

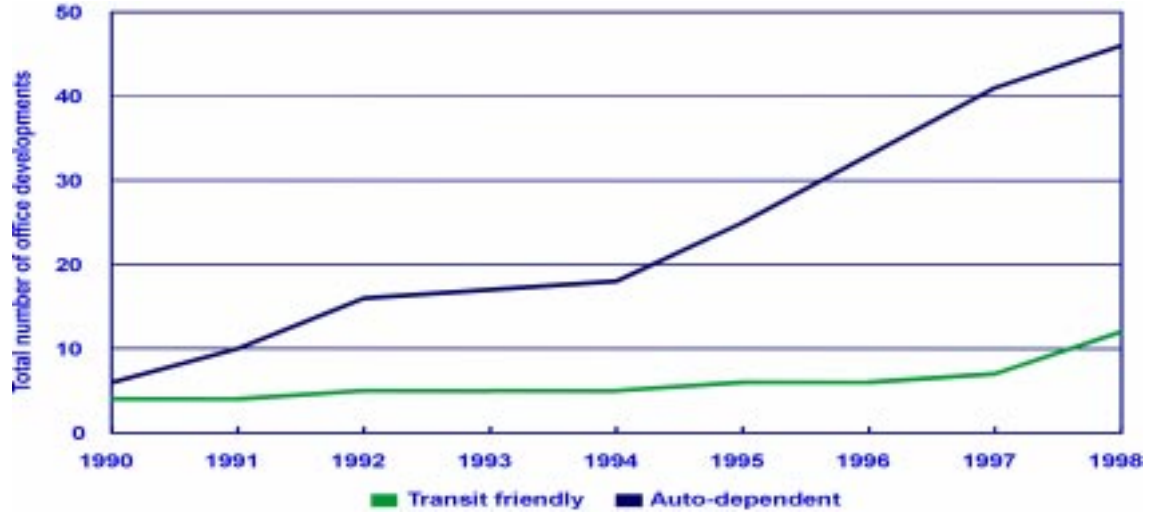
INDICATOR

28

## Workplace Transportation Options

Cumulative number of transit-friendly and auto-dependent large office developments built since 1990:

Auto-dependent developments increasing faster



### Importance

This indicator rates the largest new office buildings according to the transportation options available to those who will work there. When a major new office development is built, it reshapes the areas surrounding it. New roads, homes, and shopping often follow. If we can come and go only by car, we clog surrounding roads, pollute the air, and waste tens of thousands of hours every year. The location and design of office buildings count perhaps more than any other development decisions we make.

### Economic

The AAA estimates that it cost the average driver \$6,893 in 1998 to own one mid-sized (Taurus-type) car, and even more if you com-

mute more than the average distance of 288 miles per week. Automobile-centered development means we pay extra, too, for pollution, accidents, and construction of new roads. If we wish, we can save by avoiding such development. The side benefits will include improved energy efficiency, lower taxes, more competitive businesses, better air, and more options for getting around.

### Environmental

Pollution and land consumption from sprawling new development is one of the most serious environmental threats we face. The auto travel required to reach scattered suburban office buildings pollutes our air. When you look down on a typical suburban office building from the air, the building is

dwarfed by the parking lots surrounding it. The rainwater that runs off these parking lots is called “non-point source” pollution and has at least as large an impact as pollution from sewers and factories (point sources). We have done a good job in New Jersey of cleaning up our point sources, but non-point sources continue to grow as a problem, degrading our waterways.

### Social

Isolated, single-use developments do not foster a sense of place or of community. A lack of community, in turn, can exacerbate such problems as high crime rates and lack of political participation. Mixed office, retail, and service developments, on the other hand, help build diverse communities of people who live and work nearby.

### Things to think about

- Isolated office buildings discourage the development of public transport systems because they do not generate enough riders to justify a transit stop.
- The construction of large, isolated office buildings contributes to the decline of city centers.
- Not only do many of us have to drive to work, but also to the grocery store, to our friends’ homes, to schools, and in some cases to every single place we go.

