

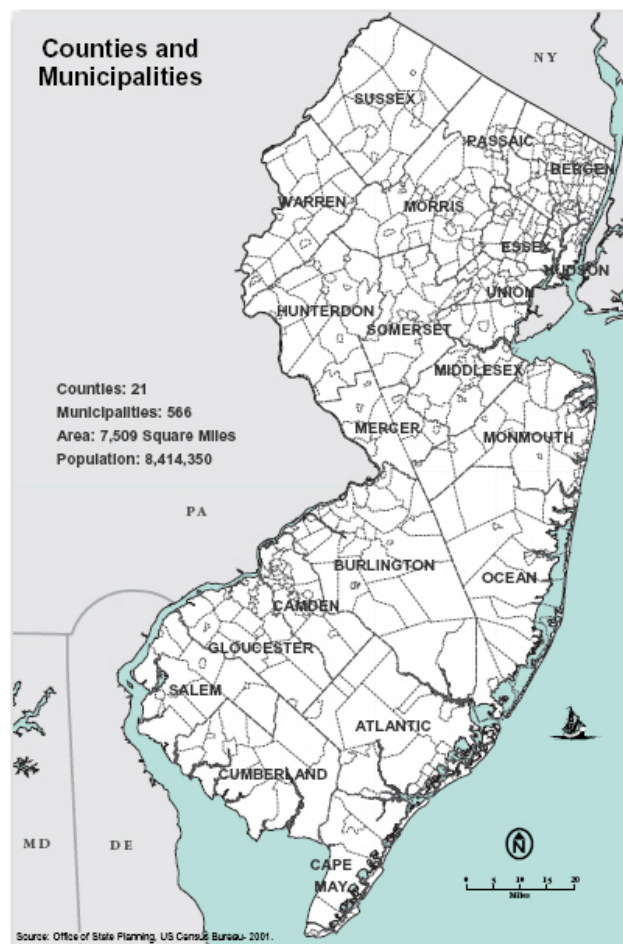


# Appendix E Background of the State of New Jersey

## Geography

New Jersey was named for the island of Jersey in the English Channel, but is also known as the “Garden State”. The State is located in the Mid-Atlantic region of the U.S. It is bordered by New York State to the north, the Atlantic Ocean to the east, Delaware to the south, and Pennsylvania to the west. It is about 150 miles long and 70 miles wide, comprising 8,722 square miles. The Delaware River is the largest river in the State, and defines the State’s southern and western borders. New Jersey is the most densely populated State in the nation, and one of the most ethnically diverse. It is comprised of 21 counties and 566 municipalities. The largest municipality is Newark, with a population of 273,546 (as of the 2000 Census). The capital city is Trenton, which is located in Mercer County, which is also the geographic center of the State.

**Figure E-1**  
**Map of the State of New Jersey showing Counties**



New Jersey is the 4th smallest State by land area and is occupied by four main land regions; the Atlantic Coastal Plain, the Piedmont, the New England Upland, and the Appalachian Ridge and Valley Region. The



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largest land area, the Atlantic Coastal Plain, covers the southern 3/5 of New Jersey. More than half of this area, characterized by gently rolling hills, is less than 100 feet above sea level. In the east the landscape consists of pine forests and salt marshes. Closer to the Atlantic coast, the salt marshes are more plentiful and shallow lagoons and meadows characterize the area. Along the coast lie New Jersey's resort areas; including Atlantic City, Ocean City, and Cape May. In the west and southwest, along the Delaware River, the fertile soil supports farming.

The Piedmont lies northeast of the Atlantic Coastal Plain. About 20 miles wide, this area covers only about 1/5 of the State. The Piedmont includes the industrial cities of Elizabeth, Patterson, Jersey City, and Newark. New Jersey's major rivers (Hudson River, Passaic River, Ramapo River, Raritan River) are found in this area supporting the industrial development.

West of the Piedmont is the New England Upland. This area, sometimes called The Highlands, includes flat-topped ridges of rock and extends into Pennsylvania and New York. This area is characterized by the many beautiful lakes nestled among the ridges.

