



## **3.0** STATE PROFILE

## SECTION 3.0 STATE PROFILE

### 3.0-1 OVERVIEW

#### Geography

New Jersey is located in the Mid-Atlantic region of the United States. It is about 150 miles long and 70 miles wide, comprising 8,723 square miles. Of the total area, New Jersey includes 7,354 square miles of land and 1,368 square miles of water. The State is made up of 21 counties and 564 municipalities. The capital is the City of Trenton, in Mercer County.

By area, Hudson is the smallest county (46.19 square miles) and Burlington is the largest (798.58 square miles). The state is bordered to the north by New York State, to the south by the Delaware Bay and Atlantic Ocean, to the east by the Atlantic Ocean, and to the west by the Delaware River and the State of Pennsylvania. The Delaware River is the largest river in the State and defines the State's southern and western borders.

#### Physiographic Provinces

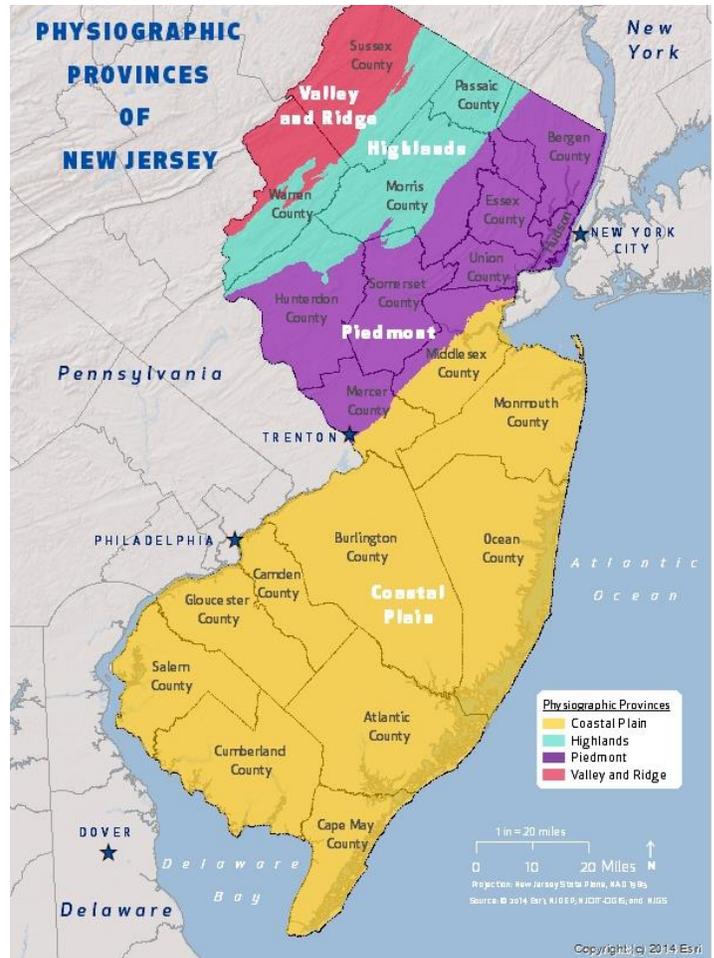
New Jersey is occupied by four physiographic provinces. Each province defines a region in which relief, landforms, and geology are significantly different from that of the other regions. The differences between these regions provides some disparity in exposure to natural hazard events, although all areas of the state face exposure to non-coastal natural hazards. The boundary between each province is determined by a major change in topography and geology. The geographic location and extent of each province is identified in Figure 3.0-1.

The Valley and Ridge Province is characterized by steep-sided, linear ridges and broad valleys (Dalton, 2006). The rocks in this province are the second oldest, ranging between 400 and 540 million years old (Harper, 2013). The Kittatinny Valley forms the eastern segment of the Province, and Kittatinny Mountain is the ridge that separates the upper Delaware River above the Delaware Water Gap from the Kittatinny Valley. High Point, near the northern end of Kittatinny Mountain, is the highest point in New Jersey at 1,803 feet above sea level (Dalton, 2006).

The Highlands Province contains the oldest rocks in New Jersey, dating as far back as being between 980 and 1,363 million years old (Harper, 2013). Wawayanda Mountain is the highest point in the Highlands at 1,496 feet above sea level. (Dalton, 2006). The Piedmont Province is classified as being mainly a low rolling plain divided by a series of higher ridges (Dalton, 2006). It consists of sedimentary sandstone, shale, diabase, mudstone and igneous basalt that date back to being between 195 and 225 million years old (Harper, 2013).

The largest province in New Jersey is the Coastal Plain Province. This province makes up the southern half of the state and contains sand, gravel, clay and greensand formations. Deposits along the Atlantic Ocean between 10 and 120 million years ago have led to the development of this province. The Coastal Plain is often divided into the Inner Coastal Plain, which is made mostly of sand and clay formations, and the Outer Coastal Plain, which can be identified as having more sandy soil (Harper,

Figure 3.0-1 Physiographic Provinces of New Jersey



Source: NJDEP, 2002; NJOGIS, 2022

2013). The maximum elevation of the Coastal Plain is 391 feet at Crawford Hill. The Highlands of Navesink, at 266 feet above sea level, is the highest point along the coast of New Jersey (Dalton, 2006).

