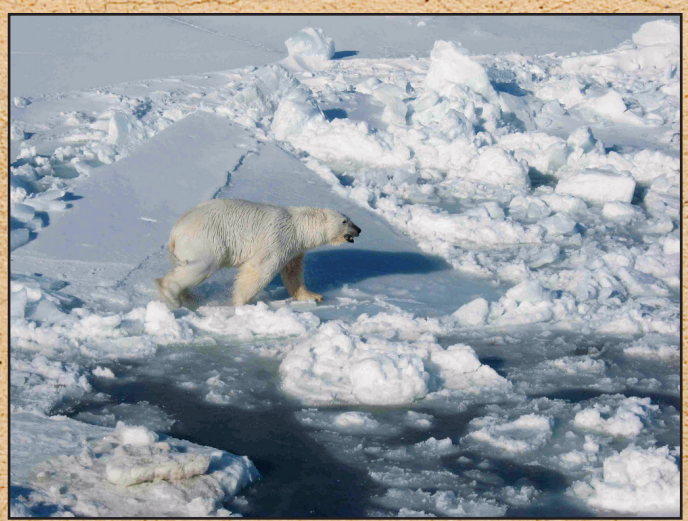
CLIMATE CHANGE
A TIME TO ACT



Dear Californian,

The science is indisputable: Global warming is real, it is happening and the effects are becoming apparent on the planet. And we know the primary cause of global warming: manmade greenhouse gas emissions produced by burning fossil fuels like coal and oil.

Scientists tell us the warming cannot be stopped, but it can be slowed and its effects contained. There is no single thing we can do to stem the tide, there is no silver bullet. But we know that we must reduce our carbon footprint by limiting greenhouse gas pollution, adopting more efficient technologies and expanding renewable energy sources.

In 2007, Congress took the first step to reduce emissions from the transportation sector by enacting landmark legislation—which I authored with Senator Olympia Snowe—to improve the mileage efficiency of our nation's fleet of vehicles by at least 10 miles per gallon over 10 years. President Obama took us a step further, requiring that automakers achieve the equivalent of a fleetwide average of 35.5 miles per gallon by 2016.

But fuel economy alone won't solve the problem. We also need legislation to:

- Reduce emissions from major industrial sources in a cost-effective manner that promotes green practices.

- Promote stronger investments in clean technology and renewable energy alternatives like wind, solar, hydrogen, and biofuels such as cellulosic ethanol.

- Improve the energy efficiency of our homes and office buildings.

Here's the bottom line: The challenge we face is real. If we take bold action now, we can make a difference and contain the worst effects of climate change. I urge you to learn more about this issue and encourage your representatives in Congress to join us in this fight.

Sincerely,

Dianne Feinstein
United States Senator

The Growing Threat of Global Warming

Preeminent scientists—from the National Academy of Sciences, the U.N. Intergovernmental Panel on Climate Change and other leading scientific bodies—have reached a consensus that global warming is real, it's happening more quickly than expected and it is affecting the environment around us.

The facts speak for themselves:

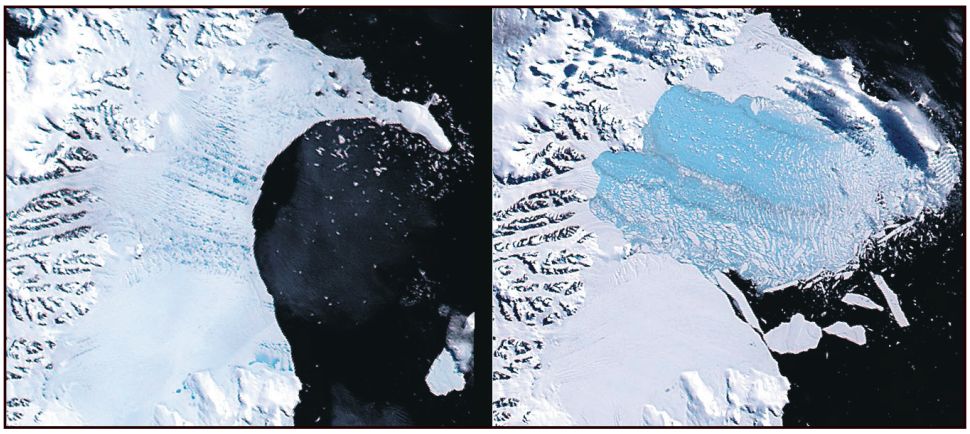
- The earth has already warmed 1 degree Fahrenheit (°F) over the last century.
- Of the 10 warmest years on record, nine of those occurred after the year 2000. 2005 was the warmest year ever on record, with 2010 tied for second.
- Seas are warming, rising and becoming increasingly acidic due to ocean water absorbing carbon dioxide from the atmosphere.

