.25 percent, or $0.18 billion; sewer lateral cost will be reduced by 8.75 percent, or $0.31 billion. About twice as much of the reductions in water and sewer lateral costs will take place in the northern region of the state ($-0.12 billion/ $-0.20 billion), followed by decreases in the southern region ($-0.06 billion/$-0.10 billion). In the southern region, more water lateral costs will be incurred under both the TREND and the PLAN scenarios.

Most of the PLAN water and sewer lateral cost savings will occur in rural/outer-suburban communities ($-47 billion/$-0.77 billion. Under PLAN versus TREND conditions, water and sewer lateral costs will increase by 27 percent (+$0.29 billion/+$0.47 billion) in urban/inner-suburban communities. In the state as a whole, for both water and sewer, decreases in cost will outweigh increases in cost. Water and sewer lateral costs will increase in communities with more densely developed planning areas (+$0.07 billion/+$0.12 billion) and decrease in communities with less densely developed planning areas ($-0.26 billion/$-0.43 billion). Water and sewer lateral costs will decrease in communities with urban, regional, and/or town centers (-$0.04 billion/-$0.06 billion) and decrease in communities without large centers ($-0.14 billion/$-0.24 billion).

# COMPARISON TO THE PREVIOUS IMPACT ASSESSMENT FINDINGS

Water and sewer demand for the current 20-year projection period will be about 70 percent of what it was at the time of the 2000 evaluation. This is due to significantly lower population and employment projections for the current period and basically similar indoor water consumption per capita. Water and sewer demand savings under the current State Plan evaluation will be about the same as projected in the 1992 evaluation (2.6 million gallons).

# CONCLUSIONS AND IMPLICATIONS OF THE FINDINGS

These findings reflect that most water demand differences between the two growth scenarios involve outdoor water use. Outdoor water use is calculated according to dwelling unit type and location, with more water used by single-family units and in outer suburban and rural municipalities. Under PLAN, the greater number of multifamily units and single-family attached units resulting from the shift of a greater share of development from outer suburban and rural communities to inner-suburban and urban communities or communities with urban, regional, and/or town centers tends to lower water demand.

To the extent that water is considered an almost inexhaustible resource, determining the amount of water demand under different development scenarios might seem to be merely an interesting exercise. Experience with water shortages in various parts of the state in the recent past shows that this is not the case. A development scenario that reduces water demand is preferable to one that does not, as there may be more water supply shortages in the future.

The cost of water infrastructure under different development scenarios is an important factor in determining overall housing and development costs. Again, the development scenario that reduces the cost of water infrastructure is preferable to one that does not. As development costs are reduced, housing costs can also be reduced, an important consideration given the continued reality of high housing prices in the state.

It is evident that development under the PLAN growth scenario is associated with reduced infrastructure costs. An even greater reduction of water and sewer infrastructure costs could be achieved under a number of conditions. These include shifting more residential development to communities with ample wastewater treatment plant capacity or by clustering dwelling units. Increased intensity of land use reduces collector capital costs. However, development at very high density can have the opposite effect of increasing collector costs because more expensive larger pipes are required to service the development.

# PRINCIPLES FOR FUTURE MONITORING BY THE OFFICE OF SMART GROWTH

Continued monitoring of PLAN will be effected by comparing changes in per capita water consumption in communities, for example, where clustered multifamily development occurs on existing developed acreage with communities where single family, large-lot development occurs on vacant land. Water demand figures should be different in these cases.

Varying costs associated with development in rural communities versus suburban and urban communities can be monitored using the CUPR water cost model. In addition, cost differences due to the size of individual developments and the mix of housing types can be projected.

Different population and employment projections will obviously lead to different cost projections. So, too, will population locational changes, particularly if they are projected for areas with treatment plants near or at capacity. Population and employment projections should be checked soon after the 2010 Census findings are released.

## MONITORING VARIABLES

***The monitoring variables for Office of Smart Growth use involve an analysis of gallons of water and sewer consumed per capita in and outside of centers, as well as the number of units served by water and sewer laterals in and outside of centers.***

***Ratios of the former should be less than one; ratios of the latter should be greater than one.***

***Gallons(M) of water use per capita (in centers)***
**divided by**
***Gallons(M) of water use per capita (in noncenters)*** ***= < 1***

***Gallons(M) of sewer use per capita (in centers)***
**divided by**
***Gallons(M) of sewer use per capita (in noncenters)*** ***= < 1***

***Units per water lateral (in centers)***
**divided by**
***Units per water lateral (in noncenters)*** ***= > 1***

***Units per sewer lateral (in centers)***
**divided by**
***Units per sewer lateral (in noncenters)*** ***= > 1***

# COMMUNITY LIFE ASSESSMENT

**Memorial Day celebration, Essex Fells**
Robert W. Burchell

This is the third major area of assessment as it relates to the State Plan's impact on community life. Of the eight goals under the new State Plan, Goals 6 and 7 relate directly to community life:

**GOAL 6**

**Provide adequate housing at a reasonable cost.**

**GOAL 7**

**Preserve and enhance areas with historic, cultural, scenic, and recreational value.**

The 1992, 2000 and 2009 community life assessments all dealt with housing supply, demand and costs, and quality of life. This evaluation of the 2009 State Plan examines the projected changes for the period from 2008–2028 due to growth under TREND versus PLAN conditions. Information on TREND and PLAN differences is presented by region and both density and type of communities.

The Community Life assessment considers the diversity of community attributes that households and employees will experience as a consequence of the spatial patterns inherent under alternative futures—TREND or PLAN. Community Life characteristics encompass many social and economic variables, among them the supply and cost of housing available in the community.

This Community Life assessment is first performed using a model that contains a composite quality-of-life rating indicative of more-preferential versus less-preferential living environments. The model takes into account such variables as education, taxation, housing, cultural and recreational facilities, crime rates, and household income.

The quality-of-life rating is a composite of regional and local factors affecting quality of life calculated for all the municipalities in New Jersey.[81] The model first rates New Jersey counties on their quality of life compared with that of other counties nationwide. Subsumed into this overall rating is another quality-of-life rating comparing New Jersey municipalities with other municipalities in the state. Each rating scheme contains both static and dynamic

[81]Burchell et. al., "Quality of Life in the United States," *Costs of Sprawl 2000.* Transportation Research Board – National Research Council. 2002.

variables assessing how well a community stands in comparison to other areas and, more importantly, how the quality of life for that community is changing over time. A community is given a quality-of-life rating, and each household and job in the community receives that rating. The combination of number of households and jobs multiplied by the rating is the score for the community under current conditions. To this is added the number of households and jobs locating to the community. Also added is the change in nonresidential ratable base in a community. A community quality-of-life rating increases slightly with increases in ratable base, and the average quality-of-life rating of all communities increases because growth of the nonresidential tax base is more pronounced in the more highly rated communities. Community quality-of-life ratings are summed to the state level and compared for the overall analysis of the TREND versus PLAN development scenarios. As indicated, the quality-of-life ratings change over time, and this is incorporated into the analysis.

Clearly within the definition of quality of community life, and also influencing perceptions of community, is the housing choice of a community. A second component of the community life assessment addresses this issue in two distinct parts. The first is the availability of housing; the second is the cost of housing. Community life is directly related to the availability of appropriate housing in a particular location at a reasonable cost.[82]

The housing-affordability analysis is driven by projections of household formation and the historical provision of housing at the local level. The housing-affordability analysis projects housing demand and income against availability and cost by building type, including rental units, for the municipalities encompassed within three broad regions of the state. The TREND and PLAN housing scenarios are compared, and each scenario is evaluated according to its ability to contribute to more affordable housing in the state. The housing affordability analysis is an important component of the Community Life assessment. The goals of natural resource protection and the desire to revitalize inner-city neighborhoods are weighted against housing affordability.

[82] Anthony Downs, *New Visions for Metropolitan America,* 84.

# QUALITY OF LIFE

**Children at play in Highland Park.**
Jon Erickson

## INTRODUCTION—CORE QUESTIONS

Quality of life is a rating of a place according to variables that describe that place relative to other locations. It is the specification of multiple attributes of a place in a single index to characterize that location. The process used to

calculate such a rating is difficult, frequently subjective, and often imprecise.[83] It is, however, a process that is necessary to viewing population changes and the effects of community environments on those who participate in those changes. The most current procedures are used to assemble a quality-of-life rating, and the analysis determines differences in the quality of life of those who move to varying locations under the two development scenarios (TREND and PLAN).

This exercise is undertaken because there is some concern that those who locate to inner-suburban and urban communities under the PLAN regimen will have a less desirable quality of life than will those who move to rural and undeveloped communities under TREND conditions. That is true to a certain degree; however, the continued decline of urban and inner-suburban communities would be a factor contributing to an overall lower quality of life under TREND development if most moves continued to be to primarily rural and undeveloped areas.

The quality-of-life analysis must be completed to shed light on the above issue. This analysis seeks to answer the following questions

- **What is the quality of life in New Jersey, and what differences are observed when quality of life in urban locations is compared with quality of life in rural locations?**
- **Is quality of life capable of changing over time? How does that happen?**
- **What is the effect of the TREND future versus that of the PLAN future on overall quality of life in New Jersey?**

[83] Burchell et al., *Costs of Sprawl Revisited,* 1998, 93-101.

## BACKGROUND

**Pedestrians on Nassau Street in Princeton.**
Jon Erickson

Quality of life is affected by both regional environments and local environments. Regional environments involve travel time, weather, relationship to recreational activities, growth, cost of living, tax burden, social support levels, and so on. Local environments involve such concerns as economic viability, educational quality and attainment, public-service delivery and cost, local environmental quality, public safety, and socioeconomic status.

The quality-of-life rating applied here involves both regional and local considerations. A regional quality-of-life index is developed for each county. The index rates counties on a scale of 1 to 5. It was formulated using variables developed by Stuart Gabriel of the University of Southern California (USC) and colleagues at the Federal Reserve Bank of San Francisco.[84] The Center for Urban Policy Research used this approach to rank counties nationwide in research conducted for the National Academy of Sciences.[85] The twenty-six variables describe quality of life at the county level.

[84] Gabriel et al., "Compensating Differential and Evolution of the Quality of Life among U.S. States," 34.
[85] Burchell et al., "Quality of Life in the United States," *Costs of Sprawl 2000,* op.cit.

A local quality-of-life index is developed for each municipality. It rates municipalities on a scale of 1 to 5 in terms of local living conditions. This portion of the analysis was the focus of the prior quality-of-life evaluation in New Jersey. The index involves 18 variables in six basic variable sets. It was originally developed by Julian Wolpert and Michael Danielson of Princeton University.[86] The use of this combined procedure to assess regional and local quality of life allows each county to be ranked consistent with the criteria used to rank all counties nationwide, and it allows localities to be ranked according to their own characteristics but within the confines of the overall county rankings. The procedure provides the most comparable and detailed quality-of-life ranking possible.

The State Plan policies pertaining to Quality of Life are as follows. They involve the protection of recreation areas and the creation of sustainable built environments.

[86] Wolpert and Danielson, "The Effects of Growth and Quality of Life," in Burchell, *Impact Assessment of the New Jersey Interim State Development and Redevelopment Plan, Report I: Research Strategy,* 161–175.

## Policy Statements from the Plan

### 16.0 Coastal Resources

**Protect and conserve New Jersey's coastal resources, by striking an appropriate balance between the important contribution that the Jersey Shore makes to New Jersey's economy and its fragile environmental resources upon which so much of that economic contribution relies. Account for the dramatic change likely to occur as a consequence of natural geologic forces, sea-level rise and increasing coastal hazards due to the effects of global warming.**

**THE CHALLENGE:**

***To improve the coordination and integration of coastal planning on multiple government levels to serve as a better guide to infrastructure investment, shore protection and regulatory programs while protecting environmentally sensitive coastal resources.***

### 19.0 Designing More Sustainable Built Environments

**Tailor design, intensity and form to fit local needs that may vary from urban centers to first ring suburbs in need of redevelopment to retrofitting newer suburban communities to center-based development for Rural and Environmentally Sensitive Areas to create spatially defined, visually appealing and functionally efficient places with respect to each of those different contexts in ways that help to create a distinctive identity, built to human scale. Establish a sense of place that enhances economic viability and includes circulation patterns that facilitate multi-modal transportation alternatives to the automobile in ways that are consistent with the vision and goals of the State Plan.**

**THE CHALLENGE:**

***To devise attractive community designs for a range of different community types from the redevelopment essential to revitalizing urban centers and first-ring suburbs to retrofit newer suburbs to designing, attractive, center-based developments in the still more rural and environmentally sensitive locations in the State.***

# IMPACT ASSESSMENT—METHODS

## REGIONAL QUALITY OF LIFE


**Walkable streets in the retailing area of Cape May.**
Jon Erickson

Several studies have attempted to identify those attributes of a regional location that cause people to prefer it over alternatives and to rate places on the basis of those attributes. Such studies face considerable challenges: [87]

- It is not easy to determine which variables should be considered in a measurement of quality of life. For example, it is clear that income probably has a significant impact on the quality of life of most people. Does that mean that income should be included as a component of a quality-of-life index? People may accept lower incomes and consider themselves better off if they live in an area with a lower cost of living and more natural and/or cultural amenities. Moreover, the value of those amenities will be partly—perhaps significantly—capitalized in land values and, therefore, in housing prices. Should higher housing prices be considered a negative or a positive indicator of quality of life?
- Tastes and preferences vary considerably. Some people are comfortable in an urban setting while others will go to great lengths to avoid urban areas. Some people prefer warm weather all the time; others prefer seasonal changes.
- Some attributes are valued in conjunction with others. People may prefer to be near the seashore, but only if the area is not too crowded and the weather allows them to enjoy it.
- Many attributes cannot be measured in a consistent, objective manner. The quality of cultural events and performances available to residents of a particular area, for example, is not easily measured in an objective way. Such qualitative attributes are difficult to incorporate into a quantitative study.
- Consistent and reliable data on many locational amenities are difficult to find. The larger the area and the finer the grain of a study, the less available are useful data. Even such a seemingly simple indicator as the student-to-teacher ratio is measured somewhat differently in various states' school districts.
- Many attributes are strongly correlated. When combined with the lack of available data for other attributes, this leads to seemingly inconsistent findings. For example, people might say they dislike certain attributes, but those same undesirable attributes prevail in the places where they prefer to live. The reason for the apparent inconsistency is that the undesirable attributes are correlated with desirable attributes for which data are not available, and so the undesirable attributes pick up the effects that should be ascribed to the omitted variables.

[87] Burchell et al., "Quality of Life in the United States," *Costs of Sprawl 2000,* op.cit.

- Making locational comparisons requires more than identifying and measuring the attributes that influence people's locational decisions. Weights must be assigned to the various attributes; small differences in weightings can lead to large changes in rankings.

**Traffic southbound on the Garden State Parkway.**
Jon Erickson

The scope of this research effort means that the research team has to either adopt or alter a set of standardized indicators of quality of life or leave this type of analysis out of the evaluation. The choice made by the research team was to alter a set of standardized indicators of quality of life and to use it to evaluate two different development futures for New Jersey. This analysis attempts to address the following key research questions:

- If one had the power to move a household from the municipality it was assigned to by a long-run population forecast to a different municipality, would that household experience a change in its quality of life?
- Specifically, if the household could be moved from a TREND (uncontrolled growth) community to a PLAN (controlled growth) community (as defined in other sections of this analysis), would the household's quality of life change? What is the statewide significance of this change in quality of life once all households have been so moved?

