



Annual Retail Propane Sales Report

U.S. Odorized Propane Sales by State and End-Use Sector

Reporting Year: 2019

Conducted by ICF on behalf of the Propane Education & Research
Council

Published: December 2020



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ICF worked with PERC to define the parameters of the data collection process and estimation of the U.S. total retail propane sales covering the Calendar Year 2019. This information was collected from participating retail propane companies from April 2020 to July 2020. ICF determined and developed the Annual Retail Propane Sales Report data verification, quality control, and estimation methodology based on industry best practices and ICF's internal expertise in an effort to minimize any bias or estimation errors arising from the collected information. ICF makes no assurances as to the accuracy of any such information or any conclusions based thereon.

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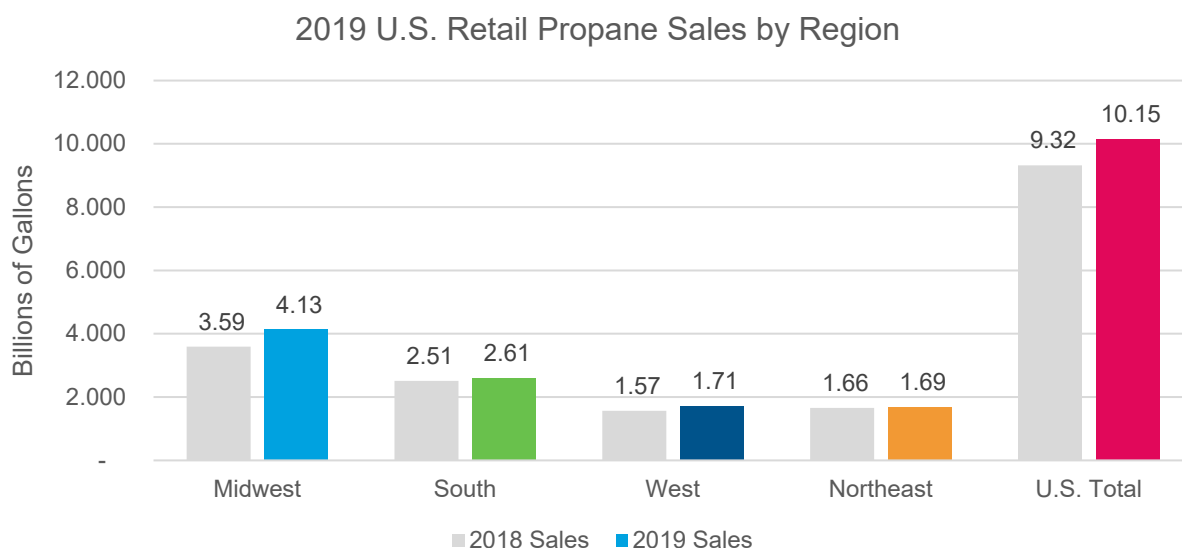
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Executive Summary

2019 U.S. Retail Propane Sales

In 2019, U.S. retail (odorized) propane sales totaled 10.15 billion gallons, an 8.9% year-over-year increase from the 9.3 billion gallons sold in 2018. Total sales for 2019 were 16.4% above the ten-year average of 8.7 billion gallons of odorized propane volumes per year.¹

While propane sales in the four major regions (Midwest, South, West, and Northeast) increased in 2019 relative to 2018, most of the increase was concentrated in the Midwest. The 2019 regional propane sales totals are shown in the figure below.