If no action is taken to curb greenhouse gas emissions, scientists warn the earth's temperature could spike by 4 to 7°F by the end of the century.

The results would be catastrophic and far-reaching:

- Nearly one-third of all plant and animal species are at a higher risk for extinction.
- Polar sea ice will likely melt entirely, causing seas to rise. Sea-level rise by the 2080s will mean millions of people flooded; densely-populated and low-lying areas are especially at risk.
- Extreme weather patterns—more frequent heat waves, more intense and longer droughts, more frequent tropical storms and heavier rainfall—will become the norm.
- Warming in western mountains will lead to decreased snowpack—the source of water for nearly two-thirds of California—will mean more winter flooding and reduced summer flows.

If we fail to act, this damage could occur before the end of the century. The urgency is unmistakable.

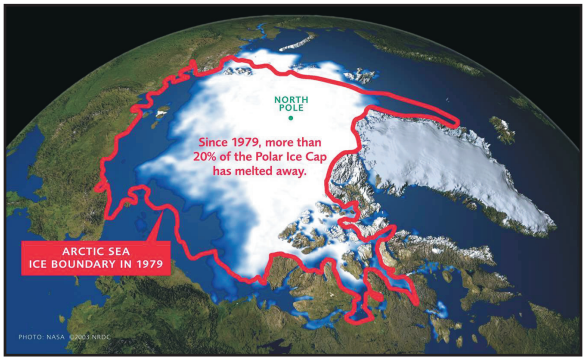


An area larger than Rhode Island has melted from Antarctica's Larsen Ice Shelf into the ocean since 2002.

Top Indicators: Polar Ice Caps and Alpine Glaciers

Melting of polar ice caps – As temperatures warm, the ancient ice sheets that cover the North and South poles are melting.

- Two years are tied for least amount of Arctic ice, known as maximum ice extent: 2011 and 2006. The seven lowest maximum Arctic sea ice extents all fall in the last seven years.
- In 2007, for the first time ever, the famed "Northwest Passage" was navigable without an ice breaking ship. The Arctic Circle could be ice free by 2030.
- Since 1979, when satellite records first became available, 30 percent of the Greenland Ice Sheet has melted.

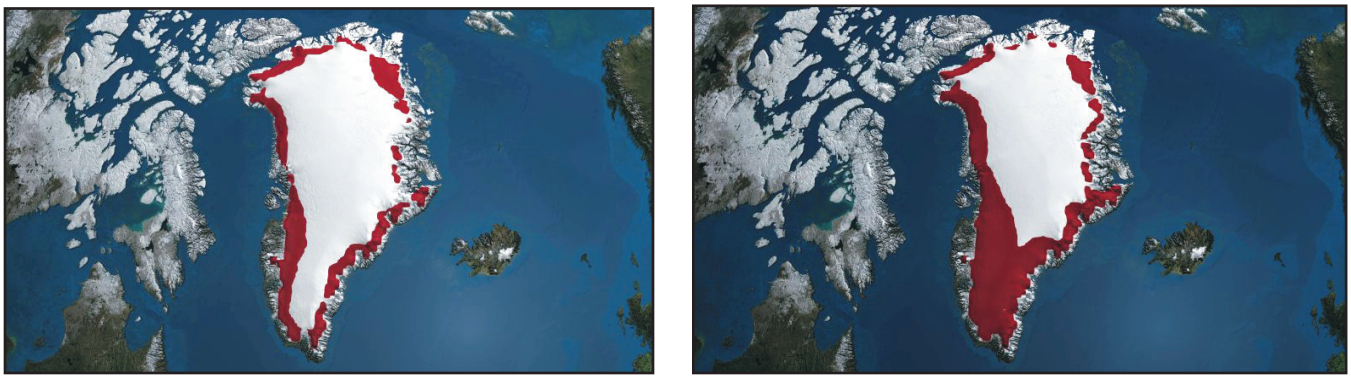


Since 1979, the average annual arctic sea ice area has seen significant losses.

