

The Urgency on Climate Change

Hank Bitten, NJ Council for the Social Studies (October 2020)

Global Effects

One of the most serious impacts of climate change is how it will affect water resources around the world. Water is intimately tied to other resource and social issues such as food supply, health, industry, transportation and ecosystem integrity. [Source](#)

Case Studies: ([From the World Resources Institute](#))

[Mexico](#)

Mexico produces just 20% of its energy from clean sources, while over 65% of its energy is generated by fossil fuels. We need to reduce our GHG emissions by promoting the use of clean and renewable energies that will also help us reach those in most need, while creating competitive, low carbon economies. More than three-quarters of Mexico's [avocado production](#) occurs in the state of Michoacán, where the resource-intensive crop has already been associated with environmental and social problems. Avocado production drove [30-40%](#) of [recent deforestation](#) in Michoacán. These local forests are important for biodiversity, livelihoods and for providing the catchment basins that supply water to local communities and Mexico City. Orchards have also begun edging into protected areas, including the [Monarch Butterfly Biosphere Reserve](#), where native vegetation is paramount for the insect's survival.

[India](#)

India is quickly becoming an economic, technological and diplomatic leader. Yet this growth has come at a cost. Rapid urbanization is placing a burden on infrastructure, energy consumption and public services. Already the [fourth-largest economy](#), India is the world's [third-largest greenhouse gas emitter](#) and [fourth-largest electricity consumer](#). The economic and development decisions that the country makes over the next few decades will pose profound implications for the global environment.

[China](#)

China's size and rapid growth have made it an economic and political powerhouse. But while these advances transformed the country's economy and lifted [more than 500 million people](#) out of poverty, they've come with environmental challenges. China is a leading emitter of greenhouse gases. The country [burns](#) almost as much coal as the rest of the world combined—and has [more than 350 new coal plants](#) slated for development. Nearly [38 percent](#) of China's major lakes and [30 percent](#) of its largest rivers are so polluted they're unsafe for use.

[Brazil](#)

With immense biodiversity, a wealth of natural resources and a diverse and robust economy, Brazil is emerging as a global market. Yet the country—[world's ninth-largest economy](#)—also faces environmental and social pressures that could exacerbate with continued economic development. A growing middle class increased Brazil's energy-related emissions by [more than 21 percent](#) from 2005-2010. Already, 85 percent of the country's citizens reside in cities, with all net population growth expected to occur in cities over the next 30 years.

[Indonesia](#)

Indonesia is a rich archipelago with an abundance of natural resources. At the same time, the country is the world's sixth-largest emitter of greenhouse gases, mainly due conversion of its forests and carbon-rich peat lands to agricultural fields. These shifts in land use also have ecological and social consequences. Indonesia's rainforests—the world's third largest—are home to more than 3,000 known species of animals, and 29,000 species of plants, and the livelihoods of 50-60 million people depend directly on these ecosystems.

[Africa](#)

Africa is at a crossroads. Its economies are growing, but most of the continent's 54 countries are still on the verge of economic and urban transformation. This gives Africa enormous potential to overcome the example set by other continents and develop in a more sustainable manner. Despite improvements in quality of life over the past two decades, almost 60 percent of sub-Saharan Africans still experience **deprivations in human development** ranging from malnutrition to lack of electricity to limited education opportunities. Climate change impacts such as more frequent floods and droughts are threatening years of hard-won development progress. As more people flock to cities, they are ballooning in a rapid, unplanned manner, often relying on fossil fuels to keep pace. And the **ecosystems that more than 70 percent of rural Africans rely on for their livelihoods** are threatened like never before. With Africa's population expected to double to approximately 2.5 billion by 2050, sustaining economic growth is essential. But for this to be possible, a lot needs to change.

[Oceans](#)

The Ocean adds \$2.5 trillion each year to the global economy, feeds 3 billion people, is home to more than half the world's species, produces half the planet's oxygen and absorbs a quarter of all carbon dioxide emissions. Yet it is a treasure in peril. Once considered vast and inexhaustible, the Ocean is being exploited in ways that were unimaginable a few decades ago. Over-fishing, plastic pollution, ocean warming and acidification and more threaten to undermine the ability of the Ocean to underpin human well-being and life on Earth as we know it.