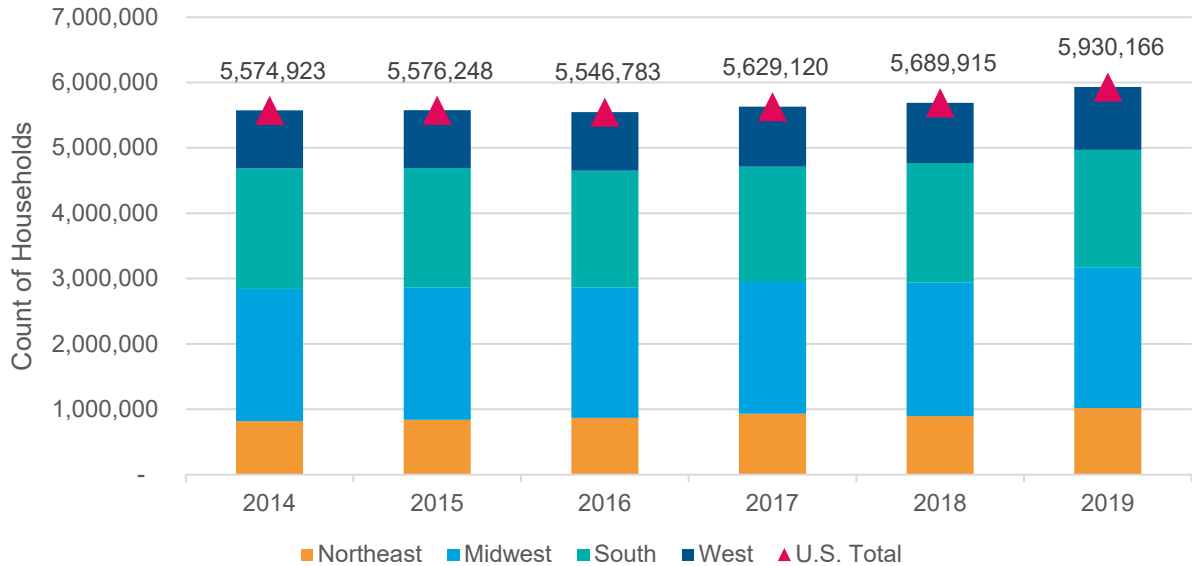
The majority of the increase in gallon sales occurred in the residential sector. Propane sales in the residential market increased from 5.184 billion gallons in 2018 to 5.851 billion gallons in 2019. The increase in residential propane sales in 2019 relative to 2018 was driven by two primary factors:

- 1) The growth in residential propane sales observed in 2019 was driven by an increase in the number of households using propane as the primary space heating fuel. Data from the U.S. Census American Community Survey (ACS) indicates that the number of households using propane as the primary space heating fuel increased by 240,251 households, or about 4.2 percent, relative to 2018, from 5,689,915 households to 5,930,166 households. The increase in propane heated households was spread across the Northeast, Midwest, and West regions. The growth in these regions was partially offset by a decline in propane heated households in the Southern region.

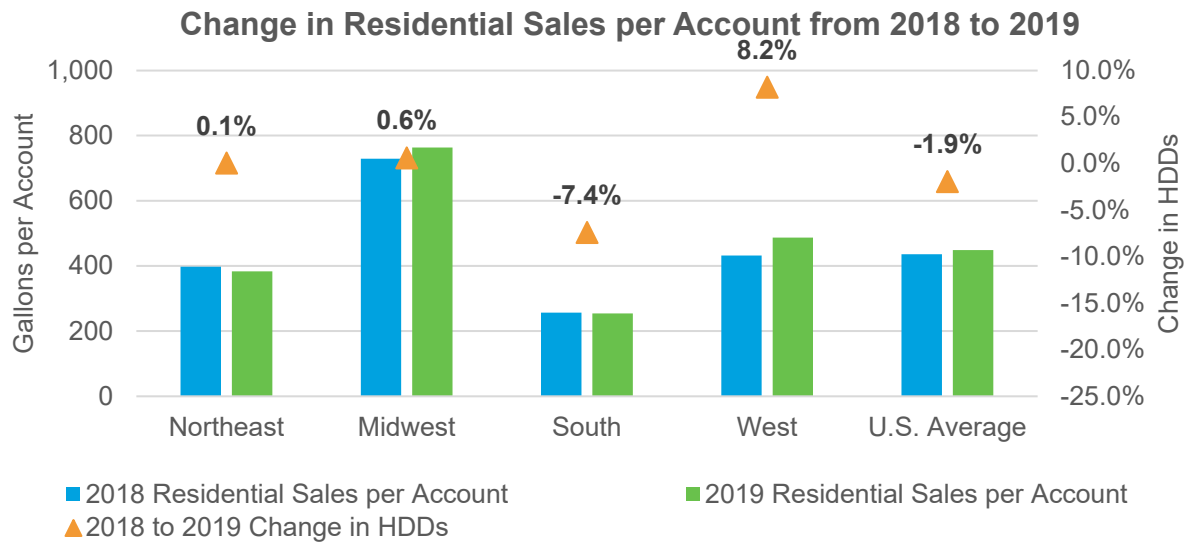
The data on the growth in propane space heating households reported in the ACS is consistent with the increase in the number of residential customer accounts reported by the propane industry in the ICF/PERC survey. The ICF survey reports an increase in residential retail propane accounts from 11.9 million in 2018 to 13.0 million in 2019.

¹ Odorized propane volumes are estimated based on PERC Assessment Collections.

Propane Heated Households by Region



- 2) While the overall average annual temperature for the contiguous U.S. was above the 20-year average and slightly warmer than 2018, the regional weather patterns differed significantly. Much of the country was colder in 2019 than in 2018, supporting a year-over-year increase in winter heating load. The West Coast and Rocky Mountain states were much colder than 2018, with HDD's increasing by 8%. The Midwest and Northeast states were moderately colder in 2019 than in 2018.



