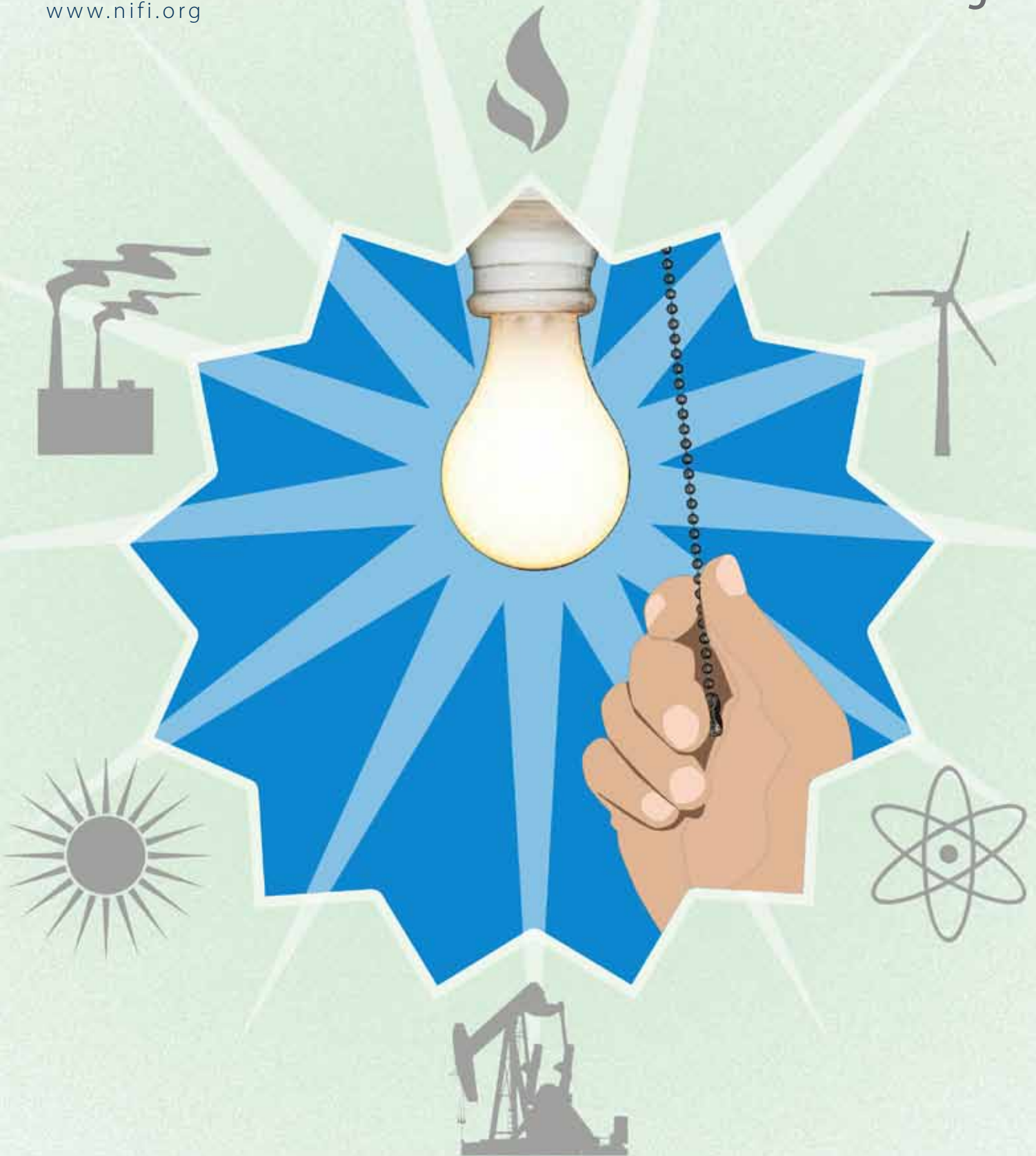




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# >> America's Energy Future

## How Can We Take Charge?



# About This Issue Guide

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**A**mericans face an uncertain energy future, and concern about the many consequences of an ever-increasing demand for a dwindling supply of fossil fuels is on the rise. Because the problems involve economics, the environment, politics, and personal lifestyles, deliberative forums on this issue will not be easy. It may be helpful to remind participants that the objective of these forums is to begin to work through the tensions between the various things we hold most valuable.

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In productive deliberation, people examine the advantages and disadvantages of different options for addressing a difficult public problem, weighing these against the things they hold deeply valuable.

The framework in this issue guide encompasses several options and provides an alternative means for moving forward in order to avoid polarizing rhetoric. Each option is rooted in a shared concern, proposes a distinct strategy for addressing the problem, and includes roles for citizens to play. Equally important, each option presents the drawbacks inherent in each action. Recognizing these drawbacks allows people to see the trade-offs that they must consider in pursuing any action. It is these drawbacks, in large part, that make coming to shared judgment so difficult—but ultimately, so productive.

## **One effective way to hold deliberative forums on this issue:**

- Ask people to describe how energy issues have affected them, their families, or friends. Many are likely to mention the concerns identified in the framework.
- Consider each option one at a time, using the actions and drawbacks as examples to illustrate what each option entails.
- Review the conversation as a group, identifying any areas of common ground as well as issues that still must be worked through.