### Knowledge gaps

This indicator only measures the state’s largest developments and might not reflect trends in different regions of the state, where smaller office buildings prevail. As such, it does not reflect the automobile dependence of people who work in other sectors of the economy.

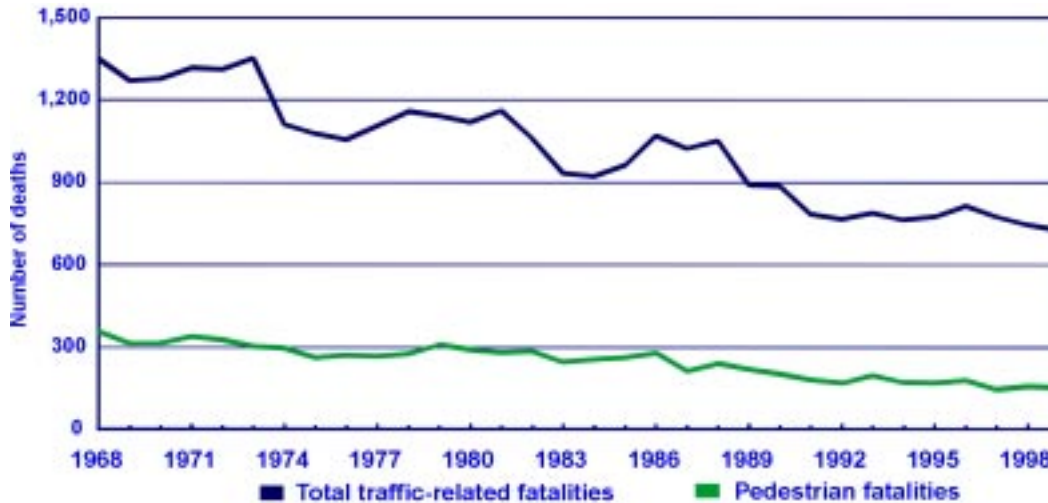
INDICATOR

29

# Traffic Fatalities

Annual number of reported deaths from traffic accidents involving motorists or pedestrians: Decreasing

# Traffic Fatalities



## Importance

Traffic fatalities are avoidable. They are also partially a byproduct of sprawling development and the long hours we spend driving. In the short term, however, we can reduce the number of accidents with such devices as traffic calming measures that slow speeds in crowded or residential neighborhoods.

## Economic

New Jersey has some of the highest auto insurance rates in the nation. This is due, in part, to the amount of driving we do and the number of accidents that result. We pay also for medical service, automobile repairs, and lost productive activity. If this money went instead to education or investment in capital assets for business growth, then we would receive returns of those investments far into the future. Instead, we pay high financial and emotional prices.

## Environmental

There is no obvious connection between traffic fatalities and the environment.

## Social

In traffic fatalities, we lose family, friends, and colleagues. Whether an accident takes the life of one or many in a community, deaths caused by traffic accidents have serious, long-term repercussions.

## TARGET

(from 1998 NJDOT's *New Jersey First: A Transportation Vision for the 21<sup>st</sup> Century*):

By 2010, cut total auto fatalities by 25 percent. 1998 level: 745  
Current level: 727

By 2010, cut pedestrian fatalities by 50 percent. 1998 level: 156  
Current level: 151

## Things to think about

- Car accidents took nearly as many American lives last year alone as the Vietnam War did throughout a decade.
- In the United States, or any country that is free of war, traffic fatalities are the largest cause of violent death.
- Safe driving can save more years of life than many medical procedures, including some cancer and heart disease treatments.

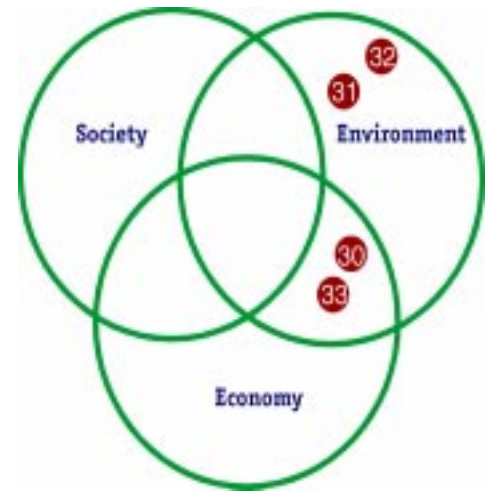
## Knowledge gaps

Young people have more car accidents than any other age group does, so traffic mishaps take an especially high toll when measured in lost years of life. The indicator does not measure lost years and thus does not reveal this important distinction. In addition, at almost all ages, men are much more prone to car accidents than women are. This discrepancy also does not show up in the indicator.

