



# Facing *the* Challenges of Climate Change

A GUIDE FOR CITIZEN THOUGHT AND ACTION





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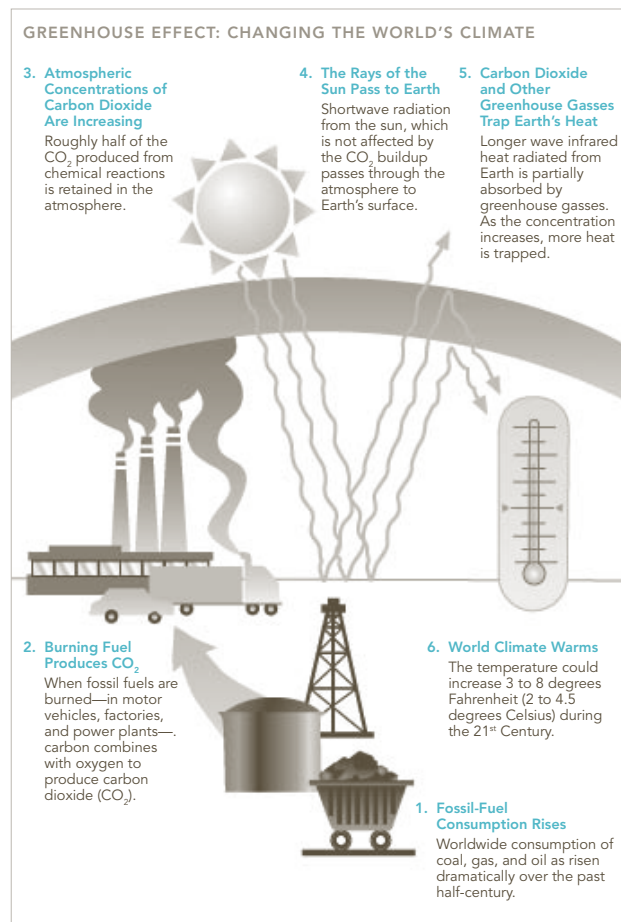


Everyone knows that the way humans live their daily lives affects the environment, and that changes in the environment can sometimes spell big trouble for humans. Now, scientists are warning that the way people have lived since the Industrial Revolution is catching up with us in the form of “global warming” or “global climate change.”

“Global warming” refers to increases in global temperatures as a result of an accumulation of what are often referred to as “greenhouse gases” in the atmosphere. Greenhouse gases are substances such as carbon dioxide and methane that act as a trap, holding heat closer to the Earth and not permitting it to radiate away as it would otherwise do. In effect, it is somewhat like having a thick blanket on your bed at night, trapping your body heat close to your body. While these gases are present naturally, we have dramatically ‘thickened the blanket’ through our activities, as described below.

For the past 150 years, the average temperature of the Earth’s atmosphere and oceans has been rising, and the pace of this change in our climate appears to be accelerating. For example, the 10 hottest years on record have all occurred since 1990.

After decades of research and hundreds of studies, an overwhelming majority of scientists have come to believe that human activities, especially the burning of fossil fuels (such as coal, oil and gas) are a major cause of this trend toward higher temperatures.



Adapted from artwork by Phil Scheuer.

The picture to the right describes the process by which carbon dioxide (CO<sub>2</sub>) is produced by the burning of fossil fuels, as well as the warming trend that results from the buildup of CO<sub>2</sub> and other “greenhouse gases” in the atmosphere. To understand the process, start with #1 on the bottom right and work your way left (counterclockwise) to #6.

Carbon dioxide levels are now approximately 40 percent higher than they were at the start of the Industrial Revolution, and they have reached levels not seen in the atmosphere in 20 million years. Scientists say that unless we curb greenhouse gas emissions, average U.S. temperatures could be 3 to 8 degrees Fahrenheit (2 to 4.5 degrees Celsius) warmer by the end of the century.

A 3 to 8 degree Fahrenheit (2 to 4.5 degrees Celsius) rise in temperature may not sound like a big change to non-scientists. It turns out, though, that this is very big news and could lead to devastating consequences for the environment. The kinds of consequences that scientists and leaders have been increasingly worried about include:

**Coastal Flooding** Global warming is already creating higher sea levels as glaciers melt and the warming oceans expand. A growing concern is that the large ice sheets of Greenland and West Antarctica will likely melt more quickly in the future, accelerating the rise in sea levels and threatening many coastal communities. The Dutch, much of whose land is already below sea level, are so concerned they have begun to experiment with floating houses.