The goal of this issue guide is to assist people in moving from initial reactions to more reflective judgment. That requires serious deliberation, or weighing options for action against the things people hold valuable.

### **The National Issues Forums Institute**

This issue guide was prepared for the National Issues Forums Institute in collaboration with the Kettering Foundation. Issue guides in this series are used by civic and educational organizations interested in addressing public issues. These organizations use the books in locally initiated forums convened each year in hundreds of communities. For a description of the National Issues Forums, log on to the website: [www.nifi.org](http://www.nifi.org).

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## >> America's Energy Future: How Can We Take Charge?

**A**MERICANS DEPEND ON EASY ACCESS to energy. Most of us take it for granted that we will be able to light up a room with the flick of a switch, adjust the temperature of our homes at will, and climb into our cars every morning to go to work, often at distant sites.

We use more energy than any other country. Americans make up only 4.5 percent of the world's population, yet we consume about 20 percent of the world's energy production. Collectively, we drive more, heat more, air condition more, and plug in more electronic devices than anyone else. We use 22 percent of the oil consumed in the world each day.

Worldwide energy use is on the upswing as well, and is projected to keep increasing, as rapidly developing countries, such as China, India, and Brazil, become bigger players in the worldwide market for energy supplies, especially oil. And—sooner or later—the world's available supply of oil will run out.

Americans have not been entirely oblivious. We have been aware for some time of the complex network of economic, environmental, and political problems associated with meeting our ever-increasing demands for energy, but solutions—ranging from developing new ways to extract oil and natural gas from shale to recycling our trash—have been piecemeal.

Congress and the White House have been grappling with the issue for many years but have, thus far, failed to find agreement as the complex elements of the problem become mired in political wrangling. The Senate has not been able to pass a major energy bill since 2007.

We are now facing the multiple consequences of an ever-increasing demand for a dwindling supply of fossil fuels. It is time to come to grips with the key question: what should we do to ensure a continuing supply of energy to meet our needs and those of our children and grandchildren?

## The Energy We Use

We are used to having cheap, abundant energy. The US Energy Information Administration says that the fuel we use most is oil (35 percent) followed by natural gas (25 percent), coal (20 percent), renewable sources like solar and hydroelectric power (9 percent), and nuclear energy (8 percent).

Domestic production of oil and natural gas has increased in the last several years, but oil imports remain high enough to hurt our international trade balance. Forty percent of the oil we use is imported. And almost a third of the imported oil comes from a cartel based in the Persian Gulf. Our dependence on this oil has drawn us into uncomfortable alliances and military engagements that have cost thousands of American lives.

The kinds of fuels we use are another problematic aspect of our energy problem. Petroleum, natural gas, and coal are all fossil fuels that cause environmental impacts when they are produced and burned.

## A Framework for Deliberation

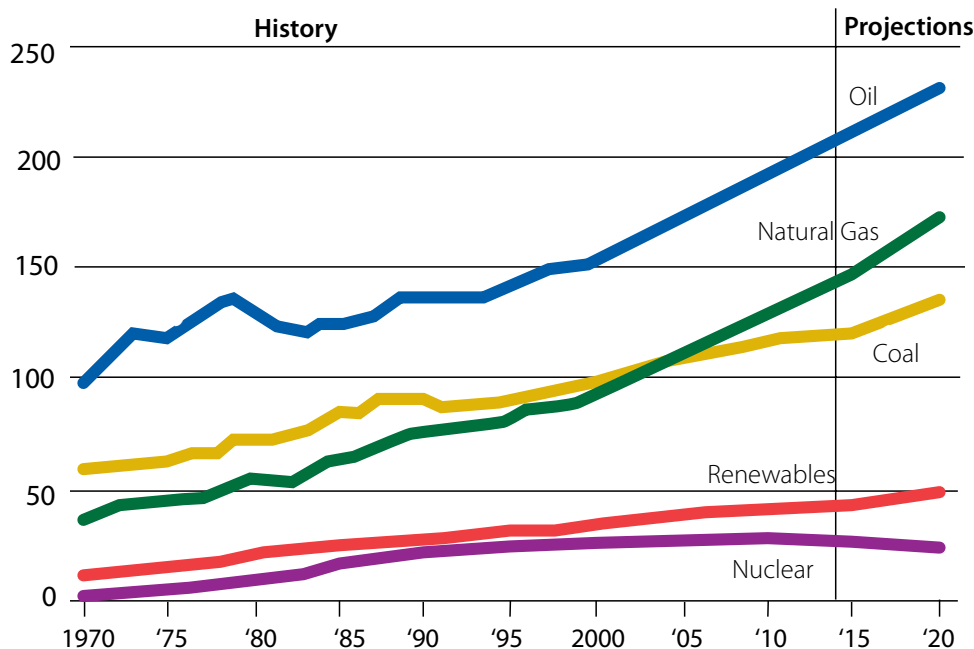
Americans face an uncertain energy future and an uncertain world. As a nation, and as individuals, we need to decide what direction to take in order to ensure the continuous flow of energy we need to fuel our way of life.