However, the states in the Southern region were generally warmer than 2018, with much of the South region significantly warmer. On a national level, the warmer weather in the South offset the colder weather in other regions.

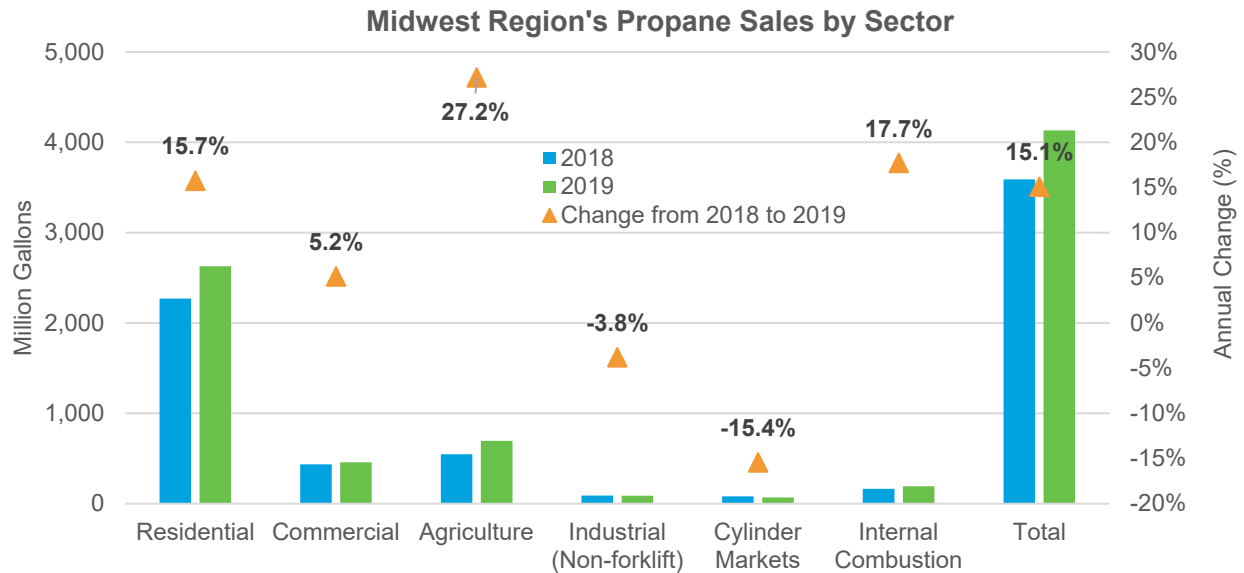
- 3) Extreme weather also impacted demand in other sectors. In 2019, there were 14 weather and climate disaster events, including three inland flooding events, eight severe storm events, two tropical cyclone events (Dorian and Imelda) and one wildfire event. However, these weather events had less of an impact on propane sales than the two major hurricanes, Florence and Michael, and other major weather events in 2018, leading to a 12 percent decline in propane cylinder market sales from 354 million gallons in 2018 to 310 million gallons in 2019.
- 4) Finally, reported sales for internal combustion applications increased by 25.5%, from 479 million gallons to 601 million gallons. In 2019, the internal combustion sector accounted for 5.9% of total odorized propane sales, up from 5.1% in 2018. The growth in reported propane sales for internal combustion applications was due in part to better reporting by the propane industry. A significant number of companies split out internal combustion sales from cylinder sales and from industrial sector sales for the first time. There also appeared to be about 7 percent organic growth in internal combustion sales by the companies reporting sales in the same format in both 2018 and 2019.

2019 U.S. Retail Propane Sales by Region

Below is a brief summary for each region of major year-on-year changes that would influence retail propane sales:

