

# Can we quickly replace fossil fuels with renewables?

## Experts project fossil fuels will remain dominant for decades to come

Renewables (including solar, wind, geothermal, biomass, biogas, and low-impact hydroelectricity) represented 10.5% of our energy consumption in 2016 and are expected to reach 14% by 2040. Fossil fuels (including petroleum, natural gas, and coal) accounted for 81% of total U.S. energy consumption in 2016 and are projected at 76% in 2040.<sup>1</sup>

## Fossil fuels and their derivatives are hard to replace because of how they are used

Many of the products we now think of as everyday essentials come from oil and natural gas. Not just gasoline, diesel, jet fuel and other fuels. But also products produced using petrochemicals, like smart phones, toys, detergents, clothing, carpets, heart valves, and even shampoo. Fuels derived from petroleum, coal, and natural gas are used in transportation, for industrial and commercial uses, and for electricity generation.

## Renewable energy has some great benefits

Generating energy through wind, solar, and other renewable sources reduces some types of air pollution and makes economic and practical sense in many circumstances where the wind always blows and the sun always shines. Plus, it's always good when we can diversify our energy supply. And of course, as the renewable energy industry grows it will create jobs and contribute to economic development.

## But nothing compares to fossil fuels in terms of energy density

Energy density is the amount of usable energy that can be stored in a given mass of a substance or system. The higher the energy density of a system or material, the greater the amount of energy stored in its mass. Fuels high in energy content use less space and are often the easiest to transport for various uses. In terms of bang-for-the-buck, no product offers nearly the energy density or efficiency of fossil fuels. For instance, a gallon of gas has enough energy to charge an iPhone every day for almost 20 years.<sup>2</sup>

## Did you know?

The blades and engine housing on wind turbines contain petrochemicals. Ethylene, derived from oil and natural gas, is integral to the production of solar panels.

<sup>1</sup> <https://www.eia.gov/tools/faqs/faq.php?id=427&t=3>

<sup>2</sup> <https://energyfactor.exxonmobil.com/category/perspectives/>