- Projections now suggest that both Antarctica and Greenland could melt at the same time. If that were to happen, sea levels would rise by 20 feet.

Melting of alpine glaciers – Mountain glaciers are shrinking in size and retreating in elevation faster than expected.

- In Montana, Glacier National Park has only 25 named glaciers today, down from 150 in 1850. One study estimates that some of the largest glaciers in the park may disappear completely by 2030.
- The total mass of glaciers in the European Alps has declined by half since 1850. Some lower-elevation alpine ski resorts could soon face winters with no snow.

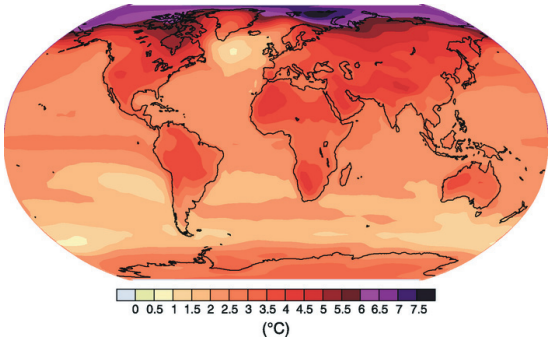


Between 1979 (left) and 2007, snow melt on the ice sheet that covers Greenland has increased by 30 percent.

Top Indicators: Global Temperatures

Higher overall temperatures – *Climate change is resulting in higher temperatures worldwide.*

- Warming of the climate system is unequivocal. Evidence can be seen in global average air and ocean temperatures, widespread melting of snow and ice and rising sea level.
- The earth's temperature has risen 1.0 to 1.8°F over the past century. There is very high confidence that human activities are the cause of this change.
- If no action is taken, scientists expect worldwide temperatures to rise another 1.0°F between 2000 and 2030, and 4.0 to 7.0°F by 2100.



Estimated surface temperture changes for years 2090-2099, relative to years 1980-1999.

Heat waves and other extreme temperature events – *Drastic changes in our global temperature will result in negative effects throughout the environment.*

- Approximately 20 to 30 percent of plant and animal species assessed so far are likely to be at increased risk of extinction if increases in global average temperature exceed 2.7 to 4.5°F.
- By the middle of the century, annual average river runoff and water availability are projected to decrease by 10 to 30 percent over dry regions at mid-latitudes, including California.
- We are already seeing some of these effects. In the summer of 2006, more than 220 people died from an intense heat wave across North America, with more than 160 deaths in California alone.

The 5 Warmest Years on Record

1. 2005

2. 2010

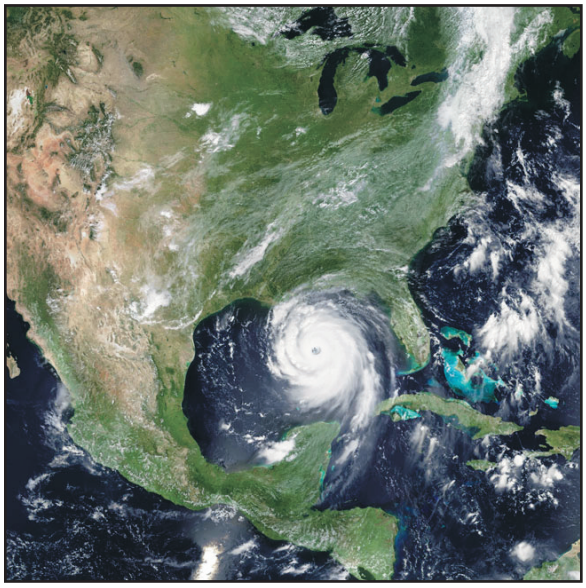
3. 1998

4. 2003

5. 2002

10 of Earth's 11 warmest years on record have occurred since 2001

Top Indicators: Weather Patterns



Scientists suggest that we'll see more frequent and intense weather patterns like hurricanes, cyclones and tornadoes.