One of the most widely used models for estimating the value of the quality of life associated with regional location was developed and estimated by Stuart Gabriel of USC, Joe Mattey of the Federal Reserve Bank of San Francisco, and William Wascher of the Federal Reserve Board of Governors. The Gabriel et al. model is used to compare quality of life in one state versus another. It is an econometric model whose regression coefficients and signs predict housing expenditures and wages related to the amenity of location.[88] The goal of this section of the analysis is to employ a modified version of Gabriel et al.'s model in the comparison of quality of life at the local level. Local quality of life is controlled by quality of life at the regional level, under the alternative growth scenarios (TREND and PLAN). The comparison could not be done unless there was agreement among research team members about what constitutes quality of life at both of these levels. The variables from the Gabriel et al. model were retained, altered, and supplemented to achieve "recognizable" indicators of regional (county) quality of life. A set of variables depicting local (municipal) quality of life was folded into the county ratings. The procedures for determining each of these quality-of-life measures are explained below.

[88]Gabriel et al., op.cit.

## Regional Quality of Life: The Creation of a Quality-of-Life Rating for Counties

The following changes were made to Gabriel et al.'s variables before they were used in the county quality-of-life rating. The signs of the regression coefficients for five of the 24 variables were changed. States with (1) less sunshine, (2) higher rates of violent crime, (3) higher state and local property taxes, (4) more expenditure on higher education, and (5) more expenditure on welfare were associated with higher quality of life in Gabriel et al.'s regression equation. The signs of these variables were reversed when used in this analysis. Further, the influence of some variables (regardless of sign) on counties appeared to be too strong: the presence of a coast (within 100 miles), better air quality (particularly low levels of carbon monoxide), a low number of hazardous waste sites, low student-to-teacher ratios, and significant funding for higher education and highways. The effects of these variables were reduced to one-quarter of their original influence.

In addition, the following variables seemed to have inconsistent effects because the data were usually not reported at the county level: (1) the amount of federal land that existed statewide, (2) whether or not the state environmental protection laws were lenient, (3) the number of visits to national parks per 100 people in the state, and (4) the number of visits to state parks per 100 people in the state. These four variables were eliminated from the analysis.

Other key variables were missing from Gabriel et al.'s list of variables because they were accounted for in the structure of the regression. The following variables needed to be added: wealth of the county; share of the population that is of working age; percentage of the population, aged 25 and older, with a graduate degree; a cost-of-living index for the county; future population growth; and employment growth in the county. These additional variables, with the deduction of the four above, expanded the original variable set to 26. Population growth and employment growth were found to exert too much influence and were reduced to one-quarter of their original effects. All regional quality-of-life variables are shown in table 42.

All variables—except for the population- and employment-growth scores and cost of living, which were scored individually—were standardized so the mean of the variable was zero and the standard deviation was one. Values lower than (-)1.5 were made equal to (-)1.5, and values above 1.5 were capped at 1.5. A value of 1.5 was then added to the original score to allow all scores to be positive, and it was doubled to arrive at a range of 0 to 6, with 6 representing the best score. The data were then scaled to conform to a range of 1 to 5 to make them consistent with the ratings for local quality of life. The variables for a county were then averaged to arrive at a quality-of-life score, with eight of the 24 variables counted as one-quarter of their original value.

**TABLE 42. Variables Used in the Regional Quality-of-Life Ranking of Counties**

| *Variables* | *Correlation between Variable and Quality of Life* | *Weighting* |
|---|---|---|
| **Weather** | | |
| 1. Average annual rainfall | - | 1 |
| 2. Morning and evening humidity | - | 1 |
| 3. Heating degree days | - | 1 |
| 4. Cooling degree days | - | 1 |
| 5. Wind Speed | + | 1 |
| 6. Sunshine days | | |
| **Amenities** | | |
| 7. Coast Location | + | ¼ |
| 8. Inland water bodies | + | 1 |
| 9. Hazardous waste sites | - | ¼ |
| 10. Air Content—ozone | - | 1 |
| 11. Air Content—carbon monoxide | - | ¼ |
| **Socioeconomic** | | |
| 12. Cost-of-living index | - | 1 |
| 13. Commuting time | - | 1 |
| 14. Violent crime rate | - | 1 |
| 15. Student-to-teacher ratio | - | ¼ |
| 16. Wealth index | + | 1 |
| 17. Working-age population | + | 1 |
| 18. Population with a graduate degree | + | 1 |
| **Public Finance** | | |
| 19. State and local income taxes | - | 1 |
| 20. State and local property taxes | - | 1 |
| 21. State and local sales tax | + | ¼ |
| 22. Expenditures on higher education | - | 1 |
| 23. Expenditures on public welfare | + | ¼ |
| 24. Expenditures on highways | + | ¼ |
| **Growth** | | |
| 25. Population growth | ~+ | ¼ |
| 26. Employment growth | ~+ | ¼ |

*Sources:* Gabriel et al., June 1996, "Compensatory Differentials and Evolution of the Quality of Life among U.S. States" (as adjusted by CUPR, Rutgers University, 2009).

*Notes:* A (+) sign indicates a positive correlation between the variable and quality of life; a (-) sign indicates a negative correlation between the variable and quality of life; a (~+) sign indicates that for population growth and employment growth there is a positive correlation between the variable and quality of life, except for extreme high growth, which is given a middle rating.

## Local Quality of Life

**Chamber music in Van Vorst Park, Jersey City.**
Matt Crosby

The quality-of-life rating also encompasses local quality of life. A local quality-of-life rating, based on the six component variable sets outlined below, is developed for each municipality. This rating varies from 1 (the lowest rating) to 5 (the highest rating). The six components developed to measure quality of life in New Jersey municipalities are the same as those in the original impact assessment:[89]

- *Economic well-being*. This component ranks communities on the basis of their median income and the relative size of their dependent population. Three variables are used in this component: median household income; Temporary Assistance to Needy Families (TANF) caseloads per capita; and the community homeless count per capita. Quality of life is assumed to be proportional to median income and inversely related to the proportion of welfare recipients and homeless people in a municipality.

[89] Burchell, *Impact Assessment of the New Jersey Interim State Development and Redevelopment Plan, Report II: Research Findings,* 255–268.

- *Housing value and ownership.* Three variables are indexed for the home-ownership component: percentage of residents who are homeowners; median housing value; change in median housing value. A better quality of life is assumed to be directly related to higher rates of homeownership, higher median housing values, and larger increases in housing values.
- *Property tax base and rate*. The tax component is based on two variables: equalized tax rates and tax base per capita. Quality of life is assumed to be inversely related to tax rates and directly proportional to taxable wealth per capita. In other words, life is better when taxes are low and ratables are plentiful.
- *Public safety*. This component assesses quality of life from the perspective of personal safety, protection of property, and public investments in policing. Five variables are used in this component: violent crimes per capita; change in violent crimes per capita; nonviolent crimes per capita; change in nonviolent crimes per capita; and public-safety expenditures per capita. Quality of life is assumed to be positively related to lower levels of crime against people and property, lower rates of increase in crime, and higher per capita expenditures for police.
- *School achievement*. This component measures the performance of the local educational system using two variables: average reading scores and high school dropout rate. Quality of life is assumed to be higher in communities that maintain high reading scores and low dropout rates.
- *Community amenities*. This component concerns municipal provision of public goods and services that enhance local quality of life. Because of data limitations, the measure does not include private activities, nor does it capture a wide range of cultural amenities. Three variables are used in this component: capital expenditures per capita; recreation expenditures per capita; and library expenditures per capita. Quality of life is assumed to be positively related to higher expenditure levels in each of these areas. The use of recreation expenditures skews this quality-of-life component somewhat in the direction of shore communities, which spend large amounts of money on beaches, boardwalks, and other ocean-related recreational facilities and activities.

What emerges from these measures is a composite ideal community characterized by affluent residents, high rates of homeownership, low taxes, good schools, attractive amenities, and little crime or poverty. In real life, trade-offs exist, for example, between low taxes and good schools or local amenities. The results of this assessment reflect these trade-offs, since certain communities rank higher on some measures than on others.

Different people also value different community attributes. Parents with school-age children value good schools more than other residents do. Tastes in community amenities vary widely, as does the willingness to pay higher taxes for them. The quality-of-life evaluation attempts to deal with diversity by including a wide range of measures and by emphasizing a set of community attributes that are widely valued by most citizens of New Jersey.

In developing the quality-of-life components, Z-scores were calculated for each component variable. These variable scores were weighted equally in calculating the Z-scores for each component. Thus, for example, the community-amenity component weights capital, recreation, and library expenditures as one-third each.

**TABLE 43. Variables Used in the Local Quality-of-Life Ranking of Municipalities**

| *Variables* | *Correlation between Variable and Quality of Life* | *Weighting (%)* |
|---|---|---|
| **Economic Well-being** | | |
| 1.Median Income | + | 5.55 |
| 2. TANF caseloads | - | 5.55 |
| 3. Community homeless count | - | 5.55 |
| **Housing Value and Ownership** | | |
| 4. Percentage homeownership | + | 5.55 |
| 5. Median housing value | + | 5.55 |
| 6. Change in median housing value | + | 5.55 |
| **Property Tax Base and Rate** | | |
| 7. Equalized tax rates | - | 8.35 |
| 8. Tax base | + | 8.35 |
| **Public Safety** | | |
| 9. Violent crimes | - | 3.35 |
| 10. Change in violent crimes | - | 3.35 |
| 11. Nonviolent crimes | - | 3.35 |
| 12. Change in nonviolent crimes | - | 3.35 |
| 13. Public safety expenditures | + | 3.35 |
| **School Achievement** | | |
| 14. Average reading scores | + | 8.35 |
| 15. High School Dropout Rate | - | 8.35 |
| **Community Amenities** | | |
| 16. Capital expenditures | + | 5.55 |
| 17. Recreation expenditures | + | 5.55 |
| 18. Library expenditures | + | 5.55 |
| **Total** | | **100.00** |

*Source:* Robert W. Burchell et al., *Costs and Benefits of Alternative Growth Patterns: 2000 Impact Assessment of the New Jersey State Plan.*

*Notes:* A (+) sign indicates a positive correlation between the variable and quality of life; a (-) sign indicates a negative correlation between the variable and quality of life.

# Local Quality of Life: The Creation of a Quality-of-Life Rating for Communities


**Sign encouraging safe driving.**
Jon Erickson

The overall quality-of-life index is constructed by combining the six quality-of-life components, weighting each equally, and dividing by the number of measured components. The six quality-of-life components are economic, housing value and ownership, property tax base and rate, public safety, school achievement, and community amenities. The quality-of-life index assigns equal importance to each of these components. For all but four of the 566 municipalities (Montague, Pine Valley, Tavistock, and Teterboro), data are available to calculate each of the six quality-of-life components. In the aberrant cases, the quality-of-life index is calculated using the average of the calculated quality-of-life components.

Weighting variables equally in developing the quality-of-life components, and weighting the six components equally in calculating the quality-of-life index, results in relative weights

for the 18 variables that make up the quality-of-life index. The assigning of weights to the 18 individual variables was done in order to maintain equal weighting of the six major components of quality of life.

Municipalities were ranked according to the quality-of-life index in approximate quintiles. Because a denominator of six was used in calculating the quality-of-life index for almost all communities, this scale was divided into 0.167 increments ranging from the highest quality-of-life index rating of 5.00 to the lowest rating of 1.00 (table 44).

**TABLE 44. Quality-of-Life Rankings of Municipalities**

| Overall Index | Quality of Life Range | Number of Municipalities | Ranking |
|---|---|---|---|
| 5 | 4.00-5.00 | 148 | Well above average |
| 4 | 3.30-3.99 | 104 | Above average |
| 3 | 2.70-3.29 | 80 | Average |
| 2 | 2.00-2.69 | 100 | Below average |
| 1 | 1.00-1.99 | 134 | Well below average |

*Source:* Center for Urban Policy Research, Rutgers University, 2009.

## EXPECTED DIFFERENCES BETWEEN TREND AND PLAN

**Children at play in Princeton Township.**
Jon Erickson

Quality-of-life ratings are higher in the farther-out suburbs and rural communities than in the close-in suburbs and redeveloping cities. This means a reduction in the quality of life of those residents that are redirected toward close-in suburbs and cities under the PLAN regimen. The expectation is that under TREND conditions, householders will choose to live in municipalities in farther-out communities that offer primarily single-family development, growing tax bases, low crime rates, and low proportions of dependent populations. Quality of life will be better there. Under the PLAN scenario, a share of population and employment growth is likely to emerge in some of the redeveloping areas of the state. The initial expectation is that, under PLAN development, some portion of overall population growth will occur in municipalities with lower quality-of-life scores. Hence, people living in those municipalities will experience a lower quality of life.

It is possible that redirecting population growth to urban communities will, in the long run, raise the quality of life found there—just as adding population to rural and undeveloped areas may at some point change the character of those communities in ways that reduce the measures

of quality of life. The increased investments in commercial and industrial property in urban communities associated with growth will enhance the tax base of these communities, thereby adding to local revenues and municipal capacity for providing public services. The human and physical capital put into these locations can, in the long run, reap rewards. It is anticipated that this will have a positive influence on overall quality of life and serve to diminish the historical disparity between urban and exurban locations.

## CRITICAL ASSUMPTIONS

**Pedestrian crossover to Bridgewater Mall.**
Matt Crosby

There are several critical assumptions that enter into a quality-of-life assessment model:

- Quality-of-life measures used in this study offer only limited insight into the true nature of quality of life.

- Under TREND conditions, municipalities that have grown in the past will basically continue to grow; municipalities that have declined will continue to decline. PLAN attempts to redirect growth among municipalities in the state, continuing growth at an abated pace in many towns and slowing decline in other municipalities.

- The quality-of-life analysis assumes that counties and municipalities are the appropriate geographic units of analysis at which to measure the quality of community life. Counties are assumed to be the appropriate scale for regional quality-of-life analysis; municipalities are assumed to be the appropriate scale for local analysis.

- In constructing the quality-of-life rating, it has been assumed that each component of the quality-of-life index is equally important—except for eight variables in the regional quality-of-life analysis.

- The impact of the addition to the nonresidential tax base of a community is reflected in the level of the community's quality of life. This variable constitutes a community wealth index that signals the community's fiscal and economic health. The variable reveals that improvement in the quality of life is closely related to the community's ability to secure an enhanced fiscal posture.

- Where communities are growing, the full value of nonresidential ratable addition is taken; where communities are in decline, only one-half of any reductions in the value of nonresidential ratables is taken. The latter reflects the situation of building owners who, even in the face of reduced demand for space, continue to pay essentially the same level of taxes on the building.

- Quality of life is experienced differently by workers and residents. The quality of life in a particular community is less significant to a worker, who spends only working hours there, than it is to a resident. In calculating the aggregate quality-of-life exposure level in a com-

munity, the addition of employment to a community multiplied by the quality of life found there is weighted as one-third that of the addition of households multiplied by the quality of life of the community. This is because residents are in the community for much more than the typical workday.

