

How gasoline gets to your neighborhood service station

When the first U.S. oil well was drilled in 1859, gasoline was a byproduct of the kerosene distillation process and was discarded. It was only recognized as a valuable fuel after the invention of the automobile in 1892. Fast forward to 2012 — Americans used about 366 million gallons per day of gasoline — more than one gallon for every man, woman and child that lives in the U.S. How does the oil in the ground become the gas we use to fill up our cars? The process begins with...

Extraction

Onshore

Offshore



How deep can they go?
ExxonMobil drilled an oil well in Russia to a depth of **37,016 feet** or over seven miles.

How deep can they go?
Shell is developing the world's deepest production facility in the Gulf of Mexico. It will extract oil from **9,500 feet**, slightly less than two miles, beneath the surface of the water.

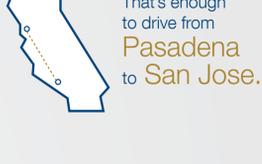
How much oil can one well extract each day?
Up to **4,000 barrels per day** (Worldwide average)

How much oil can one platform extract each day?
Up to **200,000 barrels per day** (Worldwide average)

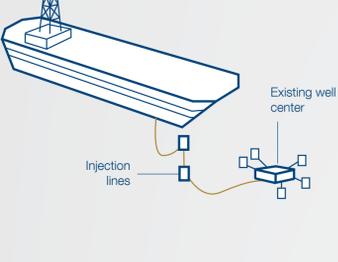


One barrel of crude oil (42 U.S. Gallons), when refined produces about

19 gallons of finished motor gasoline, as well as other petroleum products.



That's enough to drive from **Pasadena to San Jose.**



Where production is headed

FPSO: Floating production, storage and offloading vessels house facilities for both the production and the storage of hydrocarbons.

Enhanced oil recovery

Once the natural pressure that lifts oil out of a well is depleted, there still may be large amounts of oil in the reservoir. New advancements in enhanced oil recovery — such as steam injection using solar power, and subsea motors and pumps for pumping oil up to the surface or for injecting water into wells — focus on extracting more oil from these "spent" wells.

Transportation

Crude oil is transported from the well site by pipeline directly to a refinery or tanker terminal. On offshore platforms without a pipeline, oil is stored in onboard storage tanks or piped to the nearby FPSO to be transported by shuttle tanker.

Pipelines

transport raw petroleum from production locations (both onshore and offshore) to refineries for processing.



The U.S. has over **180,000 miles** of pipeline transmission pipelines that operate 24 hours a day, seven days a week.

Tankers

collect crude oil from offshore production sites that aren't connected to a pipeline.



Terminal

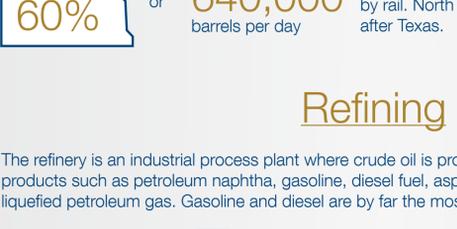
The terminal is where the oil is accounted for and then transferred to its next destination.

Custody transfer

Often the pipeline owner isn't the owner of the petroleum it transports — and the pipeline might carry product for multiple customers on the same day. Owners have to be able to accurately track and measure what flows through their pipelines at all times.

Rail

transports oil and gas to the refinery from new reserves in places without existing pipelines.



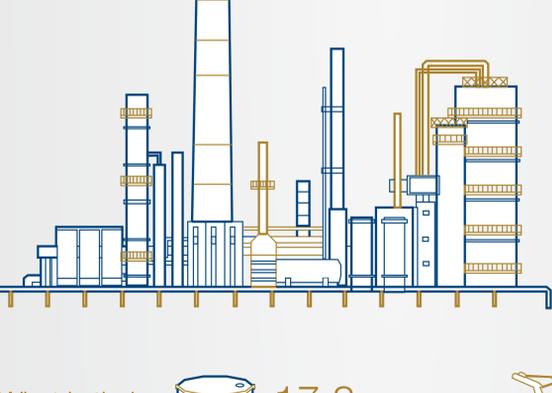
714 barrels of crude can fit in one rail car.

97,135 carloads of crude were transported in the first quarter of 2013.

More than **60%** or **640,000** barrels per day of crude oil produced in North Dakota is transported by rail. North Dakota is the largest oil producing state after Texas.

Refining

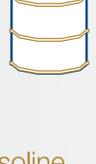
The refinery is an industrial process plant where crude oil is processed and refined into more useful products such as petroleum naphtha, gasoline, diesel fuel, asphalt base, heating oil, kerosene and liquefied petroleum gas. Gasoline and diesel are by far the most refined products today.



143 refineries operating in the U.S.

Located in... traditional crude production areas, such as Texas and Oklahoma and on both coasts and the Gulf of Mexico.

What is their collective capacity?



17.8 million barrels of crude oil per calendar day



338 million gallons of gasoline

Not all oil is refined into gasoline. Other products made from crude oil in refineries include:



diesel



kerosene



jet fuel



asphalt



plastics

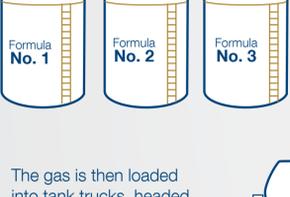
New automation technology helps to make the refining process more efficient, with consistent product quality and more product made.



It also reduces unplanned production downtime. An estimated 80 percent is preventable; 40 percent of that is caused by human error. These losses cost global process industries \$20 billion each year.

From the refinery to your local gas station

May and June are peak production months for gasoline, to meet demand for the summer season. Refiners switch from producing winter grade gas to summer grade blends in late March/early April; summer grade blends are more expensive to make.



While still at the refinery, the individual gasoline formulas are blended to a base stock, or standard specification. From there, the base stock gasoline goes to a terminal, where additives are blended in to create the brand-specific formulations of gasoline. Most brands have three grades of gas, and these are also created during the blending.

The gas is then loaded into tank trucks, headed to the stations.



Trucks can travel up to

400

miles depending on the location of the refinery and the gas station.



Each truck can carry approximately **10,000** gallons of gasoline.



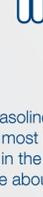
There are approximately **162,000** gas stations in the U.S.



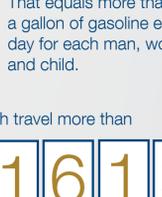
Peak gasoline demand tends to be in June, July and August.



Americans used approximately **366 million** gallons of gasoline per day in 2012.



With roughly **305 million** people in the U.S.



That equals more than a gallon of gasoline every day for each man, woman and child.



Today, gasoline is the fuel used by most passenger vehicles in the U.S. There are about **254 million** vehicles that use gasoline.

They each travel more than **11,618** miles per year.

That is collectively **2,950,972 million** miles.



Enough to make **15,872** round trips to the sun from the Earth.



Sources:

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