# Natural and Ecological Integrity

**GOAL:** Preserve and restore New Jersey’s ecosystems and the full complement of species that share the state with us.

**F**ew states have as many different types of habitat and ecosystems as New Jersey: bears and bald eagles populate our mountains, crabs and egrets live in our salt marshes, dolphins frolic off our shore, wild orchids bloom in our Pine Barrens. Unfortunately, much of this natural heritage is being threatened. We are addressing this in some ways by preserving land, conserving wetlands and the birds and other species that depend on them, and reducing pollution in rivers and coastal areas. Yet despite the efforts of many New Jerseyans, we face escalating threats to our biodiversity, primarily due to habitat loss. Reduced biodiversity has economic as well as environmental consequences. For example, a healthy and biologically diverse watershed cleanses water naturally, saving millions in water treatment.



## What we know

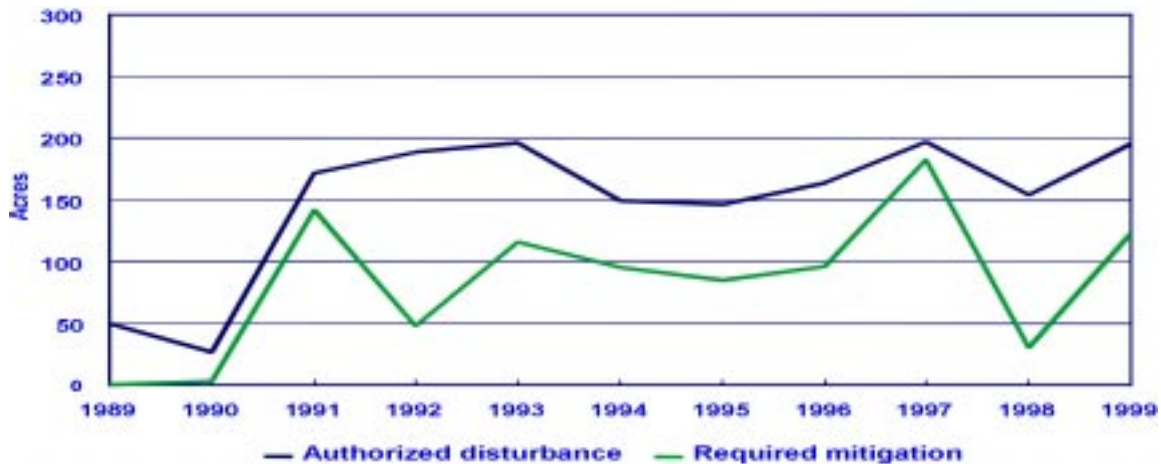
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## What we don't know

- We do not have essential basic indicators of the health of New Jersey’s ecosystems and the diversity of the plants and animals that live in them. This includes the amount of habitat left for each species.
- We do not know the thresholds beyond which the loss of species and habitat lead to the unraveling of ecosystems in ways that also undercut the stability of all life on Earth.
- When species like birds and fish decline, we do not know how much of that loss is due to changes in the ecology of our own state and how much of it is due to ecological changes in other places where these animals spend part of the year, including South America and other parts of the United States.

