NPGA

NATIONAL PROPANE GAS ASSOCIATION

propane

ENERGY FOR EVERYONE

What is Propane?

Propane is a portable energy source, a gas compressed and stored as a liquid. Propane is nontoxic, colorless, and odorless. It's most commonly used for home energy needs, including cooking and heating. It's also a valuable fuel for agriculture, on- and off-road engines, and commercial applications. Propane is officially recognized as an alternative fuel by the U.S. Environmental Protection Agency.

Propane is a Key Resource for Net Zero

"Net zero" is an overall balance between emissions produced and emissions taken out of the atmosphere. The use of propane as a fuel can help reduce CO_2 emissions by replacing heavy carbon fuels like coal and oil.[1]

Propane Accelerates Decarbonization

Decarbonization requires energy options. The U.S. Department of Energy's Office of Scientific and Technical Information reports large emissions reductions are achievable through a broad range of opportunities including the use of low- or zero-carbon alternatives[2] like propane. In the U.S., decarbonization is estimated to cost $20-$25 trillion over the next 20 years.[3] While decarbonization tools vary, the majority of those dollars are focused on full electrification.

On-Site Electricity Generation

Propane makes ultra-efficient combined heat and power (CHP) technology possible. CHP generates on-site electricity and useable thermal energy. An average CHP system achieves efficiencies of 60-80% for producing electricity. Large scale electricity generation operates at an average efficiency rate of 36%.[4]

Propane Ensures Equity

Everyone should have access to clean energy. For many renewable and sustainable energy sources, that doesn't mean free or affordable. Utility programs that promote rooftop solar power, electric vehicles, and home energy storage are largely inaccessible to low-income households. Urban and rural low-income households spend roughly three times as much of their income on energy costs as moderate-income households. In February 2021, EIA reported that, per million Btu, electricity was 68% more expensive than propane.[5] Energy equity starts today with propane.

RENEWABLE PROPANE

Renewable propane is not a fossil fuel.
It is made from plant and vegetable oils, waste greases and animal fat.[6]

Renewable Propane Pathway

Hydrogen, under pressure and temperature, can break down large vegetable oil molecules into renewable propane and diesel.

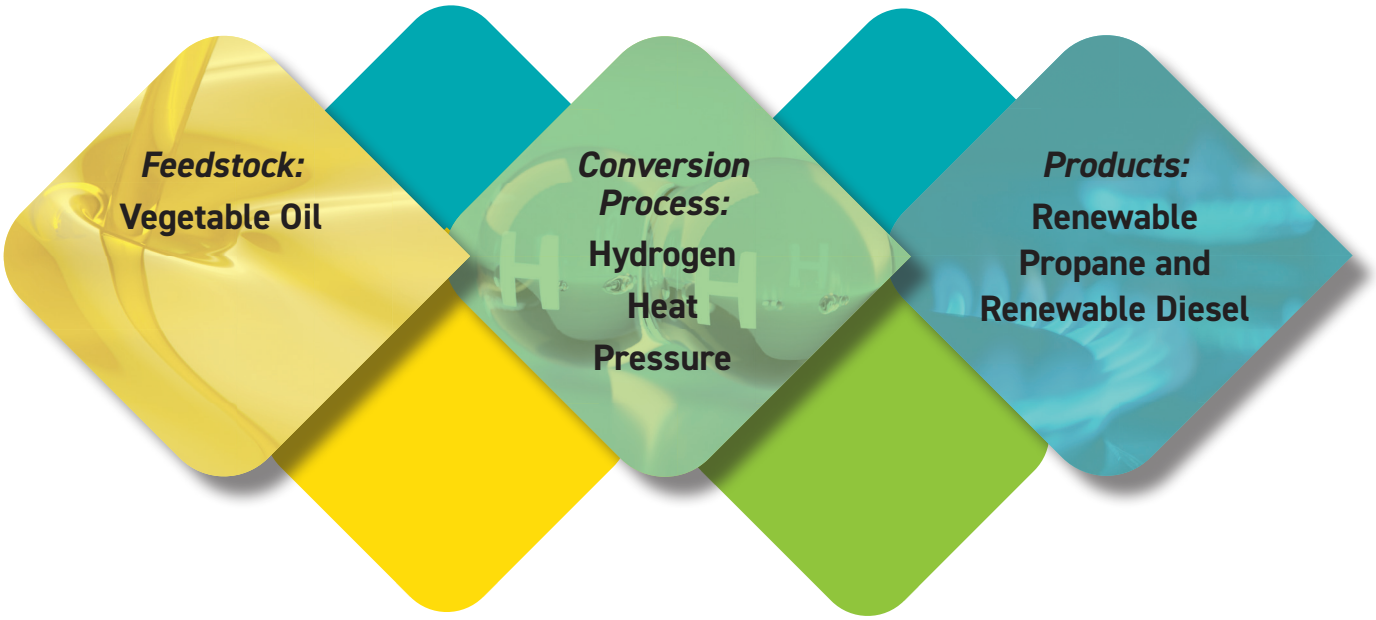
No Wait for Renewable

Renewable propane is here today and already in use. It is being manufactured in the U.S. right now.[7]