Unpredictable weather patterns could significantly increase the nation's susceptibility to dangerous flooding.

Increased storm activity – *Global warming is expected to increase the frequency of destructive and deadly storms like the cyclone that hit Burma in 2008 and the tornadoes that have devastated parts of the Midwest.*

- Many scientists have observed that warmer sea surface temperatures correlate to more intense hurricanes and tropical storm.

- As an example, in 2005, the devastating Hurricanes Katrina, Wilma and Rita were part of the busiest, most intense Atlantic hurricane season in the past 154 years of record-keeping.

Changes in weather patterns and water – *Global warming is altering precipitation patterns, affecting water supply agriculture, and our health.*

- Increases in the frequency of droughts and floods are projected to affect local crop production negatively, especially at low latitudes.

- Health effects of climate change will impact the health of millions of people, particularly those who are unable to adapt to the changes. We are likely to see increased deaths, disease and injury due to heat-waves, floods, storms, fires, droughts and declining air quality.

- The west is beginning to face serious water shortages. Scientists at UC San Diego believe there is a 50 percent chance that Lake Mead – a key source of water for 8 million people in the Southwestern United States – will be dry by 2021.

- Since 1911, the percentage of precipitation in the Lake Tahoe Basin that falls as snow has dropped by 18 percent. It is a harbinger of what's to come throughout the state.

Top Indicators: Oceans

Warming oceans – *Global warming is causing water temperatures to rise even faster than air temperatures.*

- Arctic waters, like the northern Bering Sea, are warming. Compared to 1997, spring ice cover in the north Bering Sea region is melting about three weeks earlier. Sea-bottom temperatures have increased from about 29°F in the early 1990s to 32°F in 1998.

- Some fish and whales are moving farther north to follow the cold water. Seals and walruses are faced with reduced food sources. Diving Eider ducks, which are a threatened species, are also in trouble.

Warming oceans reduce food sources for seals and walruses.

Rise in sea level – *As temperatures rise and the poles melt due to global warming, sea level will rise.*

- Satellite observations show that since 1993, sea level has risen about 1.5 inches. The rate at which this is happening is significantly higher than the average during the previous 50 years.

- Predictions estimate that the sea level will rise between 7 and 20 inches between now and 2100.

- Many ecologically rich regions in the world are low-lying delta areas—such as the Niger delta, much of Bangladesh and the Amazon delta—that will flood first as sea level rises. In addition, even small sea-level rises could have catastrophic effects on Florida and many coastal U.S. cities.

Rising ocean waters imperil the eggs and offspring of the endangered green sea turtle.

Top Indicators: Animal Kingdom and Ecosystems

Species extinctions - *Global warming threatens species around the world with extinction.*

The Arctic habitat of the polar bears is literally melting away. This majestic species could face extinction by the end of the century.

- In May 2008, the Fish and Wildlife Service placed the polar bear on the Endangered Species List, citing the loss of sea ice habitat. Its habitat is literally melting away.

- In Yosemite National Park, 14 of 50 studied animal species can no longer be found in lower-elevation portions of the range they occupied early in the 20th century.

- Scientists have identified at least 279 species of plants and animals that are responding to global warming by shifting their ranges or changing the timing of life events (like hibernation seasons or incubation timing).

- More than 1 million species will likely be at risk for extinction by 2050.

Ecosystem disruption – Global warming and its effects are leading to serious disruption of ecosystems worldwide.