To make good decisions on energy, citizens need to weigh important economic questions—how to keep energy affordable, protect jobs, and reduce imports—along with important environmental questions, including the risks of air and water pollution, oil spills, harm to wildlife, and dangers to the climate.

Deciding what our energy future will look like will not be easy. Should we concentrate on producing more of the fuels we now use? Can we dramatically increase our use of renewable energy sources, such as the wind and sun? Do we need to think more about conservation and efficiency? This issue guide is designed to spark conversations that can lead to these and other choices about our energy future.

This guide outlines three options to consider in discussing America's energy future. Each is rooted in a common concern and suggests a way to move forward, but also has drawbacks that we will have to consider. One option focuses on ensuring that we have the energy we need to maintain our way of life by controlling our own energy supply. A second option holds that the best way to ensure America's long-term energy future is to increase our use of renewable energy sources, and a third calls for finding ways to consume less.

## World Energy Consumption by Fuel Type, 1970–2020



Source: US Energy Information Administration



## OPTION ONE

Energy is too important to our way of life to have to depend on others to furnish it. We must be more self-reliant and control our own energy supply.



# >> Produce the Energy We Need to Maintain Our Way of Life

**U**NTIL THE 1950s, THE UNITED STATES produced all the energy it needed. But since then, the United States has found itself more and more dependent on foreign sources of oil. The extent of our dependence came home to many Americans for the first time in the fall of 1973. In retaliation for US support of Israel in the Yom Kippur war, the leaders of Arab oil-producing countries placed an embargo on oil deliveries to the United States. The US economy tanked. The stock market plunged. The most immediate and visible impact on our daily lives was that drivers were forced to wait for hours in long lines to fill up with gasoline—when they could find it. And it suddenly cost more.

This option holds that we must produce more of the energy we need, while making sure that as much imported energy as possible comes from stable, friendly countries, such as Canada. The result would be to lessen foreign entanglements,

cut the nation's trade deficit, and make the dollar stronger in world markets, this option says.

Forty percent of the oil we now use is imported. Our total bill for oil has mushroomed to more than \$700 billion a year. Half of that goes to pay for foreign oil. Although the largest single foreign supplier is Canada, a significant portion comes from increasingly unstable parts of the world.

Thirty percent of the oil we import comes from Persian Gulf countries, including Saudi Arabia, Iraq, and Kuwait. Strong forces in that unstable part of the world are unfriendly to America and our way of life. As long as this status quo exists, even a small interruption of oil from the other side of the world can cause social and economic chaos here.

Fareed Zakaria, a journalist and foreign policy expert, has noted that this situation causes the United States to forge political alliances with countries like Saudi Arabia, a strictly

controlled society he calls “the place where America’s interests and values most obviously clash. . . . Street protests in Saudi Arabia might warm our hearts, but they could easily lead to \$250 a barrel oil and a global recession.”

“Until fairly recently, energy independence was a subject to get laughs,” energy expert Daniel Yergin wrote in the *New York Times*. “The joke was that America was actually becoming more and more dependent on imports.”

Now there is widespread talk about the United States achieving energy independence, although whether we have the ability to reach that goal is subject to considerable debate. Yergin’s view is that the country is on the road to being “energy less dependent.”

## Foreign Entanglements

On many occasions, a spark of political or social unrest on the other side of the world has caused an almost immediate jump in the price we pay at the pump. We have also seen US foreign policy—and American troops—becoming mired in conflicts in oil-rich nations. This option says that becoming more energy independent would allow us to pull back from entanglements in areas that serve American interests only because they have oil reserves.

Another argument in favor of this option is rooted in the explosive growth going on in other developing nations. As countries like China and India require more and more energy to fuel their economic growth, it will become increasingly difficult to compete globally to purchase energy

from foreign sources. Producing our own energy, from domestic sources, will insulate us not only from capricious suppliers but also from global competitors in the marketplace.

## American Natural Gas

A relatively new process increasing domestic oil and natural gas production in this country is horizontal hydraulic fracturing, or “fracking.” Fracking is a process that forces a mixture of water, sand, and chemicals into shale rock under high pressure, creating fissures that fill with gas and oil, which can be pulled back up the well.

