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How Will The Coronavirus Affect Energy Use In America?

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11-14 minutes

There is little doubt that the world has entered [a global economic recession](#) as a result of the COVID-19 pandemic. Every recession lowers energy use, and this one may be a whopper. The 2008 financial crisis, and the [Great Recession](#) that followed, had a [pronounced negative impact](#) on the oil and gas sector, sending the price of a barrel of crude oil from about \$150 to \$35 in only a few months.



The Coronavirus pandemic is affecting energy use. As we all hunker down, work from home, stop ... [+] recreational travel, and shutter all restaurants, bars and sporting events, petroleum use, especially gasoline and jet fuel, will dramatically decrease, and the global surpluses will increase beyond historic levels, so we will see less of these supertankers on the seas. Shown here is the Supertanker AbQaiq.

US Navy (Tierney)

So it was particularly foolish for the Saudis to have initiated another [oil war with Russia](#) and the United States a few weeks ago as the coronavirus pandemic was emerging. [The](#)

[United States won the last oil war](#), but everyone's going to lose during this one.

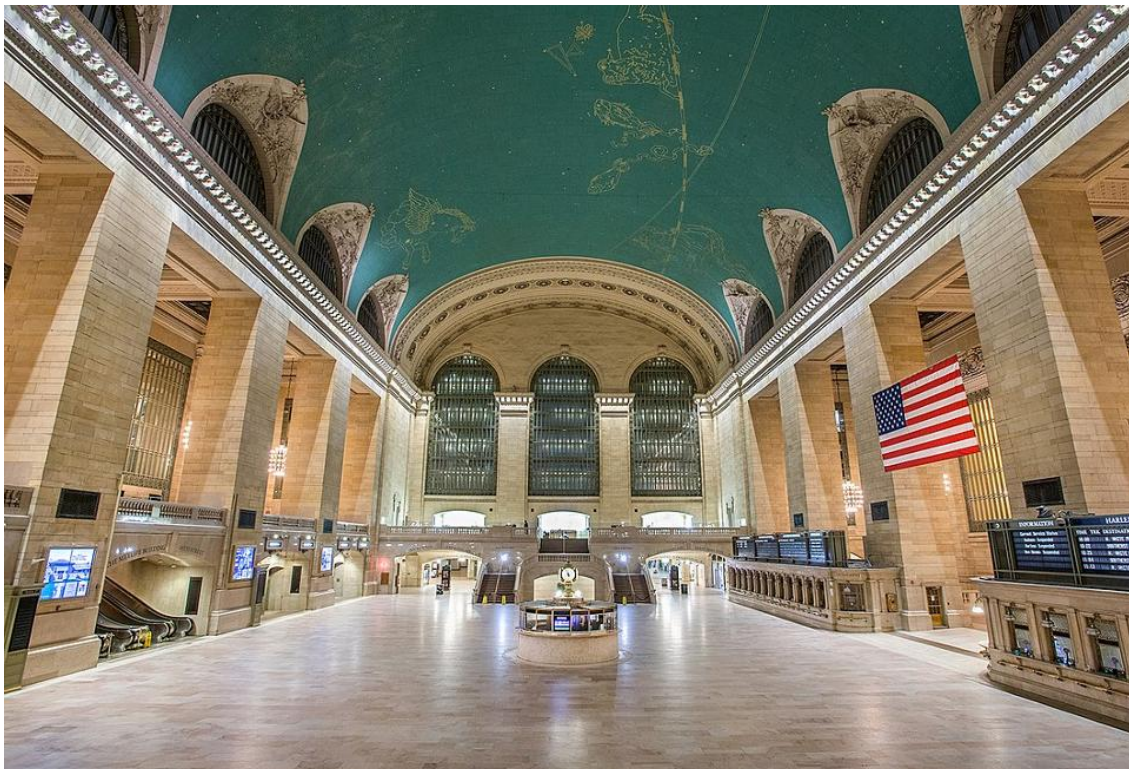
According to [IHS Markit](#), *United States oil production will bear the largest impacts in 2020-2021, and could fall by several million barrels per day over the next year.* They point to a possible buildup of the most extreme global oil supply surplus ever recorded, ranging from 800 million to 1.3 billion barrels in the first six months of 2020.