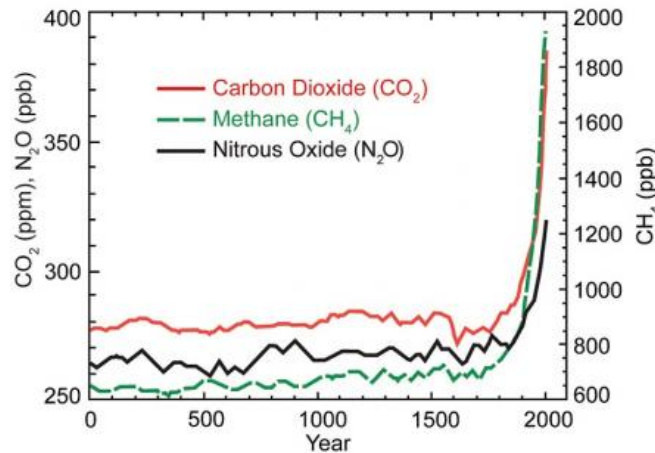
What is climate change?

The Earth's average temperature has risen by 1.5 degrees Fahrenheit over the past century and is projected to rise up to 8.6 degrees Fahrenheit over the next 100 years if steps are not taken to reduce greenhouse gas emissions. Climate change refers to a significant shift in the measures of climate (such as temperature, precipitation and wind patterns), lasting for an extended period of time. Small changes in the average temperature of the planet can translate to large and potentially dangerous shifts in climate and weather. This change in temperature is largely due to human activities, such as the burning of fossil fuels, transportation and deforestation. The urgency of being aware of the effects of climate change is that the changes we are experiencing from human activity are happening at the same time that climate changes from natural cycles are happening.

The current warming is occurring roughly **ten times faster** than the average rate since the end of the last interglacial period (NASA 2020). According to a United Nations report, (United Nations 2020, p.5), industrialization, deforestation, and large-scale agriculture have contributed to greenhouse gas levels in

the atmosphere not seen in three million years. Transportation is the No. 1 source of greenhouse gas emissions in New Jersey.

New Jersey's average temperature is already 3.5 degrees higher than the first records from 1895. Continued warming at historically unprecedented levels is projected, with the state's average annual temperature expected to rise another 4.1 to 5.7 degrees Fahrenheit by 2050.



How Serious is Climate Change in New Jersey?

Sea Levels - Sea-levels are increasing at a greater rate in New Jersey than other parts of the world. By 2050, there is a 50% chance that sea-level rise will meet or exceed 1.4 feet and a 17% chance it will exceed 2.1 feet. Those levels may increase to 3 or 5 feet by the end of the century. It is extremely likely that Atlantic City will experience "sunny day flooding" 95 days a year, (25% of the year) and a 50% chance it will experience 355 days a year, by 2100 (under a moderate emission scenario).

Water Quality - Water supplies will be stressed from the increase in the growing season and extreme temperatures expected due to climate change. Surface and groundwater quality will be impaired as increased nutrients and contaminants enter waters due to runoff from more intense rain events. Rising sea levels may lead to increased saltwater intrusion in New Jersey aquifers where wells are over pumped and freshwater intakes and aquifer recharge areas may be threatened if sea-level rise pushes the salt front further up rivers. If rivers rise from a substantial increase in precipitation, sanitary sewers may backup and overflow if the discharge point is above the waterline. [Harmful algal blooms in New Jersey's lakes](#) may increase in frequency and intensity, disrupting swimming and fishing, and posing risks to the state's drinking water supply reservoirs.

Wetlands - Some freshwater wetlands may be lost due to inundation with saltwater and our tidal wetlands may not gain elevation at a rate that equals the rate of sea-level rise causing some to be lost with rising sea-levels. Increased flooding and salinity are projected to lead to a loss of 92% of brackish marshes, 32% of tidal swamps, and 6% of tidal fresh marshes in the Delaware Estuary by 2100. The loss of coastal wetland and forest habitats will result in carbon losses and increase New Jersey's net greenhouse gas emissions.

Freshwater Systems - Freshwater fish, like brook trout, that need cold-water habitats are expected to lose habitat as water temperatures increase due to climate change. Reptiles are sensitive to temperature changes and their reproduction could be negatively affected as temperatures increase.

Marine Systems - Current climate changes could result in more “dead zones” from hypoxic events, which are of particular concern for summer flounder which is New Jersey’s largest recreational fish species. Many commercially important shellfish species including hard clams, scallops, and oysters will develop thinner and frailer shells due to ocean acidification. As temperatures increase, invasive species like the clinging jellyfish are likely to increase.