In the northwest corner of the State are the Appalachian Ridge and Valley Region. This mountainous area includes the Kittatinny Mountains that run parallel to New Jersey's northwestern border. The Delaware Water Gap is where the Delaware River has cut through the Kittatinny Mountains. The wide Appalachian Valley lies southeast of the Kittatinny Mountains. Shale and limestone formation can be found in the valley along with dairy cattle and apple orchards.

### Climate

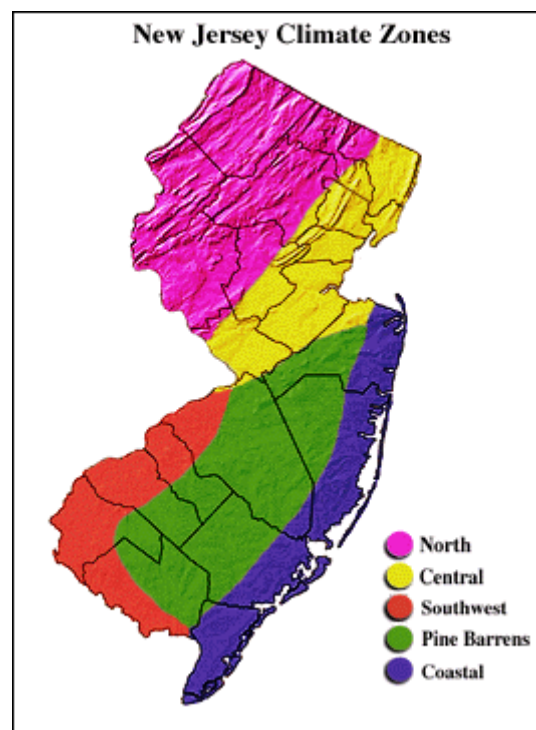
The climate in New Jersey varies greatly depending on the part of the State you are in. The southern portion tends to be more temperate than the north. The dominant feature of the atmospheric circulation over North America, including New Jersey, is the broad, undulating flow from west to east across the middle latitudes of the continent. This pattern exerts a major influence on the weather throughout the State. New Jersey has five distinct climatic regions. These are: Northern, Central, Pine Barrens, Southwest, and Coastal.

Each of the climate zones is described in detail below.

#### Northern Zone

The Northern climate zone covers about one-quarter of New Jersey and consists mainly of elevated highlands and valleys which are part of the Appalachian Uplands. Surrounded by land, this region can be characterized as having a continental type of climate with minimal influence from the Atlantic Ocean, except when the winds contain an easterly component. Prevailing winds are from the southwest in summer and from the northwest in winter.

**Figure E-2**  
**New Jersey Climate Zones**





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A major source of precipitation for this area comes from storms tracking from the Mississippi Valley, over the Great Lakes, and along the St. Lawrence Valley. Coastal storms, with precipitation shields that reach well enough inland add to the precipitation totals. The highlands and mountains in this area play a role in making the climate of the Northern Zone different from the rest of the State. Clouds and precipitation are enhanced by cold frontal passage when the air, forced to rise over the mountains, produces clouds, and even precipitation, while the rest of the State observes clear skies. The latter is due in part to subsiding air flowing off the highlands.

### **Central Zone**

The Central Zone has a northeast to southwest orientation, running from New York Harbor and the Lower Hudson River to the great bend of the Delaware River in the vicinity of Trenton. The northern edge of the Central Zone is often the boundary between freezing and non-freezing precipitation during wintertime.

### **Pine Barrens Zone**

Scrub pine and oak forests dominate the interior southern portion of New Jersey, hence the name, Pine Barrens. Sandy soils, which are porous and not very fertile, have a major effect on the climate of this region. On clear nights, solar radiation absorbed during the day is quickly radiated back into space, resulting in surprisingly low minimum temperatures. Atlantic City Airport, which is surrounded by sandy soil, can be 15-20 degrees cooler than the Atlantic City Marina on the bay, which is only about thirteen miles away.