## Climate

According to the Office of the New Jersey State Climatologist (ONJSC) New Jersey's climate is influenced by wet, dry, hot and cold airstreams, making a highly variable environment. The state is divided into five distinct climate zones. Distinct variations in the day-to-day weather between each of the climate zones is due to the geology, distance from the Atlantic Ocean, and prevailing atmospheric flow patterns. The five climate zones in New Jersey, illustrated in Figure 3.0-2, are: Northern, Central, Pine Barrens, Southwest, and Coastal.

While there is some variation across the zones that affects the potential for natural hazard events, all weather stations across the state have registered readings of 100 degrees Fahrenheit (°F) or higher and as well as 0°F and below. Average annual precipitation ranges from approximately 40 inches along the southeast coast to 51 inches in the north-central portion of the State. Most areas in New Jersey average between 43 and 47 inches of precipitation annually. Snow typically falls from about October 15 to April 30 in the Highlands and from around November 15 to April 15 in the southern counties. Most locations in New Jersey receive between 25 and 30 thunderstorms each year, with fewer storms near the coast than inland. New Jersey experiences measurable precipitation of about 120 days each year. The fall months are typically the driest, with an average of eight days of measurable precipitation.

Figure 3.0-2 Climate Regions of New Jersey



Source: ONJSC

### Northern Zone

The Northern 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 is 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.

A major source of precipitation for this area comes from storms tracking from the Mississippi Valley, over the Great Lakes, or along the St. Lawrence Valley. Coastal storms, with precipitation shields reaching inland, add to the precipitation totals. The highlands and mountains in this area make the Northern Zone distinct from the rest of the State. Clouds and precipitation are enhanced by cold frontal passage as the air, forced to rise over the mountains, produces clouds and 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 near the City of Trenton. The northern edge of the Central Zone is often the boundary between freezing and non-freezing precipitation in the State.

### 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 by the sandy soils 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 to 20 °F cooler than the Atlantic City Marina on the Absecon Inlet about thirteen miles away. The porous soil permits any precipitation to rapidly infiltrate and leaves surfaces quite dry. Drier conditions allow for a wider range between the daily maximum and minimum temperatures, and these conditions make 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 the Delaware Bay adds a maritime influence on the Southwest Zone. The Southwest Zone has the highest average daily temperatures in the State and, due to the lack of sandy soils, tends to have higher nighttime temperatures than the neighboring Pine Barrens.

This zone receives less precipitation than the Northern and Central Zones of the State as there are no orographic features and it is farther away from the Great Lakes-St. Lawrence storm track. This zone also 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 Delaware Bay 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 basis. In autumn and early winter when the ocean is warmer than the land surface, the Coastal Zone will experience 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, which has a high heat capacity (compared to land); seasonal temperature fluctuations in the Coastal Zone 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 five to 10 miles inland, but under more favorable conditions, can affect locations 25 to 40 miles inland. Sea breezes 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. Each winter there is usually 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, hurricanes, or Nor'easters affect the region.

## **3.0-2 BUILT ENVIRONMENT**

### **Land Use and Development**

New Jersey is the most developed and most densely populated state in the United States, with large portions of land that are either protected open space or part of one of the three regional planning areas: the Pinelands Area, Highlands Region, and Meadowlands District.

New Jersey has experienced three main stages of economic development and land use. The first stage was characterized by the development of a few large cities, including Newark and Camden, and numerous independent towns. The second stage started in the 1930s, when the economy was driven by urban industrial centers, later shifting to manufacturing and technological innovation laboratories. After World War II, New Jersey developed rapidly through suburban expansion outward from its urban centers. This was largely aided by the construction of superhighways that facilitated circulation in and out of these centers.

The third stage is characterized by the advancement of an interconnected network linking urban and suburban centers. The expansion of the transportation networks in the 1980s (Interstates 287, 280 and 80, and Garden State Parkway) defined the shift in the provision of economic functions, decentralizing development and dispersing employment, housing, retail, health, cultural, and recreational activities throughout the State.

Since the mid-2000s there has been growing demand for housing in urban centers like Jersey City and Hoboken due to their proximity and accessibility to employment hubs in Manhattan (Urban Land Institute, 2014). This has led to the redevelopment of many of the urban cores and revitalization of many of the State's older cities. The continued redevelopment of the State's urban centers will likely remain an important component of the future development of the state.

