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FACT SHEET: What Climate Change Means for TENNESSEE and the Southeast and Caribbean



Today, the Obama Administration released the third U.S. National Climate Assessment – the most comprehensive scientific assessment ever generated of climate change and its impacts across every region of America and major sectors of the U.S. economy. The findings in this National Climate Assessment underscore the need for urgent action to combat the threats from climate change, protect American citizens and communities today, and build a sustainable future for our kids and grandkids.

The National Climate Assessment is a key deliverable of President Obama’s Climate Action Plan to cut carbon pollution, prepare America’s communities for climate-change impacts, and lead international efforts to address this global challenge. Importantly, the plan acknowledges that even as we act to reduce the greenhouse-gas pollution that is driving climate change, we must also empower the Nation’s states, communities, businesses, and decision makers with the information they need prepare for climate impacts already underway.

The Obama Administration has already taken a number of steps to deliver on that commitment to states, regions, and communities across America. In the past year alone, these efforts have included: establishing a Task Force of State, Local, and Tribal Leaders on Climate Preparedness and Resilience to advise the Administration on how the Federal Government can respond to the needs of communities nationwide that are dealing with the impacts of climate change; launching a Climate Data Initiative to bring together extensive open government data with strong commitments from the private and philanthropic sectors to develop planning and resilience tools for communities; and establishing seven new “climate hubs” across the country to help farmers and ranchers adapt their operations to a changing climate.

TENNESSEE is part of the National Climate Assessment’s U.S. Southeast and Caribbean Region. The regional phenomena identified by the Assessment may not occur in every state that is part of a particular region. According to the third U.S. National Climate Assessment Highlights report:

“The Southeast and Caribbean region is exceptionally vulnerable to sea level rise, extreme heat events, hurricanes, and decreased water availability. The geographic distribution of these impacts and vulnerabilities is uneven, since the region encompasses a wide range of environments, from the Appalachian Mountains to the coastal plains. The region is home to more than 80 million people and some of the fastest-growing metropolitan areas, three of which are along the coast and vulnerable to sea level rise and storm surge. The Gulf and Atlantic coasts are major producers of seafood and home to seven major ports that are also vulnerable.

The Southeast is a major energy producer of coal, crude oil, and natural gas, and is the highest energy user of any of the National Climate Assessment regions.

The Southeast warmed during the early part of last century, cooled for a few decades, and is now warming again. Temperatures across the region are expected to increase in the future. Major consequences include significant increases in the number of hot days (95°F or above) and decreases in freezing events. Higher temperatures contribute to the formation of harmful air pollutants and allergens. Higher temperatures are also projected to reduce livestock and crop productivity. Climate change is expected to increase harmful blooms of algae and several disease-causing agents in inland and coastal waters. The number of Category 4 and 5 hurricanes in the North Atlantic and the amount of rain falling in very heavy precipitation events have increased over recent decades, and further increases are projected.” (NCA Highlights, p. 72)

Regional Findings of the Third U.S. National Climate Assessment: SOUTHEAST

- “Sea level rise poses widespread and continuing threats to both natural and built environments and to the regional economy.
- Increasing temperatures and the associated increase in frequency, intensity, and duration of extreme heat events will affect public health, natural and built environments, energy, agriculture, and forestry.
- Decreased water availability, exacerbated by population growth and land-use change, will continue to increase competition for water and affect the region's economy and unique ecosystems.” (NCA, Ch. 17: Southeast)

Selected Findings and Information from the Third U.S. National Climate Assessment Relevant to TENNESSEE

- **Temperature:** “Heat stress adversely affects dairy and livestock production. Optimal temperatures for milk production are between 40°F and 75°F, and additional heat stress could shift dairy production northward. A 10% decline in livestock yield is projected across the Southeast with a 9°F increase in temperatures (applied as an incremental uniform increase in temperature between 1990 and 2060), related mainly to warmer summers.” (NCA, Ch. 17: Southeast)
- **Water Availability:** Water supply and demand in the Southeast and Caribbean are influenced by many changing factors, including climate (for example, temperature increases that contribute to increased transpiration from plants and evaporation from soils and water bodies), population, and land use. While change in projected precipitation for this region has high uncertainty, there is still a reasonable expectation that there will be reduced water availability due to the increased evaporative losses resulting from rising temperatures alone. (NCA, Ch. 17: Southeast)
- **Transportation:** “Transportation systems are already experiencing costly climate change related impacts. Many inland states - for example, Vermont, Tennessee, Iowa, and Missouri - have experienced severe precipitation events, hail, and flooding during the past three

years, damaging roads, bridges, and rail systems and the vehicles that use them.” (NCA, Ch. 5: Transportation)