Air Quality - The effects of climate change are likely to contribute to increased respiratory and cardiovascular health problems, like asthma and hay fever, and a greater number of premature deaths. Environmental degradation from climate induced increases in air pollution will reduce visibility and cause damage to crops and forests.

Agriculture - The productivity of crops and livestock are expected to change due to the climate-induced changes from an increase in temperature and precipitation patterns. New Jersey may become unsuitable for specialty crops like blueberries and cranberries in the future as higher temperatures reduce necessary winter chills for these crops. The most valuable crop in New Jersey is blueberries and it is our state fruit. It contributed 79.4 million in revenue in 2018. New Jersey is the third largest producer of cranberries in the United States with 22 million in revenue in 2018. The income from blueberries and cranberries is about \$100 million annually.

Forests - The Southern pine beetle is an early example of the destruction of invasive pests that can occur due to climate change impacts in New Jersey. There will likely an increase in the frequency of large fires due to the hot, dry periods that will result from increased temperatures.

Terrestrial Systems - Climate change is likely to facilitate expansion of invasive plant species. 29% of New Jersey’s bird species are vulnerable to climate change, including the American Goldfinch which is the state bird of New Jersey. Saltmarsh Sparrows, a globally endangered species, may become nearly extinct as soon as 2040 (20 years) due to habitat loss from sea-level rise. Heatwaves are expected to impact larger areas, with more frequency and longer duration in the next 25-30 years resulting in a 55% increase in summer heat-related deaths.

Annual precipitation in New Jersey is expected to increase by 4% to 11% by 2050 with an increase in local flooding and droughts may occur more frequently due to the expected changes in precipitation patterns. Tropical storms have the potential to increase in intensity due to the warmer atmosphere and warmer oceans that will occur with climate change.

The information above is documented in the [2020 Scientific Report on Climate Change in New Jersey](#) (pp.44-98)

Changes in Precipitation - On average, New Jersey receives 46 inches of precipitation annually. There is a north to south gradient for precipitation where the north to central portion of the state averages 49 inches of precipitation annually while the coastal and southern regions average 44 and 45 inches, respectively. New Jersey is becoming wetter in recent decades. In the northern part of New Jersey, the average precipitation increased over 5 inches from the 1895-1970 period to the 1971-2000 period. In southern New Jersey, the average precipitation increased about 2 inches when comparing the same periods. To date, 2018 was the wettest year on record with a total of approximately 65 inches of

precipitation. Although increased precipitation is projected for New Jersey's future climate, there is considerable uncertainty with respect to the magnitude of change from the baseline, as well as the seasonality of the change, both of which remain active areas of research. Since 1998, the State has experienced a string of extreme events including Hurricane/Superstorm Sandy, which struck New Jersey in October 2012. During the 12-month period from October 2015 to September 2016, New Jersey experienced the 9th driest March and its 8th driest August in the last twenty-nine years. [Source](#)

Changes in Temperature - Rising temperatures are expected to have human health impacts, including increased heat stress, increased levels of ground-level ozone, accelerated secondary fine particle formation, and facilitation of the northern spread of insects carrying arthropod-borne viruses, particularly due to increased temperatures in the winter season.

Heat stress is of special concern for vulnerable urban populations. Climate models predict an increase in the number of days per year with temperatures above 90°F in the New York City metro area, with a potentially significant impact on human health due to heat stress. By 2080, the number of days above 90°F are projected to range from 24 to 75 days compared to the 1971-2000 baseline of 10 days.³⁰

The frequency, duration, maximum temperature, and intensity of heat waves are also projected to increase through the 21st century. Natural ecosystems in New Jersey would also be impacted by warmer temperatures and associated changes in the water cycle. These changes could lead to loss of critical habitat, further stresses on some already threatened and endangered species, impacts on water supply, agriculture, and fisheries, more intense rain events, more frequent periods of extended dryness, and continued increases in fires, pests, disease pathogens, and invasive weed species.

The ten warmest calendar years on record have occurred since 1990 while the ten coldest years all occurred before 1940.

Eight of the top ten warmest summers have occurred since 1999 based on the period of 1895 to the present, with 2016 being the fourth hottest summer on record.

The warmest year on record occurred in 2012 when the average annual temperature was 4.1°F (2.3°C) above the long-term average and 3.0°F (1.7°C) above the 30-year normal.