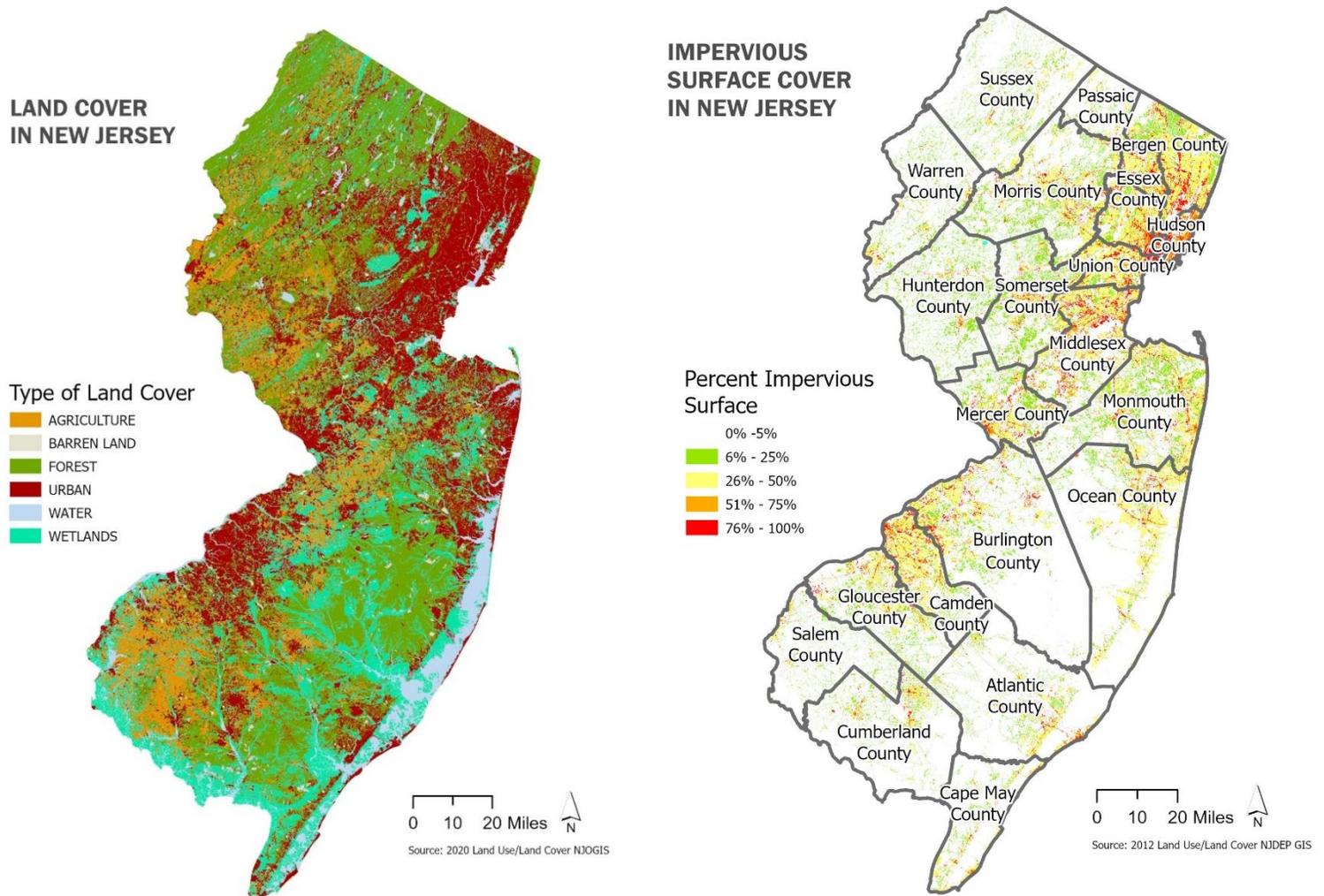
**Growth and Change Since 2018**

New Jersey has 26 urban areas and 7 metropolitan statistical areas. A majority of the State’s population is concentrated in the New York- Northern New Jersey-Long Island, NY-NJ-PA and Philadelphia-Camden-Wilmington, PA-NJ-DE-MD MSAs (United States Census Bureau, 2020).

Rowan and Rutgers universities have studied New Jersey’s urban growth and land use change. Between 2007 and 2012 New Jersey has increased its amount of urban land by 24,250 acres, which creates a statewide total of 1,558,862 acres of urban land. Urban land makes up 31% of New Jersey’s land area, which makes it the states most significant land use type (Hasse and Lathrop, 2012).

Between 1986 and 2012 New Jersey experienced a steady growth in urban land development, and a steady decline in agriculture land use, forest, and wetlands. Approximately 41,437 net acres (64.7 square miles) of forest lands were lost statewide between 2002 and 2012. Similarly, the rate of agricultural land loss has declined over the same period. Between 2002 and 2012 there has been a net loss of 48,883 net acres (76.4 square miles). Wetlands were also lost between 2002 and 2012 due to urban growth with the net acreage of wetlands loss totaling 13,070 net acres (20.4 square miles) (Hasse and Lathrop, 2010). These trends indicate that urban growth has been encouraged, while the preservation of natural resources has been declining.

**Figure 3.0-3 Land Use and Impervious Cover in New Jersey**



## Building Permits in New Jersey

Local construction officials issue building permits for new construction, additions, and alterations. New construction permits authorize new buildings. Permits for additions authorize work that adds space to an existing structure and make up about 3% of total building permits issued throughout New Jersey between 2010 and 2015. Table 3.0-1 show the total number of housing units authorized by building permits for 2016 through 2022 by County.