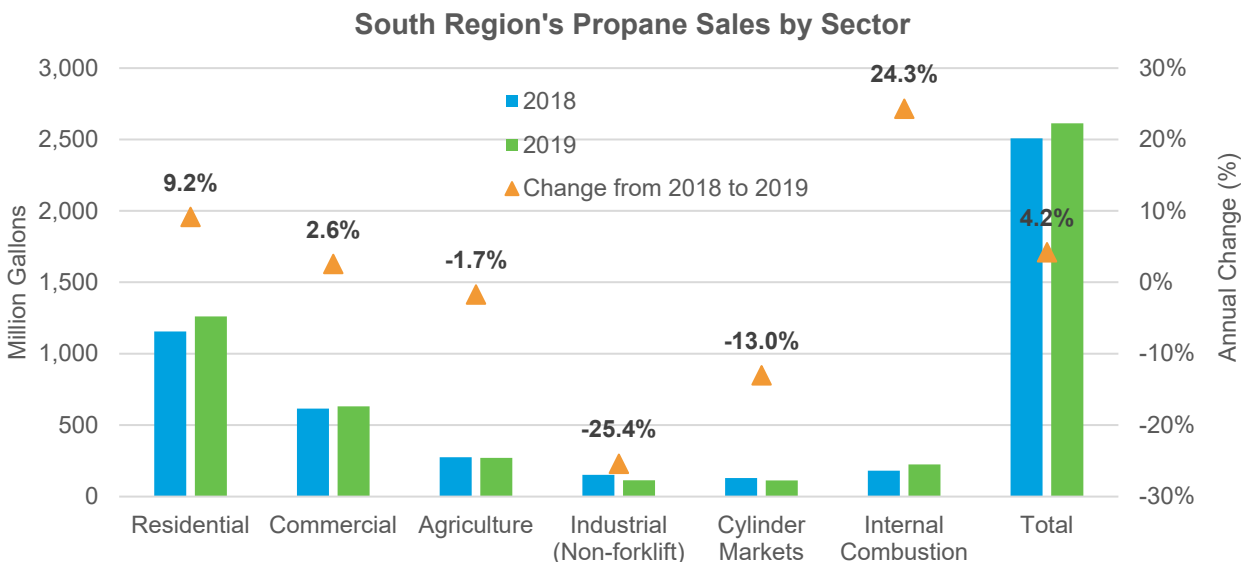
The **Midwest** accounted for 40.7% of total U.S. propane sales in 2019, a small relative increase from the 38.5% share of U.S. propane sales in 2018. Total odorized propane sales in the region increased from 3,591 million gallons in 2018 to 4,132 million gallons in 2019. Most of the sales growth occurred in the residential and agricultural sectors.

- Residential sales totaled 2,629 million gallons in 2019, up from 2,271 million gallons in 2018. Most of the increase in residential sales can be attributed to an increase in propane heated households. According to ACS data, the number of propane heated households in the region increased by 5% compared to 2018.
- Winter weather in 2019 was moderately colder than 2018. Annual HDD's increased by 0.6% in Midwest, leading to a slight increase in propane demand for space heating.
- Agriculture sales totaled 696 million gallons, representing 17% of total regional sales. This represented an increase of 149 million gallons relative to 2018, primarily due to an increase in grain drying demand.



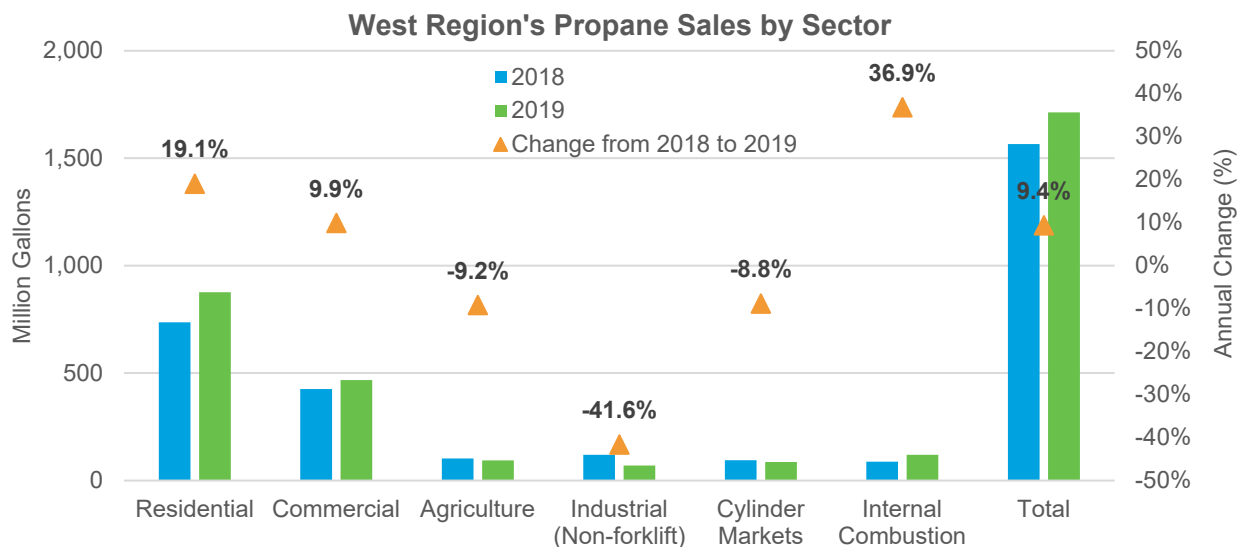
The **South** accounted for 25.8% of total U.S. propane sales in 2019, down from 26.9% in 2018. Despite the decline in the share of total U.S. propane sales, total propane sales in the region increased modestly, from 2,508 million gallons in 2018 to 2,613 million gallons in 2019.