- The projection of current levels of quality of community life adjusted by nonresidential ratable growth is a fair indication of quality of community life in the future.

## SCOPE AND DEPTH OF ANALYSIS

**Farmers market in Highland Park.**
Jon Erickson

Each quality-of-life component encompasses two to five static or dynamic variables that vary from municipality to municipality. Households and employees are located in communities for the years 2008 to 2028 according to population projections and historical location patterns (TREND) or the specific growth components inherent within the State Plan (PLAN). The resultant quality-of-life score for a community at two points in time is a weighted product of the number of households and jobs located in a community and its associated quality-of-life rating.

A municipality's quality-of-life rating can change over time. The quality-of-life assessment model allows for the possibility of change by incorporating a dynamic element in the assessment. The addition of nonresidential tax-ratables in TREND and PLAN is one measure of quality of life. The total increase in commercial and industrial employment in each municipality, and the value of the structure these employees occupy, signal economic vitality in a community. A host of other variables likewise indicate whether a community is safe, has intellectual resources, and has parks and playgrounds for recreation as well as museums and restaurants for entertainment.

The TREND and PLAN development scenarios are assessed by comparing aggregate quality-of-life totals. In addition to an aggregate total for the state, the data is partitioned (north, central, and south) to facilitate a regional analysis.

# IMPACT ASSESSMENT—FINDINGS

## TREND FINDINGS

New Jersey's quality-of-life rating in 2008 is approximately 3.03 (on a scale of 1 to 5 to). This means that overall quality of life is good in New Jersey. As table 45 shows, the quality of life on the whole is better in the northern portion of the state, followed by the southern portion. Quality of life in the northern portion of the state (3.522) is approximately 30 percent better than in the southern portion (2.483). Quality of life is approximately 9 percent better in outer suburban communities (3.504) than it is in inner suburban communities (3.208); it is 27 percent better than

in rural communities (2.757), and it is approximately 90 percent better in outer suburban communities than it is in urban communities (1.851). Quality of life is about the same in communities with more densely developed planning areas as it is in communities with less densely developed planning areas (3.028 and 3.034, respectively) Quality of life is 10 percent better in communities without large centers (3.208) than it is in communities with urban, regional, and/or town centers (2.912) (table 45).

The above are basic conditions of quality of life in the state of New Jersey today. The northern part of the state is more urban and the southern more rural. This pattern has contributed to a somewhat lower quality of life in the latter part of the state's location. The northern, more urban area has higher incomes, higher property values, but also higher property tax rates, and more air pollution. The southern, more suburban and rural part of the state has experienced less growth in overall tax base and much less income growth. It also has lower property tax rates and less air pollution.

**TABLE 45. TREND Findings—Quality of Life**

| | *2008* | *2028* | *Change* |
|---|---|---|---|
| **New Jersey** | 3.030 | 3.062 | 0.032 |
| **Regions** | | | |
| North | 3.522 | 3.570 | 0.049 |
| South | 2.483 | 2.497 | 0.014 |
| **Type of Community** | | | |
| Urban | 1.851 | 1.887 | 0.037 |
| Inner Suburban | 3.208 | 3.230 | 0.022 |
| Outer Suburban | 3.504 | 3.543 | 0.039 |
| Rural | 2.757 | 2.811 | 0.054 |
| **Planning Area** | | | |
| Metro, Suburban, Fringe | 3.028 | 3.053 | 0.025 |
| Rural, Env. Sensitive | 3.034 | 3.082 | 0.048 |
| **Centers** | | | |
| Large Centers (Urban, Regional, Town) | 2.912 | 2.949 | 0.037 |
| All Others | 3.208 | 3.232 | 0.024 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

Quality of life under TREND conditions in New Jersey for the period 2008 to 2028 will improve by 0.032, or 1 percent, from an average of 3.030 to 3.062. Quality of life under TREND conditions will be 43 percent better in the northern region (3.570) versus the southern region (2.497) by 2028. Quality of life will improve under TREND conditions in both regions of the state; it will improve by 1.4 percent in the northern region; it will increase by 0.6 percent in in all types of communities, including both communities with more and less densely developed planning areas (0.8 percent [0.025%] and 1.6 percent [0.048%], respectively), and communities with and without urban, regional, and/or town centers (1.3 percent [0.037%] and 0.7 percent [0.024%], respectively) (table 45). The driving force for this

generalized quality-of-life improvement under TREND development will be expansion of the nonresidential tax base, which will take place in most types of locations. It will particularly occur under TREND conditions in the northern part of the state, in urban and outer suburban communities, communities with less densely developed planning areas, and in communities with large centers.

Under TREND conditions, the change between 2008 and 2028 will be typified by general improvements in quality of life, reflecting in part some employment growth post 2010.

## PLAN FINDINGS

New Jersey's quality-of-life rating under the PLAN scenario by 2028 will be approximately 3.056. This will represent a 0.8 percent improvement in quality of life over what is evident in 2008. Quality of life in New Jersey under PLAN conditions (2028 – 3.056), are slightly lower overall than under TREND conditions (2028 – 3.062).

Quality of life will be best in the northern region of the state (3.566), followed by the southern region (2.490). Quality of life will be 43 percent better in the northern region than it will be in the southern region. As was the case for TREND development, quality of life will be best in outer suburban communities (3.523), followed by inner suburban communities (3.232) and then by rural communities (2.785), and finally by urban communities (1.895) communities. Quality of life will be about the same in communities with less/more densely developed planning areas (3.062/3.054), and slightly higher in communities without large centers (3.220) (table 46).

**TABLE 46. PLAN Findings—Quality of Life**

| | *2008* | *2028* | *Change* |
|---|---|---|---|
| **New Jersey** | 3.030 | 3.056 | 0.026 |
| **Regions** | | | |
| North | 3.522 | 3.566 | 0.044 |
| South | 2.483 | 2.490 | 0.007 |
| **Type of Community** | | | |
| Urban | 1.851 | 1.895 | 0.045 |
| Inner Suburban | 3.208 | 3.232 | 0.024 |
| Outer Suburban | 3.504 | 3.523 | 0.019 |
| Rural | 2.757 | 2.785 | 0.028 |
| **Planning Area** | | | |
| Metro, Suburban, Fringe | 3.028 | 3.054 | 0.026 |
| Rural, Env. Sensitive | 3.034 | 3.062 | 0.028 |
| **Centers** | | | |
| Large Centers (Urban, Regional, Town) | 2.912 | 2.947 | 0.036 |
| All Others | 3.208 | 3.220 | 0.012 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## PLAN VERSUS TREND FINDINGS

TREND and PLAN growth will be characterized by similar general increases in quality of life (table 47). TREND/PLAN scenarios will be part of an approximately 1.0/0.8 percent improvement in quality of life. New Jersey, under PLAN conditions, will experience a 23 percent lower quality of life improvement (0.032/0.026) then it will under TREND conditions. About half this difference (11.5 percent) will be noted in the northern part of the state; larger difference will be noted in the southern part of the state. Differences will also be noted in communities with less densely developed planning areas. Most differences in quality of life change will be observed in the outer suburban and rural communities of the state under PLAN. Their quality of life will increase less under PLAN.

As in the 1992 and 2000 evaluations, both scenarios will be affected more by a general increase in prosperity in the state (measured by increases in the nonresidential ratable base) than they will be by the effects of different development patterns (measured by the PLAN versus TREND scenarios). On the whole, however, the PLAN scenario will be very close to TREND development in perpetuating a better quality of life in New Jersey.

**TABLE 47. PLAN versus TREND Findings—Quality of Life Index**

| | TREND Change 2008-2028 | PLAN Change 2008-2028 | PLAN Change Minus TREND Change |
|---|---|---|---|
| **New Jersey** | 0.032 | 0.026 | -0.006 |
| **Regions** | | | |
| North | 0.049 | 0.044 | -0.005 |
| South | 0.014 | 0.007 | -0.007 |
| **Type of Community** | | | |
| Urban | 0.037 | 0.045 | 0.008 |
| Inner Suburban | 0.022 | 0.024 | 0.002 |
| Outer Suburban | 0.039 | 0.019 | -0.020 |
| Rural | 0.054 | 0.028 | -0.025 |
| **Planning Area** | | | |
| Metro, Suburban, Fringe | 0.025 | 0.026 | 0.001 |
| Rural, Env. Sensitive | 0.048 | 0.028 | -0.020 |
| **Centers** | | | |
| Large Centers (Urban, Regional, Town) | 0.037 | 0.036 | -0.002 |
| All Others | 0.024 | 0.012 | -0.012 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

**The scenic Delaware and Raritan Canal.**
Jon Erickson

## COMPARISON TO THE PREVIOUS IMPACT ASSESSMENT FINDINGS

Quality of life in New Jersey will improve by approximately 0.8 percent to 1.0 percent under both the PLAN and the TREND scenarios over the projection period, 2008 to 2028. These are two to three times the level of improvement projected for PLAN development in earlier evaluations. The change in overall quality of life will be the result of continued growth in the job base and a general increase in the quality-of-life index in most communities. It may be concluded that findings similar to those emerging in the current analysis were present in earlier evaluations. The projection for planned development is better currently because there are more accurate means of tracking the specific location of households under that scenario in the current evaluation and because rural centers and urban communities are better off today than they were a decade ago. This is measured by tax base increase taking place in these locations from 2000 to 2008.

## CONCLUSIONS AND IMPLICATIONS OF THE FINDINGS

The nonresidential ratable base of the state will be expanded under both TREND and PLAN. That expansion will contribute to the overall increase in quality of life in the state. In communities where the additions of nonresidential ratable base will be taking place, increases will occur because the value per square foot of the new ratable base will be greater than that of the old. In communities where decreases are taking place, these will be less noticeable than in communities where there will be increases because tax assessment practice does not usually allow a full loss of the property tax ratable base. The overall quality of community life will be clearly affected by different changes in ratable bases in various locations as determined by nonresidential growth increments during the period 2008 to 2028. In addition, a large share of the households and jobs under the TREND scenario will be relocating to communities experiencing the best and greatest improvement in quality of life. Under the PLAN scenario, on the other hand, a portion of those households and jobs will be moving to closer-in communities. Quality of life in these locations will not be as good as it will be in the exurban and rural locations. These household and jobs will contribute to a barely perceptible decrease in quality of life under the PLAN scenario. The implication to be drawn from this is that, in the long run, there will be less disparity in quality of life under PLAN development than there would be under TREND development, even though, in the short run, overall quality of life will be somewhat lower.

# PRINCIPLES FOR FUTURE MONITORING BY THE OFFICE OF SMART GROWTH

The key local components in determining PLAN's impact on quality of life are the changes in economic well-being; housing value and ownership; property tax base and rates; public safety; school achievement; and community amenities. These components are subsumed within regional quality-of-life ratings for the state's counties. The monitoring variable for the Office of Smart Growth should be related to the quality-of-life rating of communities characterized as urban, or as having urban, regional, and/or town centers, or as having a larger amounts of area in the more densely developed planning areas. Under PLAN development, quality of life in those locations would probably, in the short run, be generally inferior to quality of life in rural communities, in those communities with less densely developed planning areas, or in those communities without large centers. However, quality-of-life should, in the long run, improve at a faster rate in the aforementioned locations.

## MONITORING VARIABLES

***Quality-of-life ratings in urban areas, in communities with larger amounts of more densely developed planning areas, and in communities with centers should improve at a faster rate than those in other areas.***

- $\Delta$ ***QoL in urban areas***
  ***> QoL in rural areas***
- $\Delta$ ***QoL in PA-1, PA-2, and PA-3***
  ***> QoL in PA-4 and PA-5***
- $\Delta$ ***QoL in communities with centers***
  ***> $\Delta$ QoL in communities without centers***

# HOUSING SUPPLY, DEMAND, AND COSTS

**New market ownership housing in New Brunswick.**
Matt Crosby

## INTRODUCTION—CORE QUESTIONS

The introduction of the July 2009 Harvard University Joint Center report on the *State of the Nation's Housing*[90] described the chain of events leading to the "Great Recessio" of 2008. Paragraphs from this report are excerpted below:

> The seeds of the housing bust were sown during the preceding boom. Following the 2001 recession, a combination of tight housing markets and the lowest mortgage interest rates in nearly 40 years sparked rapid house price appreciation. Afraid of missing their chance to get in on rising house prices, homebuyers flocked to the housing market. Speculators looking to earn a quick return also jumped in.
>
> Despite rising mortgage interest rates, buyers were able to chase home prices higher from 2004 to 2006 largely because of changes in lending practices. Lenders were willing to relax down payment and debt-to-income requirements. They also offered products that lowered initial monthly payments but carried the risk of later re-setting to sharply higher levels. In many cases, lenders did not verify applicants' incomes and assets. At the same time, borrowers who would have previously been denied credit because of past repayment problems were able to secure subprime loans, albeit at higher interest rates.
>
> Although risks were mounting, loan performance held up as long as rising home prices allowed borrowers to refinance or sell their way out of a squeeze. But prices began to flatten at the end of 2006 in some of the formerly hottest markets and then dropped in an ever-growing number of locations in 2007 and 2008. As a result, the share of subprime loans entering foreclosure soared to 4.1 percent in 2008—shattering the 2.3 percent record set in 2001 when the subprime market share was much smaller. Problems eventually spread to the prime market, where the share of loans entering foreclosure more than tripled from 2006 to 2008 but still held under 1.0 percent. Investors quickly lost their appetite for mortgages and the securities they backed, sending the values to these investments down sharply.
>
> After helping to fuel unsustainable house price appreciation, credit markets did an about-face in 2008. Many borrowers with excellent credit were suddenly compelled to make large down payments, keep their payments well in line with their incomes, and

[90] Joint Center for Housing Studies of Harvard University. 2009. *The State of the Nation's Housing.* Cambridge, MA: Joint Center for Housing Studies of Harvard University.

back up every piece of information on their loan applications. But as the financial crisis worsened, even stricter underwriting was unable to the flow of mortgage credit. The federal government therefore intervened, taking mortgage giants Fannie Mae and Freddie Mac into conservatorship, purchasing their securities, and expanding FHA lending. What happens to mortgage credit now rests in the hands of the federal government.

Problems emanating from the housing market forced financial institutions to take massive write downs on their mortgage portfolios, igniting a broader banking crisis. Amid fears about the strength of banks and severe losses of both housing and stock wealth, consumer confidence plunged 41 percent below its lowest previous trough posted in the 1970s. Households slashed their spending and—for the first time on record—cut their net borrowing in 2008.

With that, the broader economy lurched into a severe recession that accelerated with stunning speed. From their quarterly peaks during the housing boom to the last quarter of 2008, real home equity was down 41 percent, existing median home prices 27 percent (and at least 40 percent in 26 metropolitan areas), new home sales 70 percent, and existing home sales 33 percent. Homeowners also pulled back on home improvement projects, with spending off 13 percent in real terms in 2008 and even larger declines expected in 2009. The cutbacks in home building and remodeling shaved a full percentage point off economic growth in 2007 and nearly another point in 2008. The collapse of home prices placed another drag on the economy by dramatically reducing household wealth, which further discouraged consumers from spending.