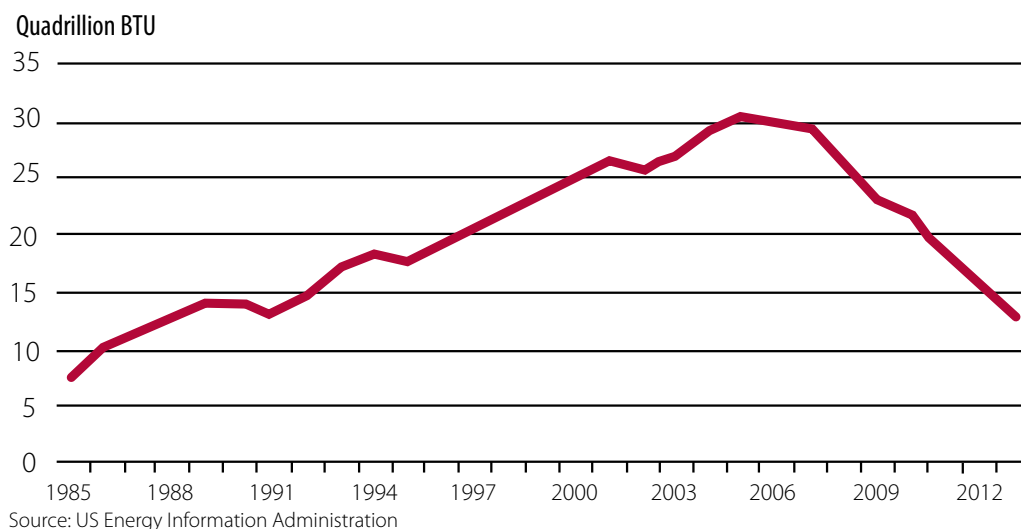
Because of the recent widespread use of fracking, US energy production is rapidly increasing. Natural gas production in the United States exceeded coal production in 2011 for the first time in 30 years. And domestic production of crude oil, which had been decreasing since 1970, began ticking up again in 2009.

The country ran record trade deficits between 2004 and 2008, with imported crude petroleum and refined products accounting for about a third of the red ink. But net energy imports have been nearly cut in half since the 2008 peak.

The federal government predicts that natural gas production will increase by 44 percent by 2040, with almost all the increase coming from gas that has been extracted from shale by fracking.

To be sure, fracking has its environmental drawbacks but, in this view, we simply can’t afford to jeopardize our strength and security by continuing to depend on other countries to meet our energy needs.

## Net US Energy Imports Have Been Nearly Cut in Half Since Peaking in 2008



## Clean Coal and Nuclear Power

Although its portion of our energy picture is shrinking, we still rely heavily on coal, primarily to generate electricity and fire industrial boilers. Much has been made in recent years of the environmental impacts caused by mining and burning coal, but new technologies are being developed every day to remove or reduce pollutant emissions to the atmosphere.

Clean coal technologies now include “washing,” “wet scrubbing,” and “gasification” methods that remove, separate, and store the dangerous chemicals produced by burning coal. Methane, a potent greenhouse gas that is released by mining coal, can now be diverted and turned into an energy source itself.

The world’s first coal-fired power plant designed to capture and store carbon dioxide went on line in Spremberg, Germany, in 2008. The facility, owned by a Swedish company, captures CO<sub>2</sub> and acid-rain-producing sulfides, separates them, and compresses the CO<sub>2</sub> into a liquid. Challenges still remain, but the aim, according to the company’s vice president, Lars Strömberg, is to develop a power plant with “almost zero” pollution.

The United States gets more than a third of its electricity from coal. And Americans are nothing if not ingenious. According to this option, we should support the development of technologies required to burn clean coal and continue to take full advantage of our cheapest and most abundant source of energy.

The United States has 65 commercial nuclear power plants in 31 states. For more than two decades, they have produced about one-fifth of the nation’s electricity. Nuclear energy doesn’t pollute the air or water. Because of that, some climate scientists have argued that increased use of nuclear power is the only way to increase energy supply while reducing the emissions that are warming the planet.

The federal government estimates that nuclear power in the United States will increase somewhat over the next few decades. This option argues that this trend should continue and expand.

## What We Could Do

Option One focuses on the need to control our own sources of energy so that we do not have to depend on countries that cannot be relied on to

remain friendly. The United States has abundant natural resources. If we have enough energy to run our society and maintain our standard of living, we should use it.

Here are some things this option suggests we could do, along with potential drawbacks:

- We could open up offshore sites to drilling for oil and natural gas. The federal government estimates that the outer continental shelf could hold more than 85 billion barrels of crude oil and that the sea floor could yield some 420 trillion cubic feet of natural gas.

*But . . . offshore development of any kind poses threats to marine life and the coastal environment. The 2010 disaster on the Deepwater Horizon oil rig in the Gulf of Mexico caused untold damage to beaches, wetlands, and wildlife habitats in several states as well as to their fishing and tourist industries.*

- The president should approve construction of the Keystone XL pipeline, which has been on hold for five years. The proposed pipeline would bring an estimated 830,000 barrels of crude oil a day from Canada (our most reliable ally) to America’s Gulf Coast refineries. This would lessen our dependence on unstable countries and create jobs here.

*But . . . our use of this oil—a particularly “dirty” variety extracted from Canadian oil sands—will worsen climate change. And, while thousands of temporary workers will be required to build the pipeline, it is estimated that only about 50 will be needed on a permanent basis to maintain it.*

- Coal companies and power plants should make it a priority to invest in clean coal technologies and the government could reward these efforts by easing restrictions on coal that is mined and burned in these ways. Coal mining is a major source of employment in some parts of our nation.

*But . . . coal mining produces serious environmental problems around the mine. And coal is a nonrenewable source of energy; reliance on it will only put off the day when we will have to find other ways to meet our energy needs.*

## OPTION TWO

We need to expand our energy sources by investing in renewable sources of energy. Some day, we will run out of coal, oil, and natural gas, so the sooner we make the switch to renewables the better off we will be.