**Table 3.0-1 Housing Units Authorized by Building Permits, by County**

County	2016	2017	2018	2019	2020	2021	2022	Total
Atlantic	966	1,025	601	810	466	568	420	4,856
Bergen	2,584	2,059	2,366	3,249	1,609	2,588	4,232	18,687
Burlington	634	832	1,207	2,394	1,011	1,594	1,487	9,159
Camden	213	629	444	745	592	589	778	3,990
Cape May	635	774	686	685	637	824	734	4,975
Cumberland	45	37	70	134	144	279	125	834
Essex	1,504	1,430	1,072	2,250	1,701	3,051	3,821	14,829
Gloucester	609	804	439	464	481	490	628	3,915
Hudson	5,312	7,403	6,205	8,596	6,742	4,671	7,566	46,495
Hunterdon	230	121	316	439	133	844	368	2,451
Mercer	913	439	439	423	729	404	952	4,299
Middlesex	1,959	2,311	2,305	2,299	2,395	2,478	1,702	15,449
Monmouth	1,901	1,729	1,828	1,262	1,642	1,622	1,384	11,368
Morris	1,168	1,301	1,673	789	1,055	2,544	1,578	10,108
Ocean	2,712	2,757	2,079	2,273	1,996	2,290	2,061	16,168
Passaic	437	351	311	793	1,021	757	827	4,497
Salem	46	50	79	61	29	50	34	349
Somerset	839	564	1,196	757	1,624	1,186	739	6,905
Sussex	121	147	108	205	185	153	211	1,130
Union	1,182	1,100	2,473	1,932	2,331	2,954	1,847	13,819
Warren	160	98	151	210	157	108	298	1,182
<b>State Total</b>	<b>24,170</b>	<b>25,961</b>	<b>26,048</b>	<b>30,770</b>	<b>26,680</b>	<b>30,044</b>	<b>31,792</b>	<b>195,465</b>

Source: NJDCA, 2016-2022

Table 3.0-2 lists the number of permits issued for residential construction as well as the square footage of permits for non-residential construction in New Jersey for 2015 through 2020. Both residential and non-residential construction experienced a gradual growth in issued permits between 2010 and 2014 but experienced a decrease in 2015.

**Table 3.0-2 Issued Building Permits by Use, 2015 to 2020**

Type of Permit	Year						Total
	2015	2016	2017	2018	2019	2020	
<b>Residential (Units)</b>							
One and Two Family	9,470	8,885	9,201	9,026	8,954	8,673	54,209
Multifamily	9,989	15,217	16,146	16,811	21,762	17,950	97,875
Mixed Use	44	68	614	211	54	57	1,048
Issued Permit Total for State	19,503	24,170	25,961	26,048	30,770	26,680	153,132
<b>Non-Residential (Square Footage)</b>							
Hotels, motels, guest houses	991,959	2,356,300	862,262	518,839	1,561,134	235,947	6,526,441
Business / Office	5,751,737	7,183,084	6,826,372	5,316,607	5,724,671	5,525,377	36,327,848
Education	1,289,204	3,296,631	1,157,087	2,310,632	1,557,636	963,127	10,574,317
Hazardous uses	55,128	3,829	44,280	96,332	38,333	11,334	249,236
Industrial	641,621	1,465,986	2,494,469	912,617	1,804,437	2,098,951	9,418,081
Institutional	1,197,161	1,573,919	1,941,595	876,948	2,339,783	2,087,473	10,016,879
Retail	3,544,141	2,913,461	2,153,638	3,122,448	1,286,733	2,023,918	15,044,339
Storage	11,368,650	23,015,317	18,832,520	15,299,726	22,114,195	19,630,111	110,260,519
Signs, fences, miscellaneous	2,349,635	3,889,815	3,165,932	5,928,172	2,154,533	3,002,349	20,490,436
Issued Permit Total for State	27,189,236	45,698,342	37,478,155	34,382,321	38,581,455	35,578,587	218,908,096

Source: NJDCA, 2015-2020

## Transportation

New Jersey's transportation network consists of multiple forms of transportation, including vehicular, rail, light rail, bus, air, and ferry. Numerous bridges, tunnels, highway, and rail lines facilitate interstate travel. The Garden State Parkway, the New Jersey Turnpike, and the Atlantic City Expressway 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, subway tunnels and by the facilities of the Port Authority of New York and New Jersey (PANYNJ) including the George Washington Bridge, the Lincoln and Holland vehicular tunnels, and three bridges to Staten Island. Newark airport (operated by the PANYNJ) ranks among the nation's busiest. Shipping centers in New Jersey include the ports of the Newark Bay and New York Bay areas, notably the Ports of Newark and Elizabeth. Along the Delaware, there is a relatively minor amount of seagoing traffic.

New Jersey has more miles of highway per square mile than any other state. New Jersey has 38,991 miles of highways (33,535 miles urban and 5,456 miles rural). Of the total miles of highways, 432 miles are Interstate, 488 miles are other freeways or expressways, 5,896 miles are arterial, 4,437 miles are collector, and 27,738 miles are local (NJDOT, 2020). New Jersey also has 6,805 bridges located throughout the State (USDOT, 2022).