Of the population increase of 63 million people nationwide expected to occur from 2008–2028, about 47 percent will be new immigrants and their children. In terms of their contribution to housing demand, these immigrants (most in their working years with children) will be joined by a growing number of empty-nester and elderly households. From 2000 to 2028, 55 percent of the net population growth will be baby boomers aging into their late fifties and sixties. By 2028, 22 percent of the nation's population will be elderly, up from 15 percent in 2008.

Approximately one-half of the elderly population currently lives in the suburbs, but twice as many city elderly (14.2 percent) versus suburban elderly (7.7 percent) are poor. Nearly 80 percent of the elderly are homeowners, including 65 percent of blacks and 60 percent of Hispanics. Twenty percent of today's elderly are actually overhoused.[91]

In New Jersey, domestic outmigration is no longer being mitigated by international immigration gains. The rate of immigration increase is decreasing rapidly. This will cause a significant decrease in the rate of growth of population and households, but this will occur gradually.

By the end of 2008, New Jersey returned to a level of foreign-born population that was midway between its 1910 high of 25 percent and its 1970 low of 10 percent (17.5 percent). According to 2007 estimates, New Jersey has approximately 1.7 million foreign-born residents, representing 19.9 percent of the state's total population.[92]

Asian and Latin American immigration, moderate growth of the black population, and slower growth of the white population will contribute to

[91] U.S. Department of Commerce, Bureau of Census. *Current Population Survey.*
[92] Ibid.

increasing racial and ethnic diversity within the state. Most of the groups that are growing the fastest have the larger household sizes, a factor that impacts housing demand.

The older segment of the elderly population (those aged 75 and over) grew by more than 24,000, or four percent, between 2000 and 2007. The increasing average age of the elderly is contributing to the number of citizens who require housing that offers various forms of personal assistance.[93]

The above trends are operating in conjunction with an even larger trend affecting household formation: the decline in the percentage of married-couple households. In 1960, these households comprised almost three-quarters of all households, and now they represent less than one-half (49 percent) of all households in the United States. Single-parent households, in 2007, represented 17 percent of all households, and nonfamily households (single persons living alone and nonfamily members living together) represented 33 percent, up from 30 percent in 2000. Again, this has implications for demands on the future housing stock.[94]

The questions to be answered in this portion of the analysis are:

- **How much housing of what types will be demanded in the future in New Jersey?**
- **Is supply capable of meeting demand?**
- **Will TREND and PLAN significantly impact housing location and thus housing costs?**
- **Will PLAN versus TREND development cause housing to be less or more affordable than it has been in the past?**

**TABLE 48. New Jersey Residential Building Permits Authorized 2000 through 2008**

| *County* | *1- to 4-Unit Structures* | *5+ Unit Structures* | *Total Units* |
|---|---|---|---|
| Atlantic | 14,292 | 1,212 | 15,504 |
| Bergen | 11,551 | 8,068 | 19,619 |
| Burlington | 13,510 | 3,412 | 16,922 |
| Camden | 8,006 | 2,814 | 10,820 |
| Cape May | 11,327 | 2,156 | 13,483 |
| Cumberland | 4,046 | 175 | 4,221 |
| Essex | 14,511 | 4,266 | 18,777 |
| Gloucester | 12,096 | 1,424 | 13,520 |
| Hudson | 7,260 | 17,078 | 24,338 |
| Hunterdon | 4,544 | 217 | 4,761 |
| Mercer | 8,042 | 2,302 | 10,344 |
| Middlesex | 13,513 | 6,147 | 19,660 |
| Monmouth | 16,664 | 5,026 | 21,690 |
| Morris | 9,224 | 5,452 | 14,676 |
| Ocean | 26,555 | 2,887 | 29,442 |
| Passaic | 3,851 | 2,170 | 6,021 |
| Salem | 1,730 | 368 | 2,098 |
| Somerset | 7,538 | 4,336 | 11,874 |
| Sussex | 4,878 | 471 | 5,349 |
| Union | 6,561 | 2,817 | 9,378 |
| Warren | 4,831 | 411 | 5,242 |
| State Total | 204,530 | 73,209 | 277,739 |

http://lwd.dol.state.nj.us/labor/lpa/industry/bp/bp_index.html

**TABLE 49. Housing Median Value and Median Rent**

| *Median House Value 2000* | *Median House Value 2008* | *Median Value Change (%)* | *Median Gross Rent 2000* | *Median Gross Rent 2008* | *Median Gross Rent Change (%)* |
|---|---|---|---|---|---|
| 170,800 | 364,100 | 113% | 751 | 1,068 | 42% |

*Source: U.S. Census of Population and Housing*, 2000, and *American Community Survey*, 2008

[93] Ibid.
[94] Ibid.

## BACKGROUND

**A view across Main Street in Lebanon.**
Jon Erickson

According to United States Census Bureau estimates, the population of the United States in 2008 is 304 million, and New Jersey's population is 8.68 million. The United States contains approximately 128 million housing units, and New Jersey contains approximately 3.5 million housing units. The national percentage growth in housing units in an average year is approximately 1 percent; the average New Jersey percentage growth in housing units is approximately 0.75 percent per year. Over the period from 2000 to 2007, New Jersey built an average of 27,000 housing units per year. In 2008, there were under 20,000 housing starts; in 2009 there were an estimated 15,000 housing starts per year.[95]

Throughout the 1970s and in the early 1980s, housing costs in New Jersey were the highest in the nation. Those periods of high costs spawned the *Mount Laurel* I and *Mount Laurel II* decisions in 1974 and 1983, respectively. The *Mount Laurel* decisions were the impetus for the New Jersey State Plan because they required all municipalities to provide housing for their poor currently living in deteriorated housing as well as stipulating that municipalities in the growth area had to provide for the poor that would require new housing. The State Plan would be used to determine which communities were in the growth area and the amount of growth that would be permitted in those communities. The latter would determine how much affordable housing would be required for each community.

The *Mount Laurel* decisions also led to the *Fair Housing Act* and the creation of the Council on Affordable Housing (COAH). To date, the communities in New Jersey under COAH's jurisdiction, in a period of 23 years, provided for approximately 70,000 units of affordable housing either built (~36,000), zoned for (~10,000), transferred (~10,000), or rehabilitated (~14,000). This activity has mitigated somewhat the affordability problem in New Jersey.[96]

Housing affordability affects the ability to pay across all types and tenure of housing. From 2000 to 2007, median household income grew from $52,000 to $67,000, a gain of approximately 29 percent. The 2007 census estimates reveal significant income disparities between homeowners and renters. New Jersey's homeowners (67 percent of the state's households) had a median household income of $85,852 in 2007, while renters (33 percent of the state's households) had a median household income of only $38,462.[97]

Between 2000 and 2007, the median sales price of a house in New Jersey increased from $200,275 to $372,300, an increase of 85.9 percent. The median sales price of houses in New Jersey in the first quarter of 2008 had dropped to $350,700. Median rent increased from $827 in 2000 to $1,026 in 2007, an

[95]Ibid., and U.S. Department of Commerce, U.S. Census Bureau, *Manufacturing, Mining, and Construction Statistics: Building Statistics.* www.census.gov/const/www/permitinde.html

[96]Robert W. Burchell, New Jersey Institute for Continuing Education (PowerPoint), New Brunswick, New Jersey (2008).

[97]Ibid.

increase of 24.1 percent. Rent also dropped slightly from 2007 to 2008.[98]

In 1999, the median sales price in the central region was $221,000, making that region the most expensive in the state in terms of homeownership. The northern region, with a 1999 median sales price of $218,500, trailed the central region by 1 percent, and the southern region, with a median sales price of $118,000, trailed the central region by 48 percent. By the third quarter of 2007, the northern region was the most expensive, with a median sales price of $455,500, an increase of 108 percent from 1999. The median price in the central region had increased 62 percent to $358,900, while median prices in the southern region increased 99 percent, yet continued to trail far behind, at $234,925.[99]

In 1999, the most expensive rental units were found in the central part of the state. The central region and the northern region had median rents of $908 and $829 per month, respectively. The southern region was a distant third, with a median rent of $722. In 2007, the central region continued to have the highest median rent, at $1,052 per month, an increase of 15.9 percent. Median rent in the northern region increased 21.6 percent to $1,008 per month, and median rent in the southern region increased 18.7 percent to $857.[100]

Clearly, the cost of housing in New Jersey remains high. Among working families (with children) who receive food stamps, the median amount spent on shelter is $620 a month. That amount places New Jersey second among the states in terms of housing cost (New York is first). Further, in 1995, the National Research Council evaluated the federal poverty guidelines and proposed an index of state-by state adjustments to the poverty threshold that take into account differences in the cost of housing. According to this index, which is based on a national value of 1.000, figures for New Jersey would be set at 1.202, or 20 percent higher than the national average, to account for the higher cost of living. According to the index, New Jersey ranks second highest in the nation in terms of adjustment to the poverty index for housing costs. Hawaii, which is indexed at 1.243, is first.[101]

The State Plan policy regarding housing is as follows:

## Policy Statements from the Plan

### 6.0 Housing

**Preserve and expand the supply of safe, decent, and reasonably priced housing while meeting the constitutional mandate with respect to affordable housing through improved planning, regulatory reform, supportive infra-structure investments, housing subsidies, tax and discounted fee incentives and municipal property tax relief in ways that are consistent with the vision and goals of the State Plan.**

**THE CHALLENGE:**

***To match changing housing demand with adequate housing supply in a way that is also consistent with the goals of the State Plan.***

[98] Ibid.

[99] These regions are different from the northern and southern regions used elsewhere in this report. These regions take Middlesex, Somerset, and Hunterdon from the northern region and Monmouth, Ocean, and Mercer Counties from the southern region to form a central region.

[100] Burchell, New Jersey Institute for Continuing Education, op. cit.

[101] Ibid.

# IMPACT ASSESSMENT—METHODS

**Residential street in Philipsburg.**
Matt Crosby

Housing-unit projections are undertaken using household projections, to which are applied vacancy rates unique to each community. In much the same way as the population-to-household ratio change adjusts the municipal base of households, vacancy-rate change is also used to adjust the municipal base of housing units. Again, the projection period end number of total housing units in a community is subtracted from the base number to generate the increment in housing units in that community over the projection period. A housing-unit vacancy rate of 7.5 percent is used for 2000; about 7.6 percent is used for 2008; and 7.0 percent is used for 2028. Housing-unit projections directly follow household projections and differ from these projections only by the standing vacancy rate. Housing-unit projections for the period 2008–2028 reflect the period 2000–2008 and have been checked for reasonableness against population estimates at various points within this period.

In the analysis conducted for PLAN, different communities are projected to have different numbers of new housing units. This is determined according to household projections

**Projected Housing-Unit Growth—TREND and PLAN**
**—**
**State of New Jersey, 2000–2028**

| *Year* | *Housing Units* | *Change from Prior Period* |
|---|---|---|
| 2000 | 3,310,275 | |
| 2004 | 3,414,916 | |
| 2008 | 3,517,293 | 207,018 |
| 2013 | 3,557,696 | |
| 2018 | 3,617,068 | |
| 2023 | 3,693,400 | |
| 2028 | 3,781,464 | 264,171 |

*Source:* 2000-2008 U.S. Census estimates

***New Jersey ranks second highest in the nation in terms of adjustment to the poverty index for housing costs.***

for the community. The analysis conducted for communities' 2008 to 2028 housing growth increments also reflects the distribution of new housing units delivered from 1990 to 2000. The total housing unit projections for each municipality under the TREND and PLAN scenarios are equivalent to household projections plus a vacancy rate. The 2000 U.S. Census vacancy rate by municipality is used to estimate the additional housing required to account for vacancy in each community.

The difference in the statewide distribution of housing units under PLAN versus TREND is the difference in the increment of units destined for a community multiplied by the composition of unit change for that community under TREND or PLAN conditions, added to similar numbers for each of the other 565 municipalities.

Housing affordability over the projection period for the TREND and PLAN scenarios is calculated for each community by creating a distribution of 2028 income and comparing it with a distribution of 2028 housing-unit rent (capitalized) and value. In each community, income for the period 2008 to 2028 is increased annually by the 2007 through 2009 Consumer Price Index change (3 percent per year), and rent and value are increased annually by the observed national housing price increase for 1970 through 2008. This averages 4 percent per year. In each community, the housing value for 2028 is arrayed against the income of those likely to occupy those units. All housing is expressed in value terms; rental housing is converted to value by multiplying monthly rent times one hundred. A unit is deemed affordable in a community if it is valued at no more than 2.5 times annual household income. Households destined for a community under TREND are arrayed against the housing offerings in a particular community; households destined for a community under PLAN (usually more or fewer households than under TREND) are similarly arrayed against the housing offerings found there. This results in a percentage of households under each scenario being able to afford the housing offered locally. The summation of 566 matches of income versus housing price under TREND is compared with 566 matches under PLAN. The summation of PLAN matches minus the summation of TREND matches is the comparison of affordability for the two scenarios. These results are shown by region, municipality type, communities with more or less densely developed planning areas, and communities with or without urban, regional, and/or town centers.

# EXPECTED DIFFERENCES BETWEEN TREND AND PLAN

**Construction site in Asbury Park.**
Matt Crosby

## Housing Demand and Supply

It is expected that there will be a relatively close relationship between housing supply and housing demand in overall numbers under TREND and PLAN development, but significant mismatches in both the location and the type of housing delivered versus housing required. One would expect that, under TREND, more housing would be supplied than required in the northern part of the state, and that more single-family housing would be built as a share of all housing than required everywhere in the state.

One would further expect that TREND and PLAN development would demand similar numbers of units at the state and regional levels but significantly different numbers of units below the regional level. TREND would require more units in suburban and rural communities, in communities with less densely developed planning areas, and in communities without large centers. PLAN development would require more units in urban communities, in communities with more densely developed planning

areas, and in communities with urban, regional, and/or town centers.

## Housing Affordability

It is expected that housing affordability would generally increase in the future as a result of the post-2007 relationship between the rate of housing cost increase and the rate of increase of the Consumer Price Index (CPI). This is further compounded by the fact that the greatest share of single-family units as a percentage of all housing built since the 1950s was constructed in the 2000s. This is typically the least affordable type of housing because most of it is single-family detached and single-family attached ownership housing.

It is also expected that, since PLAN development will encourage growth in urban communities and in communities with urban, regional, and/or town centers, affordability should increase less under PLAN because of the lower prices and mix of non-single-family housing found in these locations.

Finally, PLAN should generally increase affordability in urban communities—the household incomes destined for suburban locations under TREND conditions will be more than adequate for most urban housing offerings.

# CRITICAL ASSUMPTIONS

## Housing Demand and Supply

It is assumed that actual housing supply will accurately reflect recent building permit numbers and locations throughout the state, and that the prior decade is the best barometer of where housing is likely to be delivered in the future. It is further assumed that housing demand will parallel the projected household growth of each development scenario both in overall numbers and in location. No attempt will be made to match demand with supply by type of unit (single-family or multifamily) other than by the actual or capitalized cost of the dwelling units.

Since housing is a regional market and since commuting times are quite significant and municipalities physically small in New Jersey, there should be significant mismatches between supply and demand at any geographical division below the regional level.