Impact on our Oceans - The Ocean adds \$2.5 trillion each year to the global economy, feeds 3 billion people, is home to more than half the world's species, produces half the planet's oxygen and absorbs a quarter of all carbon dioxide emissions. Yet it is a treasure in peril. [Source](#)

To date, human activities have caused approximately 1°C of global warming since the Industrial Revolution; this warming will likely reach 1.5°C between 2030 and 2052 if current activities continue. While these differences seem small, the consequences are not. Scientists now predict large differences between current conditions and those likely to occur between 1.5°C and 2°C. By 2100, average global sea level rise would be around 0.1 meter lower with global warming of 1.5°C compared to 2°C. This seemingly small difference means that up to 10 million fewer people would be exposed to the related risks of flooding, storm damage and coastal displacement. This is especially relevant for the millions of people living on small islands and in low-lying coastal areas and deltas.

For the ocean, the risks are also projected to be substantially lower at 1.5°C than at 2°C. Most striking, coral reefs suffer a 70–90% loss at 1.5°C, but are entirely destroyed at 2°C. Studies have shown that, at the lower loss level, with continued decreased temperatures, corals can still recover. The risk of irreversible loss of many other marine and coastal ecosystems increases sharply with rate of warming, and becomes especially stark at 2°C or more.

Risks to marine biodiversity, fisheries, ocean ecosystems, and the vital functions and services they provide to humans, also increase substantially at 2°C. Should we fail to secure a 1.5°C future, acidification and warming are predicted to act synergistically—producing stronger effects working together than they could alone—to decrease the growth, development, calcification, survival and abundance of a broad range of species, from algae to fish. For example, at 2°C, loss of global annual catch for marine fisheries would be twice that predicted under a 1.5 °C world. These types of differences would be catastrophic for both the ocean and people alike. [Source](#)

What you can do!

The information below is from the NJ Department of Environmental Protection report.

(www.nj.gov/dep/climatechange/action.html) Jeanne Herb, executive director of environmental analysis and communications group at Rutgers University’s Bloustein School of Planning, noted New Jersey has a long way to go to achieve the state’s goal of reducing greenhouse gas emissions by 80 percent from 2006 levels by 2050. ***“To achieve the state’s 2050 limit, we need to reduce emissions by 75 percent below today’s levels,”*** she told the committee. [Source](#)

Learn your carbon footprint

The first step in knowing how to reduce your carbon footprint is learning what yours is. Use either one of these calculators to get started. [Carbon Calculator](#) or [Household Carbon Footprint Calculator](#)

Change to energy efficient light bulbs

Even just changing 5 of your most frequently used light bulbs to [Energy Star](#) qualified products can save up to \$70 a year on energy bills, and have a powerful impact on the environment. They use about 75% less energy than standard lighting. Learn how to [reduce energy usage in your dorm room](#), and even showcase your ENERGY STAR, energy efficient lighting, office equipment, and home electronics.

Drive Green

The majority (42%) of New Jersey’s Greenhouse Gas emissions come from transportation. Do your part to reduce emissions by purchasing the most energy-efficient vehicle that meets your family’s needs. See the car-buying guides at <https://www.fueleconomy.gov/feg/findacar.shtml>. Check out [Drive Green New Jersey](#) and [EPA’s Green Vehicle Guide](#) to learn more!

Upgrade to energy efficient appliances

Look for the [Energy Star](#) label when purchasing items for the home such as washers and dryers, office equipment and electronics. Over their lifetimes, products in your home that have earned the Energy Star

label can reduce greenhouse gas emissions by about 130,000 pounds, which is equivalent to taking 12 cars off the road for one year, saving you approximately \$11,000 on energy bills. New Jersey residents can take advantage of the [New Jersey Clean Energy Program](#) rebates and incentives to upgrade their appliances to energy star products!

Smart heating and cooling

Update heating and air conditioning systems to an energy efficient model, make sure that the system is regularly maintained and fix air leaks and drafts with proper insulation and weather stripping. By taking these steps, you can save up to 20% on heating and cooling energy costs. Learn about [heating and cooling degree days](#) to help yourself remain energy efficient, and further reduce your energy costs by making the most of the New Jersey Clean Energy [COOLAdvantage Rebate Program](#) and the [WARMAdvantage Rebate Program](#) to help fund HVAC upgrades.

Incorporate the 3 R's into your home: Reduce, Reuse, Recycle

It is the law to recycle in New Jersey! By practicing all 3 of the R's in your household, you conserve energy, reduce the amount of material ending up in landfills, and reduce pollution and greenhouse gas emissions from the extraction, manufacturing, and disposal of waste. Check out the [NJDEP Residential Recycling](#) webpage to learn more!