- **Forests:** “Forest disturbances caused by insects and pathogens are altered by climate changes due to factors such as increased tree stress, shifting phenology, and altered insect and pathogen lifecycles. Current knowledge provides limited insights into specific impacts on epidemics, associated tree growth and mortality, and economic loss in the Southeast, though the overall extent and virulence of some insects and pathogens have been on the rise (for example, Hemlock Woolly Adelgid in the Southern Appalachians), while recent declines in southern pine beetle (*Dendroctonus frontalis* Zimmerman) epidemics in Louisiana and East Texas have been attributed to rising temperatures. Due to southern forests’ vast size and the high cost of management options, adaptation strategies are limited, except through post-epidemic management responses – for example, sanitation cuts and species replacement.” (NCA, Ch. 17: Southeast)
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Examples of Efforts Underway in TENNESSEE to Address Climate Change

In **TENNESSEE**, many efforts are already underway to mitigate and respond to the impacts of climate change, including:

Preparing Communities for the Consequences of Climate Change:

Many important preparedness, resilience, and adaptation efforts are already being led by local, state, and regional entities across the country. Mechanisms being used by local governments to prepare for climate change include: land-use planning; provisions to protect infrastructure and ecosystems; regulations related to the design and construction of buildings, road, and bridges; and preparation for emergency response and recovery. These local adaptation planning and actions are unfolding in municipalities of different sizes, and regional agencies and regional aggregations of governments are also taking actions. And States have also become important actors in efforts related to climate change.

- Mayor Madeline Rogero (Knoxville, TN) serves on the President’s State, Local and Tribal Leaders Task Force for Climate Preparedness and Resilience. Mayor Rogero champions efforts to make Knoxville a more sustainable and resilient community, including initiatives to increase the energy efficiency of low-income and affordable housing, conserve open space and wildlife habitat, and expand infrastructure for bicyclists, pedestrians, and transit users. Mayor Rogero was honored at the 24th annual Energy Efficiency Forum for her exemplary leadership in instituting and advancing energy efficiency in the United States and abroad.

Cutting Carbon Pollution in TENNESSEE:

In 2012, power plants and major industrial facilities in Tennessee emitted more than 50 million metric tons of carbon pollution – that’s equal to the yearly pollution from more than 11 million cars. Through the Climate Action Plan and state initiatives, there are many efforts already underway to mitigate and respond to the impacts of climate change in Tennessee, including:

- ***Investing in Clean Energy:*** Since President Obama took office, the U.S. increased solar-electricity generation by more than ten-fold and tripled electricity production from wind power. Since 2009, the Administration has supported tens of thousands of renewable energy projects throughout the country, including 325 in Tennessee, generating enough energy to power more than 12,000 homes.
- ***Improving Efficiency:*** Using less energy to power our homes, businesses and vehicles is critical to building a clean and secure energy future. President Obama has made essential investments in research and development for energy efficiency advances, and set new standards to make the things we use every day – from cars to microwaves – more efficient.
 - President Obama established the toughest fuel economy standards for passenger vehicles in U.S. history. These standards will double the fuel efficiency of our cars and trucks by 2025, saving the average driver more than \$8,000 over the lifetime of a 2025 vehicle and cutting carbon pollution.
 - Since October 2009, the Department of Energy and the Department of Housing and Urban Development have jointly completed energy upgrades nearly two million homes across the country, saving many families more than \$400 on their heating and cooling bills in the first year alone.
 - As part of the President's Better Buildings Challenge, the city of Knoxville committed to reducing energy intensity 20 percent by 2020 in 2.06 million square feet of its buildings.

For more information about the third U.S. National Climate Assessment, please visit www.globalchange.gov or contact engagement@usgcrp.gov.

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