## Housing Affordability

Housing is deemed affordable if it costs no more than 2.5 times annual gross household income. Further, the value of a rental unit is equivalent to 100 times its monthly rent. Finally, trends in housing affordability for the future reflect some increase in affordability that diminishes over time.

# SCOPE AND DEPTH OF ANALYSIS

**A large older home in Cold Spring.**
Jon Erickson

## Housing Demand and Supply

In order to undertake the housing demand and supply analysis, households destined for

individual communities are paired with existing housing relative to simple distributions of household income and similar distributions of housing price. This is done for all households that will be formed during the period 2008 to 2028 under each development scenario for the community in which housing is being sought. Results for the 566 communities are summed by type, location, density of development, center presence, and other characteristics of communities.

## Housing Affordability

Housing affordability is calculated for each household; its income is distributed against the array of housing available by price in the location where housing is being sought. The analysis is initiated at the community level and summed to groupings of communities according to desired levels and types of analysis. No attempt is made to match households with housing units using socioeconomic characteristics other than household income.

### *Current Conditions*


**Bank foreclosure in Highland Park.**
Jon Erickson

***Housing Supply***. In 2008, New Jersey had approximately 3.52 million housing units. Of these units, approximately 2.8 million (79 percent) were either single-family detached/-attached units or two-to four-family structures. Another 0.7 million (20 percent) were multi-family units in structures of five or more units. (The remaining 1 percent of units consists of motor homes, RVs, houseboats, etc.) Using April 2000 to April 2008 building permits as a guide, New Jersey in an 8-year period delivered 207,018 new dwelling units. If this number is factored through the current recession, 264,171 units could be delivered statewide during the period 2008–2028. The number and location of these units for a two-decade period is used to project housing supply in this analysis. The distribution of these units is shown in table 50 by type of unit (structures of one to four units, multifamily structures of five or more units), regions, municipality types, and by planning areas and center locations.

New Jersey housing supply under TREND conditions will deliver 264,171 units. Nearly 71 percent of all units will be delivered in the southern part of the state (187,339 units), and 29 percent in the northern part (76,832 units). Sixty-four percent of all units will be delivered in urban/inner-suburban communities (167,756 units and 36 percent in rural/outer-suburban communities (96,415). Seventy-six percent will be delivered in communities with more densely developed planning areas (201,676 units); 24 percent will be delivered in communities with less densely developed planning areas (62,495 units). Seventy-eight percent will be delivered in communities with urban, regional, and/or town centers (206,400); 22 percent will be delivered in communities without large centers (57,771).

***Housing Affordability.*** As of the year 2008, approximately 76 percent of New Jersey's 3.25 million households can afford the housing they occupy if a standard of housing price no greater than 2.5 times annual gross household income is

applied. To put it another way, a household should not pay more than 30 percent of its income for housing. If the average household earns $67,150 annually, the house price that they can afford is $167,875 ($67,150 x 2.5). Thirty percent of $67,150 annual income equals $20,145. This annual housing cost divided by 12 months is $1,680 per month. This figure, multiplied by 100, yields the amount that $1,680 monthly will support in housing price under conventional mortgage rates and terms ($168,000).

Distributing housing in a community by its value (including the value of rental units) and applying income of new housing occupants against this value allows matches to be made using the above ratio of 2.5. The figure of 76 percent statewide housing affordability emerges from this household-by-household comparison. In New Jersey, housing has less relative affordability in the southern region (73 percent affordability) than the northern region (78 percent affordability). Housing is slightly less affordable in urban/inner-suburban communities (75 percent affordability) and slightly more affordable in outer-suburban/rural municipalities (76 and 77 percent affordability). Housing is slightly less affordable in communities with more densely developed planning areas (75 percent affordability) than it is in less densely developed planning areas (79 percent affordability) and slightly more affordable in communities with rather than without urban, regional, and/or town centers (76 versus 75 percent affordability) (table 50).

**TABLE 50. Current Conditions—Housing**

| | *Housing Units 2008* | *Supply of 1-4 Unit Structures* | *Supply of 5+ Unit Structures* | *Total Housing Unit Supply* | *Affordability 2008 (%)* |
|---|---|---|---|---|---|
| **New Jersey** | 3,517,293 | 206,331 | 57,840 | 264,171 | 0.76 |
| **Regions** | | | | | |
| North | 2,042,114 | 48,544 | 28,288 | 76,832 | 0.78 |
| South | 1,475,179 | 157,787 | 29,552 | 187,339 | 0.73 |
| **Type of Community** | | | | | |
| Urban | 1,073,788 | 28,402 | 19,455 | 47,857 | 0.75 |
| Inner Suburban | 1,646,673 | 90,470 | 29,429 | 119,899 | 0.75 |
| Outer Suburban | 610,365 | 64,276 | 8,565 | 72,840 | 0.76 |
| Rural | 186,467 | 23,184 | 391 | 23,575 | 0.77 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 2,965,451 | 149,630 | 52,046 | 201,676 | 0.75 |
| Rural, Env. Sensitive | 551,842 | 56,701 | 5,794 | 62,495 | 0.79 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 2,871,488 | 155,605 | 50,795 | 206,400 | 0.76 |
| All Others | 645,805 | 50,726 | 7,045 | 57,771 | 0.75 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

Obviously, the above is only an aggregate glimpse at affordability. Significant differences from the above averages could be found for renters, single-person households, minorities, and so on. However, most of the above trends are recognizable. Housing has similar relative affordability in the southern and northern parts of the state; it is slightly more affordable in more rural communities and in communities with less densely developed planning areas.

# IMPACT ASSESSMENT—FINDINGS

## TREND FINDINGS

### Housing Demand and Supply

Under TREND conditions of housing fulfillment, demand is paired with supply. This is shown in table 51. Households shopping for housing in certain communities are compared to housing availability in these communities. Housing demand at a particular site is equal to 20-year growth in households plus a vacancy rate, distributed according to projections of households undertaken for this study from 2008 to 2028. Housing supply at a given site is determined by 2000 to 2008 building permits by type in a municipality, used to project housing and growth from 2008 to 2028.

For the period 2008 to 2028, 264,171 units of housing will be required under TREND development. If this housing is occupied as it has been in the past decade, approximately 13 percent of the future units will be multifamily (five or more) units (33,342). About 87 percent of future housing units will be single-family detached and attached units, and a very small number of units will be in two- to four-unit structures (230,829). These are combined in tables 50-53 as 1-4 units. Seventy-one percent of all additional units will be required to meet the demand in the southern part of the state (187,339); 29 percent of the additional units will be required to meet demand in the northern part of the state (76,832). Demand and supply are projected to be in balance at both the state level and the regional levels (northern and southern halves.

Under TREND conditions, 53.4 percent of the required units will constitute demand in urban/inner suburban communities (141,059) — 15 percent more than will be delivered; 46.6 percent will constitute demand in rural/outer suburban communities (123,112)—28 percent less than what will be delivered (table 51).

Under TREND conditions 75.7 percent of the required units will represent demand in communities with more densely developed planning areas (199,952)—1 percent less than what will be delivered; 24.3 percent will represent demand for communities with less densely developed planning areas (64,219)—3 percent more than what will be delivered. Finally, under TREND conditions 78.5 percent of required units will represent demand in communities with urban, regional, and/or town centers (207,313)—about the amount that will be delivered. About 21.5 percent of the required units will represent demand for communities without large centers (56,858)—2 percent less than what will be delivered (table 51).

**TABLE 51. TREND Findings: Housing Demand**

| | 1-4 Unit Structures | 5+ Unit Structures | Total units | Demand/ Supply Ratio | Affordability 2028 (%) |
|---|---|---|---|---|---|
| **New Jersey** | 230,829 | 33,342 | 264,171 | 1.00 | 0.76 |
| **Regions** | | | | | |
| North | 68,005 | 8,827 | 76,832 | 1.00 | 0.76 |
| South | 162,825 | 24,514 | 187,339 | 1.00 | 0.76 |
| **Type of Community** | | | | | |
| Urban | 32,673 | 2,114 | 34,787 | 0.73 | 0.76 |
| Inner Suburban | 90,245 | 16,026 | 106,272 | 0.89 | 0.75 |
| Outer Suburban | 85,547 | 11,295 | 96,842 | 1.33 | 0.77 |
| Rural | 22,364 | 3,906 | 26,270 | 1.11 | 0.76 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 175,917 | 24,035 | 199,952 | 0.99 | 0.75 |
| Rural, Env. Sensitive | 54,913 | 9,307 | 64,219 | 1.03 | 0.78 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 181,831 | 25,483 | 207,313 | 1.00 | 0.76 |
| All Others | 48,999 | 7,859 | 56,858 | 0.98 | 0.74 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

What is clear from the above analysis is that TREND housing demand will require more housing to be delivered in the southern region and less housing to be delivered in the northern region. TREND housing demand will require much more housing to be delivered in rural/outer suburban communities, and far less to be delivered in urban/inner suburban communities.

TREND housing demand will require much more housing to be delivered in communities with more densely developed planning areas and much less housing to be delivered in communities with less densely developed planning areas. TREND housing demand will require much more housing to be delivered in communities with large centers and less housing to be delivered in communities without large centers.

## Housing Affordability

Housing affordability under TREND conditions will remain about the same at 76 percent—a figure representing the percentage of the population that can afford housing during the period 2008 to 2028 (table 51). This occurs because there are two offsetting forces. First, under both TREND and PLAN conditions, housing costs are decreasing over time due to the effects of the current recession. Ownership housing is not selling causing more rentals that put down pressure on the market. Second, under TREND conditions, future households are shopping in the most expensive markets for housing – housing in newer suburbs and exurban areas. In these locations the primary offering is new single-family housing, which is considerably more expensive than new multifamily housing in inner suburbs in urban centers. The

fact that some of these houses are now available for rent dampers this trend somewhat.

Housing affordability will remain about the same in the southern region (76 percent); it will also remain about the same in the northern region (76 percent) (table 51).

Under TREND conditions, housing affordability will decrease from 76 percent to 75 percent in communities with more densely developed planning areas—a decline of 1 percent, and increase from 76 percent to 78 percent in communities with less densely developed planning areas—an increase of 2 percent. Housing affordability will remain about the same in communities with urban, regional, and/or town centers, and it will decrease by 2 percent in communities without large centers (table 51).

Under TREND conditions, housing affordability will remain about the same in the southern and northern halves of the state; it will decrease slightly in communities with more densely developed planning areas and in communities without large centers. It will increase slightly in communities with less densely developed planning areas and in communities with large centers.

# PLAN FINDINGS

## Housing Demand versus Supply

Under PLAN conditions, 264,171 units of housing will be required during the period 2008 to 2028. If housing is occupied according to the way it was during the prior decade and households are encouraged to seek more urban and more densely developed locations with centers, more single-family attached and slightly more multifamily units will be required. This will amount to 33,353 units under PLAN, or 12.6 percent of all units required during the period. Over 87 percent of the required future units will be single family detached/attached or two-to four-unit structures. As was the case with TREND, about 71 percent of the required units will be in the southern half of the state (187,339) – about the same as what will be delivered; and about 29 percent will be required in the northern part of the state (76,832) – again, about the same as will be delivered (table 52).

This is where PLAN's similarities to the TREND scenario end. Under PLAN conditions 71.5 percent of the required units will represent demand for urban/inner suburban communities (188,971)—approximately 13 percent less than what will be delivered; 28.5 percent of the required units will represent demand for rural/outer suburban communities (75,200) —19 percent more than what will be delivered (table 52).

Under PLAN conditions, 85 percent of the required units will represent demand for communities with more densely developed planning areas (224,207)—11 percent less than what will be delivered, and 15 percent of the required units will represent demand for communities with less densely developed planning areas (39,964)—36 percent more than what will be delivered. Finally, under PLAN conditions, 83 percent of the required units will constitute demand for communities with urban, regional, and/or town centers (219,181)—6 percent less than what will be delivered, and 17 percent of the required units will constitute demand for communities without large centers (44,990)—22 percent less than what will be delivered (table 52).

**TABLE 52. PLAN Findings: Housing Demand**

| | 1-4 Unit Structures | 5+ Unit Structures | Total units | Demand/ Supply Ratio | Affordability 2028 (%) |
|---|---|---|---|---|---|
| **New Jersey** | 230,818 | 33,353 | 264,171 | 1.00 | 0.77 |
| **Regions** | | | | | |
| North | 68,233 | 8,599 | 76,832 | 1.00 | 0.77 |
| South | 162,584 | 24,755 | 187,339 | 1.00 | 0.76 |
| **Type of Community** | | | | | |
| Urban | 46,999 | 3,223 | 50,222 | 1.05 | 0.76 |
| Inner Suburban | 118,202 | 20,547 | 138,749 | 1.16 | 0.76 |
| Outer Suburban | 55,484 | 7,717 | 63,201 | 0.87 | 0.79 |
| Rural | 10,133 | 1,866 | 11,999 | 0.51 | 0.80 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 196,939 | 27,268 | 224,207 | 1.11 | 0.76 |
| Rural, Env. Sensitive | 33,879 | 6,085 | 39,964 | 0.64 | 0.81 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 192,678 | 26,503 | 219,181 | 1.06 | 0.77 |
| All Others | 38,140 | 6,850 | 44,990 | 0.78 | 0.76 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

What is obvious from the PLAN findings of housing demand versus supply is that in most instances TREND development is occurring in outlying areas: in the southern portion of the state, in rural/outer suburban communities; in communities with less densely developed planning areas; and in communities without large centers. PLAN development's housing demand, on the other hand, is concentrated in more close-in areas. PLAN development is actually taking supply pressure off rural/outer suburban communities and transferring it to communities that are more urban or that have large centers.

## Housing Affordability

Housing affordability under Plan conditions will increase from 76 percent to 77 percent of the population, or by approximately 1.3 percent, during the period 2008 to 2028 (table 52). As was the case for TREND, this will occur because housing costs will decrease somewhat over the future period due to excess housing supply. It will occur to a slightly larger degree than it would under TREND conditions because new residents will be shopping for a greater mix of housing in less-expensive urban locations under PLAN development.

Housing affordability will increase slightly in both the southern (+1percent to 77 percent) and northern regions (+1 percent to 77 percent) (table 52).

Under PLAN conditions, housing affordability will remain at 76 percent of the population in urban/inner suburban communities; it will increase from 76-77 percent to 79-80 percent of the population in rural/outer suburban communities – an increase of 4 percent (table 52).

Under PLAN development, housing affordability will increase from 75 percent to 76 percent and from 76 percent to 77 percent in communities with more densely developed planning areas and in communities with large centers – increases of 1.33 percent and 1.31 percent, respectively. Under PLAN development, housing affordability will increase from 78 percent to 81 percent and from 74 percent to 76 percent in communities with less densely developed planning areas and in communities without urban, regional, and/or town centers – increases of 3.8 percent and 2.7 percent, respectively (table 52).

Under PLAN, affordability declines more in the northern and central regions, in suburban and rural/outer suburban communities, in communities with less densely developed planning areas, in communities without large centers.