The porous soil permits any precipitation to rapidly infiltrate and leave surfaces quite dry. Drier conditions allow for a wider range between the daily maximum and minimum temperatures, and makes the area vulnerable to forest fires.

### **Southwest Zone**

The Southwest Zone lies between sea level and approximately 100 feet above sea level. The close proximity to Delaware Bay adds a maritime influence to the climate of this region. The Southwest has the highest average daily temperatures in the State and without sandy soils, tends to have higher nighttime minimum temperatures than in the neighboring Pine Barrens.

This region receives less precipitation than the Northern and Central regions of the State as there are no orographic features and, it is farther away from the Great Lakes-St. Lawrence storm track. It is also far enough inland to be away from the heavier rains from some coastal storms, thus it receives less precipitation than the Coastal Zone. Prevailing winds are from the southwest, except in winter when west to northwest winds dominate. High humidity and moderate temperatures prevail when winds flow from the south or east. The moderating effect of the water also allows for a longer growing season. Autumn frosts usually occur about four weeks later here than in the North and the last spring frosts are about four weeks earlier, giving this region the longest growing season in New Jersey.

### **Coastal Zone**

In the Coastal Zone, continental and oceanic influences battle for dominance on daily to weekly bases. In autumn and early winter, when the ocean is warmer than the land surface, the Coastal Zone will experience



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warmer temperatures than interior regions of the State. In the spring months, ocean breezes keep temperatures along the coast cooler. Being adjacent to the Atlantic Ocean, with its high heat capacity (compared to land), seasonal temperature fluctuations tend to be more gradual and less prone to extremes.

Sea breezes play a major role in the coastal climate. When the land is warmed by the sun, heated air rises, allowing cooler air at the ocean surface to spread inland. Sea breezes often penetrate 5-10 miles inland, but under more favorable conditions, can affect locations 25-40 miles inland. They are most common in spring and summer. Coastal storms, often characterized as nor'easters, are most frequent between October and April. These storms track over the coastal plain or up to several hundred miles offshore, bringing strong winds and heavy rains. Rarely does a winter go by without at least one significant coastal storm and some years see upwards of five to ten. Tropical storms and hurricanes are also a special concern along the coast. In some years, they contribute a significant amount to the precipitation totals of the region. Damage during times of high tide can be severe when tropical storms or nor'easters affect the region.

This narrative borrows liberally from David Ludlum's *New Jersey Weather Book*, Rutgers University Press, New Brunswick, New Jersey, 1983, and also includes information from *Climate of New Jersey*, by the National Climatic Center, Asheville, North Carolina, June 1982. Each of these sources, plus our list of [NJ Climate Publications](#), provides a considerable amount of information on New Jersey's climate.

### Demographics

New Jersey is the most densely populated State in the nation and the 11<sup>th</sup> most populated. Its 2005 estimated population is approximately 8,717,925. This is up 3.7% (310,213 persons) from the 2000 census. Of the total increase, 254,766 is attributed to a natural increase, while 79,211 is from in-migration. It is also the 2<sup>nd</sup> wealthiest State in the U.S., behind Connecticut.

New Jersey is a very ethnically diverse State. As of 2005, Caucasians made up 76.6% of the population, below the national percentage of 80.2%. New Jersey's minority percentage is higher than the national trend. This also holds true for foreign-born population those who use English as a second language in the home. The percentage of foreign-born residents is 17.5%, while the national average is only 11.1%. More than 25% of households in New Jersey reported in speaking a language other than English in the home. ([QuickFacts: New Jersey](#), U.S. Census Bureau; 11.09.2007)

New Jerseyans are a highly educated population. More than 82% of the population has received a high school diploma and over 29% of the population has a Bachelor's degree or higher. These education rates translate into jobs and income. New Jersey is the second wealthiest State in the nation. The median income is \$57,338 while the national average is \$44,334 as of 2004. (<http://quickfacts.census.gov/qfd/States/34000.html>, 11-9-2007)