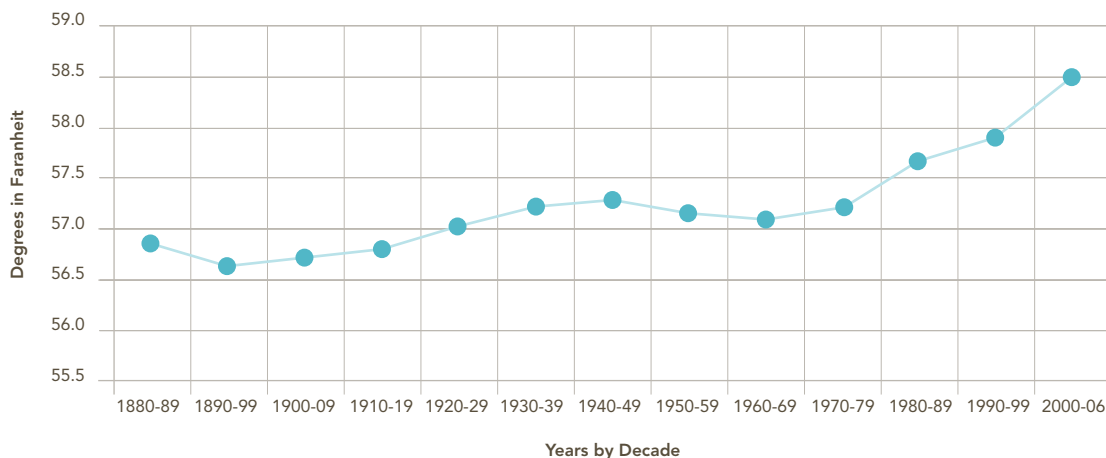
**Extreme Weather** Many scientists believe that the increase in heat waves, episodes of extreme rainfall, and the intensity of hurricanes may be related to climate changes caused by global warming, and that we can expect harsher weather if the warming trend is allowed to continue.

**Droughts** Rising temperatures may increase the number of droughts, which will in turn affect food crops and water availability across the globe. Many scientists are warning that we may already be seeing agricultural problems as a result of global climate change.

**Economic Downturn** In addition, recent economic studies warn of the economic consequences of climate change. One warns that they could be as bad, or worse, than the Great Depression of the 1930s.

Of course, there continues to be uncertainty about what the exact consequences of global warming will be, but an overwhelming majority of scientists and leaders are warning that since higher global temperatures and sea levels are a virtual certainty, we cannot afford to wait to see exactly what happens. Uncertainty should not be treated as a reason to sit on our hands and hope that the problem resolves itself. Instead, we must roll up our sleeves and take steps to address this problem now.

## Global Average Temperature



Data source: National Oceanic & Atmospheric Administration

# Meeting the Challenges of Climate Change

## ENGAGING THE ISSUE, CONSIDERING SOLUTIONS

As both the leading producer of greenhouse gas emissions and the world's most powerful country, the United States has a special responsibility to lead the way in the search for solutions. Fortunately, we have a long tradition of solving big problems and meeting new challenges. It is high time for the American spirit of innovation to be put to work on meeting the challenges of climate change.

But where do we start? There are important decisions to be made, and this guide is designed to help you begin to think about them. In what follows, three contrasting approaches to solutions are described—each with its own set of trade-offs to consider.

These approaches are essentially three different kinds of arguments about the best way to address the problem of climate change. They are presented in non-technical terms so that, rather than getting bogged down in details, you can focus on the broad directions, values and trade-offs involved. Of course, you may find in the course of your discussion that you and your neighbors need more information about some aspect of the issue.

After familiarizing yourself with the three approaches, you may find that one of them makes the most sense to you, or that some combination of all three does. You may also have ideas that aren't covered by any of them that you'd like to add to the discussion. All of that is perfectly fine—this guide is meant only as a place to start thinking and talking about how we can address the issue of climate change, not as the last word.

The three approaches are summarized below and then discussed in greater detail in the pages that follow. Reflecting on and discussing these approaches can help you and your neighbors decide on the policies and practices we should develop to meet the challenges of climate change. A final section of this guide suggests a few of the ways that you, as a citizen, can make a difference.