# PLAN VERSUS TREND FINDINGS

## Housing Supply and Demand

Both TREND and PLAN development will benefit from housing supply that is on a par with demand in terms of numerical incidence. TREND's locational patterns require more demand than supply provides in rural/outer suburban communities, communities with less densely developed planning areas, and communities with large centers. PLAN development also has more demand than supply in urban/inner suburban communities, communities with more densely developed planning areas, and in communities with large centers (table 53).

**TABLE 53. PLAN versus TREND Findings: Housing Demand**

| | 1-4 Unit Structures | 5+ Unit Structures | Total Units | PLAN Demand/ TREND Demand | Affordability 2028 (%) |
|---|---|---|---|---|---|
| **New Jersey** | -12 | 12 | 0 | 1.00 | 0.01 |
| **Regions** | | | | | |
| North | 229 | -229 | 0 | 1.00 | 0.02 |
| South | -240 | 240 | 0 | 1.00 | 0.00 |
| **Type of Community** | | | | | |
| Urban | 14,326 | 1,109 | 15,435 | 1.44 | 0.00 |
| Inner Suburban | 27,957 | 4,521 | 32,477 | 1.31 | 0.01 |
| Outer Suburban | -30,063 | -3,578 | -33,641 | 0.65 | 0.03 |
| Rural | -12,232 | -2,040 | -14,271 | 0.46 | 0.03 |
| **Planning Area** | | | | | |
| Metro, Suburban, Fringe | 21,022 | 3,233 | 24,255 | 1.12 | 0.01 |
| Rural, Env. Sensitive | -21,034 | -3,221 | -24,255 | 0.62 | 0.03 |
| **Centers** | | | | | |
| Large Centers (Urban, Regional, Town) | 10,847 | 1,020 | 11,868 | 1.06 | 0.01 |
| All Others | -10,859 | -1,009 | -11,868 | 0.79 | 0.02 |

*Source:* Rutgers University, Center for Urban Policy Research, Projections 2008—2028.

## Housing Affordability

TREND and PLAN scenarios are subject to slightly different housing affordability change over the 20-year projection period 2008 to 2028. TREND's housing affordability generally stays the same at 76 percent of the population during the study period. PLAN's housing affordability increases slightly from 76 percent to 77 percent of the population, or by 1.31 percent (table 53). PLAN's focus on urban and close-in developments saves housing consumers a small amount of the cost increase that they would experience under TREND. PLAN development also causes a 4 percent gain in affordability in rural/outer suburban communities as fewer households are available for more housing in these locations under that scenario. Overall, PLAN development contributes to making housing slightly more affordable in rural/outer suburban communities, in communities with less densely developed planning areas, and in communities without urban, regional, and/or town centers.

# COMPARISON TO THE PREVIOUS IMPACT ASSESSMENT FINDINGS

## Housing Demand and Supply

In the 1992 evaluation, a total demand of 407,757 units was projected for both growth scenarios for the period 1990 to 2010. The projection in the 2000 evaluation for the period 2000 to 2020 called for 486,440 units, or approximately 20 percent more. The current evaluation calls for a number of housing units (264,117) that is 65 percent of what was called for in the 1992 evaluation and 55 percent of what was called for in the 2000 evaluation. It is clear that the Great Recession has impacted both housing demand and housing supply.

## Housing Affordability

PLAN development was much more affordable than TREND development in the 1992 evaluation, and, in both scenarios, housing affordability increased into the future. The latter is the only significant difference between the findings of the 2000 analysis and the 1992 findings. In the 2000 evaluation, housing affordability decreased into the future, yet this was consistent with most prognostications of future housing affordability at this time; currently, analyses indicate that affordability will increase slightly, as all signs point toward continuing impacts of the recession.

# CONCLUSIONS AND IMPLICATIONS OF THE FINDINGS

## Housing Demand and Supply

Housing supply is on a par with housing demand under both scenarios of future growth in New Jersey. Under TREND conditions, more housing is sought in rural/outer suburban communities (123,112 versus 75,200), in communities with less densely developed planning areas (64,219 versus 39,964), and in communities without large centers (56,858 versus 44,990). Supply lags demand in these areas. Supply lags demand in opposite locations under PLAN development but almost all of PLAN creates more demand in urban/inner suburban communities, in communities with more densely developed planning areas, and in communities with urban, regional, and/or town centers. The implications of these findings are that PLAN potentially could take the pressure off supply in the rural/outer suburban communities of the state by redirecting a portion of growth to urban/inner suburban communities. This would relieve housing supply, which is lagging both TREND and PLAN in the allocation of housing in less densely developed communities of a variety of types.

## Housing Affordability

Future housing affordability will remain about the same under TREND and increase very slightly under PLAN. This is because hard economic times will continue to drive down housing costs at a somewhat faster rate than income will decrease. Thus, housing affordability will be slightly better in the future under PLAN than under TREND. Under PLAN development, households will shop for housing where it is less expensive – in urban and inner suburban communities and in rural redeveloping communities. The implication of this finding is that slightly more housing will be affordable under the PLAN scenario than under the TREND scenario.

# PRINCIPLES FOR FUTURE MONITORING BY THE OFFICE OF SMART GROWTH

## Housing Demand and Supply

Annual building permits by municipality provide excellent information as to where development will take place in the state. Detailed counts are available by type of units, by year, and by location. Building permits should be tracked to determine whether development is taking place in urban/inner suburban communities, communities with more densely developed planning areas, and/or communities with urban, regional, and/or town centers.

## Housing Affordability

Trends in housing affordability are more difficult to establish than trends in housing demand and supply. Personal income (not household income) by municipality is available annually, but the value of housing put in place is not. One way of tracking affordability is to project housing value by municipality and compare trends in income against projections.

## MONITORING VARIABLES

***The monitoring variable that the Office of Smart Growth would use for monitoring Housing Supply is residential building permits by location and by year. Personal income by year and by municipality could also be used by the Office of Smart Growth; this information is available from the New Jersey Department of Labor.***

***HOUSING SUPPLY***

***Δ Building permits in communities without large centers***

***divided by***

***Δ Building permits in communities with urban, regional, and/or town centers***

***= ≤ 0.75***

***HOUSING AFFORDABILITY***

***Δ Personal income per capita***

***divided by***

***Δ Housing price***

***= ≥ 1.0***

# INTERGOVERNMENTAL COORDINATION ASSESSMENT

**New Jersey State House, Trenton**
Jon Erickson

## INTRODUCTION—CORE QUESTIONS

The 2009 intergovernmental coordination assessment examines the level of communication and shared decision making throughout the state among all levels of government.

Intergovernmental coordination is defined for the purpose of the impact assessment as the joint effort of governments at various levels to resolve issues of mutual concern. The specific cases of intergovernmental coordination addressed here involve land-use issues.

In practice, issue resolution is hampered by the inability of governments to understand and address common problems. For example, if a local government views an issue as a matter of "home rule," it might be criticized for ignoring the views of other local governments and other levels of government in its decision-making process. Conversely, if a decision is primarily made at a higher level, the governmental agency involved might be criticized for imposing a "top-down" public policy decision and for excluding those who are affected by the policy from the decision-making process. Each approach generates its own set of critics and supporters. The challenge for optimal growth lies in the implementation of a multilevel decision-making process that integrates the best aspects of upper-level policy making and local autonomy. The *State Development and Redevelopment Plan* seeks to achieve this integrative approach.

In an effort to analyze changes in intergovernmental coordination stemming from State Plan adoption, a survey was administered to county planning directors (or their designated substitutes) to measure the frequency and quality of communication between counties, between counties and municipalities, and between counties and state agencies.[102] The survey also asked respondents for their views on the frequency and quality of communication between municipalities, and between municipalities and state agencies.[2] The survey, conducted entirely by telephone, probed the frequency and quality of contacts under two conditions: with the State Plan (PLAN) and in the absence of a State Plan (TREND). The overall impressions of county planning directors as to reasons for any differences were solicited as well. The following

[102]Rutgers University, Center for Urban Policy Research, "County Intergovernmental Coordination Survey."

key questions must be answered in this portion of the analysis:

- **Does the frequency and quality of land-use information exchanges between counties change under the two conditions?**
- **Were these changes also observed in the exchanges between counties and state agencies and between counties and municipalities?**
- **Did county officials observe significant changes in the frequency and quality of land-use information exchanges between individual municipalities and between municipalities and state agencies under the two conditions?**

## BACKGROUND

**New Jersey League of Municipalities Convention, Atlantic City**

With its 566 municipalities, 616 school districts, and 21 counties, New Jersey has the highest density of local governments in the United States.[103] A number of states (Connecticut, Delaware, Florida, Georgia, Hawaii, Maine, Maryland, New Hampshire, Oregon, Rhode Island, Vermont, and Washington) have established a statewide, comprehensive growth-management framework, in part to coordinate the development oversight activities of various public actors. There is a heightened recognition in those states that the rapid pace of development is not purely a private matter, but, rather, a matter of private and public concern.[104] Although New Jersey's local governments are empowered by the state to undertake land-use planning and management, municipalities and counties have limited access to the tools required to manage certain types of land use. In addition, the effects of local land-use decisions often cross over municipal and county boundaries or result in other consequences that may require state or county involvement.

The State Plan addresses these issues in three ways. First, municipalities, counties, and regional agencies are included in the planning process through the cross-acceptance of their plans and regulations with those of the State Plan. This step attempts to coordinate planning at all levels and to encourage the development of local plans that are consistent with the State Plan and its variety of programs.

The State Planning Act has also enhanced the traditionally limited role of county land-use planning and control. Under the Act, counties play a vital coordination role in the preparation and update of the State Plan, and they negotiate cross-acceptance with the State Planning Commission. The State Plan encourages counties to play an active role in regional planning through the preparation of Urban Complex Strategic Revitalization and Regional Strategic Plans. These expanded planning roles establish

[103] New Jersey Future, op. cit., 28

[104] DeGrove, *The New Frontier for Land Policy: Planning and Growth Management in the States*, 146 – 156.

the counties as active intermediaries between their municipalities and the state.[105]

In order for localities and counties to implement the Plan, state-level implementation must also proceed through the coordinated activities of state agencies. The State Planning Act mandates state agency involvement through membership on the State Planning Commission and active participation in the statewide planning process established by the Act. Seven state entities are represented on the State Planning Commission: the Department of Agriculture, the Department of Treasury, the Governor's Office, the Department of Community Affairs, the Department of Environmental Protection, the Department of Transportation, and the Commerce and Economic Growth Commission.

State agencies are required to identify ways in which the provisions of the State Plan can be achieved through their programs and to tailor these programs in a manner consistent with the State Plan. Each agency has an implementation team (an "I Team") that is responsible for performing these tasks.[106]

Coordination between the levels of government has produced multijurisdictional cooperative planning relationships in the state. The Hudson County strategic revitalization plan and the Burlington County/Route 130 Corridor strategic revitalization plan are examples of regional approaches to economic development planning. (See Multi-Jurisdictional Cooperative Planning Relationship for listing.) In each case, several local governments participated in a cooperative effort to facilitate the economic redevelopment of corridors that traverse their municipalities. The endorsement of both plans by the State Planning Commission makes it possible for state agencies to deliver to the communities involved the services and infrastructure required for the success of the planned revitalization.[107]

Two new state initiatives have been created that may help implement the State Plan through regionalization or consolidation. The "Local Unit Alignment Reorganization and Consolidation Commission" (LUARC) was established in 2007. LUARC will study and report on the structure and functions of county and municipal government. This effort includes the study of local taxing districts and their statutory basis. It also includes the fiscal relationship between local governments, and the appropriate allocation of service delivery responsibilities from the standpoint of efficiency. The commission will recommend legislative changes that would encourage the more efficient operation of local government. These changes may include the structural and administrative streamlining of county and municipal government functions including, but not limited to, the transfer of functions from one level of government to another and the use or establishment of regional service-delivery entities and the consolidation of local governments.

The second is the New Jersey Quality Single Accountability Continuum (NJQSAC). QSAC will evaluate the performance of school districts and rely more heavily on oversight from the county school superintendent. The result of this oversight and performance review may be the consolidation of school districts into larger, more comprehensive school districts that include in their operational planning a focus on providing services in more thoroughly and regionally planned location of educational facilities.

Since the State Plan deals primarily with land-use decisions, the intergovernmental coordination assessment conducted here focuses on

[105] "Chair, We Don't Have the Luxury of Time," *New Jersey Future*, 1.
[106] DeGrove, op. cit., 1.
[107] Ibid., 1.

interactions concerning land-use issues. One of the nine basic goals of the State Plan is to ensure sound and integrated planning and implementation statewide.[108] By increasing intergovernmental coordination, the state seeks to increase the frequency and improve the quality of contacts between levels of government in land-use matters. This analysis of intergovernmental coordination forms the fifth major substantive section of the overall evaluation.

Of the eight goals under the new State Plan, Goals 8 and 9 relate directly to the intergovernmental coordination. Those goals are:

**Goal 8:**
**Ensure sound and integrated planning and implementation statewide.**

**Goal 9:**
**Achieve all the State Plan goals by coordinating public and private actions to guide future growth into compact, ecologically designed forms of development and redevelopment, consistent with the statewide policies and the policy objectives of each planning area.**

Moreover, the Plan has several sections pertaining to comprehensive planning:

**Policy 1.0: Equity**

**Equity, as a State Plan fundamental policy principle, should serve as a guide to the implementation of the State Plan to be considered and taken into account with respect to the implementation of all State Plan policies.**

***The Challenge: To preserve the Equity concept as it pertained to land values in previous State Plans, but to add to it by incorporating concepts of social equity and environmental justice as aspects of Sustainability.***

### Policy 2.0: Comprehensive Planning

**The State Plan is a comprehensive plan as it is comprised of a vision, goals, strategy, statewide policies, a Resource Planning and Management Structure along with implementation steps and a way to monitor and evaluate actions taken pursuant to the State Plan. It is a legislatively-directed initiative to guide State government's executive branch while improving the coordination and integration of State government plans with those of regional, county and municipal jurisdictions.**

***The Challenge: To draw upon the numerous functional plans of State Departments and agencies as well as the numerous regional, county and municipal plans to develop a State Plan that is comprehensive and respectful, while also pointing to strategic directions for the State of New Jersey's Executive Branch and its regional, county and municipal jurisdictions.***

[108] New Jersey State Planning Commission, *New Jersey State Development and Redevelopment Plan: Draft Final Plan*, 2009.

**Policy 17.0: Planning Regions Established by Statute**

**The State Plan acknowledges the special statutory treatment accorded to the New Jersey Pinelands Commission under the Pinelands Protection Act, the New Jersey Meadowlands Commission under the Hackensack Meadowlands Reclamation and Development Act, and the New Jersey Highlands Council under the Highlands Watershed Protection Act. The State Planning Commission is explicitly directed to "rely on the adopted plans and regulations of these entities in developing the State Plan." In the State Plan, these areas are considered planning regions established by statute. The Statewide Policies for Planning Regions Established by Statute are intended to coordinate the planning efforts of the State Planning Commission with these agencies and their adopted plans and regulations in order to gain compatibility with provisions of the State Plan.**

**MULTI-JURISDICTIONAL COOPERATIVE PLANNING RELATIONSHIP**

***Hudson County Urban Complex and Strategic Revitalization Plan***

Bayonne

East Newark

Guttenberg

Harrison

Hoboken

Jersey City

Kearny

North Bergen

Secaucus

Union City

Weehawken

West New York

***Burlington County Route 130— Delaware River Corridor*** Beverly

Beverly City

Burlington Township

Burlington City

Cinnaminson

Delanco

Delran

Edgewater Park

Florence

Palmyra

Riverside

Riverton

Willingboro

# IMPACT ASSESSMENT—METHODS

**Borough Hall, Metuchen**
Jon Erickson

## EXPECTED DIFFERENCES BETWEEN TREND AND PLAN

Since a central purpose of the State Planning process is to increase intergovernmental coordination, it is expected that respondents would report higher levels in the frequency and quality of communication between counties, between counties and municipalities, and between counties and state agencies under the State Planning process. It is also expected that respondents would report higher levels in the frequency and quality of communication between municipalities and between municipalities and the state government under the State Planning process.