# Freshwater Wetland Impacts

The acres of freshwater wetlands permitted to be disturbed and required to be mitigated each year: Little recent change



## Importance

Wetlands or bogs and marshes – including the Great Swamp and the Meadowlands around Giants Stadium – are a particularly critical ecosystem. They filter water, protect us from floods, and provide habitat for a wide range of species. They are incubators supplying our sport and commercial fisheries. They are way stations for migrating birds. According to estimates, we have lost 20 to 39 percent of our freshwater wetlands since colonial times. Fortunately, with the passage of the State's Freshwater Wetlands Protection Act, the rate of freshwater wetland losses has been significantly reduced over the past 12 years. On average, we now permit development of fewer than 175 acres of freshwater wetlands each year, from the approximately 700,000 acres of freshwater wetlands remaining in our

state. Currently, mitigation is required to offset many authorized wetlands disturbances. On average, 84 acres of mitigation is required per year. Mitigation may include restoration and enhancement of existing wetlands, creation of new wetlands, purchases of credits in a mitigation bank, or contribution to the State's Wetlands Mitigation Fund.

## Economic

Wetlands act as natural filters for our ground water supply, reducing the need for expensive investments in water purification. Wetlands also mitigate floods by absorbing water and releasing it slowly, which reduces costs that we might otherwise pay for insurance and clean-up. As habitat for a rich variety of wildlife, wetlands attract tourists and bird watchers to our growing "eco-tourism" industry.

## Environmental

Wetlands support a high density and diversity of native and migratory animal, plant, and insect species. Many oceanic species rely on wetlands for some portion of their lives. Wetlands are one of the state's largest repositories of biological capital. Wetlands are also among the habitats most sensitive to disturbance.

## Social

Wetlands enhance our quality of life by contributing to our recreational opportunities. Hunting, fishing, and bird watching are activities dependent upon clean water and habitat. Birds and other species that rely on wetlands for habitat enhance our daily relationship with the natural environment.

## Things to think about

- Although our drinking water has remained relatively clean, the amount of work necessary to make it clean has increased over the years as nature's services of cleaning the water have declined with the loss of wetlands and other ecosystems.
- In addition to freshwater wetlands, New Jersey is also home to over 200,000 acres of coastal wetlands.

## TARGET

(from 1998 NJDEP Strategic Plan):

By 2005, there will be a net increase in wetland acreage and quality. (Net = wetlands loss minus wetlands created, restored, or enhanced.)

## Knowledge gaps

These data are based on permits to legally alter and fill in freshwater wetlands. Some wetlands are filled illegally while others slated for development with permits remain untouched. Many legally disturbed or filled wetlands are replaced with mitigated or man-made wetlands. Over time, mitigation is expected to produce additional functioning wetlands. Studies are underway to assess the success and viability of mitigated wetlands. There is a need for better ways to measure the net changes in wetlands acreage, the quality of existing wetlands, and the impacts of development near wetlands.

Note: See the Technical Appendix for a change in this indicator since the 1999 Sustainable State Project Report.