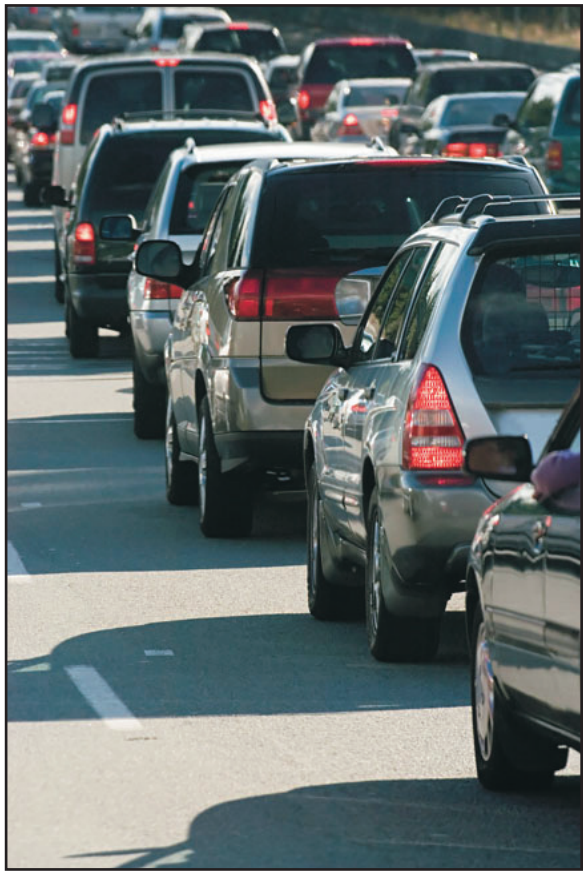
The Mountain Pine Beetle has infested 21 million acres of forest in British Columbia.

- Warmer temperatures have allowed the spread of the mountain pine beetle, a voracious predator of lodgepole pine trees. The beetles have infested an area of Canadian forest three times the size of Maryland, and are killing more trees in Canada than logging or wildfires. If this infestation crosses the Rockies, it could be a catastrophe for the forests throughout much of the western United States.

- The increasing acidification of the oceans is endangering coral reefs – and critical reefs are crumbling and dying. Some scientists warn we could lose half of the world's sea life by the middle of the Century.

The New Feinstein Fuel Economy Law

The transportation sector produces about one-third of global warming gases in the United States. And the use of motor vehicles accounts for roughly 25 percent of total U.S. emissions. The simplest step we can take is to raise fuel economy standards.



Raising fuel economy standards is the simplest step we can take to lower emissions from motor vehicles.

The good news is that in 2007, Congress approved a new law—which I authored with Senator Olympia Snowe—to increase the average fuel economy for all sedans, light trucks and SUVs by 10 miles per gallon over 10 years.

This means that fuel efficiency will be raised from today's fleetwide average of 25 miles per gallon to a fleetwide average of at least 35 miles per gallon by 2025.

The legislation increases the fuel economy of America's fleet of vehicles for the first time in more than three decades. And it does so in a way that gives the auto industry the time and flexibility to meet these new standards.

What does this mean for drivers like you?

- **You'll still be able to purchase the car, truck, minivan or SUV of your choice** – but beginning in 2011, your vehicles will achieve better mileage for each gallon you drive.
- **You'll help reduce our nation's carbon footprint** – that means a 17 percent reduction in carbon dioxide emissions below projected levels by 2025.
- **You'll save money at the pump** – an average of $700 to $1,000 per household.
- **You'll help break our nation's addiction to oil** – 2 million barrels of oil per day will be saved by 2025, or roughly the amount we currently import from the Persian Gulf.

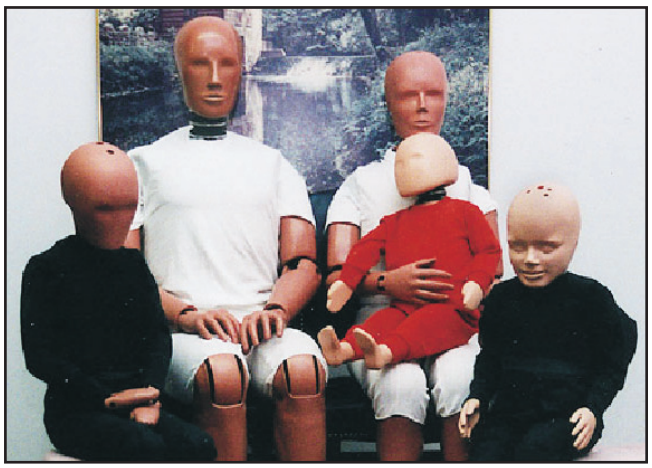
This new law is a major step forward.

Additional Benefits of Improving Fuel Efficiency

Improved consumer information:

- A label will be prominently placed on each vehicle that includes information on the fuel economy of the automobile and the greenhouse gas and other emissions consequences of operating the automobile over its expected life.