The State's transit system is extensive, consisting of multiple operators and transit types that include bus, rail, and ferry. Operators of these transit systems include New Jersey TRANSIT (NJ TRANSIT), PANYNJ, the Port Authority Trans-Hudson Corporation (PATH), Port Authority Transit Corporation (PATCO), and Amtrak Northeast Corridor. The 2012 study by New Jersey Future, *Targeting Transit*, outlines a comprehensive list of transit. Since that study, the Pennsauken Transit Center has been completed (NJ TRANSIT). There are 6,337.3 route miles of bus service, 920.4 route miles of rail service, and 116.2 route miles of light rail operated by NJ Transit. There are 26 passenger bus stations with 15,991 stops and over 20,600 commuter parking spaces for bus service (NJ TRANSIT, 2021). In addition to the bus network, there are 243 transit stations in New Jersey that consist of:



Figure 3.0-5 Major Transportation Routes in New Jersey



Source: NJDOT, 2013

### 3.0-3 POPULATION AND THE ECONOMY

#### Population Trends

New Jersey is the most densely populated state in the United States and the eleventh most populated. The 2020 population of New Jersey was 9,288,994 and the population density of New Jersey was 1,263 persons per square mile (United States Census, 2020). This is an increase of 4.32% from the population of 8,904,413 in 2015 (United States Census, American Community Survey (ACS), 2015). Between 2010 and 2020, the highest growth occurred in Hudson County, whose population grew by 90,588 persons (14.28%). Sussex County experienced the largest decrease in population during this time frame, decreasing by 5,044 persons (-3.38%).

The five most populated counties in New Jersey are clustered together in the northeastern section: Bergen, Essex, Middlesex, Hudson, and Monmouth Counties (United States Census, 2020). The most populous county in New Jersey is Bergen County, with a population of 955,732, and Salem County is the least populated county in the State, with a population of 64,837 (United States Census, 2020). Between 1980 and 2020, the population density in New Jersey increased by more than 26%, from 1,001 persons per square mile to 1,263 persons per square mile (United States Census, 2020). The densest county is Hudson County with 15,691 people per square mile, followed by Essex County with 6,850 people per square mile. The least dense county is Salem County with 195 people per square mile (United States Census, 2020). A detailed list of population, size and density of each county is provided in Table 3.0-3.

**Table 3.0-3 County Population, Density and Percent Change**

County	Population Count		Population Density		Percent Change
	2010	2020	2010	2020	
Atlantic	274,549	274,534	494.1	494.03	-0.01%
Bergen	905,116	955,732	3,884.50	4,101.68	5.59%
Burlington	448,734	461,860	561.9	578.35	2.93%
Camden	513,657	523,485	2,321.50	2,365.93	1.91%
Cape May	97,265	95,263	386.9	378.88	-2.07%
Cumberland	156,898	154,152	324.4	318.69	-1.76%
Essex	783,969	863,728	6,211.50	6,843.58	10.18%
Gloucester	288,288	302,294	895.3	938.77	4.86%
Hudson	634,266	724,854	13,731.40	15,692.88	14.28%
Hunterdon	128,349	128,947	300	301.40	0.47%
Mercer	366,513	387,340	1,632.20	1,724.88	5.68%
Middlesex	809,858	863,162	2,621.60	2,794.22	6.58%
Monmouth	630,380	643,615	1,344.70	1,372.93	2.10%
Morris	492,276	509,285	1,069.80	1,106.71	3.45%
Ocean	576,567	637,229	917	1,013.44	10.52%
Passaic	501,226	524,118	2,715.30	2,839.36	4.57%
Salem	66,083	64,837	199.1	195.35	-1.88%
Somerset	323,444	345,361	1,071.70	1,144.30	6.77%
Sussex	149,265	144,221	287.6	277.88	-3.38%
Union	536,499	575,345	5,216.10	5,593.48	7.23%
Warren	108,692	109,632	304.5	307.16	0.87%

Source: United States Census 2010, 2020

#### Race and Ethnicity

New Jersey is an ethnically diverse state. Caucasians make up 55% of the population, which is below the national percentage of 61.6% (United States Census, 2020). The State is also above the national percentage for foreign-born persons and language other than English spoken at home. The percentage of foreign-born residents is 22.7%, while the national percentage is 13.5%.

More than 31% of households in New Jersey reported speaking a language other than English, while the national percentage is over 21% (ACS, 2020).

## Underserved Communities and Socially Vulnerable Populations

As in any state, there are communities and populations in New Jersey “that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life”, which makes them *underserved communities* as defined the federal Executive Order 13985. For the 2024 SHMP, New Jersey used three different datasets to identify communities that have been underserved, have experienced environmental injustice, and/or have socially vulnerable populations.

### **Social Vulnerability Index**

The Centers for Disease Control and Prevention (CDC) Social Vulnerability Index (SVI) identifies populations where residents may be in greatest need before, during, or after a hazard event or disaster based on census data. Four categories of vulnerability are included in the SVI, each calculated with component ACS data – socioeconomic status, household composition and disability, minority status and language, and housing and transportation ([Centers for Disease Control and Prevention and Agency for Toxic Substances and Disease Registry Social Vulnerability Index](#)). These ACS variables and associated categories are combined to assign each geography (in this case, 2020 census tracts) a percentile ranking for that variable, then those percentiles are summed to create an overall score within that category. Percentile rankings are assigned for each of the four categories and summed to create the overall Social Vulnerability Index. The four social vulnerability levels – Low, Low to Moderate, Moderate to High, and High – are defined by dividing all tracts in the state into quantiles based on the SVI’s distribution.