DATA SOURCE: NJ DEPARTMENT OF ENVIRONMENTAL PROTECTION

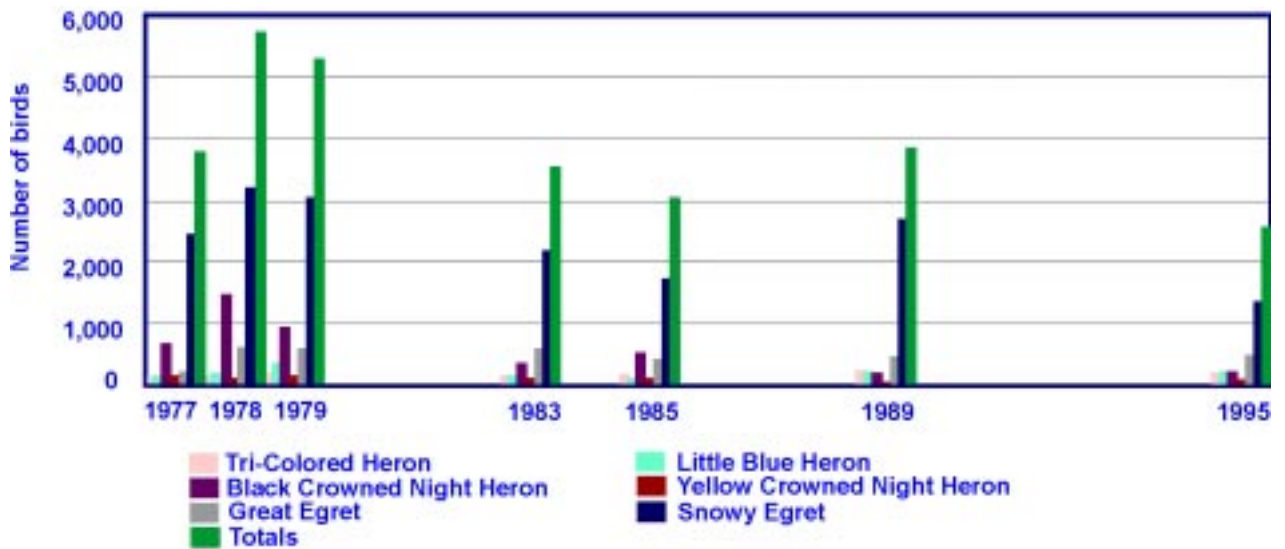
# Nesting Water Birds

INDICATOR

31

## Nesting Water Bird Populations

Population of nesting colonies of water birds: Decreasing



### Importance

Our populations of American egrets, night herons, and other water birds are declining. Water birds are generally at the top of the food chain, and so their well-being can serve as an indicator of the general health of the ecosystem on which they rely: in this case, our wetlands and shore. If water birds are declining, we can also infer that the species they eat, such as fish, amphibians, and insects, are also in trouble. This decline is due in part to the over-development of shoreline areas and wetlands.

### Economic

Bird watching is the fastest-growing outdoor sport in the

United States. This indicator is important to watch not only for the direct contribution of bird watchers to our economy, but because the habitat that water birds prefer is also the habitat preferred by vacationers seeking refuge from a busy world. If this habitat is lost, it will have other economic impacts, such as additional flooding, water supply degradation, and weakened fisheries.

### Environmental

Water birds react to many changes in the environment, including excessive human disturbance or disruption. Their decline alerts us to many environmental problems, from

pollution to habitat loss. They are good indicators of toxics because they are long-lived, feed high on the food chain, and are reproductively sensitive. As a result, they are a “plural indicator species.” Declining populations of indicator species can indicate an ecological unraveling that threatens our state’s natural capital as well as the clean air and water provided to us “for free” by nature.

### Social

Birds, like all of New Jersey’s wildlife, are part of our heritage and our memories. They are part of what it means to explore the back bays, lagoons, and marshes of our state and to participate in the tradition of experiencing nature.

### Knowledge gaps

These data account for a small number of species in a small section of New Jersey. We need population data for many other species of birds and animals for each of New Jersey’s many habitats and ecosystems. Since water birds are migratory, data are necessary to account for what happens to them after they leave New Jersey. A clearer understanding of the factors involved in water bird population decline would also be useful. Additional data are needed for this indicator, as this survey has not been conducted since 1995. However, resources to update the data are being pursued.

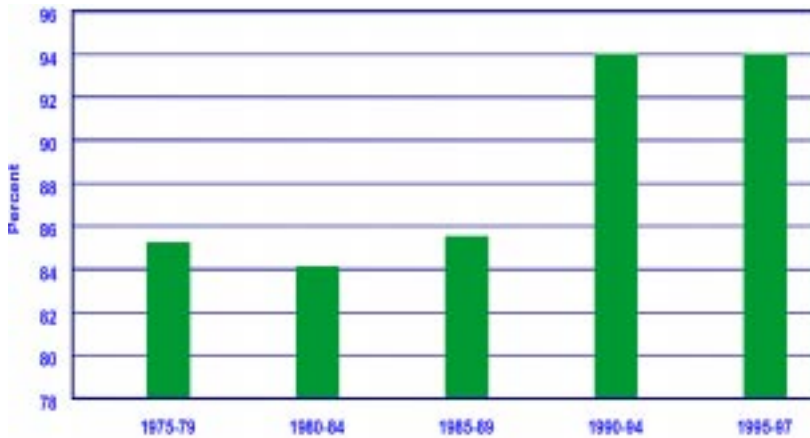
### Things to think about:

- Water birds such as herons and egrets were once almost wiped out by the millinery trade but made a great comeback once laws were put into place to protect them from hunting and trapping. Their current decline stems both from habitat loss, which may not be possible to reverse, as well as from human disturbance, excessive predation, and possibly exposure to contaminants and pesticides, which may be reversible.
- Water birds nest in large colonies and thus need large undisturbed areas for nesting and breeding.