### The Three Approaches in Brief:

**I. We need decisive local, national and international action to prevent & minimize the worst consequences of climate change**

We need strong local, national and international action to dramatically cut the production of greenhouse gasses, slow down global warming, and prevent the worst consequences of climate change.

**II. We need to make sure our most vulnerable communities adapt to the inevitable changes global warming will cause**

It's too late to prevent global warming, so we should make sure our communities, especially those that are the most vulnerable, prepare to adapt to the problems it will cause.

**III. We should trust the free market to lead the way in the search for solutions**

We should rely on the efficiency and ingenuity of businesses in the private sector to provide us with the best strategies for addressing climate change.

# Approach I

We need decisive local, national and international action to prevent and minimize the worst consequences of climate change.

What's most needed now is strong government action to dramatically cut the production of greenhouse gases, slow down global warming, and prevent as much as possible the damage it would otherwise do.

Therefore we should do things like:

**Increase conservation and fuel efficiency by:**

- :: Requiring car makers to produce more fuel efficient cars, and discouraging consumers from buying gas-guzzlers through a heavy sales tax on those vehicles.
- :: Taxing carbon emissions to encourage the industrial sector to curb their emissions.
- :: Putting construction codes in place that require new buildings to be highly energy efficient.
- :: Investing in energy-saving public transportation.

**Increase federal funding for scientific research into:**

- :: Clean, renewable sources of energy (such as solar, wind, and safe forms of nuclear energy).
- :: Technologies that "capture" greenhouse gases from smokestacks and "store" them in ways that render them relatively harmless to the environment.

**Take a leading role in international efforts to:**

- :: Reduce greenhouse gases through policies that put strict limits on the amount of carbon emissions a country can release into the atmosphere.
- :: Provide aid to developing countries in the form of know-how and resources that help them industrialize with clean energy.

## The Role of Government

Our government must play a major role in addressing climate change at home and leading the way abroad, because this is precisely the kind of long-term, complex issue that private businesses, focused as they are on the bottom line, have little incentive to address on their own.

## The Role of Business

With strong governmental regulations, business and industry must begin to make necessary changes to reduce emissions.

## The Role of Citizens

In addition to voting for candidates who support the above policies, citizens can do things like:

- :: Recycle and use energy in the home and at work more efficiently, and encourage others to do the same.
- :: Buy local food and merchandise, because they require less transportation to reach us, and are therefore responsible for less greenhouse gas emissions.



## Arguments for and against Approach I

### Arguments in Favor

These policies can help us become less dependent on foreign sources of energy, especially oil.

While it is likely to hurt some business interests (such as oil), this approach will protect the overall economy from ecological disasters, while also creating new business opportunities in other areas such as clean energy and “green” construction.

### Arguments Against

This will be expensive and would require diverting resources from other important problems, such as health care and reducing the federal deficit.

This approach will limit consumer choices while also raising prices as businesses pass their increasing costs on to consumers.



## Approach II

We need to make sure our most vulnerable communities adapt to the inevitable climate changes global warming will cause.

Given how far global warming has already advanced, and given how little willingness and ability the world has shown to face up to it, the wisest course of action is to figure out how to help our most vulnerable communities adapt to the serious problems climate change will inevitably cause.

Therefore we should do things like:

### **Adapt society to harsher weather conditions by:**

- :: Enacting new building codes to make our cities more weather- and flood-proof.
- :: Giving aid to farmers to help them switch to crops and methods that can survive climate disruptions.
- :: Developing new dams and water control systems to minimize the impacts on cities likely to be affected by higher sea levels.

### **Discourage people from living in areas that are likely to be hard-hit by floods and wildfires by:**

- :: Ending federal flood insurance.
- :: Providing tax incentives that encourage them to move to less vulnerable regions.
- :: Focusing business development in regions of the country least likely to be affected by severe weather and flooding.

### **Increase federal funding for scientific research into such areas as:**

- :: Developing local food crops that can adapt to harsh weather conditions.
- :: Control of tropical diseases and pests.

## The Role of Government

State and local government, with the federal government's support, should lead local communities in developing ways to cope with the problems and challenges that climate change is likely to create.

## The Role of Business

Instead of asking businesses to reduce greenhouse emissions, they should be required to donate a meaningful percentage of their profits to fund local programs that help communities adapt to climate change.