Last year, the United States used about [142.23 billion gallons](#) (3.39 billion barrels) of gasoline and about [35 billion gallons of diesel](#). Airlines consumed about [18 billion gallons of jet fuel](#).

The airline industry is devastated so we can assume most of that consumption will stop during this crisis. Assuming long-haulers won't stop shipments too much because they

are essential, diesel may not drop too much. But gasoline will drop dramatically as we all hunker down, work from home, stop recreational travel, and shutter all restaurants, bars and sporting events.

The average commute in the United States is 45 minutes and about 80% of that uses gasoline. According to [the U.S. Census Bureau](#), 85% of our 150 million workers (or 128 million people) drove to their workplace in an automobile.



Commuting is down as we all hunker down against the pandemic. Places like Grand Central Station are ... [+] almost empty.

Flickr/MTA

[Just commuting to work](#) takes and costs the average worker about \$2,600 a year, which translates to about \$330 billion/yr (\$28 billion/month). If 80% of commutes stop for 3 months because of the pandemic, then we will lose about \$67 billion in gasoline purchases. More if this goes on longer, less if it ends sooner.

The United States is a highly-industrialized country, consuming about [100 quadrillion BTUs](#) per year. According to the Energy Information Administration, our [general energy breaks down as](#) Industrial (32%), Transportation (29%), Commercial (18%) and Residential (20%).

Thus, if this isolation goes on for 3 months, it could cause significantly less energy use in the first three sectors, perhaps as much as half, which would lower energy use by about 15 quadrillion BTU. Although it depends on the energy source (from about \$17 to \$30/million BTU), the average cost of a million BTU is about \$25.

So not using 15 quadrillion BTU could mean not spending close to \$400 billion on energy in only three months as a result of this crisis.

On the other hand, sheltering in place for long periods, watching videos and streaming shows, as well as online schooling and conferencing, means more energy use for those activities. At first, one might not think that's much, but a study by [SaveOnEnergy](#) shows that something like binging Netflix uses [more energy \(and emits more CO2\)](#)

[than you might think.](#)

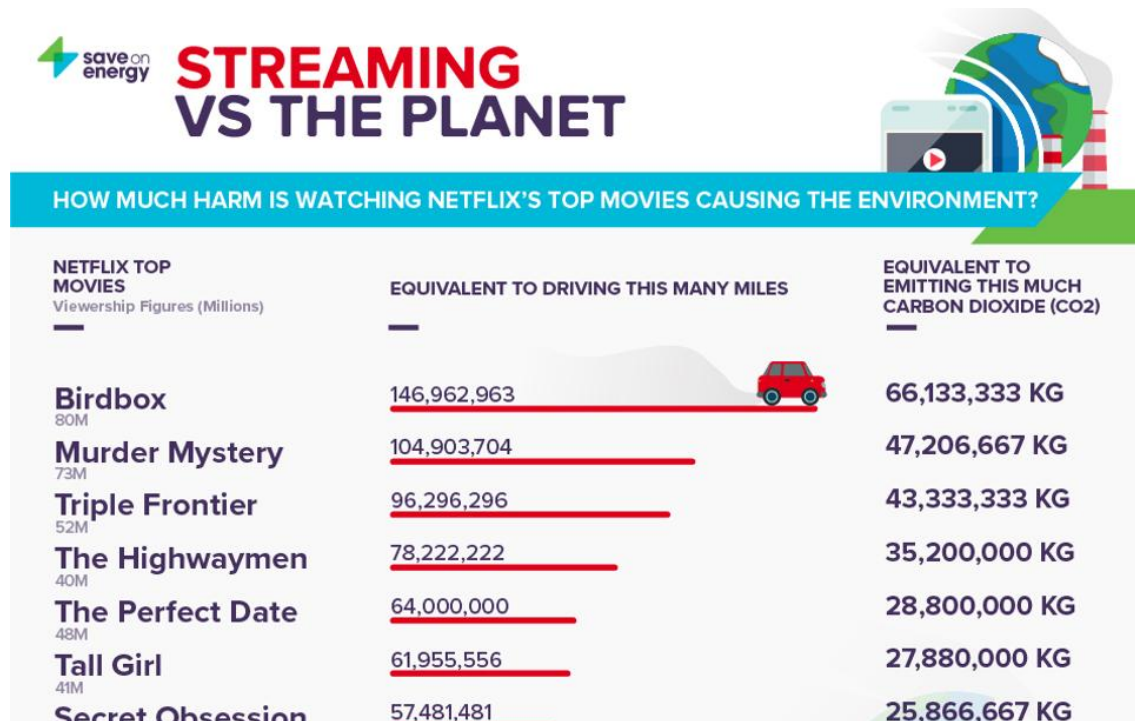
[DOE has been following](#) this issue for years.