For the purposes of this analysis, Michael Baker assessed census tracts (2020) within New Jersey which met criteria to define ‘social vulnerability’ as greater than 0.6, defining ‘Moderate to High’ and ‘High’ risk tracts. A total of 866 tracts (40% of all tracts in the state) qualified as socially vulnerable to disaster risk. Distribution across the state was relatively standard, with all 21 counties within New Jersey having at least one tract predicted to be in greater need of support and recovery assistance post-disaster due to social vulnerability. The New Jersey counties with the highest share of census tracts ranking in ‘Moderate to High’ and ‘High’ categories of the SVI are Essex, Hudson, and Passaic Counties, each in the northern part of the state.

### **Overburdened Communities**

Overburdened Communities (OBC) are communities defined by the 2020 New Jersey Environmental Justice Law. Under this law, OBCs are geographies (defined at the Census Block Group level) in which there are:

- (1) at least 35% low-income households; or
- (2) at least 40% of the residents identifying as minority or as members of a State recognized tribal community; or
- (3) at least 40% of the households having limited English proficiency ([NJDEP, 2023](#)).

Like the CDC’s SVI, this community designation as an Overburdened Community is intended to identify communities which may be higher risk in the event of a disaster or extreme weather event; however, this designation has the added intent to identify communities which may need environmental justice more broadly.

NJDEPs environmental justice mapping tool “EJMAP” includes a layer that shows “adversely impacted” OBCs, which adds specific environmental and public health indicator information. For this assessment, Michael Baker analyzed census block groups within New Jersey using the broader demographic criteria listed above. There are 3,462 block groups (2020) qualified under OBC criteria—over half (52%) of all census block groups in the state. Distribution of these block groups is statewide, with each of New Jersey’s 21 counties having at least 5 block groups defined as an OBC. Counties with the highest share of OBC-designated block groups are clustered in northern New Jersey – Essex, Bergen, Hudson, Middlesex, and Union.

### **White House – Climate and Economic Justice Screening Tool**

Data from the White House’s Climate and Economic Justice Screening Tool (CEJST) is another resource used in this analysis to identify communities that are disadvantaged—marginalized, underserved, and overburdened by pollution. This data is used by federal agencies, including FEMA, to better identify areas that may benefit from the Justice40 Initiative, a program crafted

with the intention to confront and address decades of underinvestment in disadvantaged communities. By identifying geographies which meet criteria centered on population level and environmental indicators, the initiative aims to bring resources to those most impacted by climate change, pollution, and ongoing environmental hazards ([White House Council on Environmental Quality, 2022](#)).

A community is highlighted as disadvantaged according to the tool if it is within a census tract (2010) that is at or above the threshold for one or more environmental, climate, or other burdens, *and* at or above the threshold for an associated socioeconomic burden *or* if they are within the boundaries of a Federally Recognized Tribe. Census tracts that are surrounded by disadvantaged communities and at or above the 50<sup>th</sup> percentile for low income are also included in the data as disadvantaged.

The CEJST takes a wide variety of complex data into account to build the index. Environmental factors include projected loss rate and projected wildfire risk, energy costs and air quality, access to green space, legacy pollution and brownfield sites, traffic proximity and volume of traffic flows, and wastewater release points. Population level factors take health conditions and low life expectancy, historic community underinvestment, housing costs and quality, workforce participation, median incomes, education, and unemployment into account.

For this assessment, Michael Baker identified census tracts within New Jersey which are defined as ‘disadvantaged’ by the CEJST. There are 536 census tracts (2010) qualifying under these criteria, nearly 27% of all 2010 tracts in the state. All counties within the state of New Jersey are represented with at least 23 disadvantaged census tracts per county, showing relatively even distribution throughout the state.

### Summary

These three data sources allowed a statewide assessment of *underserved* communities throughout New Jersey. Each source integrates different nuances and definitions of what constitutes ‘underserved’, ‘overburdened’, ‘disadvantaged’, or ‘vulnerable’, leading to discrepancy in both the count of geographies and geographic coverage of communities meeting criteria. For example, the White House sourced CEJST integrates not only estimates of future risk (as in the SVI and NJDEP data) but historic burden into its calculation of disadvantage. Additionally, while the OBC and SVI indices allow for a diversity of environmental, population, and economic factors to qualify the geography as a whole, the CEJST requires an income limit within each geography to qualify. This may account for the smallest ratio of qualified geographies (27%) when compared to the higher representation of statewide communities for SVI and OBC designations. Still, every county in New Jersey is represented within each of these indices, showing underserved populations and vulnerable communities regardless of data source. These populations and those who represent them were engaged in the planning process through a series of stakeholder workshops including a Social Equity Listening Session held on June 21, 2023. These populations and those who represent them were engaged in the planning process through a series of stakeholder workshops including a social equity listening session. For more information, see section 2.0, Planning Process.