1:1 Fit for Renewable

The use of renewable propane does not require technology changes. Engines and appliances that use conventional propane can also use renewable propane.

Renewable Supply Chain



Making a Clean Energy Cleaner

Renewable propane has the same great features as conventional propane — reliability, portability, power, and reduced emissions — but with the added benefit of reducing GHG emissions even more!

Renewable is High Performance

The use of renewable propane reduces emissions without sacrificing performance.

Autogas

Renewable propane autogas powers police fleets, school buses, and delivery trucks. There are 3,500+ public and private refueling stations nationwide. Approximately 200,000 vehicles in the U.S. have been purchased or converted to propane autogas.

The propane school bus fleet has grown approximately 920% since 2012.

Portland Public Schools report that propane autogas buses run up to 30,000 miles longer than those fueled by gasoline, and Boston Public Schools save an estimated $1,000 in fuel costs per day by using propane powered buses instead of diesel.

The U.S. Farm

Propane is used on 800,000 farms in the U.S. Harvesting with propane crop dryers enables a farmer to maximize the farm's cycles and deliver the highest quality crops to market.

Propane can be found on 40% of American farms.

Better Than the Grid

More than 60% of energy used to generate electricity is lost in the production process[8] and nearly 20% of grid electricity comes from coal.[9] Almost no energy is lost as it travels from the propane tank to the energy application. Propane is a highly efficient, low-waste energy that is ready to go.

Building Community Resilience

Access to propane generators can mean the ability to function during or after an ongoing natural disaster or accidental power outage. Propane is locally stored and readily available in the event of a catastrophic failure of the grid.

Energy's First Responder

Propane companies frequently work with the Federal Emergency Management Agency (FEMA) or government contractors to provide heat for temporary structures, fuel for mobile kitchens, and hot water for mobile showers and laundry facilities. During the onset of the COVID-19 pandemic, propane provided critical energy for temporary overflow hospitals and testing sites.[10]

The Numbers

Top ranked states by retail propane sales

The top 10 states by total retail sales accounted for 48% of total U.S. propane sales, while the remaining 40 states and District of Columbia totaled 52% of total sales. The table at right shows the top 10 ranked states by total retail propane sales and average gallons sold per account.

Top 10 states by total retail propane sales

(millions of gallons)

State	Rank	2020 Propane Sales (Mn Gallons)	Residential Sales Per Account	Commercial Sales Per Account
Michigan	1	535	628	1,670
California	2	519	402	1,554
Minnesota	3	512	757	2,408
Illinois	4	486	884	3,024
Iowa	5	467	1,065	2,509
Wisconsin	6	435	738	2,583
Texas	7	432	276	3,144
New York	8	417	334	1,655
North Carolina	9	372	228	1,270
Pennsylvania	10	357	339	1,776
Other States		4,908	419	2,197
Total U.S.		**9,440**	**414**	**1,956**