Correlation is not causality. Other factors may be at play. In an effort to help identify causal factors, respondents are encouraged to discuss reasons for any changes that they believe occur in intergovernmental relationships attributable to the State Planning process.

## CRITICAL ASSUMPTIONS

Both the *quantity* and the *quality* of intergovernmental contacts are measured in the analysis that follows. The quantitative component measures the perceived *frequency* of contact between state, county, and local governments under the State Planning process and in the absence of that process. The qualitative component measures the *content* of intergovernmental exchanges under the same two scenarios. The conditions existing in the absence of the State Planning process are termed TREND intergovernmental coordination conditions, and conditions existing under the State Planning process are termed PLAN intergovernmental coordination conditions.

## SCOPE AND DEPTH OF ANALYSIS

Intergovernmental coordination is measured by interviewing county planning directors for their views on intergovernmental interaction. These individuals were asked to identify the frequency and quality of their contacts with state agencies, other counties, and local governments with and without a State Planning process. Because it is not feasible to survey every municipal government in the state, county respondents were also asked to provide their assessment of the frequency and quality of contacts occurring between municipalities and between municipalities and state agencies under TREND and PLAN.

In brief, the survey questionnaire dealt with intergovernmental contacts (frequency and quality) with and without a State Planning process. Respondents were asked to select answers from a list of precoded choices. For example, with respect to the frequency of contact with other governmental agencies, responses were distributed on a scale of 1 to 5 as follows: 5, very frequent; 4, frequent; 3, average; 2, infrequent; 1, very infrequent. With respect to the quality of contact with other governmental agencies, the coded responses also ranged on a scale of 1 to 5. These were 5, excellent; 4, adequate; 3, neutral; 2, inadequate; 1, poor. Respondents' answers were tabulated by dividing the sum of the numerically coded replies (1 to 5 for each respondent) by the number of respondents (21), thus providing an average raw score for the 21 counties on each question. These scores were then compared for the TREND and PLAN analysis. The counties' mean response to the frequency and quality of county-to-county contacts in the absence of the State Planning process was compared with the mean response to the frequency and quality of the contacts with the State Planning process in place. A difference-of-means test was applied to the results. This exercise was repeated for county-to-municipality, county-to-state, municipality-to-municipality, and municipality-to-state exchanges. Only results below the 0.05 level of statistical significance were reported. The 0.05 level of statistical significance is typically used in social science surveys; it indicates that there is only a 5 percent probability that the observed difference could be the result of random variation.

# TREND FINDINGS

Table 54 presents the survey findings for TREND development, both in numerical and in verbal form. There are 21 counties in New Jersey. Each county has a planning department, or an equivalent agency; and each department is headed by a county planning director. Interviews were conducted with the planning director for each county, or, in a very limited number of cases, with a substitute designated by the planning director.

## County-to-County Contact

Respondents were asked to judge the frequency of contact between their county and other counties were there no State Planning process. Their average *frequency* score under this condition is 2.5 ("average"). Respondents assign an average score of 3.1 ("neutral") to the *quality* of their contacts under this condition.

## County-to-Municipality Contact

When asked to judge the frequency of county-to-municipality contact were there no State Planning process, county directors assign an average score of 3.2 ("average"). The average score for the quality of the contact that would occur is 2.9 ("neutral") .

## County-to-State Contact

The frequency of county-to-state contact before State Plan adoption received an average score of 2.4 ("infrequent"). In addition, respondents assign an average score of 2.6 ("neutral") to the quality of the contact between county and state agencies.

**TABLE 54. TREND Findings: Intergovernmental Coordination**

| | *County to County* | *County To Municipality* | *County to State* | *Municipality to Municipality* | *Municipality to State* |
|---|---|---|---|---|---|
| Frequency without State Planning Process | 2.5 | 3.2 | 2.4 | 2.3 | 2.0 |
| Frequency without State Planning Process | Average | Average | Infrequent | Infrequent | Infrequent |
| Quality without State Planning Process | 3.1 | 2.9 | 2.6 | 2.4 | 2.3 |
| Quality without State Planning Process | Neutral | Neutral | Neutral | Inadequate | Inadequate |

*Notes: Frequency: 1 = no contact; 2 = infrequent; 3 = average; 4 = frequent; 5 = very frequent*
*Quality: 1 = poor; 2 = inadequate; 3 = neutral; 4 = adequate; 5 = excellent*

*Source:* CUPR, Rutgers University, County Intergovernmental Coordination Survey, Summer 2005

## Municipality-to-Municipality Contact

Respondents assign an average score of 2.3 ("infrequent") to the frequency of municipality-to-municipality contact before State Plan adoption. The quality of contact between municipalities receives an average score of 2.4 ("inadequate").

## Municipality-to-State Contact

County directors assign an average score of 2.0 ("infrequent") to the frequency of contact between municipalities and state agencies before the Plan. The quality of the contact receives an average score of 2.3 ("inadequate").

## Summary

The results in table 54 show that the highest *frequency* of contact in the absence of the State Planning process occurs between counties and municipalities. The other intergovernmental relationships, listed in descending order by frequency of contact, are as follows: county to county; county to state, municipality to municipality, and municipality to state. Average scores for the *frequency* of contact ranged from a high of 3.2 ("average" contact between counties and municipalities) to a low of 2.0 ("infrequent" contact between municipalities and the state).

Following are the intergovernmental relationships in descending order by quality of contact: county to county; county to municipality; county to state; municipality to municipality; and municipality to state. Average scores for the *quality* of contact ranged from a high of 3.1 ("neutral" quality of contact between counties) to a low of 2.3 ("inadequate" quality of

contact between municipalities and the state government).

The major finding that can be drawn from the survey responses about the frequency and quality of intergovernmental contact under TREND is that a State Planning process is needed to improve intergovernmental coordination between counties, municipalities and the state. In the absence of a State Planning process, the frequency and quality of contact among municipalities, where most land-use powers reside, and between municipalities and the state, where most monies for infrastructure reside, is low: infrequent and inadequate, respectively. Even the frequency of contact between counties and the state is "infrequent," and the quality of contact between counties and the state is barely adequate, by one-tenth of a point. The degree to which the present State Planning process improves upon TREND conditions in the area of intergovernmental coordination is explored below.

***Under TREND it was found that a State planning process is needed to improve intergovernmental coordination between counties, municipalities, and the State.***

# PLAN FINDINGS

## County-to-County Contact

Respondents were asked to judge the frequency and quality of contact between the county and other counties under the State Planning process. Their average score for frequency under the State Planning process is 3.1 ("average"). The average score for *quality* of contact with other counties is 3.7 ("adequate").

## County-to-Municipality Contact

The average score for frequency of contact in the post-adoption period is 4.3 ("frequent"). Quality of contact is 4.2 ("adequate").

## County-to-State Contact

The average score for frequency of county-to-state contact is 3.3 ("average"); the average score for quality of contact is 3.1 ("neutral").

## Municipality-to-Municipality Contact

The average score for frequency of municipality-to-municipality contact is 3.0 ("average"). The average score for quality of contact is 2.9 ("neutral").

## Municipality-to-State Contact

The average score for frequency of contact between municipalities and state agencies is 3.0 ("average"). The average score for quality of contact is 3.3 ("neutral").

**TABLE 55. PLAN Findings: Intergovernmental Coordination**

| | *County to County* | *County To Municipality* | *County to State* | *Municipality to Municipality* | *Municipality to State* |
|---|---|---|---|---|---|
| Frequency without State Planning Process | 3.1 | 4.3 | 3.3 | 3.0 | 3.0 |
| Frequency without State Planning Process | Average | Frequent | Average | Average | Average |
| Quality without State Planning Process | 3.7 | 4.2 | 3.1 | 2.9 | 3.3 |
| Quality without State Planning Process | Adequate | Adequate | Neutral | Neutral | Neutral |

*Notes: Frequency: 1 = no contact; 2 = infrequent; 3 = average; 4 = frequent; 5 = very frequent*
*Quality: 1 = poor; 2 = inadequate; 3 = neutral; 4 = adequate; 5 = excellent*

*Source:* CUPR, Rutgers University, County Intergovernmental Coordination Survey, Summer 2005

## Summary

The results reflected in table 55 show that the highest *frequency* of contact under the State Planning process occurs between counties and municipalities. Following are the other intergovernmental relationships listed in descending order by frequency of contact: county to county; county to state; and municipality to municipality and municipality to state (tie). Average scores for the *frequency* of contact ranged from a high of 4.3 ("frequent" contact between counties and municipalities) to a low of 3.0 ("average" contact between municipalities and between municipalities and the state).

Under the State Planning process, the highest *quality* of contact was observed between counties and municipalities. Following are the other intergovernmental relationships listed in descending order by quality of contact: county to county; municipality to state; county to state; and municipality to municipality. Average scores for *quality* of contact ranged from a high of 4.2 ("adequate" quality of contact between counties and municipalities) to a low of 2.9 ("neutral" quality of municipal-to-municipal contact).

Two findings can be drawn from the survey responses about the frequency and quality of intergovernmental contact under the State Planning process. First, the pattern of highest to lowest scores for frequency of contact and quality of contact among all the levels of government is exactly the same: 1.3 units. Second, the average score among all the levels of government for frequency of contact and quality of contact is almost the same: 3.3 for frequency of contact and 3.4 for quality of contact.

# PLAN VERSUS TREND FINDINGS

A difference-of-means test is applied to respondents' answers to questions regarding the frequency and quality of contact under TREND and PLAN. The results are reflected in table 56.

## County-to-County Contact

The average score for frequency of contact increases from 2.5 under TREND to 3.1 under PLAN, a difference of 0.6, which is statistically significant at the 0.001 level. The average score for quality of contact increases from 3.1 ("neutral") to 3.7 ("adequate"), a difference of 0.6, which is statistically significant at the 0.003 level.

The reasons mentioned most often for these increases are (1) county interactions regarding State Plan policies, particularly in the areas of transportation and environmental protection, and (2) cross-acceptance. County-to-county frequency and quality of contact are among the lowest rated in the five categories of interaction, and the reason given for these low ratings is that the counties also interact as participants in metropolitan planning organizations (MPOs), economic development districts (EDDs), the County Planners Association, and other similar organizations.

## County-to-Municipality Contact

For the frequency of county-to-municipality contact under TREND, county directors assign an average score of 3.2 ("average"). This score increases to 4.3 ("frequent") under PLAN, an increase of 1.1 units. This is the largest increase among the five intergovernmental frequency-of-contact categories, and it is statistically significant at the 0.000 level. The average score for quality of contact also improves, increasing by 1.3, from 2.9 ("neutral") to 4.2 ("adequate"). As is the case with frequency, this is the largest increase among the five intergovernmental quality-of-contact categories, and it is statistically significant at the 0.000 level.

Among the reasons given by respondents for the increase in frequency and quality of contact are the state's smart-growth grant program, plan endorsement, and the cross acceptance process, which begins by requiring county-to-municipal interaction to produce the county's report to the OSG.

## County-to-State Contact

The average score for the frequency of county-to-state contact increases from 2.4 ("infrequent") to 3.3 ("average"), an increase of 0.9. This is statistically significant at the 0.000 level. The average score for quality of contact between county and state agencies increases from 2.6 to 3.1, an increase of 0.6. This is a statistically significant result at the 0.010 level. Respondents stated that the increase in the frequency of contact is due to the State Planning process and to increasingly more complex regulations issued by the Department of Environmental Protection (DEP). While quality of contact increased as well, it increased by only 0.5 of a unit (tied with municipality-to-municipality quality of contact as the lowest among all contact categories), and respondents cited the turnover of staff at the Office of Smart Growth (OSG) and process delays by both the DEP and OSG.

## Municipality-to-Municipality Contact

The average score for the frequency of municipality-to-municipality contact increases from 2.3 ("infrequent") to 3.0 ("average"), a difference of 0.7, which is significant at the 0.001 level. The average score for quality of contact improves from 2.4 ("inadequate") to 2.9 ("neutral"), an increase of 0.5, which is statistically significant at the 0.000 level. Respondents make the observation that the

comparatively low increase for both frequency and quality is due to the tendency of municipalities to use the county to work with and coordinate with other municipalities. They also cite substate regional programs (e.g., Sourlands Mountain), supported by the State Plan, as a reason for the increase in both frequency and quality of contact.

## Municipality-to-State Contact

County directors report that the frequency of contact between municipalities and state agencies increased at a significant level as well; the average score for frequency of contact increases from 2.0 ("infrequent") under TREND to 3.0 ("average") under PLAN, a difference of 1.0. This is significant at the 0.000 level. The average score for quality of contact increases from 2.3 to 3.3, a difference of 1.0. This is also statistically significant at the 0.000 level. Respondents cite the plan endorsement process as being very positive in promoting frequent and high-quality contact. The Council on Affordable Housing is also mentioned as promoting greater contacts between municipalities and the State. Cross-acceptance is seen as contributing significantly to the quality of municipal-to-state contact, and the smart-growth grants and the plan-endorsement process contribute greatly to frequency of contact. The quality of contact could be significantly improved, some respondents state, if the guidelines used at the state level regarding plan endorsement were made known to counties and municipalities in advance.

