

# HOW CLIMATE CHANGE AFFECTS YOU

## SINKING VILLAGES

### ALASKA

Along coastlines, once permanently frozen ground is thawing and crumbling under homes. Significant portions of the town of Newtok, for example, may be lost in 10 years, says a report by the U.S. Army Corps of Engineers. Twenty-five other communities are at risk.

## WILDFIRES

### THE ROCKY MOUNTAINS

Drier conditions are helping set the stage for fires. National Interagency Fire Center data show that nine of the worst 10 years of fires have occurred since 2000 (as measured by acreage burned). This coincides with the warmest years on record.

## INVASIVE WEEDS

### MIDWEST & NORTH

Kudzu, the weed known as "the vine that ate the South" (it can grow a foot per day), is creeping northward, partially due to warmer winters. The weed—which chokes young trees and power lines—is now in Illinois and has crossed into Canada.

## FARMLAND DROUGHT

### CALIFORNIA

The state, which leads the U.S. in produce production, gets a third of its H<sub>2</sub>O for farmland from snowpack that piles up in the mountains in winter and melts in spring, when needed for crops. But due to warmer winters, less snow has been falling, and spring runoff has declined up to 13%, leaving less H<sub>2</sub>O for hungry fields.

## RENEWABLE ELECTRICITY

### CALIFORNIA

CA has a renewable energy standard: Utilities must provide at least 33% from clean sources (e.g., wind, solar) by 2020.

## TOO HOT FOR TAKEOFF

When air is too hot, it may not be dense enough to lift planes. Several flights have been canceled when temps hit 119°F.

## WIND POWER

### TEXAS

Texas has more installed wind capacity than any other state. Wind power generated more than 10% of its electricity in 2014 (29% at one point in the spring!).

## 12 CITIES GOING GREEN

### 1 PORTLAND, OR

The city has the highest bicycle commuting rate of any large city, thanks in part to 319 miles of bike paths.

### 2 SAN DIEGO

Its Miramar landfill keeps more than 700,000 tons of CO<sub>2</sub> equivalent (CO<sub>2</sub>e) emissions out of the air each year by capturing methane gas.

### 3 PHOENIX

About 149,000 utility customers use a pay-as-you-go program that shows, in real time, how much they use, empowering them to shrink their usage 12% on average.

### 4 BOULDER, CO

Many city residents use the Eco Pass system to ride mass transit for free; they drive 47% fewer vehicle miles, cutting emissions in half.

### 5 DALLAS

New buildings over 10,000 sq. ft. need LEED (Leadership in Energy & Environmental Design) certification. (LEED is an industry green-building standard.)

### 6 GREENSBURG, KS

In 2007, a tornado leveled 95% of the city. It rebuilt using low-carbon choices (green space, eco-buildings) and is the first city to use all-LED streetlights.

**SOME OF THE DRAMATIC CHANGES** we hear about seem so far away (case in point: melting polar ice caps), but some surprising effects of climate change are closer to home. To find out what's really going on across our country, we consulted scientists and local officials. Here's a snapshot from coast to coast—plus, places that are doing cool things to help Mother Earth and her inhabitants. Then turn the page for a quick lesson in Climate Change 101.

#### LOWER EMISSIONS

CT, DE, MA, MD, ME, NH, NY, RI, VT

These make up the Regional Greenhouse Gas Initiative, the first U.S. mandatory program to reduce power-sector carbon pollution (they've cut it by over 40% since 2005).

#### STORM-WATER FLOODING

##### NEW YORK CITY

Storm waters can be expected to breach Lower Manhattan's seawall once every four or five years. In the 19th century, that was only likely to happen once every 100 to 400 years.

#### BUH-BYE, ORIOLES

Baltimore is getting too warm for its mascot. The birds may be forced north by 2080.

#### SUPER IVY

Rising CO<sub>2</sub> levels help poison ivy grow faster and make its oil more toxic.

#### LYME TICKS

##### NORTH & MIDWEST

Lyme disease is mostly in the Northeast, where infected deer ticks abound. But ticks are moving into the Midwest and Canada, thanks in part to climate shifts, which increase their survival rate. The CDC puts new cases at 300,000 a year, and the incidence of Lyme has more than doubled since 1991.

#### STRONGER HURRICANES

##### GULF & ATLANTIC COASTS

The warmer the sea, the stronger the hurricane, and surface temps in the past 30 years have been the highest since reliable observations began in 1880, upping the risk of Category 4 and 5 storms. Flooding in FL, LA and TX is up as sea levels rise because warmer water takes up more space.