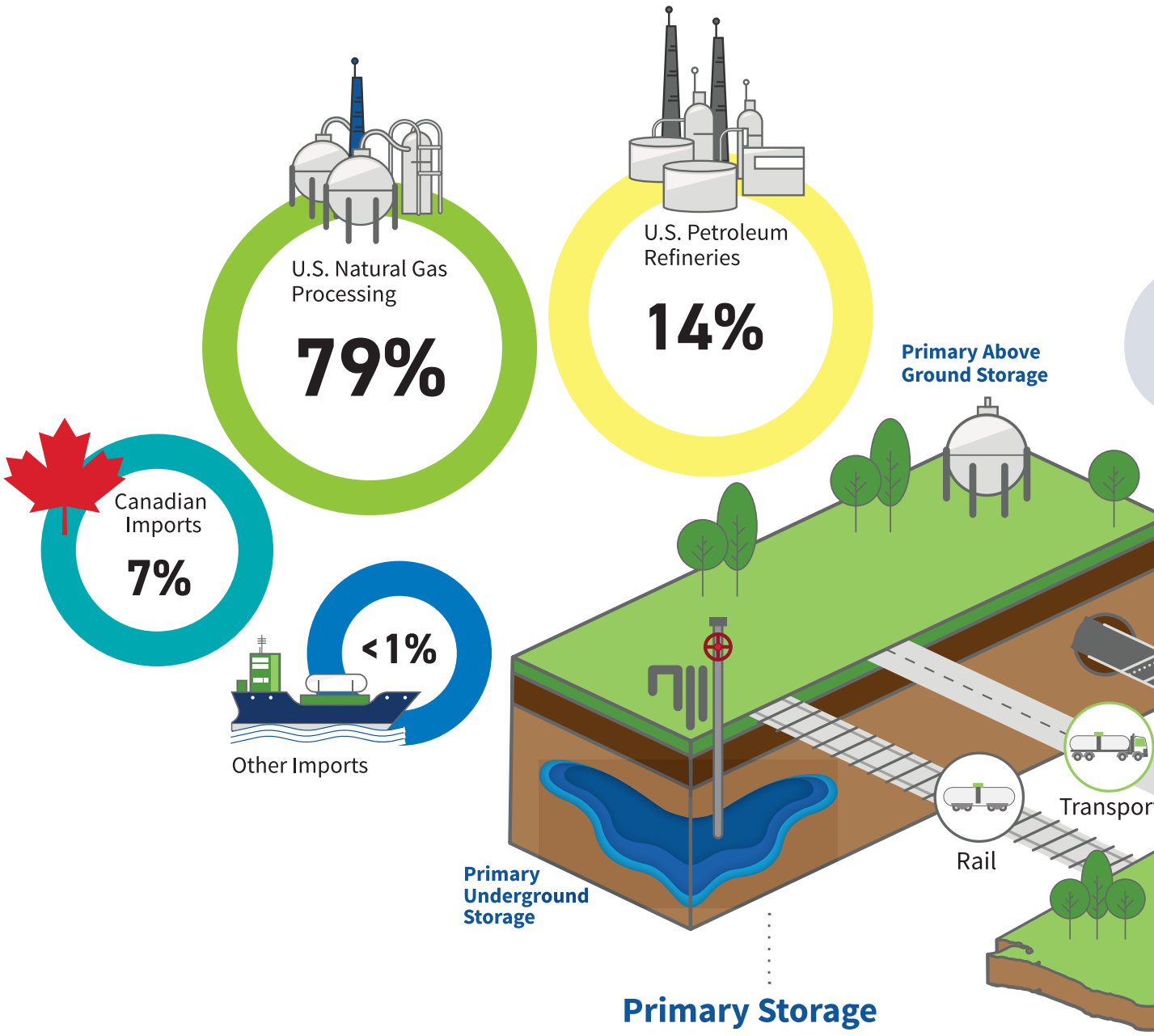
Summary information of total U.S. retail propane sales by end-use sectors

Category	Residential	Commercial	Agriculture	Industrial (Non-forklift)	Cylinder Market	Internal Combustion	Total Sales
Propane sold (Mn gallons)	5,086	2,198	978	263	326	589	9,440
Total accounts	12,280,081	1,123,672	440,726	124,414	319,526	236,592	14,525,010
Gallons per account	414	1,956	2,220	2,111	1,019	2,490	650
Sector share of total sales	54%	23%	10%	3%	3%	6%	100%

- The **residential** sector accounted for 54% of total sales, or 5,086 million gallons. The sector averaged sales of 414 gallons per account.
- The **commercial** sector accounted for 23% of total sales, or 2,198 million gallons. The sector averaged sales of 1,956 gallons per account
- The **agriculture** sector accounted for 10% of total sales, or 978 million gallons. The sector averaged sales of 2,220 gallons per account.
- The **industrial (non-forklift)** sector accounted for 3% of total sales, or 263 million gallons. The sector averaged sales of 2,111 gallons per account.
- The **cylinder markets** sector accounted for 3% of total sales, or 326 million gallons. The sector averaged sales of 1,019 gallons per account.
- The **internal combustion** sector accounted for 6% of total sales, or 589 million gallons. The sector averaged sales of 2,490 gallons per account.