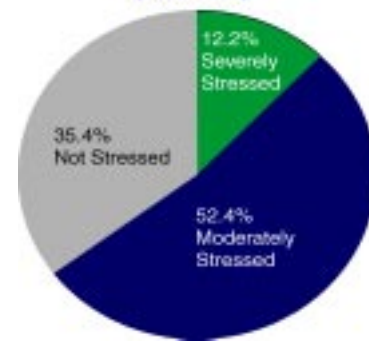
DATA SOURCE: NJ DEPARTMENT OF ENVIRONMENTAL PROTECTION

## River Health/Dissolved Oxygen

Percent of testing stations reporting acceptable levels of dissolved oxygen: Little recent change



Biological Conditions in NJ Rivers (1992-1996)



### Importance

Our river ecosystems survive only if they have enough dissolved oxygen. When large quantities of fertilizers and other pollution run off from our farms, cities and roads, then algae and bacteria grow quickly in our rivers and use up the oxygen. This process is known as “eutrophication.” Severe eutrophication can kill fish and other species and change the ecological balance of rivers.

### Economic

Our rivers are part of the state’s water system, from which we draw much of our drinking water. Our state has significant industries that depend on healthy rivers for tourism and for fishing. Some of the ocean fish harvested by New Jersey businesses are spawned and hatched in our rivers. Property values are higher adjacent to healthy bodies of water.

### Environmental

Rivers are particularly important ecosystems. They matter not only to a wide range of freshwater fish

and aquatic species, but also to many birds and insects and to ocean fish that spend parts of their lives in freshwater. River, or riparian, habitat is also among the most sensitive and the first to show damage from pollution and disturbance.

### Social

Healthy rivers provide valuable recreation to those who have access. They bring charm and pride to the communities they run through. Sadly, the poorest and most neglected communities may have the most polluted rivers.

### Things to think about

- New Jersey’s great cities, including Trenton, Paterson, Newark, Camden, Jersey City, and New Brunswick, were located intentionally on rivers. Each of these distressed cities has a distressed river running through it. Many of the best revitalization efforts are focusing on riverfront restoration.
- River levels of dissolved oxygen have improved dramatically in New Jersey over the last 20 years due to improvements in wastewater treatment. Continued improvement will require improved management of nonpoint source runoff from suburban development and farming.
- The pollution that causes eutrophication is usually not toxic pollution. Ordinary nutrients are among the substances that feed the algae and bacteria that use up the dissolved oxygen. For example, fertilized suburban lawns contribute to the excessive nutrients that pollute New Jersey’s water.
- Another method of assessing the health of the aquatic life in New Jersey’s rivers had shown that approximately one-third of the tested rivers are not stressed, approximately one-half are moderately stressed, and 12 percent are severely stressed. Recent resampling (1997-1999) of many of these rivers has shown little change in most retested areas.

### Knowledge gaps

The dissolved oxygen indicator does not tell us everything about river quality. In addition, relatively insignificant changes in the amount of oxygen can occasionally cause a station to drop below acceptable levels, yet the river may not truly be impaired. It is necessary to have data on river health that are consistently collected and carefully analyzed to provide a complete picture of water quality and biological health.

Note: See the Technical Appendix for a change in this indicator since the 1999 Sustainable State Project Report.

INDICATOR

33

## Marine Water Quality

Percent of shellfish habitat safe for harvesting: Increasing



### Importance

Shellfish are a very sensitive indicator of pollution because they eat by filtering whatever is floating in the coastal waters where they live. As a result, our ability to eat shellfish - or our need to declare them off limits - is an important indicator of water quality and ecosystem health. As the chart above shows, New Jersey has been successful in upgrading coastal water quality and opening up more areas for shellfish harvesting. In each of the past twelve years, we have been able to open up more acres of shellfish for harvest.