Data centers and server-farms are one of the most energy-intensive building types,

consuming [10 to 50 times the energy per floor space of a typical commercial office building.](#)

Collectively, these spaces account for [approximately 2% of the total U.S. electricity use,](#)

and as our country's use of information technology grows, data center and server energy use is expected to grow too.





According to SaveOnEnergy, the energy generated from Netflix users' total 80 million views of the ... [+] thriller Birdbox could be the equivalent of driving more than 146 million miles and emitting over 66 million kg of CO2.

SaveOnEnergy

Just looking at Netflix (see figure), the SaveOnEnergy study suggests that the energy generated from Netflix users' total 80 million views of the thriller Birdbox is the equivalent of driving more than 146 million miles and emitting over 66 million kg of CO2. That's almost the same as 80 million viewers driving 2 miles to the movies.

However, others do not agree, and say that it

depends on where the streaming data is coming from. Some web activities connect to big data centers and run [billions of Google searches each day](#) or perform complex analyses — like the [explosion in personal algorithms and big data](#) that choose products to show you on websites — which require lots of computing and energy.

But streaming is different. "Streaming is not something that's computationally intensive," [said Vishal Misra](#), a computer scientist at Columbia University. When you stream *Game of Thrones*, the show isn't streaming to you from that type of giant data center, but from a different type of data center called a Content Delivery Network which physically stores the episode and simply copies information as opposed to asking computers to crunch numbers and search through massive banks of

information.

Regardless of how it breaks down, these are growing activities in the world. Cisco's Visual Network Indicator predicts that online videos will account for [82% of all internet traffic by 2022](#) from the almost 5 billion internet users that will exist by that time and their over 28 billion fixed and mobile personal devices and connections. This will require global IP traffic to reach about 5 zettabytes per year by 2022. Zetta, or 1 followed by 21 zeros, is not a prefix used very much.

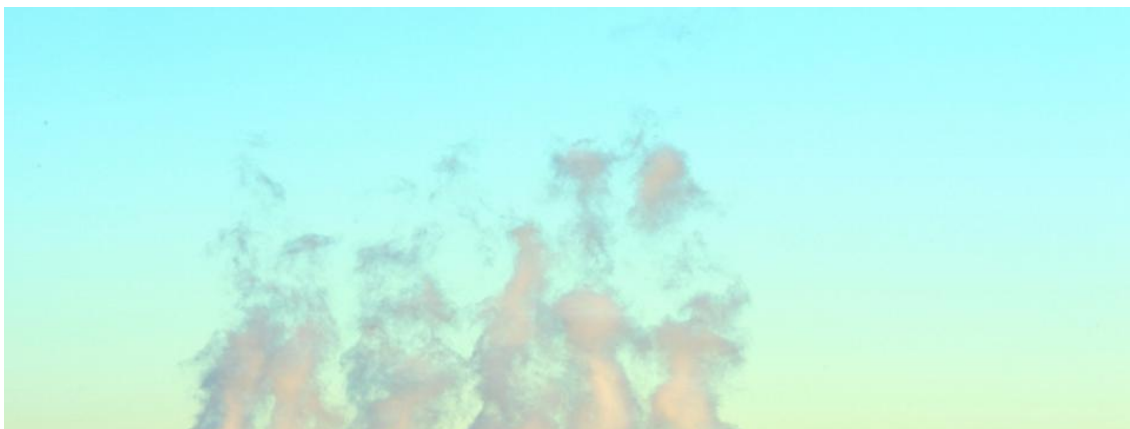
Not to mention charging 28 billion personal devices.

The energy producers may also be affected. Coal is probably the worst. Large coal plants take over one hundred 100-ton coal cars per day. Coal plants have only about two months of fuel on hand, so the pandemic threatens

that supply.

The [National Mining Association](#) asked [President Trump](#), Speaker Nancy Pelosi and Majority Leader Mitch McConnell to ensure that coal companies have access to the necessary cash flow they need to continue operations.