Smart use of water

Conserving water not only helps the environment by saving water overall, but it also reduces greenhouse gas emissions due to the amount of energy it takes to pump, treat, and heat water. Do simple things like turn the faucet off while brushing your teeth and fix a leaky toilet. Invest in new fixtures with the [WaterSense](#) label to ensure you're purchasing water-efficient products. For landscaping, only water when needed and do it at the coolest part of the day. For more tips on how to conserve water inside and outside of your home visit the [NJDEP Every Drop Counts](#) webpage.

Invest in Solar Power

By installing [solar panels](#) on your home, you not only will save money on your electric bill, but you will use less electricity from grid sources, which typically have higher emissions. Electricity production is the source of approximately 16% of greenhouse gas emissions in New Jersey! Learn about more solar incentives [here](#). Check out the [NJDEP Solar Siting Analysis](#) to learn about the potential for solar in your community.

Plant and Protect Trees

When you plant trees, you directly reduce your carbon footprint (because trees sequester CO₂), and potentially save energy. Trees and vegetation lower surface and air temperatures up to 9°F by providing shade and through evapotranspiration. Take advantage of free and low-cost tree seedlings from the [NJDEP Forest Service](#) to plant more trees on your property. If you own over 5 acres of land you'd like to protect, consider participating in the [NJDEP Forest Stewardship Program](#). Learn about NJDEP's Urban and Community Forestry program [here](#).

For Elementary and Middle School Students

Learn and Explore

Learn about our changing climate and what you can do to help! Check out [NASA's Climate Kids Webpage](#), where you can explore the world, our environment and what you can do to protect it. Talk to your parent/guardian and teachers about how you can act locally to mitigate the impacts of climate change. This may include encouraging your school to reduce and compost food waste, participate in community clean up events, or start a school vegetable or pollinator garden. Need ideas for what actions your school can take? Visit [Sustainable Jersey for Schools](#) to help get you started. Consider becoming a [schoolyard steward](#). Learn about the stewardship projects that New Jersey middle and elementary school students carried out on their school properties and in their communities to reduce the impacts of flooding from storms, a weather condition influenced by climate change. There is no age limit for being a climate hero!

Help your school become an ENERGY STAR

Inquire about your school's energy usage and find out how your school measures up to other schools nationwide using [Energy Star's Portfolio Manager Tool](#). Your school may earn the ENERGY STAR if it qualifies as the top performer. And remember, even small energy choices add up. Turn off lights, TVs, and computers, when you do not need them to cut your energy usage. Unplug any electronic gadget you can turn on with a remote, such as TVs, DVD players, and gaming systems, all of which use power even when they are shut off.

Use your Voice to learn and become an engaged citizen

Learn how your local and state government representatives are voting on climate actions, and let them know you care about the world they are leaving to you. There is currently a landmark U.S. federal climate lawsuit where youths now ages 10 to 21 argue that the federal government is violating their constitutional rights by failing to act on climate change. You are never too young to act.

Walk or Ride your Bike

Instead of asking for a ride, walk or ride your bike for short trips. Since its always more fun to walk together, consider organizing a "walking school bus" for your school. To learn how, visit www.walkingschoolbus.org.

For High School Students

Organize or Join your School Environmental Club

Get involved in your existing environmental club, or inquire about how you can start your own. Encourage your school to become certified as a Green School with Sustainable Jersey.

Volunteer in your community

Find out about community clean ups, forest conservation efforts, and sustainability events in your area, post flyers and network with fellow students about participating in local environmental actions together.

Help your school become an ENERGY STAR

Inquire about your school's energy usage and find out how your school measures up to other schools nationwide using Energy Star's Portfolio Manager Tool. Remember to turn off lights and electronics when not in use to cut energy use and greenhouse gas emissions. Your school may earn the ENERGY STAR if it qualifies as the top performer.