**SOURCES:** Katharine Hayhoe, Ph.D., associate professor and director, Climate Science Center, Texas Tech University; John Rogers, coauthor of *Cooler Smarter* and senior energy analyst, Union of Concerned Scientists; Garrett Fitzgerald, Strategic Partnerships Advisor, Urban Sustainability Directors Network; Gernot Wagner, Ph.D., coauthor of *Climate Shock*, lead senior economist, Environmental Defense Fund; Mike Bellamente, executive director, Climate Counts

#### 7 SPIRIT LAKE, IA

A wind turbine powers the elementary and middle schools. Surplus electricity is sold to fund education programs.

#### 8 NEW ORLEANS

Green Light New Orleans (founded by musician Andreas Hoffmann) provides homeowners with free energy-efficient lightbulbs and vegetable gardens.

#### 9 CHICAGO

Much of its power is bought coal-free; this city also has 509 planted roofs (which help to keep buildings cooler in summer, saving energy and AC costs).

#### 10 CLEVELAND

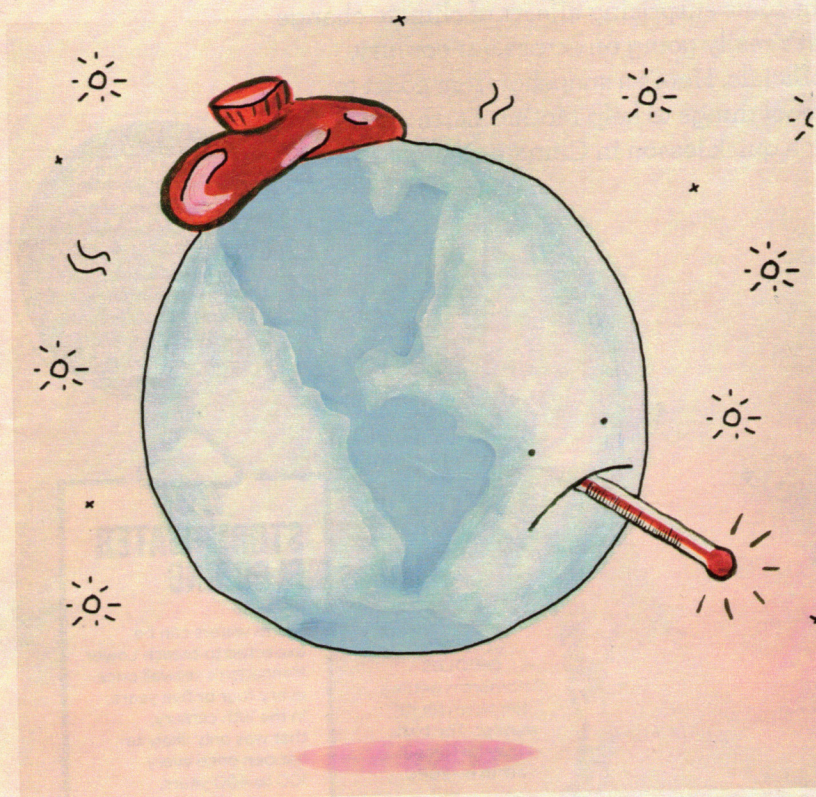
City programs have transformed 405 vacant lots into orchards and parks, which help retain storm water and reduce urban heat island effects.

#### 11 CORAL GABLES, FL

Based on the kids' initiative, G.W. Carver Middle School cut more than \$49,700 in energy costs by painting the roof white, weather stripping doors and more.

#### 12 NORTHAMPTON, MA

Developers are required to plant street trees that can thrive in the city now and also in a climate currently found several hundred miles to the south.



## 6 CLIMATE MYTHS DEBUNKED

It's tempting to dismiss all the talk as hype, but experts say not to fall for these misconceptions

**MYTH** If global warming were an issue, blizzards would be on the wane.

**FACT:** We're seeing stronger blizzards because of global warming. As the air, land and sea get warmer, more H<sub>2</sub>O evaporates. So when a storm comes along, there's more water to pick up and dump, meaning more snow when it's cold out.

**MYTH** It's all a natural cycle; humans can't affect something as big as Earth.

**FACT:** Yes, Earth's temperature goes up and down with the ice ages. But scientists think temperatures should be dropping in preparation for the next

ice age, and instead they're soaring. According to NASA, thermometers around the world find that the average global temp has been rising since 1880; 2014 was the hottest year yet. And before the Industrial Era, natural levels of CO<sub>2</sub> were about 275 parts per million (ppm). Now, due to all the coal, oil and gas we've burned, levels have topped 400 ppm. The explanation? Us.

**MYTH** It may be real, but it's not affecting my family right now.

**FACT:** Climate change is already hitting our pocketbooks: U.S. losses due to natural disasters like storms,

floods, droughts and wildfires rose between 1980 and 2014. Your family may also be affected by worsening allergies from plants that bloom earlier and produce more pollen due to climate change.

