

energy choices

what should we do about america's energy future?

Meeting the United States' substantial appetite for energy raises a complex network of economic, environmental, and political issues. There are national-security and economic concerns, environmental problems such as air and water pollution, and potential climate-change effects from fossil fuels, such as extreme weather, sea-level rise, and changing growing seasons.

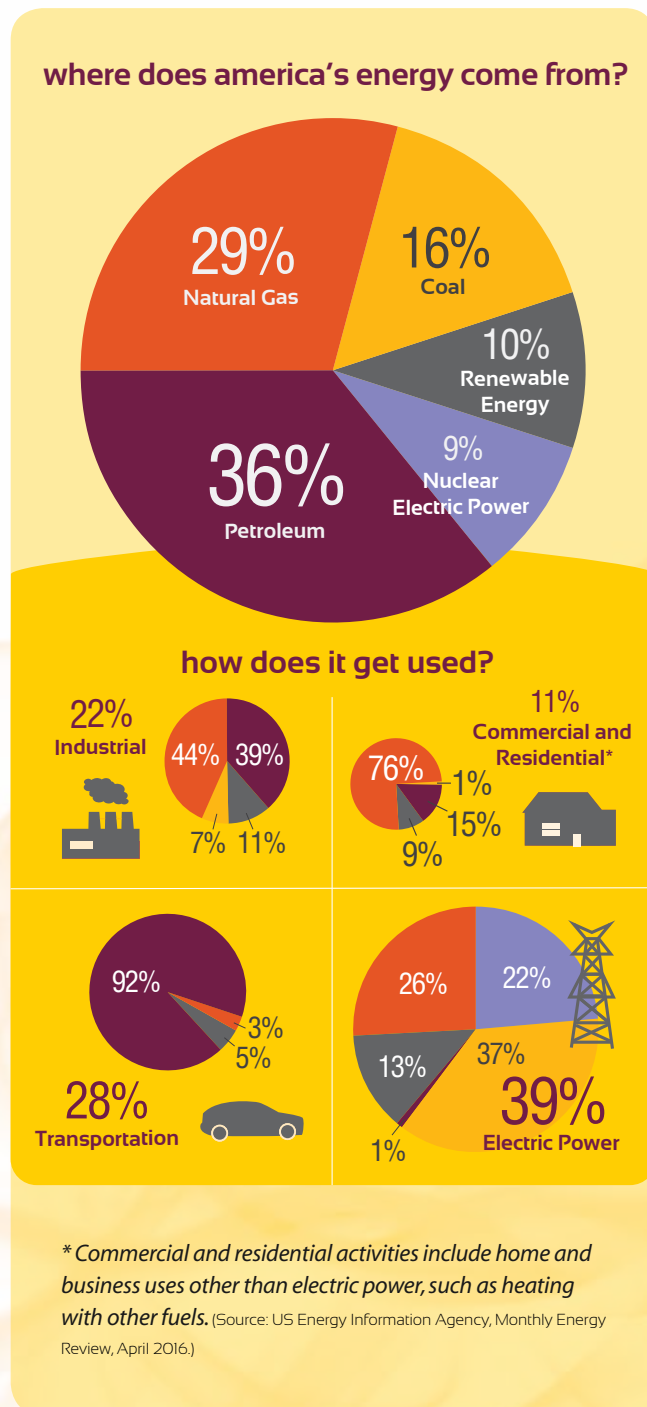
Americans have long been aware of the wide-ranging impacts of fueling our energy needs, along with ever-increasing global demands. This awareness is reflected in growing support for clean energy, development of new ways to extract oil and natural gas, efforts to do more with less power, and more.

Concerns over foreign entanglements, terrorism, and carbon pollution from fossil fuels have grown. At the same time, new domestic production from oil, natural gas, and renewable sources has helped America move closer to energy independence. New technologies for power production, storage, vehicle fuels, and energy efficiency are proliferating. The question is how to navigate this changing landscape and arrive at an energy future that supports a thriving economy.

This guide presents three options based on views and concerns of people from across the country. Any path we choose will put some of these concerns into tension with some others. Our task is to deliberate, or weigh options for action against the things that people hold valuable. What should America do to ensure a continuing supply of energy to meet our needs and those of our children and grandchildren?