## The Role of Citizens

In addition to voting for candidates who support the above policies, citizens can do things like:

- :: Learn about the impacts climate change could have in your area (e.g., rising sea levels, droughts, heat waves) and work with your neighbors and local officials to adapt your homes and community to deal with them.
- :: Work with schools, hospitals, and the city council to develop evacuation plans and other emergency procedures to keep people safe during dangerous weather.





## Arguments for and against Approach II

### Arguments in Favor

This approach focuses on saving lives rather than on unrealistic hopes of stopping global warming.

This will protect business from legislation that could harm productivity and prosperity.

### Arguments Against

Even if we can't prevent all of the bad effects of global warming, we'll only be able to adapt successfully if its effects are not too destructive, so prevention and mitigation efforts are still crucial.

By itself, an "adaptation" strategy is just giving permission to polluters to continue to produce more greenhouse gasses.



# Approach III

We should trust the free market to lead the way in the search for solutions.

The most important thing we can do to address the challenges of global warming is to make sure businesses have the information, freedom, and incentives that allow them to respond to new opportunities. When it's profitable to "go green" or develop strategies that help communities adapt to climate change, creative entrepreneurs will seize the opportunity.

Therefore we should do things like:

**Cut back on regulation and red tape that might inhibit business from responding to new opportunities in alternative energy by:**

- :: Easing patent and other regulatory processes so that businesses can bring new, "green" technologies to the market much more quickly.
- :: Making it as easy to build and operate nuclear power plants in America as it is in many other countries.
- :: Creating incentives for businesses to "go green," such as tax breaks and national recognition awards.

**Encouraging private sector research by:**

- :: Providing tax breaks for businesses that are exploring new forms of clean energy.
- :: Supporting business-university partnerships to develop practical technologies for businesses to implement.
- :: Giving business interests a stronger hand and greater say in advising Congress on new environmental policies.

**Work toward international agreements that:**

- :: Offer trade incentives to companies that reduce greenhouse gases.
- :: Encourage international banks and multinational corporations to invest in "green" technologies for the developing world so more nations can industrialize without contributing to global warming.

## The Role of Government

The main role of government is to create an economic environment that helps businesses to seize new market opportunities.

## The Role of Business

Businesses should be free to pursue what is good for their prosperity with minimum interference from government so that the free market can dictate which solutions should be pursued and when.

## The Role of Citizens

In addition to voting for candidates who support the above policies, citizens can do things like:

- :: Support organizations that advocate for low-tax, low-regulation policies that allow businesses more freedom to innovate.
- :: Use their dollars to reward companies that produce energy-efficient goods.



## Arguments for and against Approach III

### Arguments in Favor

The most important thing we can do to address the challenges of climate change is to bring the innovation and ingenuity of business to bear upon them. If we wait for the politicians to act, we'll be waiting forever.

Relying on business solutions will avoid highly expensive government programs and the intrusive regulations and policies that restrict the freedom of businesses and consumers.

### Arguments Against

The free market can't solve all our problems. After all, it was big businesses, in the form of energy and automobile companies (among others) that helped get us into this mess. Why should we trust them to get us out of it, or give them even more influence over the government than they already have?

More and more business leaders are themselves saying they can't make the long-term, costly changes to bring about greater conservation and cleaner energy without significant government regulation and leadership.



# More Things Citizens Can Do<sup>1</sup>

Regardless of which approach or combination you find most persuasive, there are several things that you can do to help reduce your own impact on the environment. Based on your view of the different approaches, some of these ideas may make more sense to you than others, and you may have ideas that are not included here.

## Making Choices at Home

Most emissions from homes are from the fossil fuels burned to generate electricity and heat. By using energy more efficiently at home, you can reduce your emissions and lower your energy bills by more than 30 percent. In addition, since agriculture is responsible for about a fifth of the world's greenhouse gas emissions, you can reduce your emissions simply by watching what you eat.

### **Replace high-use regular incandescent light bulbs with compact fluorescent light bulbs (CFLs)**

CFLs use 60 percent less energy than a regular bulb. This simple switch will save about 300 pounds of carbon dioxide a year. If every family in the U.S. made the switch, we'd reduce carbon dioxide by more than 90 billion pounds! You can purchase CFLs online from the Energy Federation. ([www.energyfederation.org/consumer](http://www.energyfederation.org/consumer))

### **Move your thermostat down 2° in winter and up 2° in summer**

Almost half of the energy we use in our homes goes to heating and cooling. You could save about 2,000 pounds of carbon dioxide a year with this simple adjustment. The American Council for an Energy Efficient Economy has more tips for saving energy on heating and cooling. ([www.aceee.org](http://www.aceee.org))

### **Choose energy efficient appliances when making new purchases**

Look for the "Energy Star" label on new appliances to choose the most efficient models. If each household in the U.S. replaced its existing appliances with the most efficient models available, we'd eliminate 175 million tons of carbon dioxide emissions every year!