# >> Put More Renewables and Clean Energy Sources into the Mix

**F**OSSIL FUELS HAVE BEEN GOOD TO US, powering the industrial and technological revolutions that have created our modern world. But this option argues that we must find more sources of energy if we are to continue to count on safe and secure energy sources.

A major problem with oil, natural gas, and other fossil fuels is that burning them releases large amounts of carbon dioxide and other greenhouse gases into the air. Those gases trap energy, causing our planet to warm. The US Environmental Protection Agency says temperatures have risen and will continue to do so. We are already seeing the consequences of climate change with more droughts, floods, and heat waves.

Finally, these fossil fuels were created from dead plants and animals over millions of years. Their supply is finite. When they are gone, there will be no more.

This option says that we need to find and use more sources of renewable energy. And, because we will inevitably have to move to renewables at some point, we should start down that path now. It will take time, but it will be worth it in the long run.

## New Sources of Energy

To meet our needs with this option, we will need to put more resources into technological advances, such as more efficient solar cells and wind turbines. We also need breakthroughs to new energy sources, and the best way for that to happen is to put more money into research.

The late Richard E. Smalley, a Nobel Prize-winning chemist who became a clean energy advocate late in his career, was outspoken on the subject. “We have to somehow wean ourselves off our dependence on oil—and the sooner the bet-



ter,” he said in a lecture at Rice University in 2003. “Can it be done soon enough to avoid the hard economic times, terrorism, war, and human suffering that will otherwise occur as we fight over the dwindling oil and gas reserves on the planet? Energy may very well be the single most critical challenge facing humanity in this century.”

We already are making progress toward the development and application of renewable energy in our homes and businesses. In 2012, about nine percent of all the energy used in our country came from renewable sources.

The US Energy Information Administration predicts that the amount of electricity from renewables, such as solar and wind energy, will grow in the coming years as new technology makes it possible to lower the costs. How much it grows depends on a number of factors.

An abundance of relatively low-cost natural gas, for example, is making expensive renewables less attractive. According to this option, government incentives may be needed to keep energy research focused on renewable technology. Such subsidies are currently used in some 40 countries to spur the use of renewable technologies by bringing down the costs to individual users.

A carbon tax levied on natural gas and coal could be used to raise the cost of those fuels, making renewables the cheaper way to go, comparatively.

Renewable advocates say that alternative energy sources could quickly and easily replace fossil fuels in a few years. This option admits that this

likely won’t happen quite that soon. But it will have to happen eventually because supplies of fossil fuels will inevitably run out.

## Wind, Water, and Sun

One of the oldest sources of energy comes from harnessing the power of falling water. It was first used thousands of years ago to turn paddlewheels to grind grain. The first hydroelectric power plant in this country began operating in 1882 near Appleton, Wisconsin.

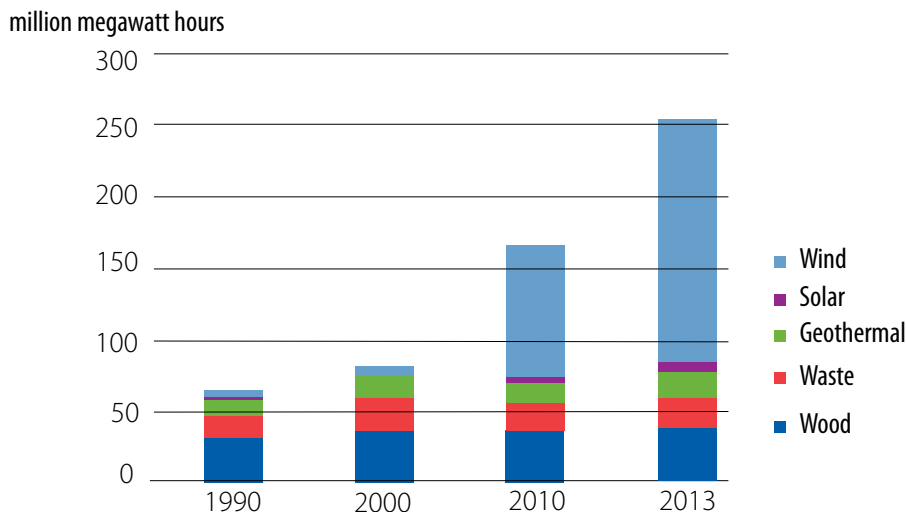
Today, renewable energy supplies close to 12 percent of our electricity. Most of that is generated by hydropower in the Northwest and California.

Current laws and regulations make it difficult to build new dams because of the adverse effects dams can have on waterways and the surrounding countryside. Damming rivers to generate hydropower can harm aquatic life by changing natural water temperature and chemistry, flooding farmland and archaeological sites, and forcing people to move.

A simple solution to that problem, according to this option, is to make use of dams that are already in place. A 2012 report from the US Department of Energy and the Oak Ridge National Laboratory found that adding electrical generating power to existing dams could increase hydropower by 15 percent without building new dams.