### Economic

As a coastal state, marine resources are important to New Jersey's economy. We have a vibrant commercial fishing industry, of which shellfish are a part. The commercial and sport fishing industries rely on clean water just as much as the shellfish industry. Water quality and fresh shellfish are important to tourism, which is the second largest industry in the state.

### Environmental

Maintaining marine water quality and habitat is essential to protecting the diversity of life in the ocean. As bottom dwellers and

filter feeders, shellfish are good indicator species for the quality of the water and the health of the marine ecosystem. Moreover, clean coastal waters reduce public health problems when we eat fish - and when we swim and play in this water.

### Social

Clean beaches and water provide safe opportunities for recreation and tourism in our coastal communities. Trips to the shore, and the opportunity to eat fresh seafood, are timeless leisure activities for many of us. Maintaining them preserves an important part of our heritage.

### Things to think about

- New Jersey is one of only five states that have been able to increase their number of harvestable estuarine acres since 1990.
- Suburban and urban runoff is one of the biggest remaining uncontrolled pollution sources contributing to harvest limitations.

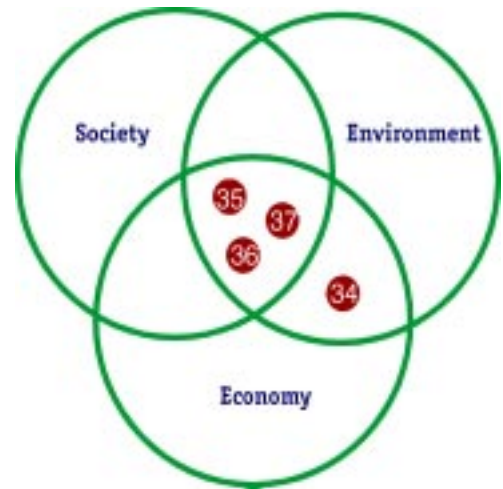
### Knowledge gaps

In general, our information concerning the health of marine ecosystems is poor. We still know little about ocean ecosystems and our many effects on them. We need a greater understanding of how pollutants enter our coastal waters, particularly from non-point sources such as stormwater runoff. We also need scientific study of how these substances affect marine ecosystems.

# Protected Natural Resources

## **GOAL:** Maintain New Jersey's natural resource base.

**O**ur state is rich in natural resources. The Pine Barrens supplied the Revolution with timber and iron. Our farmland and the aquifers that fill our streams, rivers, and lakes are among the richest in the world. But our farmland has dropped, from 2 million acres in 1950 to fewer than 1 million acres. In recent times, we've begun to protect our dwindling natural resources with mixed results. We've altered as much as 39 percent of the state's colonial wetlands, yet have improved our protection of the state's coastline from pollution. There's much left to do.



### **What we know**

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37 Preserved and developed land both increasing.....	page	59

### **What we don't know**

- The economic value of the services provided to us, for free, by our natural resources, such as clean water, air, and recreation.
- The amount of forested and undeveloped land that is consumed in New Jersey each year.
- The full extent of the actual quality and quantity of our natural water supply.
- The amount of energy we use, and that is possible to make, from sustainable, renewable sources.
- What natural resources we consume in New Jersey that are imported from other states and countries.



# Energy Consumption

INDICATOR

34

## Energy Consumption

Annual energy consumption: Increasing



### Importance

Our lifestyle and economy are dependent on the use of large quantities of energy to run our cars, appliances, factories, and homes. The vast majority of this energy production creates pollution, whether in the form of greenhouse gases, toxins, or radioactive waste. In fact, most air pollution comes, directly or indirectly, from the creation and consumption of energy. Perhaps the most troublesome aspect of our energy dependence is that most of our energy comes from burning fossil fuels like coal, oil, and gas that are finite and non-renewable.

### Economic

Increases in energy prices translate quickly into higher prices for goods and services at every level. Energy shortages have the power to plunge an economy into recession. With so much of our energy usage, especially transportation, dependent on foreign oil sources, our economy is not as secure as it could be. Technologies that use energy more efficiently can cut our risks and expenses impressively, but most companies, homes, and government agencies do not use them.