### **Wrap your water heater in an insulation blanket**

You'll save 1,000 pounds of carbon dioxide a year with this simple action. You can save another 550 pounds per year by setting the thermostat no higher than 120 degrees Fahrenheit.

### **Use less hot water**

It takes a lot of energy to heat water. You can use less hot water by installing a low-flow shower head (350 pounds of carbon dioxide saved per year) and washing your clothes in cold or warm water (500 pounds saved per year) instead of hot.

### **Unplug electronics from the wall when you're not using them**

Even when turned off, things like hair dryers, cell phone chargers and televisions use energy. In fact, the energy used to keep display clocks lit and memory chips working accounts for 5 percent of total domestic energy consumption and spews 18 million tons of carbon into the atmosphere every year!

### **Only run your dishwasher when there's a full load and use the energy-saving setting**

You can save 100 pounds of carbon dioxide per year.

### **Insulate and weatherize your home**

Properly insulating your walls and ceilings can save 25 percent of your home heating bill and 2,000 pounds of carbon dioxide a year. Caulking and weather-stripping can save another 1,700 pounds per year. The Consumer Federation of America has more information on how to better insulate your home. ([www.buyenergyefficient.org](http://www.buyenergyefficient.org))

**Be sure you're recycling at home**

You can save 2,400 pounds of carbon dioxide a year by recycling half of the waste your household generates. Earth 911 can help you find recycling resources in your area. ([earth911.org](http://earth911.org))

**Seek out and support local farmers markets**

The average meal in the United States travels 1,200 miles from the farm to your plate. Buying locally will save fuel and keep money in your community. It will reduce the amount of energy required to grow and transport the food to you by about 20 percent. You can find a farmer's market in your area at the USDA website ([www.ams.usda.gov/farmersmarkets/map.htm](http://www.ams.usda.gov/farmersmarkets/map.htm))

## Making Choices on the Road

Almost one third of the carbon dioxide produced in the United States comes from our cars, trucks and airplanes. Here are some simple, practical things you can do to reduce the amount of carbon dioxide you produce while on the move.

**Reduce the number of miles you drive by walking, biking, carpooling and taking mass transit wherever possible**

Avoiding just 10 miles of driving every week would eliminate about 500 pounds of carbon dioxide emissions a year!

**Start a carpool with your coworkers or classmates**

Sharing a ride with someone just 2 days a week will reduce your carbon dioxide emissions by 1,590 pounds a year. [eRideShare.com](http://eRideShare.com) runs a free national service connecting commuters and travelers.

**Keep your car tuned up**

Regular maintenance helps improve fuel efficiency and reduces emissions. When just 1 percent of car owners properly maintain their cars, nearly a billion pounds of carbon dioxide are kept out of the atmosphere.

**Check your tires weekly to make sure they're properly inflated**

Proper inflation can improve gas mileage by more than 3 percent. Since every gallon of gasoline saved keeps 20 pounds of carbon dioxide out of the atmosphere, every increase in fuel efficiency makes a difference!

**When it is time for a new car, choose a more fuel efficient vehicle**

You can save 3,000 pounds of carbon dioxide every year if your new car gets only 3 miles per gallon more than your current one. You can get up to 60 miles per gallon with a hybrid!

## What can your community do together?

In addition to the things you and your family can do to reduce emissions, there are also many things that communities can do together to help address the problem. Since every community is different, you should spend some time thinking about the kinds of things your town, city, or neighborhood might be able to do to reduce carbon emissions, to prepare for difficult consequences of global warming, or to encourage businesses to step up and lead the way. What are your ideas?

## What can leaders do?

Finally, you can think about what leaders can do to help you more effectively make a difference in your life and your community to address global climate change. You can also think about what leaders should be doing on your behalf to address the issue—for example, internationally—and let them know what you think!

Source: [climatecrisis.org](http://climatecrisis.org)

# Notes

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**PUBLIC AGENDA**

[www.publicagenda.org](http://www.publicagenda.org)