- Automakers will also be required to include improved consumer information on tire fuel efficiency, safety, and durability, and increased consumer awareness of flexible fuel automobiles.



There is no trade-off between fuel economy improvements and passenger safety.

Flexibility for automakers:

- Standards will be established based on the physical attributes of different types of vehicles, such as size or engine power. That means small cars will be compared to small cars, light trucks to light trucks, etc.

- Manufacturers will be able to trade a limited number of fuel economy credits when the performance of their passenger car or light truck fleets exceeds standards set by the legislation. They can also borrow against future fuel economy gains—up to three years—and to carry forward credits up to five years.

Safety Standards will be upheld:

A recent study concluded that no trade-off is required between fuel economy and vehicle safety:

- **"Fuel economy can be dramatically improved without compromising safety. Safety can be bolstered without sacrificing fuel economy."** – Senator Feinstein

- **"Advanced materials allow vehicles to be both bigger and lighter, providing multiple ways to improve safety and fuel economy without sacrificing functionality."** – Senator Feinstein

In fact, the technology already exists today to increase safety, without sacrificing fuel economy, including: seat belt reminders, window curtain air bags, lower bumpers, and seatbelts that tighten, if a vehicle were to rollover.

The Role of Renewable Energy

One of the most promising tools to combat global warming is clean, renewable energy. Whether in the form of solar, wind, biomass, geothermal or biofuels, clean energy must play a significant role in the United States and the world.

Of course, the benefits of increased development and use of clean energy have more than just environmental benefits. Clean energy technology is a proven job creator and also serves to reduce our nation's dependence on foreign oil.

Clean energy in California:

California's natural resources and sustained support for renewable energy make our state a world leader in clean energy development. By 2007, nearly 12 percent of all our electricity came from renewable resources.

At the heart of our energy policy is the state law AB 32, the *Global Warming Solutions Act of 2006*. This law solidified our position as a clean energy innovator and led to a surge in the clean energy industry.

But California's green sector has always been strong. A report by the California Employment Development Department's Labor Market Information Division found that "7.9 percent of California businesses employ workers to produce green products or supply green services…with close to 433,000 individuals performing green work at least part time."

I am dedicated to keeping those numbers high and furthering California's role as a leader in clean energy.

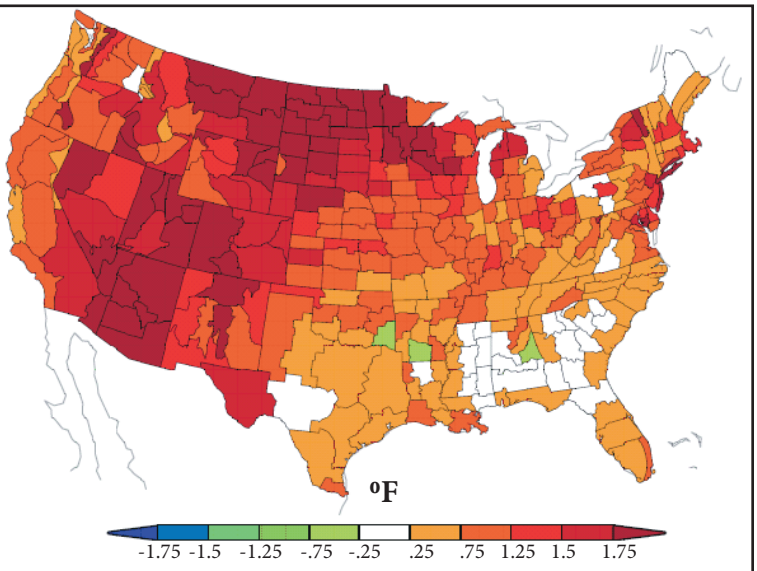
The United States and Climate Change

Regulating greenhouse gas emissions is a global responsibility, and the United States, as the biggest producer of CO_2, needs to play its part.

We're seeing some progress. The Environmental Protection Agency is bound by law to reduce greenhouse gas emissions, and the Supreme Court has even ruled that carbon dioxide endangers human health and therefore must be regulated.