Some questions to consider as you discuss the three options:

- How does this option address our concerns about producing, distributing, and using energy?
- What worries us or makes us uncomfortable about this approach?
- If this approach worked perfectly, what would the trade-offs or consequences be?



option 1: keep america self-reliant and stable

We should use our own abundant natural resources to produce all the energy we need to fuel our economy and avoid entanglements in unstable and unfriendly regions. Relying on the market and technological advancements will continue to lead us to a cleaner energy future. **BUT** large-scale energy production, even solar and wind power, has major environmental impacts, and unfairly affects communities near facilities like mines, refineries, and transmission lines. Furthermore, the transition to cleaner energy may not occur quickly enough to stave off the threat of climate change.

Examples of What Could Be Done

Some Trade-Offs to Consider

Open up more areas to oil and gas drilling, including off-shore and environmentally sensitive areas.

This could increase carbon pollution and threaten marine life as well as coastal and other sensitive natural areas.

Invest in large-scale solar and wind farms to produce large amounts of cleaner energy.

Adding needed transmission lines and ways to store surplus energy would increase cost and complexity, and reduce efficiency. There are also concerns about wildlife deaths and habitat.

Invest in cleaner coal technologies, and ease restrictions on coal that is mined and burned in less-polluting ways.

These emerging technologies are pricey and complicated, and won't eliminate environmental problems from mining and burning coal.

Be more willing to allow construction of pipelines, oil refineries, and wind and solar farms near where we live.

These facilities are often sited near rural, poor, and minority communities, making them bear an unfair share of the impacts of energy independence.

Continue to expand domestic oil and natural gas production.

"Fracking" and conventional production and exploration can disturb natural areas and use a lot of water. Water pollution, earthquakes, and boom-and-bust economic cycles can harm local communities.

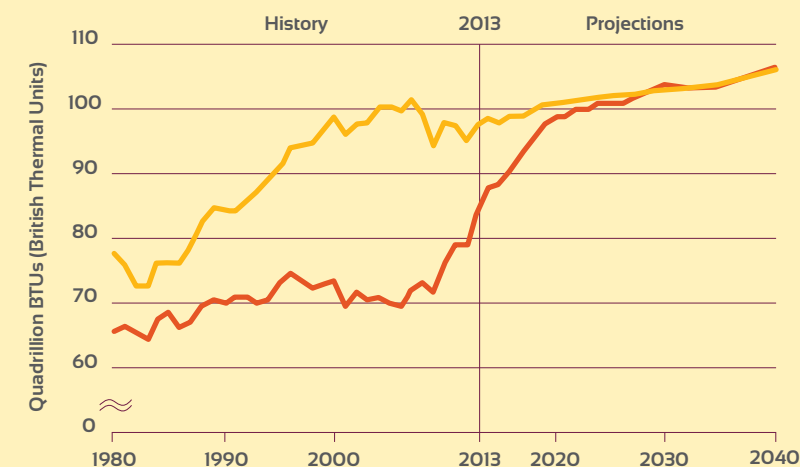
Increase nuclear power subsidies and ease restrictions on siting waste disposal facilities so this low-carbon, high-output power source is more viable.

Catastrophic failure and long-term environmental damage and human health impacts are risks. And we are still unclear about how to safely store nuclear waste.

the united states has the resources to produce all the energy we need

(Source: US Energy Information Agency, Annual Energy Outlook, 2016.)

Consumption
Production



option 2: take local responsibility for clean energy

If we want our country to transition to clean, low-carbon power, everyone needs to participate, as not only a consumer but also a producer. Currently, electricity in our system mainly flows one way, from large power plants through transmission and distribution lines to end users. We need to decentralize that system to enable more clean, locally produced energy to flow where it needs to. **BUT** retooling our power grid and fueling infrastructure could be costly, take a long time, and cause economic disruptions. This would change how our communities look and how we live, and add a responsibility for producing power that people may not want or be able to afford.