The next most common renewable fuel is wind energy, mostly produced by electric turbines turned by a good breeze, both on land and offshore. Wind energy is only about three percent of

## US Nonhydropower Renewable Electricity Generation Has Nearly Quadrupled Since 1990



Source: US Energy Information Administration

the overall picture, but has increased rapidly in the last dozen years. Behind much of that increase have been federal financial incentives and state rules that require electric utilities to generate a portion of their energy from renewable sources.

The federal government predicts that, by 2030, about one-fifth of the nation's energy could come from wind.

Proponents of wind energy point out that it uses no water, creates no waste products, and is becoming cheap enough to compete with electricity produced by burning fossil fuels. The most wind energy is generated in Texas. Iowa gets about one-fourth of its electricity from wind.

Solar energy also appears to have great promise. But at this point, it provides only one percent of the relatively small contribution from renewable sources, partly because of its relatively high costs.

Proponents of solar energy say these costs should come down with utility rebates and government tax incentives. Some states allow homeowners to sell excess solar power back to the utility on sunny days, lowering their monthly bills. In addition, the single largest cost is the solar panels themselves. As the volume of production increases, prices will come down just as they have done with semiconductors in computers.

Solar panels are going up in Connecticut homes at the rate of 1,000 a month, according to state records, partly because the cost of solar energy for homes has suddenly become more affordable. That is in part because the state has now made it possible for homeowners to lease solar equipment.

Connecticut resident T.J. Benoit, who has a 20-year lease on his solar panel, put \$13,000 down up front and has no payments. He expects to make the money back in five years because his formerly \$200-a-month electric bill has been cut in half. "It's worry free," he told an NBC interviewer recently. "It's either on or off and it takes care of itself."

While a variety of biofuels, made from plants and other organic waste, are under study and, in some cases, in use, perhaps the most promising of the advanced technologies for clean energy are hydrogen fuel cells. The only thing coming out of the tailpipe in automobiles powered by hydrogen fuel cells is water.

Cars using hydrogen fuel cells have been manufactured but they are, so far, prohibitively expensive for the average car buyer and could not be feasibly used today because they would require a nationwide network of hydrogen fueling stations. Considerable research is being conducted by agencies like the National Renewable Energy Laboratories and by all the major car companies to overcome these and other challenges.

## What We Could Do

- Homeowners can put solar panels on their roofs, while farmers and larger property owners could generate electricity with wind turbines. The initial expense would be offset by years of savings in fuel costs.

*But . . . both sun and wind can be unreliable sources of energy in many parts of the country. Making good use of solar panels and wind turbines may well depend on where you live.*

- The government can offer more incentives to US manufacturers to develop hydrogen fuel-cell technology. Cars powered by hydrogen gas emit only water and heat. Many car companies already have market-ready models of fuel-cell cars ready to go.

*But . . . in this country there is virtually no infrastructure to support fuel-cell cars. California has 10 hydrogen gas filling stations. South Carolina has one.*

- Utility companies could increase the construction of solar arrays and wind farms to produce electricity for their customers. The costs of solar energy have come down dramatically in the last few years, and wind turbine prices have decreased to the lowest in a decade.

*But . . . building transmission lines to places that have enough sun and wind would disrupt communities and the cost would be enormous. The blades at wind farms are noisy and can kill birds and bats.*

The most practical way to deal with our current energy problems is to use less energy and to do more with the energy we do use.



## >> Find Ways to Use Less Energy

**“WE HAVE A SERIOUS PROBLEM,”** said President George W. Bush in his 2006 State of the Union address. “America is addicted to oil.” And, as in the treatment of any addiction, the cure may lie not in trying to deal with the supply, but rather in curbing the demand.

We in the United States are energy gluttons compared to the rest of the world. We live in homes that use electricity 24 hours a day and take our powered-up devices wherever we go. We clog our highways with needlessly large four-wheel-drive vehicles and drive two blocks to pick up a gallon of milk. Americans use more gasoline than Europe, South America, Africa, and Asia combined, according to the US Energy Information Administration.

According to this option, there is no long-term future in this voracious use of energy produced by fossil fuels. They will, eventually, run out and, in the meantime, we continue to do great damage to the air, water, and earth that sustain us. While renewable, nonpolluting sources of energy may well be the answer to our problems, realistically we cannot expect them soon.

It will be many years—perhaps several generations—before we can all heat our houses with energy provided by the sun or drive cars fueled by hydrogen gas. In the meantime, according to this option, the best way to ensure a continuing flow of energy for ourselves and our children is to treat our addiction. We need to learn to use energy—

both domestic and foreign—more efficiently and less wastefully.

## Getting More Miles for Our Money

Large quantities of the oil we use come from countries we cannot count on as reliable allies. “The most direct way to reduce our dependency on foreign oil is simply to use less of it, starting with the cars and trucks we drive,” says Steven Chu, a Nobel Prize-winning physicist and former secretary of the US Department of Energy.

One way we already use less energy is by driving more fuel-efficient cars.

In 1973, when Arab members of OPEC imposed an oil embargo on the United States, the average American passenger vehicle got 19.9 miles to the gallon (mpg) of gas. The crisis that ensued after the embargo—rising gas prices and severe shortages at the pump—prompted Congress to pass the Energy Policy Conservation Act, which called for raising fuel-efficiency standards to 29.6 mpg. Considerably tougher standards were laid on manufacturers of new cars in 2012.