Key Issues for Our Coastlines:

- More spring runoff and warmer coastal waters will increase the seasonal reduction in oxygen resulting from excess nitrogen from agriculture.
- Higher water temperatures and ocean acidification from increased atmospheric carbon dioxide will present major additional stresses to coral reefs, resulting in significant die-offs and limited recovery.



Average temperatures in 2000-2007 compared to averages for 1901-2000. Source: Dr. Martin Hoerling. National Oceanic and Atmospheric Administration.

In the United States, the West has experienced increases in temperature significantly greater than those in the East.

Key Issues for U.S. Agriculture:

- Forage quality in pastures and rangelands generally declines with increasing carbon dioxide concentration because of the effects on plant nitrogen and protein content, reducing the land's ability to supply adequate livestock feed.
- Increased heat, disease, and weather extremes are likely to reduce livestock productivity.

Key Issues for Health in the United States:

- Warming is likely to make it more challenging to meet air quality standards.
- Some diseases transmitted by food, water, and insects are likely to increase.
- Rising temperature and carbon dioxide concentration increase pollen production and prolong the pollen season, presenting a health risk.

Key Issues in U.S. Ecosystems:

- Fires, insect pests, disease pathogens, and invasive weed species are likely to continue their upward trends.
- Deserts and drylands are likely to become hotter and drier, feeding a self-reinforcing cycle of invasive plants, fire, and erosion.
- The habitats of some mountain species and coldwater fish, such as salmon and trout, are very likely to contract.

Climate Change and California

I am proud that California is leading the fight against global warming, setting ambitious goals for slashing greenhouse gases 80 percent by mid-century and reducing greenhouse gas emissions from vehicle tailpipes.

But California has good reason to take such strong steps. Global warming is California's more pressing environmental threat.

Since 1900, California has warmed by 2°F. Annual precipitation has decreased over much of the State—by 10 to 25 percent in many areas. The EPA estimates that the temperature in California could rise by as much as 5°F by the end of this century if the current global warming trends continue.

Water Supply

As the largest agricultural state in the union, we need water to farm and grow our crops. We need water to keep the ecosystem in balance. And we need water for the 37.5 million people in California.

The Sierra Nevada snowpack is the state's largest source of water. The snowpack equals about half the storage capacity of all of California's man-made reservoirs.

It is estimated, however, that by the end of the century, the shrinking of the snowpack will eliminate this water source for 16 million people. That is equal to all of the people in the Los Angeles Basin.

It is estimated that by the end of the century, the shrinking of the Sierra Nevada snowpack would eliminate the source of water for 16 million people.

Dairy Industry

We are the largest dairy-producing state. Studies indicate that increased temperatures could reduce milk production by anywhere from 5 to 20 percent. This would not only have a drastic impact on California's thriving agriculture industry, but it would also affect other states that rely on California to provide milk and other dairy products.

Climate Change and California

California's Efforts to Combat Climate Change

California has long been ahead of the curve in addressing our planet's number one environmental challenge: the fight against global warming.

The state recently enacted landmark legislation to reduce greenhouse gas emissions (the primary cause of global warming) to 2000 levels by 2010 and to 1990 levels by 2020.

And California is also embracing low-carbon fuels, hybrid vehicles, green building codes, and a host of other environmentally-sound policies.

I am extremely proud of the example that California has set. But the truth is that California cannot solve the problem of global warming by itself.

Beaches and Coastline

When most people think of California, they think about our spectacular beaches and coastlines. But over the last century, global warming has caused the sea level to rise between 3 to 8 inches.

Scientists predict it will continue to rise an additional 13 to 19 inches by the end of this century. This will force municipalities to replenish land on beaches stretching from Santa Barbara to San Diego. The EPA says this could cost from $174 million to $3.5 billion.