### Economy

According to the 2020 County Business Patterns for New Jersey, there are 232,761 business establishments in the state. The retail trade industry has the highest number of establishments, making up 13.0% of all businesses. Following retail trade is health care and social assistance, making up 12.4% of all businesses. The third highest industry is the professional, scientific, and technical services industry, making up 12.2% of all businesses. Table 3.0-4 provides 2020 industry and employment information.

**Table 3.0-4 Economic Census for the State of New Jersey (2020)**

Industry	Number of Establishments	Annual Payroll (\$1,000)	Number of Employees*
Agriculture, Forestry, Fishing & Hunting	206	\$46,693	1,025
Mining, Quarrying, and Oil and Gas Extraction	73	\$98,033	1,249
Utilities	389	\$2,395,092	18,327
Construction	21,656	\$12,025,364	165,366

Industry	Number of Establishments	Annual Payroll (\$1,000)	Number of Employees*
Manufacturing	7,065	\$14,477,915	221,768
Wholesale Trade	13,229	\$26,597,678	270,884
Retail Trade	30,165	\$14,697,690	463,891
Transportation and Warehousing	8,215	\$11,056,524	207,020
Information	3,854	\$9,113,730	85,372
Finance and Insurance	11,418	\$28,537,128	204,384
Real Estate and Rental and Leasing	9,966	\$4,007,079	64,123
Professional, Scientific, and Technical Services	28,334	\$34,640,497	338,602
Management of Companies and Enterprises	1,492	\$18,167,045	128,327
Administrative and Support and Waste Management and Remediation Services	14,199	\$15,274,351	355,100
Educational Services	3,966	\$4,278,087	111,756
Health Care and Social Assistance	28,890	\$33,004,977	625,613
Arts, Entertainment, and Recreation	3,889	\$1,808,038	67,791
Accommodation and Food Services	21,505	\$6,004,223	333,224
Other Services (except public administration)	23,819	\$4,778,588	155,479

Source: United States Census, 2022

\* This number only includes paid employees

### Tourism and Services Industries

Along New Jersey's 1,729 miles of shoreline (NOAA, 2011) there are 130 miles of beaches, many boardwalks, and casinos in Atlantic City. These amenities make New Jersey a popular tourist destination, especially during the summer season. Monmouth, Ocean, Atlantic, and Cape May Counties all see large summer population increases, especially along the coastline.

### Agriculture

The most recent agricultural data for New Jersey is from 2017. According to the 2017 data, New Jersey has a total of 9,883 farms and 734,084 acres of farmland. The average size of New Jersey farms is 74 acres. In 2017, crop sales totaled \$984,530,000, or 89.7% total market value of products sold. Livestock sales totaled \$113,421,000, or 10.3% total market value of products sold (United States Department of Agriculture, 2017). Hunterdon County has the largest number of farms out of all the counties in New Jersey, followed by Sussex County. Hunterdon County has the largest amount of land in farms with 101,290 acres, while Salem County has the highest average farm size at 126 acres. Refer to 3.0-5 for more details.

**Table 3.0-5 Census of Agriculture for New Jersey, by County (2017)**

County	Operated Farmland (Acres)	Number Of Farms	Average Farm Size (Acres)	Median Farm Size (Acres)
Atlantic	29,016	450	64	20
Bergen	1,051	74	14	7
Burlington	96,256	915	105	17
Camden	9,298	197	47	15
Cape May	8,135	164	50	19
Cumberland	66,256	560	118	26
Essex	191	22	9	6
Gloucester	49,381	580	85	17
Hudson	26	4	7	7
Hunterdon	101,290	1,604	63	17
Mercer	25,230	323	78	18
Middlesex	16,023	217	74	10
Monmouth	39,198	838	47	12

County	Operated Farmland (Acres)	Number Of Farms	Average Farm Size (Acres)	Median Farm Size (Acres)
Morris	14,514	418	35	12
Ocean	8,510	260	33	12
Passaic	1,893	89	21	12
Salem	98,239	781	126	25
Somerset	35,862	452	79	20
Sussex	59,766	1,008	59	18
Union	75	9	8	7
Warren	73,874	918	80	18
<b>State Total</b>	<b>734,084</b>	<b>9,883</b>	<b>74</b>	<b>16</b>

Source: USDA, 2017

### 3.0-4 ECOSYSTEMS AND NATURAL ASSETS

New Jersey’s ecosystems are central to its identity as the Garden State and quality of life. The health of these ecosystems directly affects the health and well-being of New Jersey residents who live and work near them, and the economies that rely on those ecosystems. The annual value of ecosystem services in New Jersey was estimated to be \$8-19 billion (NJDEP, 2021). Nature-based interventions can be less expensive alternatives to hazard mitigation or hard engineering measures. For example, some of the most valuable and cost-effective of these mitigation services come from wetlands, which also provide vital habitat and opportunities for recreation (NJDEP, 2021).