Examples of What Could Be Done	Some Trade-Offs to Consider
Install solar panels and wind generators on homes, businesses, and farms. The initial expenses would be offset by years of savings in fuel costs.	Placing solar and wind generators everywhere would add another set of responsibilities to home and business ownership, and change the aesthetics of our communities and rural areas.
Develop "microgrids"—local power systems that can make communities more self-sufficient and allow them to unplug from centralized power grids.	The transition could be slow, uneven, and costly. Changing regulations to promote local competition and investment could increase risk and make this essential service more expensive.
Create local smart grids to manage systems that include dispersed clean power generators, energy storage to handle the ups and downs of renewables, and other elements like electric vehicles, which can both use and store power.	These new systems will be complex and could end up varying widely in efficiency and reliability due to their reliance on solar and wind.
Add electrical generating capacity to those dams without it, and modernize existing hydroelectric dams to boost local power production.	Environmental problems with dams may outweigh the benefits of more hydroelectric power. We should prioritize removing dams, not improving them.
Boost incentives to US car manufacturers, universities, and technology firms to develop hydrogen fuel cells and other clean, locally supportable ways to power vehicles.	We would be using taxpayer funds to subsidize research that would benefit individual corporations.
Expand renewable energy targets and requirements for universities and local governments.	These institutions have their own goals, and should not have to deal with producing power, too.

networking many sources and users will make tomorrow's clean, local power possible

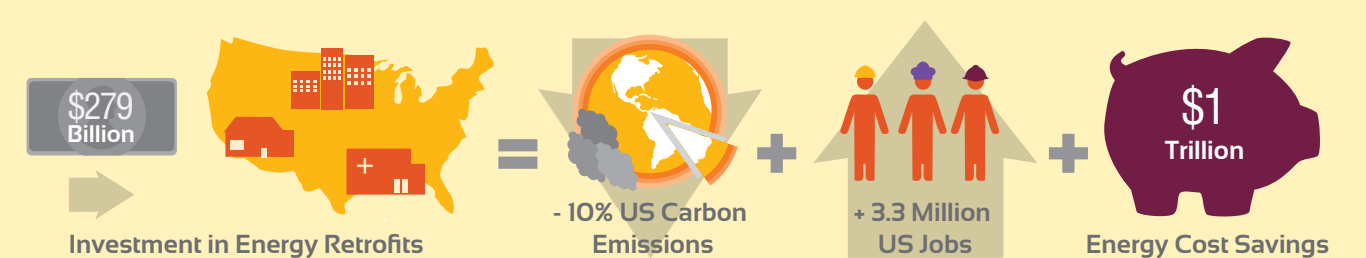


option 3: find ways to use less energy

We should aggressively reduce energy use and boost efficiency. Energy consumption in the United States has leveled off recently, but to tackle climate change, we must rapidly reduce carbon emissions. Using less energy could also lead to greater security. **BUT** requiring energy conservation could restrict personal choices and limit economic growth. And tackling climate change could depend more on replacing fossil fuels with cleaner fuels than on how much energy we use.

Examples of What Could Be Done	Some Trade-Offs to Consider
Raise gas taxes to discourage people from driving.	Raising taxes could stymie economic growth and hit poor people the hardest.
Combine technologies like "smart" electric meters and GPS devices with peer pressure and social media to encourage people to reduce energy use.	This raises privacy and security concerns. Voluntary use of apps and social media could limit their impact to people who are already inclined to conserve.
Strengthen local planning and zoning to stop sprawling development, and invest in public transportation to reduce the need for residents to drive.	This could limit choices about where and how to live. Also, property values could skyrocket where development is allowed, and decline where it is not.
Use volunteers to offer education and technical assistance for home weatherization, programmable thermostat installation, and other changes to reduce home energy use.	These programs won't create the sweeping changes in how we live, what we buy, where our food is grown, and the fuels we use that are likely to be needed to materially slow climate change.
Ease regulatory processes to bring new energy-saving technologies to the market more quickly.	Regulations are there to protect us, and some harmful new technologies may slip through the cracks if we loosen our standards.
Use less heat and air conditioning; walk, bike, or take public transportation; turn off lights in office buildings at night, and make other choices to reduce energy use.	We may need to require changes rather than make them voluntary. And these changes could be difficult for the elderly, the handicapped, and stressed-out families short on time.

energy retrofits for buildings would help the planet, create jobs, and save money



(Source: Deutsche Bank Climate Change Advisors and Rockefeller Foundation, United States Building Energy Efficiency Retrofits Market Sizing and Financing Models, March 2012)