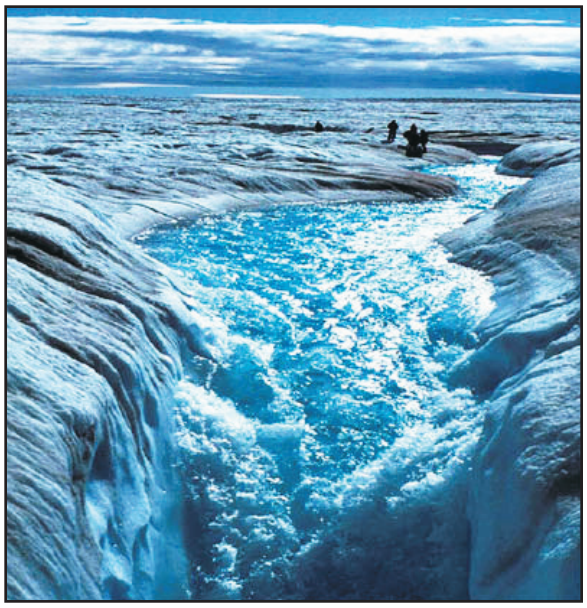
Continued sea level rising could also be disastrous for the future of the Sacramento-San Joaquin Delta, most of which is already below sea level, and which serves as an important conduit for the State's water supply.

Carbon dioxide emissions are responsible for more than 60 percent of the "greenhouse effect."

Over the last century, global warming has caused sea levels to rise between 3 and 8 inches. Scientists predict seas level could rise an additional 13 to 20 inches by the end of the century.

Other Efforts to Combat Climate Change

Cities and states are not waiting for the federal government to act to curb global warming—they are moving forward with their own efforts.



In 1996, the melted ice from Greenland was 90 times the water usage for Los Angeles. In 2005, the melted ice from Greenland was 225 times the city's water usage.

Action by Cities

In 2005, members of the United States Conference of Mayors unanimously passed a resolution that requires their member cities to attempt to meet or exceed emissions standards set by the Kyoto Protocol.

They have also agreed to try to meet or beat the Kyoto targets in various communities around the Nation. They have agreed to urge their state governments and the federal government to enact policies to reduce greenhouse gas emissions.

So far, 167 cities have signed up to enforce the Kyoto requirements.

Action by States

To date, nearly 40 States have developed their own climate plans. Four-fifths of the United States is moving on its own because the federal government has been so slow to act.

- An emission trading system is emerging in the Northeast that will require large power plants from Maine to Delaware to reduce their carbon emissions.

- As of March 2011, 29 states and the District of Columbia have enacted standards to require that electricity be generated with renewable fuels rather than fossil fuels. I am proud to say that California has one of the most aggressive standards in the country.

These NOAA photos show the melting of Alaska's Portage Glacier between 1914 and 2004.

What Else Can Be Done

Energy Efficiency

In California, energy use per person has not gone up in the past 20 years, while national energy use has skyrocketed by 50 percent. To be specific, Californians use 6,000 kilowatt-hours a year per person, while the national average is 12,000 kilowatt-hours.

We should build on California's energy efficiency plans at the national level, including requiring electricity and natural gas distributors to implement efficiency measures to achieve significant savings, as well as strict energy efficiency standards for new federal, commercial and residential buildings.

I am also working with my colleagues to help extend energy-efficiency and renewable energy tax incentives that help make green technologies more cost-effective.

Individuals can also make a difference. Here are a few suggestions, all of which save energy and reduce carbon dioxide emissions:

- Buy energy efficient appliances and light bulbs
- Take public transportation.
- Carpool with coworkers.
- Turn down the heat and air conditioning.
- Set your water heater to no higher than 120°F.
- Consider fuel economy when purchasing or renting an automobile.

All of these are easy to do and they can make a difference.

I ask you to stand up, be counted and join me in this effort. Talk and write to your representatives in Congress. Urge them to make their voices heard in support of legislation to slow global warming. This is our collective challenge—and I encourage you to do your part.

For More Information

If you are interested in receiving further information about this important issue, please log on to Senator Feinstein's website (http://feinstein.senate.gov) and register to receive e-mail updates. Many of the statistics used in this booklet came from the following sources:

Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
(202) 272-0167
http://www.epa.gov/

California Environmental Protection Agency
1001 I Street
P.O. Box 2815
Sacramento, CA 95812-2815
(916) 323-2514
http://www.calepa.ca.gov/

Intergovernmental Panel on Climate Change
IPCC Secretariat, C/O World Meteorological Organization
7bis Avenue de la Paix
C.P. 2300
CH- 1211 Geneva 2
Switzerland
(41-22) 730-8208
http://www.ipcc.ch/

United Nations Framework Convention on Climate Change
Haus Carstanjen
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