Carmakers will be required to achieve an average fuel economy of 54.5 mpg by the 2025 model year. There are, of course, many benefits to getting farther with less gas. Fuel-efficient vehicles are better for the pocketbook and the environment. Notably, according to the US Department of

Energy, the new mpg standards will reduce our energy use by two billion barrels of oil a day in 2025.

## Taxing Gas

The new rules are a significant step in the right direction, according to *New York Times* columnist Eduardo Porter, but there may be an even better way: raising taxes on gasoline. “The reason is fairly straightforward,” Porter says. “Fuel-efficiency standards do not really change drivers’ behavior in a helpful way. Gas taxes do.”

That is because a gas tax provides an immediate, direct incentive for drivers to reduce gasoline use. As the price of gas goes up, people will inevitably drive less. They will trade in their gas guzzlers for smaller, more fuel-efficient cars, and carmakers will take note of the trend and act accordingly.

As Porter points out, this is not just a theory. “When the price of gas shot abruptly past \$4 a gallon in 2008, Americans cut back sharply on their driving. Total miles driven on American highways declined for the first time since 1980, and gas use fell more than 4 percent.” All these trends reversed again when the price of gas receded.

While Americans complain almost continuously about gas prices they do, in fact, pay far less for gas than most other industrialized countries. Some Europeans pay more than twice as much. In Norway, a major oil-producing country, gas costs \$9.79 a gallon. In India a gallon of gas costs more than the average worker earns in a day.

Many politicians balk at the prospect of raising taxes but as the Highway Trust Fund (which is financed by gas taxes) faces imminent bankruptcy, support for raising the tax on gasoline is building among businesses, labor unions, truckers, the American Automobile Association, and others, according to the US Chamber of Commerce. In 2013, eight states, recognizing the economic consequences of crumbling roads and bridges, raised state gas taxes.

And finally, if we don’t want to pay more at the pump, we can consider walking and biking more.

### Comparative Gas Prices-June 2014

Price/Gallon	Country
\$9.79	Norway
\$8.28	Israel
\$6.94	New Zealand
\$5.84	Japan
\$5.34	Argentina
\$4.73	China
\$3.69	USA
\$3.19	Russia
\$1.77	United Arab Emirates
\$0.04	Venezuela

Source: Bloomberg Rankings



Many cities even encourage this, with dedicated bike lanes, bike-share programs, and zoning laws that encourage mixed-use, “walkable” new developments.

## Self-Regulation

Another way we can use less energy is by giving individuals more control over how and when they use electricity. Under the prevailing system, power plants produce electricity around the clock, but the peak use is during daylight hours. Electric utilities sometimes have a hard time keeping up with daytime demand, causing brownouts, and then generate power at night that is wasted.

A solution is the so-called smart grid that allows power companies and consumers to make more efficient use of electricity. For the power company, a smart grid might mean faster notification of a problem at a substation, or a break in a line. That can mean more cost savings and less waste.

The part of the grid installed at the home is a “smart meter” showing how much electricity is being used at any given time. This is coupled with pricing that rewards off-peak use. Check your smart meter and, if it is showing a lot of use, you might walk around the house turning off unneeded appliances. You could also set your clothes dryer to do its work at 3 a.m., when the rates are lower.

There have been some problems with the operation of smart meters and concerns that others might use the information that the meter is reporting about what goes on in your home. But advocates for smart meters say that privacy issues related to smart meters can be dealt with by the same kinds of laws that protect the privacy of health-care records.

There are many things that individuals can do to cut back on their energy use at home. Installing a more efficient showerhead could halve the 30 to 50 gallons used in a 5-minute shower. Turning off the water while lathering also saves water, as does turning off the water while brushing your teeth. Elsewhere in the house, people could change their heating, ventilation, and air conditioning (HVAC) filters regularly, install a programmable thermostat, and seal leaks in heating and air conditioning ducts and around windows and doors. Replacing

appliances like refrigerators with more efficient models can also have an impact on home energy use.

## What We Could Do

According to this option, we are missing the point when we go looking for new sources of energy. We need to find ways to use less energy in the first place or to use it more efficiently. Until the far-off day when we can all live on the energy produced by sustainable, nonpolluting sources, we should accept the changes we have to make in order to conserve the energy resources we have.

- The government should raise the gas tax and also continue to put pressure on car manufacturers to improve gas mileage by regulating the mpg standards of automobiles and trucks.

*But . . . higher gas taxes will be hardest on working people. Tough new fuel efficiency standards could make cars too costly for the average consumer. The effect of this would be that the government would have a greater say in what people drive.*

- Americans can do a lot to make their homes more energy efficient by buying Energy-Star-certified appliances, repairing the cracks and crevices through which they lose heat and cooled air, and using water-saving showerheads and toilets.

*But . . . upgrades and retrofits can be costly, especially in older homes.*

- Individuals can change extravagant and wasteful habits. We can, for instance, reset our thermostats and wear sweaters in the winter. We can walk or bike to nearby destinations instead of taking the car. Office buildings do not have to be lit up all night.