Sales data:

Frost & Sullivan / Propane Education & Research Council – Annual retail propane sales report

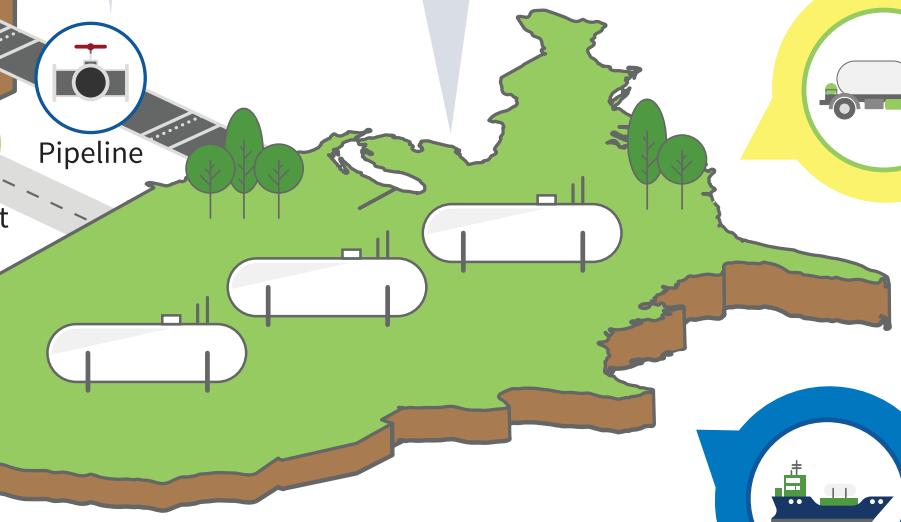


In 2019, the U.S. exported more than 16 billion gallons of propane. That's enough to fuel more than 5 million fleet vehicles or more than 15 million homes.

Propane is readily stored in large tanks and underground facilities and is **shipped by pipeline, rail, or truck** to thousands of secondary storage facilities throughout the U.S.

Secondary Storage

These bulk plants consist of one or more steel tanks, with typical capacities of **18,000 to 30,000 gallons** each.

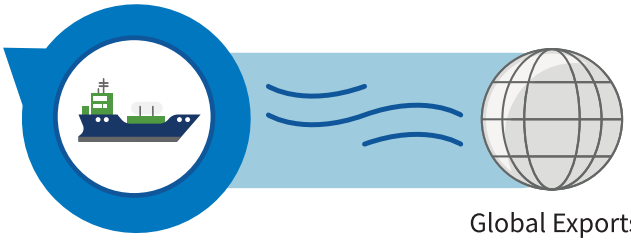


Pipeline

Propane is delivered from nearly **10,000 bulk plant** storage facilities to millions of customers throughout the U.S.

Residential

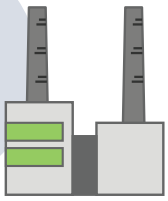
Commercial



Global Exports

Bobtails and **Transports**

Tanks used in smaller bobtail delivery trucks and larger highway transport vehicles have capacities that range **from 3,000 – 12,000 gallons** and are built of thick, high-strength steel.



Industrial

Agriculture

Autogas Fleets

Propane Uses

Climate-Friendly Refrigerant

School Buses

Cargo Ships

Cook Tops

BBQs

Fleet Vehicles

Heating

Agriculture

Propane Makes an Impact Today

The Infrastructure, Investment and Jobs Act includes access to over $7 billion in funding for propane initiatives. Under this legislation, the propane industry is eligible for $2.5 billion under the Clean Corridors Program, $2.5 billion in school bus funding, more than $1.6 billion for low-emission transit buses, $1.25 billion between two programs designed to reduce emissions from the nation's ferry system, and a variety of other programs.

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Notes

1. https://www.eia.gov/tools/faqs/faq.php?id=73&t=11
2. https://www.nrel.gov/docs/fy17osti/68214.pdf
3. https://static1.squarespace.com/static/5e540e7fb9d1816038da0314/t/5f209173294b6f5ee41ea278/1595969952405/Jobs_White_Paper_Compressed_Release.pdf
4. https://www.epa.gov/chp/chp-benefits
5. https://www.govinfo.gov/content/pkg/FR-2021-03-17/pdf/2021-05482.pdf.
6. https://afdc.energy.gov/fuels/propane_production.html
7. https://www.regi.com/find-fuel/production-facilities/geismar
8. https://www.eia.gov/todayinenergy/detail.php?id=44436&src=email
9. https://www.eia.gov/electricity/data/browser/#/topic/0?agg=2,0,1&fuel=vtvv&geo=g&sec=008&freq=A&start=2020&end=2021&ctype=linechart&ltype=pin&rtype=s&maptype=0&rse=0&pin=
10. https://bpnews.com/feature-articles/propane-rescue-providing-heat-hot-water-covid-19-responders

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