#### Natural Lands

##### *Wetlands (Coastal and Freshwater)*

A wetland is a unique ecosystem where the land is regularly saturated with water either permanently or seasonally. There are many different types of wetlands, including as bogs, marshes, and swamps, but all wetlands have three essential characteristics in common: water, saturated soil, and aquatic plant vegetation. Wetlands provide vital ecological and socioeconomic contributions to New Jersey including:

- Protecting drinking water by filtering out chemicals, pollutants, and sediments that would otherwise contaminate our waters.
- Providing natural flood control during heavy rains and snow melts.
- Providing critical habitats for the State’s fish and wildlife, including endangered, commercial and recreational species.
- Providing high quality open space for recreation and tourism.

Wetlands are found throughout New Jersey, covering 17% of the state’s total area (NJDEP, 2023), and they can be either coastal or freshwater. Coastal wetlands are routinely flooded by the tides of the ocean, rivers, streams, and bays. The water in these wetlands can be saltwater or a mix of salt and freshwater. Freshwater wetlands can be found along non-tidal streams, rivers, and creeks, and even in low-lying areas far from any waterway where water is provided through precipitation or groundwater. Significant wetland areas in New Jersey include the Meadowlands, the Great Swamp in Morris County, and the wetlands surrounding the Delaware and Barnegat Bays. Unfortunately, wetlands in New Jersey are highly vulnerable to both human and natural forces, especially sea level rise and development pressure.

##### *Forests*

Forests provide many ecosystem and socioeconomic benefits including wildlife habitat, food and water resources, recreational resources, and timber, as well as less visible services such as erosion control and carbon sequestration. Despite New Jersey’s status as the most densely populated state, traditional forests cover 40% of the land (NJDEP, 2023). These forests are mostly located in the Highlands and Pinelands regions of the state. Over half the Highlands region in the north of the state is forested. The sandy soils of the Pinelands in the south create a unique forest ecosystem, home to Wharton, Brendan T. Byrne, Penn, and Bass River state forests. Wharton State Forest is the largest state forest in New Jersey, encompassing over 110,000 acres in Atlantic, Burlington, and Camden Counties. Outside of these areas other significant forested areas include Stokes State Forest, the Delaware Water Gap National Recreation Area, and Worthington State Forest in the northwest portion of the state.

## Water Resources

### *Hydrography and Hydrology*

Numerous ponds, lakes, creeks, and rivers make up the waterscape of New Jersey. According to the United States Geological Survey 1,368 square miles, or 15.7% of New Jersey's total area is made up of water (USGS, 2018). There are more than 800 lakes and ponds, more than 100 rivers and creeks, and 127 miles of Atlantic Ocean coastline in the State. The major rivers of New Jersey include the: Delaware River, Hudson River, Raritan River, Passaic River, Rancocas Creek, Mullica River, Manasquan River, Great Egg Harbor River, and Maurice River. The Passaic River system, with its main stem approximately 80 miles long, is the longest river system within the State of New Jersey. Major lakes and reservoirs in the state include: Lake Hopatcong, Budd Lake, Culver Lake, Spruce Run Reservoir, and Round Valley Reservoir. Lake Hopatcong, which is approximately four-square miles in size, is the State's largest lake. New Jersey also has large bays, including the Delaware Bay, which is the largest bay in the State, but is only partially located within New Jersey. The Barnegat Bay is the largest bay located completely within New Jersey.

### *Water Supply*

New Jersey withdraws fresh water from three sources: surface water, and both confined and unconfined aquifers. On average, New Jersey gets 7% of its water from confined groundwater sources, 16% from unconfined groundwater sources, and 77% from surface water sources (NJDEP, 2017). Surface waters and aquifers in the Highlands region provides a source of water for 70% of the state's population (Highlands Council, 2023). Significant aquifers in the state include the Kirkwood-Cohansey aquifer system (the largest aquifer system in the state located throughout nearly the entire Coastal Plain), the Atlantic City 800-foot sand, the Wenonah-Mount Laurel Aquifer, the Englishtown Aquifer, and the Potomac-Raritan-Magorothy aquifer system.

New Jersey typically has ample precipitation on average and the State's geology allows the storage of large quantities of groundwater as well as supports large surface water reservoirs. Generally, New Jersey has sufficient water available to meet needs into the foreseeable future.

## Dunes and Beaches

Beaches are landscapes that provide benefits through habitat and breeding grounds, storm protection, aesthetic value, recreational resources, tourism, and water access. New Jersey has 127 miles of coastline along the Atlantic Ocean from the Raritan Bay to the Delaware Bays, most of which consists of beach. The beaches along the shore are a major driver of tourism and associated economic benefits in New Jersey, an industry which amounts to tens of billions of dollars in revenue a year (VisitNJ, 2023).

Dunes are dynamic and constantly changing ecosystems located along beaches that form a natural buffer between sea and land. Besides providing important habitat, sand dunes provide natural coastal protection against storm surge and high waves, thus preventing or reducing coastal flooding that causes damage to beach side communities. They also act as sand storage areas, supplying sand to eroded beaches. Dune coverage along the coast of the state is highly variable as most beaches are managed by small municipalities, private companies, or homeowners.

Dune and beach habitats are vulnerable to human impact. In New Jersey, intense development along the shore and the heavy use of the beaches by humans has reduced most of the dunes and the ecological services they provide.