On the other hand, nuclear is the least affected. Nuclear is the most security and disaster-minded industry there is. It's why nothing bad ever happens to our nuclear plants. Nuclear workers are highly trained in protocols and procedures that are ideal for handling contamination of any type, including biologicals.





Nuclear is the most security and disaster-minded industry there is, with workers highly trained in ... [+] protocols and procedures that are ideal for handling contamination of any type, including a pandemic. And nuclear has years' worth of fuel onsite since it uses so little fuel to produce so much energy. Shown here is Columbia Generating Station near Richland, WA. The plume is pure water vapor.

Energy Northwest

And nuclear has years' worth of fuel onsite since it uses so little fuel to produce so much energy. [And there is plenty](#) of U inventory on hand to ride out this global pandemic.

Renewables have no fuel to worry about but they do require natural gas as backup in most places, except the Pacific Northwest where hydro buffers them. So as long as gas supplies are uninterrupted, they're OK.

There is no real threat to our utilities from this pandemic because disaster planning is an integral part of electric and gas utilities, which regularly deal with hurricanes, earthquakes, cyberattacks and other disruptions that threaten to disable critical infrastructure.

In fact, the utility and energy industries started developing detailed pandemic plans over a decade ago, in the wake of SARS.

These plans involve stopping and putting off maintenance and routine activities until the pandemic dies down, restricting site access to essential personnel, seating control center staffers farther apart from each other and

being prepared to scale down to a skeleton crew if enough people get sick.

According to Scott Aaronson, VP of Security and Preparedness for the Edison Electric Institute, utilities are participating in twice-weekly phone conferences with federal officials at the Department of Energy and the Department of Homeland Security. Says Aaronson, “By planning for a lot of different worst-case scenarios and a lot of potential contingencies, I have confidence that the sector will be prepared to respond no matter how this evolves.”

Such planning is necessary because most utility employees can’t work from home but need to be in the field, operating power plants or repairing electricity distribution lines or checking for gas leaks in homes.

There is another real fear for Americans on

the edge financially because of not working, and that is the fear of having their utilities shut off for non-payment. Some Governors, like [Washington State's Jay Inslee](#) and [California's Gavin Newsom](#), are addressing that by urging utilities not to disconnect for non-payment, to waive late fees, offer payment plans and expand bill assistance plans.

The utilities are listening and taking some or all of these steps, like Seattle's Puget Sound Energy and Tacoma Public Utilities, and California's Edison, PG&E, San Diego Gas & Electric, Southern California Gas and the Los Angeles Department of Water and Power.

The California Public Utilities Commission [extended that protection last week](#) to all energy, water, sewer, and communications companies under its jurisdiction. The

moratorium on disconnections is intended to last 12 months.



This pandemic will result in more hospital beds, especially ICUs like this one. The United States ... [+] has about 925,000 hospital beds, but we need an additional 575,000 beds to handle epidemics and other disasters.

Norbert Kaiser

Finally, the pandemic itself has an energy need. The United States has about 925,000

hospital beds, or 2.8 beds per 1,000 people. As Dave Christie points out, something called the [Hill-Burton Act](#) suggests that number should be 4.5 beds per 1,000 to handle epidemics and unlooked-for disasters. So we would need an additional 575,000 beds.

According to a [2007 report by the EIA](#), the biggest 3,040 hospitals with approximately 915,000 beds used about 458 trillion BTUs per year. To add 575,000 beds would require another 287 trillion BTUs, or about 85 billion kWhs, per year. Not including ICU units.

That translates into 10 nuclear power plants like our near-by [Columbia Generating Station](#), 13 large coal plants, 15 large gas plants, or the output of four [Grand Coulee Dams](#).

So this pandemic's effects on energy use is going to be complicated. Like 9/11 and the

1918 Spanish Flu, this pandemic will change how we live and that will mean how we use energy. At the least, more workers will work from home if at all possible.

We will be tracking national energy use over the next few weeks to see what actually evolves. For those of you who want to dig deep into regional electric demands over time, visit the Energy Information Administration [hourly electric grid monitor web site](#). Each circle on the maps is a balancing area and if you hover over the circles, you will see the name and outline of the balancing area.

So don't worry about energy, just stay safe, stay home as much as you can and keep your distance.