**TABLE 56. PLAN versus TREND Findings: Intergovernmental Coordination**

| | *County to County* | *County To Municipality* | *County To State* | *Municipality To Municipality* | *Municipality to State* |
|---|---|---|---|---|---|
| Difference in frequency rating under TREND/PLAN | 0.6 | 1.1 | 0.9 | 0.7 | 1.0 |
| Significance and significance level of difference in frequency rating | Significant (0.001) | Significant (0.000) | Significant (0.000) | Significant (0.001) | Significant (0.000) |
| Difference in quality rating under TREND/PLAN | 0.6 | 1.3 | 0.6 | 0.5 | 1.0 |
| Significance and significance level of difference in quality rating | Significant (0.003) | Significant (0.000) | Significant (0.010) | Significant (0.000) | Significant (0.000) |

*Notes:* Frequency: 1 = no contact; 2 = infrequent; 3 = average; 4 = frequent; 5 very frequent
*Quality:* 1 = poor; 2 = inadequate; 3 = neutral; 4 = adequate; 5 = excellent
*Source:* CUPR, Rutgers University, County Intergovernmental Coordination Survey, Summer 2005

| County | Sum of Means | Pattern |
|---|---|---|
| Union | 8.5 | VH |
| Hunterdon | 8.0 | VH |
| Camden | 6.0 | H |
| Cape May | 6.0 | H |
| Cumberland | 6.0 | H |
| Essex | 6.0 | H |
| Sussex | 6.0 | H |
| Passaic | 5.5 | H |
| Bergen | 5.0 | M |
| Monmouth | 5.0 | M |
| Atlantic | 4.0 | M |
| Burlington | 4.0 | M |
| Gloucester | 4.0 | M |
| Morris | 4.0 | M |
| Ocean | 4.0 | M |
| Mercer | 3.5 | L |
| Middlesex | 2.0 | VL |
| Somerset | 1.0 | VL |
| Warren | 1.0 | VL |
| Hudson | 0.0 | N |
| Salem | 0.0 | N |

***Average Net Change in Frequency***

N = No Increase (0)
VL = Very Low Increase (1.0—2.4)
L = Low Increase (2.5 - 3.9)
M = Moderate Increase (4.0 - 5.4)
H = High Increase (5.5 - 6.9)
VH = Very High Increase (7.0+)

**FIGURE 11. PLAN versus TREND: Change in Frequency of Contact**

| County | Sum of Means | Pattern |
|---|---|---|
| Camden | 9.0 | VH |
| Passaic | 8.5 | VH |
| Sussex | 8.5 | VH |
| Cape May | 6.5 | H |
| Union | 6.0 | H |
| Bergen | 5.0 | M |
| Essex | 5.0 | M |
| Gloucester | 5.0 | M |
| Monmouth | 5.0 | M |
| Morris | 5.0 | M |
| Atlantic | 4.0 | L |
| Hunterdon | 4.0 | L |
| Warren | 4.0 | L |
| Mercer | 3.0 | L |
| Hudson | 2.0 | VL |
| Salem | 2.0 | VL |
| Burlington | 1.0 | VL |
| Cumberland | 0.0 | N |
| Middlesex | 0.0 | N |
| Ocean | 0.0 | N |
| Somerset | 0.0 | N |

***Average Net Change in Frequency***

N = No Increase (0)
VL = Very Low Increase (1.0 - 2.5)
L = Low Increase (2.6 - 4.1)
M = Moderate Increase (4.2 - 5.7)
H = High Increase (5.8-7.3)
VH = Very High Increase (7.4+)

**FIGURE 12. PLAN versus TREND: Change in Frequency of Contact**

Upon examination of TREND and PLAN graphic results (see figures 11 and 12), it is apparent that there are significant regional patterns in the responses dealing with change in intergovernmental contacts.

Two counties, one in the northeast and one in the southern portion of the state, experience no change in *frequency* of contact between governments under TREND and PLAN. Twice as many counties (four) report no change in *quality* of contact under TREND and PLAN, two of which are in the middle part of the state. On average, counties in the northern part of the state experience greater increases in both frequency and quality of contact under PLAN than counties in any other part of the state. Counties in the middle and southwestern parts of the state rate frequency and quality of contact higher under PLAN but with much lower ratings than counties in the northern part of the state.

## COMPARISON TO THE 2000 STATE PLAN EVALUATION

The current survey results can be compared with those of the 2000 Intergovernmental Coordination Survey because the same subjects (county planning directors or their surrogates) were interviewed and the same scale was used in the survey instrument. The only difference in how the two surveys were conducted is in the wording of the frequency and quality question under TREND conditions. The 2000 survey probed the frequency and quality of contacts before and *after State Plan adoption in 1992*. Because of the amount of time (13 years) that had elapsed between adoption of the first State Plan in 1992 and the current survey in 2005, there has been substantial turnover of county planning staff. As a result, many of the 2005 respondents were not in their positions prior to 1992 and, therefore, could not respond to the question the way it was phrased. Consequently, the current survey probed "the frequency and quality of contacts under the State Planning process (PLAN)" and "the frequency and quality of contacts were there no State Planning process (TREND)."

On average, levels of significance due to the increment of change are stronger in the most recent survey compared with the 2000 survey. Levels of significance in the 2005 survey for all categories of contact were significant, whereas in the 2000 survey results for county-to-county (quality), county-to-municipality (quality), and municipality-to-state (quality) contacts were insignificant. Second, the largest increase in both frequency and quality of contacts in the 2000 survey was between municipalities, whereas the largest increase in both frequency and quality of contacts in the 2005 survey was in county-to-municipality contacts. This may be due to the fact that a lull during the most recent (2005) cross-acceptance process occurred after county reports were prepared (when county-to-municipal contacts are intense) and submitted to the OSG before negotiations between the state, counties and municipalities begin (when municipality-to-municipality and municipality-to-state are intense).

## CONCLUSIONS AND IMPLICATIONS OF THE FINDINGS

County planning directors report a significant, across-the-board increase in the frequency of contacts among all levels of government under PLAN. Respondents also report an improvement in the quality of these contacts. All of these results are statistically significant.

Compared with the 2000 intergovernmental coordination survey, the ratings given in the 2005 survey are high, even though there was a clear sense of frustration on the part of county directors with the turnover of staff at the OSG (and the perceived inexperience of the new staff) and the lull in the cross-acceptance process in the fall of 2005. In almost every case, however, the directors, or their substitutes, looked beyond these annoyances and credited the entire State Planning process, not just the cross-acceptance phase, as being responsible for improved intergovernmental coordination in the State. The "entire" State Planning process includes at least two implementation activities that have been added over the years since the adoption of the first State Plan in 1992, specifically (1) plan endorsement and (2) smart-growth grants. Based on comments by the directors, these two programs added significantly to the frequency and quality of municipality-to-county and municipality-to-state contact, the two categories of contacts that had been rated low in previous surveys. Even when respondents mention factors (e.g., substate regional programs like the Highlands, MPO meetings, EDD meetings) other than the State Planning process as contributing to increases in the frequency and quality of contact under PLAN, they typically

credit the State Plan and the State Planning process with promoting these other forms of contact and for facilitating these kinds of activities.

Finally, it is clear in the responses that PLAN, over the 13 years since adoption of the first State Plan in 1992, is gradually becoming TREND. The high frequency and quality of contact between the different levels of government has been maintained, the cross-acceptance process is becoming a routine governmental activity, and implementation of the State Plan is being achieved through some new programs and activities. In summary, the State Planning process is becoming the norm in the view of many of those interviewed.

# PRINCIPLES FOR FUTURE MONITORING BY THE OFFICE OF SMART GROWTH

The key monitoring variables in determining PLAN's impact are the changes in the frequency and quality of intergovernmental contacts. These changes can be assessed through periodic surveys of county directors or their designated substitutes.

## MONITORING VARIABLES

***As the State Plan becomes integrated in land-use activities, a quantitative component of future assessments can measure perceived changes in frequency contact between state, county, and local governments. A qualitative component of future assessment can measure the content of intergovernmental exchanges.***

# GLOSSARY

The following definitions are taken from the 2009 Draft New Jersey State Development and Redevelopment Plan or *The Complete Guide to Planning in New Jersey*. These definitions are intended to assist the reader with the terminology specific to the State Plan and the impact assessment. Various empirical procedures used in the State Plan analysis may incorporate definitions slightly different from those found below.

**Agriculture**

Farming in all its branches, including activities such as: 1. the production, cultivation, growing, and harvesting of any agricultural, viticultural, or horticultural commodities, 2. the raising and/or the breeding of livestock including but not limited to dairy and beef cattle, sheep, goats, fur-bearing animals, companion animals, poultry, and swine, 3. the breeding, boarding, raising, or training of equine, 4. the production of nursery, sod, floriculture, and forest products, and 5. the harvesting, storage, grading, packaging, processing, distribution, and sale of such commodities where such activities occur at the point of production.

**Aquifer**

A subsurface geological formation that produces water to wells or other surface waters.

**Brownfields**

Any former or current commercial or industrial site that is currently vacant or underutilized and on which there has been, or there is suspected to have been, a discharge of contaminants.

**Capital Facilities**

The land, building, and other physical facilities 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.

**Center**

A compact form of development with one or more cores and residential neighborhoods. Centers range in scale from an urban center to a regional center, town center, village, and hamlet. Centers in fringe, rural, and environmentally sensitive planning areas must be surrounded by a boundary distinguishing the center from its environs. Centers in metropolitan and suburban planning areas and the environmentally sensitive/barrier island planning area may have a center boundary, where environs exist to be protected.

**COAH**

Council On Affordable Housing.

**Compact**

A pattern of land development with sufficient density of development and proximity between uses and activities to encourage pedestrian movement and efficient provision of public facilities and services.

**Cross-acceptance** or **Cross-acceptance Process**

The process of comparing the provisions and maps of local, county, and regional plans and regulations with those of the State Plan and the dialogue that occurs among participants during and after this process to achieve consistency among the plans.

**Density**

The number of families, individuals, dwelling units, or households per unit of land.

**Developable Land**

Unimproved land exclusive of: 1. public open space, 2. land precluded from development due to deed restrictions, and 3. land deemed undevelopable by state or local regulation of natural features (e.g., slopes, wetlands, etc.).

**Ecosystem**

An integrated system of living species, their habitat, and the processes that affect them.

**Environmentally Fragile Lands**

Areas that are critical to maintaining biodiversity, including those containing: 1. habitats of endangered or threatened plant or animal species, 2. pristine waters, 3. coastal and freshwater wetlands, 4. prime forested areas, 5. ridgelines, gorges, and ravines, 6. grasslands, and 7. staging areas for migratory species.

**Environs**

Means the area outside the center boundaries.

**Fair Housing Act (N.J.S.A. 52:27D-301 et Seq., 1985)**

An act of the New Jersey Legislature that created the enabling legislation for COAH, a direct result of the *Mount Laurel* suits.

**Floodplain** or **Flood-Prone Area**

The channel and the area adjoining the channel of a stream or river that has been or may be covered by floodwater.

**Floor-area ratio**

The sum of the area of all floors of buildings or structures compared to the total area of the site.

**Global Warming**

The process by which the Earth is warming and threaten to make the Earth warmer than has it been for millions of years. The Earth is warmed by heat trapping gases that are present in the atmosphere. Due to recent human activity heat trapping gases or greenhouse gases, which include carbon dioxide and methane, have been increasing.

**Growth Management**

The conscious public effort to induce, restrain, or accommodate development in any geographic setting and at any governmental level.

**Habitat**

The natural environment of an individual animal or plant, population, or community.

**Hamlet**

A small-scale, compact residential settlement with one or more community-related functions that accommodates development in a more compact form than might occur otherwise.

**Impact Assessment**

The assessment of the economic, environmental, infrastructure, community life, and intergovernmental coordination impacts of the Interim Plan, as required by the State Planning Act.

**Infrastructure**

Those systems under public ownership, or operated or maintained for public benefit, that are necessary to support development, maintenance, and redevelopment and to protect the public health, safety, and welfare.

**Infrastructure Needs Assessment**

(As required by the State Planning Act §199.b): Information on present and prospective conditions, needs, and costs with regard to state, county, and municipal capital facilities.

**Land**

Real property, including improvements and fixtures thereon, above or below the surface.

**Laterals (Water or Sewer)**

Pipes conducting water or sewage from individual buildings to larger pipes called trunks or interceptors usually located in the street.

**Mixed-Use Development**

A tract of land with three or more different uses such as, but not limited to, residential, office, manufacturing, retail, public, or entertainment.

**Multifamily unit**

A structure containing five or more units,

**Municipality**

Any city, borough, village, or township of the state but not a county or school district.

**New Jersey State Development and Redevelopment Plan**

The Plan prepared and adopted pursuant to the State Planning Act.

**NJDA**

New Jersey Department of Agriculture

**NJDCA**

New Jersey Department of Community Affairs.

**NJDEP**

New Jersey Department of Environmental Protection.

**NJDOT**

New Jersey Department of Transportation.

**OSG**

Office of Smart Growth in the Department of Community Affairs.

**PA-1**

The metropolitan planning area of the New Jersey State Development and Redevelopment Plan.

**PA-2**

The suburban planning area of the New Jersey State Development and Redevelopment Plan.

**PA-3**

The fringe planning area of the New Jersey State Development and Redevelopment Plan.

**PA-4**

The rural planning area of the New Jersey State Development and Redevelopment Plan.

**PA-4B**

The rural/environmentally sensitive planning area of the New Jersey State Development and Redevelopment Plan.

**PA-5**

The environmentally sensitive planning area of the New Jersey State Development and Redevelopment Plan.

**PA-5B**

The environmentally sensitive/barrier island planning area of the New Jersey State Development and Redevelopment Plan.

**Parcel**

A quantity of land either vacant or holding structures that can be defined geographically with certainty.

**Per Capita**

A measurement that is presented in terms of units per person.

**Planning Area**

An area of greater than one square mile that shares a common set of conditions, such as population density, infrastructure systems, level of development, or environmental sensitivity.

**Regional Center**

A settlement or a location for development along or near a transportation corridor. It is the locus of high-intensity, mixed-use development, with a density of more than 5,000 people per square mile and an emphasis on employment.

**Septic System**

An underground individual sewage system with a septic tank used for the decomposition and treatment of wastewater before it is discharged to groundwater.

**Sewer**

Any pipe or conduit used to collect and carry away sewage or storm water runoff from the generating source to the treatment plant or receiving water body.

**Single-Family Unit**

Individual or attached structures on a lot containing up to four units.

**State Planning Act (N.J.S.A. 52: 18A-196 et Seq., 1985)**

An act of the New Jersey Legislature that established the State Planning Commission and the Office of Smart Growth in the New Jersey Department of Planning.

**State Planning Commission**

The 17-member body created by the State Planning Act of 1985.

**State Plan Policy Map (SPPM)**

The geographic application of the State Plan goals and policies.

**Steep Slope**

An area predominantly characterized by either an average change in elevation greater than 15 percent of the corresponding horizontal distance through the slope (15 percent slope) or by a very high erosion hazard as indicated by an erodibility factor $k$ of 0.40 or greater as determined by the U.S. Department of Agriculture, Natural Resources Conservation Service.

**TEA-21**

The federal Transportation Efficiency Act for the 21st Century.

**Town Center**

A center that has a high investment in public facilities and services several neighborhoods with a highly diverse housing stock and a central core of retail, office, and community facilities.

**Transit**

A vehicle or transportation system, including heavy and light rail, buses, vans, and other services, owned or regulated by a governmental agency and used for mass transportation of people.

**Urban Center**

A city of statewide importance, designated as an urban center by the State Planning Commission. An urban center is a large settlement that has a high intensity of population and mixed land uses, including industrial, commercial, residential, and cultural uses.

**USEPA**

United States Environmental Protection Agency.

**Vehicle Miles Traveled (VMT)**

An estimate of the total number of miles traveled on the highway and street system. VMT is used as an indicator for both vehicular and roadway utilization.

**Village**

A small, compact center of predominantly residential character but with a core of mixed-use commercial, residential, and community services. It often incorporates local economic and social functions that are integrated with housing.

**Wastewater Management Plan**

A description of existing and future waste-water-related jurisdictions, wastewater service areas, and selected environmental features and domestic treatment works.

**Wetland**

An area that is saturated or inundated with surface or ground water at a frequency and duration sufficient to support hydrophilic vegetation and characterized by hydric soils.

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