Explore Environmentally Friendly Solutions

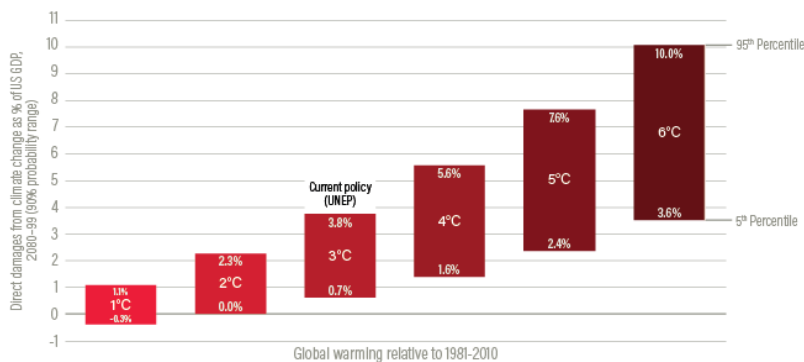
Explore six real world scenarios faced by New Jersey's coastal municipalities that have community hazards due to being located near tidal wetlands. Tidal wetlands are often overlooked but can be invaluable for reducing flooding from coastal storms and sea level rise, both symptoms of climate change. Students are challenged to research and design their own solutions for these sites then compare their work with the actual work that was done at the sites by professionals. To learn more, go to [Ecological Design Challenges](#).

Drive Green


The majority (42%) of New Jersey's Greenhouse Gas Emissions come from transportation. Do your part to reduce emissions by purchasing electric vehicles and alternative fuel vehicles. Strive to carpool, use public transportation, walk or ride your bike before driving solo. Check out [Drive Green](#) New Jersey and EPA's Green Vehicle Guide to learn more!

Charts and Graphs

U.S. Economic Damages at Different Levels of Global Warming

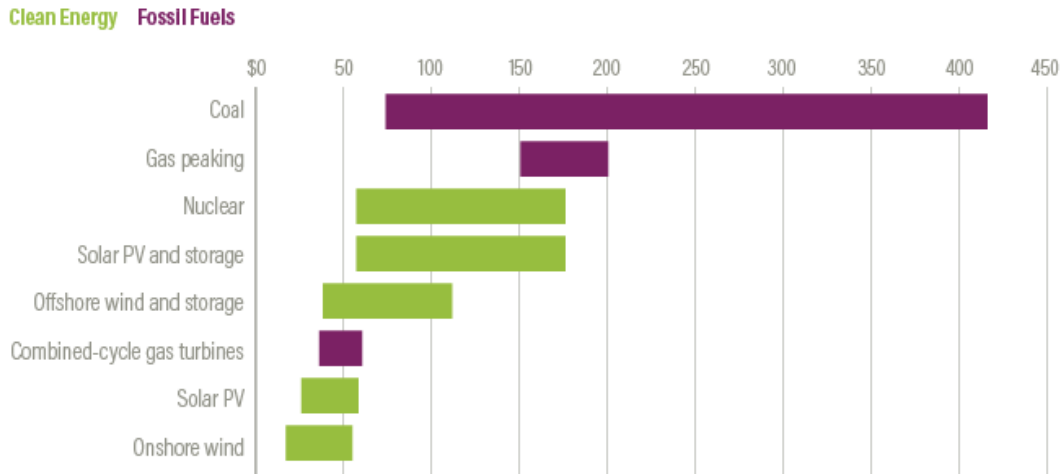


Source: Hsiang et al, 2017; UNEP, 2019.
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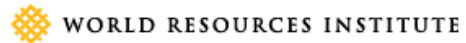
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[Source](#)