*But . . . some of these lifestyle changes would be particularly difficult for the elderly and the handicapped, and for stressed out families for whom time management is an issue. Offices and other commercial properties are often lit during off-hours for security reasons.*

S U M M A R Y



# >> America's Energy Future

## How Can We Take Charge?

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What we are facing now are the multiple consequences of an ever-increasing demand for a

dwindling supply of fossil fuels. It is time to come to grips with the key question: what should we do to ensure a continuing supply of energy to meet our needs and those of our children and grandchildren?

Americans face an uncertain energy future. Deciding what that future will look like will not be easy. Should we concentrate on producing more of the fuels we now use? Can we dramatically increase our use of renewable energy sources, such as the wind and sun? Do we need to think more about conservation and efficiency?

This issue guide provides a framework for working through these options, along with the drawbacks each presents, in seeking some common ground for action.

**OPTION ONE**

We should control our own sources of energy so that we will not have to depend on countries that cannot be relied on to remain friendly. The United States owns abundant natural resources. If we have enough energy to run our society and maintain our standard of living, we should use it.

*But, additional drilling and mining could lead to more polluted air and water. It also ties us to fossil fuels that eventually will run out.*

EXAMPLES OF WHAT MIGHT BE DONE	SOME CONSEQUENCES AND TRADE-OFFS TO CONSIDER
Oil companies should be allowed to drill more wells off our coasts and in areas like Alaska's Arctic National Wildlife Refuge.	A mishap on an offshore drilling platform or in a wilderness area can cause an environmental disaster.
We should continue to expand production of natural gas to heat our homes and produce electricity.	Concerns remain about pollution of water supplies, earthquakes, and other problems associated with "fracking."
Coal and power companies should invest in clean coal technologies and the government should support them by easing restrictions on mining and burning coal.	Coal mining causes considerable devastation to the environment where it occurs. Reliance on coal will just put off the development of new energy sources, which will be needed when coal runs out.
Utilities should build more nuclear power plants, which don't produce greenhouse gases.	We would generate more radioactive waste, which poses long-term dangers. We also would put more people's lives at risk from accidents.
Consumers should be more willing to allow construction of pipelines, oil refineries, and wind or solar farms, even in their own "backyards."	Such installations impose more of the burden of energy independence on relatively few people, and often disproportionately impact poor or minority populations.

## OPTION TWO

We need to expand our energy sources by putting more renewables into the mix. Not only is our lavish use of fossil fuels causing untold damage to the environment, but someday, we will run out of coal, oil, and natural gas, so the sooner we make the switch to renewable sources of energy the better off we will be.

*But, renewable energy technology is far from being a fully developed, reliable way to fuel our way of life. Making a wholesale change too soon would cripple our economy.*

EXAMPLES OF WHAT MIGHT BE DONE	SOME CONSEQUENCES AND TRADE-OFFS TO CONSIDER
More homeowners could install solar panels on their properties to produce at least part of the energy they need to run their homes.	Even though the cost of panels is dropping, this could still cost more than many people can afford, and the payback can take years.
Utilities should increase construction of wind and solar farms, which produce electricity with no pollution.	The blades of large wind turbines are noisy and can kill birds and bats. Large solar arrays, which demand full sun, often require the destruction of a great many trees in a neighborhood.
The government should relax restrictions on dam construction to create more hydroelectric power.	More dams would impede river commerce and destroy ecosystems.
The government should offer more incentives to US car manufacturers to develop fuel-cell technology.	There is little future in manufacturing fuel-cell cars until we develop an infrastructure to support them. There are currently only 10 hydrogen gas stations in the entire country.
More investment should be put into generating power with turbines turned by wave action.	Offshore generators can spoil the views on coastlines, and the energy produced is not competitive in price.

## OPTION THREE

The most practical way to deal with our current energy problems is not to produce more energy but to use less of it and to do more with the energy we do use. This will involve both stricter government regulation and changes in our individual lifestyles.

*But, it is very difficult for people to voluntarily scale back the conveniences they have become accustomed to in their daily lives.*

EXAMPLES OF WHAT MIGHT BE DONE	SOME CONSEQUENCES AND TRADE-OFFS TO CONSIDER
Governments could impose higher gas taxes that would discourage people from driving, while helping to repair the nation's deteriorating infrastructure.	Such a tax could stymie economic growth. It would hit poor people the hardest.
Americans should be much more efficient and less wasteful with energy in their homes, appliances, offices, and vehicles.	Upgrades and retrofits can be expensive. And making changes, such as taking shorter showers and turning down the thermostat, can be hard to implement.
Government and utilities should develop programs to reward individuals for switching to more efficient appliances, and for using them less.	Incentives can't last forever, and when they go away, people might well revert to more wasteful habits in their use of energy.
Government could continue to require better gas mileage for vehicles, and Americans should trade in their gas guzzlers for more efficient models.	Such requirements could restrict consumers' choices, and trading cars too often means more energy used to produce too many new vehicles.
Smart grids and new electric meters can reduce the amount of electricity that is generated and then wasted.	Changing our electrical grid would be expensive, and some new meters raise privacy concerns.



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