**MYTH** Living "green" takes too much effort and cost.

**FACT:** Many of the reforms that help Earth can also ease your bottom line, and they're simple to implement. Food waste is the largest component of landfill, so by reducing it—eat leftovers!—we can all significantly lessen methane-emitting landfill material and save cash. More efficient appliances and cars may cost extra up front, but they use so much less energy over the lifetime of the product that you come out ahead.

**MYTH** Even if we did do something about it, China's building a coal plant a week. Why bother?

**FACT:** Our per-person CO<sub>2</sub> emissions are almost three times those of China. Yes, China has a lot more people, but the Chinese are doing something about it: They're number two in the world in solar power (we're number five), and they're also beating us on wind power—they're first, we're second.

**MYTH** I'm just one person. I can't make much of a difference.

**FACT:** Our lifestyle decisions control a shocking 75% of emissions in the U.S. If we all improved the energy efficiency of our homes by just 10%, it would be the equivalent of taking some 25 million cars off the road! And as voters, we control a portion of the other 25%. Check out the nonprofit Citizens' Climate Lobby ([citizensclimatelobby.org](http://citizensclimatelobby.org)), which can help you write letters to Congress in support of Earth-friendly legislation.

## CLIMATE SCIENCE 101

We asked Katharine Hayhoe, director of the Climate Science Center at Texas Tech University, for a quick lesson:

### WHY IS A WARMING PLANET A BAD THING?

It alters weather patterns. We see more extreme and/or frequent events—droughts, floods, hurricanes, blizzards—affecting food production, water supply, the economy and our health.

### WHAT CAUSES WARMING?

Greenhouse gases, which act like a blanket, trapping Earth's heat and keeping us warmer. The most harmful gases are CO<sub>2</sub> and methane; both exist naturally, so we already have a perfect blanket keeping us at the right temp. But man-made emissions are tipping the scale, trapping too much heat.

### HOW DO WE CREATE GREENHOUSE GASES?

Most U.S. electricity is powered by fossil fuels (coal, natural gas); when they're burned at power plants, their CO<sub>2</sub> gets dumped into the air. Ditto when we burn gasoline (oil) for cars. Methane's released by the production of fossil fuels, livestock (yep, cow flatulence) and landfills' decaying waste.

### HOW DO WE CUT EMISSIONS?

Reduce the use of fossil fuels: Drive less, opt for fuel-efficient cars and use less electricity (via energy-smart appliances and LED/CFL lightbulbs). Recycle, eat less red meat and look for companies that tap sun and wind energy. Measure your own carbon footprint at [earthday.org/footprint-calculator](http://earthday.org/footprint-calculator).



## GREEN THUMBS-UP



Kudos to these companies for recognizing that being environmentally responsible is the right thing to do—and good for business. They've earned praise from the Institute and our environmental consultants, Eric Wilmanns and Mike Brown of Brown and Wilmanns Environmental.



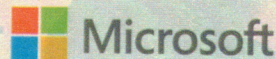
### H<sub>2</sub>O SAVERS

Water is one of our most valuable natural resources, and the apparel and footwear industries use lots of it: According to Nike, it takes 700 gallons of the wet stuff to grow enough cotton to make just one T-shirt. To cut consumption, the sportswear brand tracks H<sub>2</sub>O runoff from contracted manufacturing plants and uses a water-free dyeing facility.



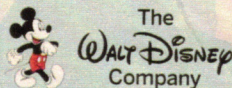
### FRIENDS OF FARMERS

Most companies aren't as environmentally clued in as the Vermont-based ice cream maker, which has started using byproducts created during production for some of its power needs. It also offers a Caring Dairy program that teaches farmers how to do their work more sustainably.



### CARBON-FOOTPRINT CUTTERS

Microsoft charges each of its departments fees for emissions related to everything from office energy use to employee air travel. Not only is this an incentive for workers to be energy-conscious, but it also creates funds that go to projects that help offset the company's carbon footprint—like its 2013 partnership with a Texas wind farm.



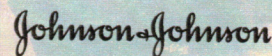
### TRASH BUSTERS

By the end of 2014, Disney was diverting from landfills 48% of operational solid waste generated at its owned facilities and theme parks around the world—through recycling, composting and having waste converted into energy. By 2020, the entertainment giant aims to raise that figure to 60%.



### FUEL-EFFICIENCY STARS

To build greener cars, the Detroit automaker is developing cutting-edge technologies, more aerodynamic designs and engines that run on a range of energies—from electricity to natural gas to biofuels.



### HOLISTIC HEROES

This company is reducing CO<sub>2</sub> emissions from its factories and delivery fleet, cutting water consumption, diverting trash from landfills and developing more sustainable packaging techniques—all to address its global environmental impact.