### Environmental

The combustion of coal, oil, or natural gas by power plants, motor vehicles, and other sources emits greenhouse gases that contribute to global warming. Most air pollution is the result of some kind of energy produc-

tion or consumption. In addition, the extraction and use of these sources of energy can radically alter local landscapes, and sometimes leads to oil spills in the ocean or accidents at power plants. There is not yet an accepted long-term solution for safe disposal of radioactive waste from nuclear power plants.

### Social

New Jersey is a major recipient of – and contributor to – air pollution. Just as pollution from upwind neighbors angers us, the pollution we emit angers our neighbors when it crosses into their states and countries. To voluntarily reduce the energy we consume will require cooperation among neighbors who carpool, families who remember to turn off lights, and consumers who buy efficient appliances and cars. Ending our unsustainable energy dependence will require the efforts of our entire society.

### Knowledge gaps

We do not yet have widely released, assessed, or accepted data on the percentage of our energy that comes from renewable, clean, or sustainable sources. As a result of energy deregulation, new data are becoming available through a new reporting requirement that provides consumers with a standard set of information about the environmental characteristics of energy they purchase.

### Things to think about

- Approximately 33 percent of the energy we consume in New Jersey is used for transportation.
- New and renewable sources of energy, such as wind and solar power, offer us impressive potential to pollute less while still living in whatever ways we choose. However, to reap these benefits we have to invest in developing new technology.
- More efficient automobiles, refrigerators, light bulbs, manufacturing processes, and machines of many kinds can cut our energy use and save money, without changing the ways that we live, but we have to choose to use these efficient technologies.



INDICATOR

35

# Farmland

## Total acres of farmland in New Jersey: Decreasing

Farmland



### Importance

New Jersey is called the Garden State because its soil and climate make it one of the most productive farming areas in the world. Our farms provide fresh local produce and beautiful vistas, and recharge our groundwater. Because farmland brings in more revenue than it costs in local services, it helps keep property taxes low. New Jersey's farmland is diminishing. Far from yielding to forests or parks, though, in many cases this former farmland has been paved and replaced by strip malls and tract housing.

### Economic

Agriculture is the third largest industry in New Jersey. To keep farming economically viable requires large continuous

blocks of farmland. New development often changes the character of rural areas and threatens to drive remaining farmers out of business. The loss of farmland to new residences frequently heralds property tax increases. As we compete nationally and internationally to attract top workers and businesses, we must prevail over competitors based in part on the quality of life that our surroundings offer. A state with too many strip malls will stand at a disadvantage.

### Environmental

Crops and farmland offer habitat for birds, other wildlife, and a host of insects and small creatures that perform functions like pollination and decomposition. Farmlands, when worked respon-

sibly, filter pollutants from the water and air, and even play a role in increasing the absorption of rains and preventing floods. Eating fresh local produce is healthy and reduces the energy required for long-haul transportation.

### Social

Attractive vistas and open spaces are associated with our state's farming tradition. The Garden State is becoming less and less of an apt description of New Jersey as the state loses its agricultural landbase. Instead, sprawling and homogeneous developments are driving the state's unique rural communities into extinction. Preserving our farmland preserves our heritage.

### Things to think about

- As of 1998, only 7 percent of the state's farmland had been preserved from development. The other 93 percent remains open to future development.
- Despite existing farmland preservation programs, other alternatives are needed for landowners who often face financial pressure to sell their farmland to commercial developers. They should have better incentives to sell it instead to other farmers, government, or to preservation groups.
- The sprawl created by subdivisions in former farming areas contributes to traffic congestion, longer drives, and air pollution.
- In 1998, New Jersey voters overwhelmingly passed a referendum to spend \$98 million per year for the next ten years to preserve one million acres of the state's remaining open space and farmland.

### Knowledge gaps

This indicator shows the amount of farmland, but not economic viability. We also have little data on the percent of our local and total food production, or other agricultural production, that comes from unsustainable and fossil-fuel dependent methods of farming.