### Economy

The US Bureau of Economic Analysis estimates that the total State product for New Jersey in 2004 was \$416 billion. It is ranked second in the nation by the number of places with per capita incomes above national average with 76.4%. Nine of New Jersey's counties are in the top 100 of the wealthiest in the nation. (<http://www.bea.gov/bea/newsrelarchive/2005/gsp1005.pdf>)



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The State is noted for its output of chemicals and pharmaceuticals, machinery, and a host of other products, including electronic equipment, printed materials, and processed foods. The long history of heavy industry in New Jersey has left the State with the largest inventory of U.S. Superfund sites, and industrial cleanup is an important issue in its cities.

New Jersey has been a leader in industrial research and development since the establishment in 1876 of Thomas Edison's research facility in Menlo Park. Color television, the videotape recorder, and the liquid crystal display were invented in New Jersey corporate research labs. Today telecommunications and biotechnology are major industries in the State, and the area near Princeton has developed into a notable high-tech center. Finance, warehousing, and "big box" retailing have also become important to the State's economy, attracting corporations and shoppers and to a large extent reversing New Jersey's onetime role as a suburb for commuters to New York City and Philadelphia. New Jersey's tourism also strongly drives the economy.

### Transportation

A tremendous transportation system, concentrated in the industrial lowlands, moves products and a huge volume of interstate traffic through the State. Busy highways like the Garden State Parkway and the New Jersey Turnpike are part of a network of toll roads and freeways. New Jersey is linked to Delaware and Pennsylvania by many bridges across the Delaware River. Traffic to and from New York is served by railway and subway tunnels and by the facilities of the Port Authority of New York and New Jersey—the George Washington Bridge, the Lincoln and Holland vehicular tunnels, and three bridges to Staten Island. Airports are operated by many cities, and Newark airport (controlled by the Port Authority) ranks among the nation's busiest. Shipping in New Jersey centers on the ports of the Newark Bay and New York Bay areas—notably Port Newark and Port Elizabeth—with relatively minor seagoing traffic on the Delaware as far north as Trenton.

### Agriculture

New Jersey is a leading State in agricultural income per acre. The scrub pine area of the southern inland region is used for cranberry and blueberry culture. North of the pine belt the soil is extremely fertile and supports a variety of crops, most notably potatoes, corn, hay, peaches, and vegetables (especially tomatoes and asparagus). Dairy products, eggs, and poultry are also important. Commercial and residential expansion, however, has taken over much of the State's farmland, and New Jersey is now almost one third developed. (<http://www.infoplease.com/ce6/us/A0859952.html>, 11-09-2007)

### Government

The New Jersey legislature consists of a senate of 40 members and an assembly of 80 members. The Governor serves a four-year term and may be reelected once. The current Governor is Chris Christie, a Republican, was elected to the Governorship in 2009 and Kim Guadagno is the first Lt. Governor. New Jersey sends 13 Representatives and two Senators to the U.S. Congress and has 15 electoral votes. The State is made up of 21 counties and 566 municipalities. All 566 New Jersey municipalities, regardless of their form of government, can be classified as belonging to one of five types of municipal government: Borough, Township, City, Town, and Village.



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New Jersey State government legislative body consists of an upper house Senate consisting of 40 members and a lower house General Assembly or 80 members. Assembly members are elected for a two-year term and State Senators are elected and serve four year terms.

### Higher Education

New Jersey is home to two of the most prestigious centers of higher learning, including Princeton University and Rutgers, the State University of New Jersey. Rutgers has 50,000 students and is one of the nation's major public institutions for higher education. Chartered in 1766, the university has a unique history as a colonial college, a land-grant institution, and a State university. The University offers 27 degree programs in more than 100 fields. (<http://ruweb.rutgers.edu/about-the-university.shtml>) Princeton University is the fourth oldest college in the US. Princeton's Nassau Hall was the temporary capitol of the United States in 1783. Today, there are more than 850 full-time faculty members and 4,760 undergraduate and 2,295 graduate students. (<http://www.princeton.edu/main/about/facts/>)