Levelized Cost of Electricity Comparison, 2019

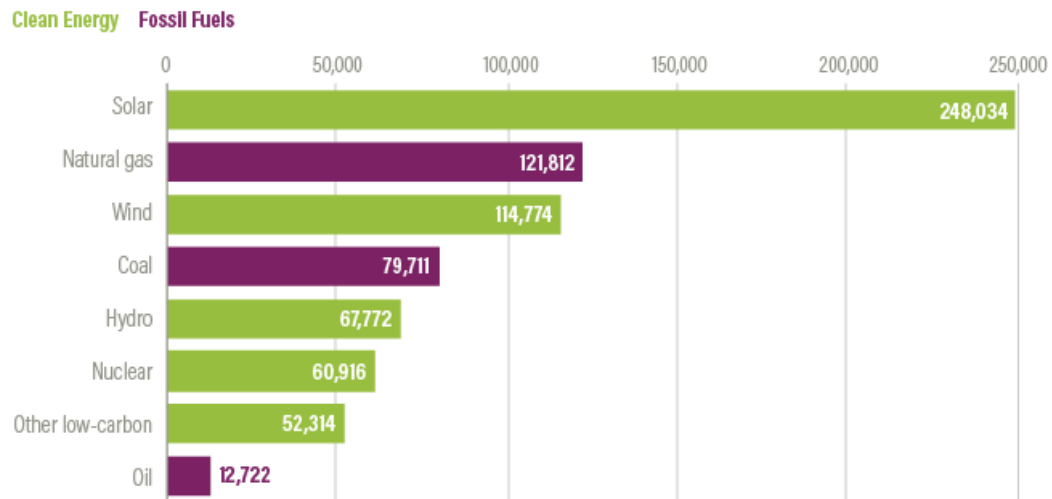


Source: Lazard, 2019; BNEF and BCSE, 2020.
20.07.22



Costs are falling in other sectors as well. For example, electric cars and SUVs are already cheaper to operate than gasoline or diesel vehicles — even with low gas prices due to the coronavirus — and they are expected to reach purchase price parity during the mid-2020s. Battery storage, which is crucial to the deployment of electric vehicles and addressing the variability of wind and solar energy, has seen a dramatic drop in prices, from \$1,100 per kilowatt-hour (kWh) in 2010 to \$156/kWh in 2019.

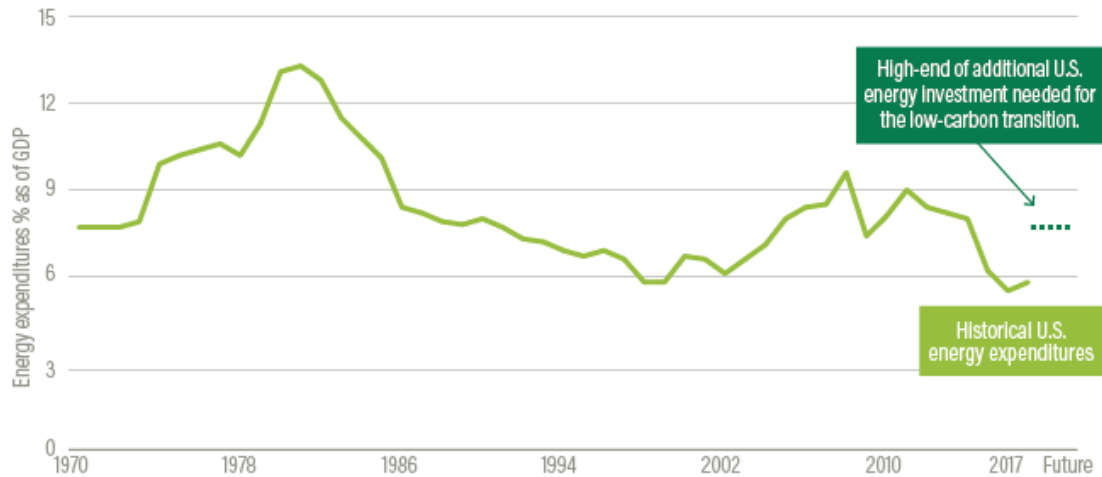
U.S. Power Generation Jobs, 2019




Source: NASEO & EFi, 2020.
20.07.22



Total Energy Spending as Share of U.S. GDP

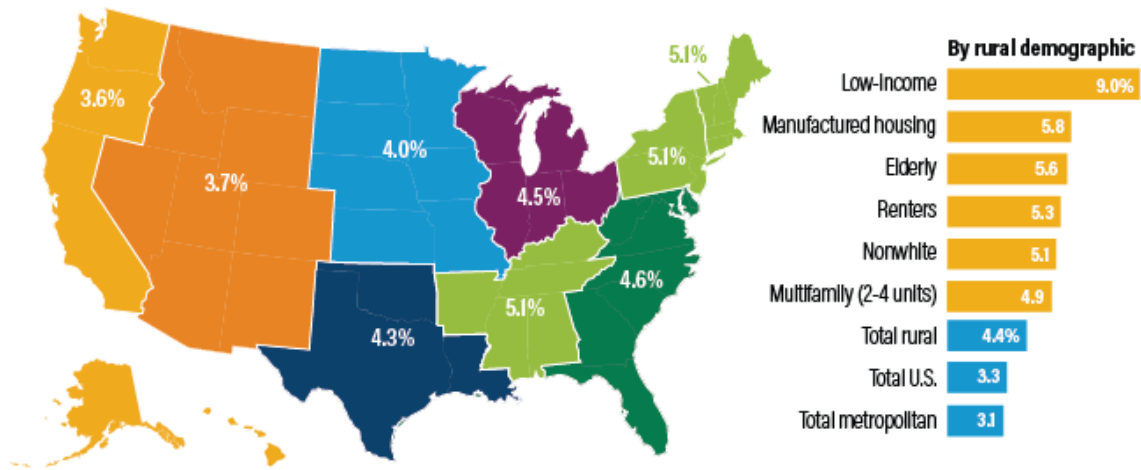


Source: US EIA, n.d; WRI.
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Decarbonization will require new investment in infrastructure such as clean power plants, green buildings, and electric vehicles, among others. A range of studies estimate that ambitious climate action will require additional energy investments equivalent to 2% of GDP at the most. One of the newest studies estimated that the United States would experience net savings rather than net expenditures, with the additional clean energy investment needs outweighed by fossil fuel spending reductions.

Rural energy burden (share of income spent on electricity and heating bills)



Source: ACEEE, 2018.
20.07.22

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41 U.S. States and Washington, D.C. Are Reducing Emissions While Growing GDP

RANK	STATE	(2005-2017)		RANK	STATE	(2005-2017)	
		CHANGE IN EMISSIONS	CHANGE IN GDP			CHANGE IN EMISSIONS	CHANGE IN GDP
1	Maryland	↓ -38%	↑ 18%	22	Michigan	↓ -20%	↑ 2%
2	New Hampshire	↓ -37%	↑ 15%	23	South Carolina	↓ -20%	↑ 21%
3	Dist. of Columbia	↓ -33%	↑ 21%	24	Kansas	↓ -19%	↑ 24%
4	Maine	↓ -33%	↑ 5%	25	West Virginia	↓ -19%	↑ 7%
5	Alaska	↓ -29%	↑ 17%	26	New Mexico	↓ -18%	↑ 9%
6	Georgia	↓ -28%	↑ 16%	27	Illinois	↓ -17%	↑ 10%
7	Nevada	↓ -27%	↑ 3%	28	Vermont	↓ -14%	↑ 9%
8	Delaware	↓ -27%	↑ 5%	29	Missouri	↓ -13%	↑ 40%
9	North Carolina	↓ -25%	↑ 19%	30	Montana	↓ -13%	↑ 6%
10	Indiana	↓ -25%	↑ 13%	31	Minnesota	↓ -13%	↑ 21%
11	New York	↓ -25%	↑ 21%	32	Utah	↓ -13%	↑ 15%
12	Massachusetts	↓ -24%	↑ 9%	33	Florida	↓ -13%	↑ 11%
13	Ohio	↓ -25%	↑ 26%	34	Oklahoma	↓ -13%	↑ 34%
14	Alabama	↓ -24%	↑ 6%	35	Wisconsin	↓ -12%	↑ 12%
15	Kentucky	↓ -24%	↑ 9%	36	Arizona	↓ -11%	↑ 14%
16	Connecticut	↓ -24%	↑ 0.5%	37	Rhode Island	↓ -10%	↑ 1%
17	Virginia	↓ -24%	↑ 12%	38	Colorado	↓ -9%	↑ 31%
18	Hawaii	↓ -23%	↑ 18%	39	Oregon	↓ -5%	↑ 17%
19	Pennsylvania	↓ -23%	↑ 18%	40	California	↓ -6%	↑ 32%
20	Tennessee	↓ -22%	↑ 19%	41	Iowa	↓ -6%	↑ 31%
21	New Jersey	↓ -21%	↑ 6%	42	Wyoming	↓ -4%	↑ 15%

Source: US EIA, 2019. US BEA, 2020. WRI.
20.07.22



[Source](#)

Resources

New Jersey

[Climate Data for New Jersey](#)

[NJ Spotlight](#) (4/26/19)

[North Jersey.com](#) (7/13/20)

Global

[David Suzuki Foundation](#)

[Earth Day.org](#)

[United Nations](#)

[World Resources Institute](#)

[NASA](#)

[Earth Observatory](#) (Columbia University)

[Clinton Foundation](#)

[Ocean Conservatory](#)

Videos

[Baseline 2020: Climate Change Beyond a Human Lifetime](#) (15 min)

[The New Urgency of Climate Change](#) (video: TED Talk with Al Gore) (57 min)

[Climate Change is Bigger Disaster Than the Coronavirus](#) (Bill Gates 9 min)

[New Warning Over Climate Change from Siberian Arctic](#) (BBC) (4 min)

[How Climate Change Affects Wildfires](#) (David Kanter NYU Environmental Studies) (3 min)

[Global Warming 1880-2019](#) (NASA) (30 sec.)