- At 1,261 million gallons in 2019 residential sales accounted for 48% of the region's propane sales.
- Winter weather in much of the South was much warmer in 2019 than in 2018. Compared to 2018, annual Heating Degree Days (HDD) in the South region decreased by 7.4%. The warmer winter resulted in a significant decline in propane sales for space heating for several states in the region.
- The number of propane space heated households in the South declined by 1.5% compared to 2018. Propane continued to lose market share to electricity for household space heating, although the decline was slower in 2019 relative to the previous five years.



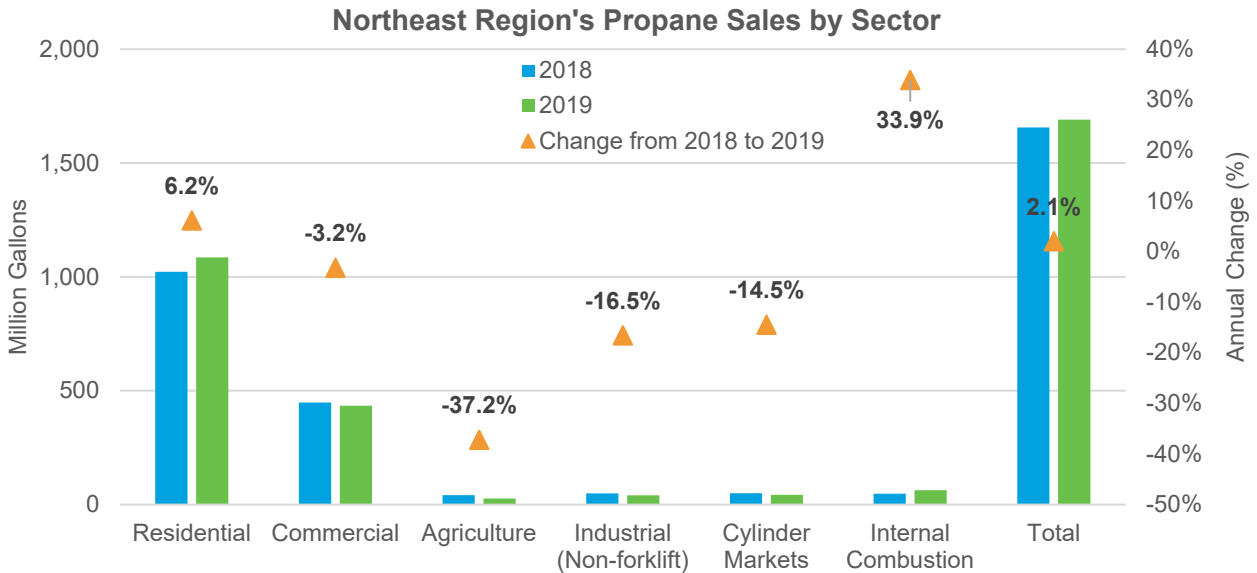
In 2019, the **West** region accounted for 1,713 million gallons of propane sales, or 16.9% of total U.S. propane sales. 2019 sales increased by 9.4% relative to 2018. Most of the increase occurred in the residential sector. Residential sales increased from 736 million gallons in 2018 to 876 million gallons in 2019.

- In 2019, winter weather was much colder in most of the western region than in 2018, leading to a significant rebound in propane space heating demand.
- According to ACS data, the number of households using propane for primary space heating increased in the region by 4% relative to 2018.



The **Northeast** region accounted for 16.7% of total U.S. propane sales in 2019. Propane sales in the region reached 1,690 million gallons in 2019, an increase of 36 million gallons, or 2.1%, relative to 2018. Residential sales account for 64% of total sales in the Northeast, with commercial volumes accounting for an additional 26%.

- According to the ACS data, the northeast region continued to experience rapid growth in the number of propane heated households, with space heating households increasing by 14% relative to 2018.



Top Ranked States by Retail Propane Sales

In 2019, the top 10 states by total retail sales accounted for 48.1% of total U.S. propane sales, while the remaining 40 other states and District of Columbia totaled 51.9% of total sales. The table below shows the top 10 ranked states by total retail propane sales and average gallons sold per account.

Top 10 States by Total 2019 Retail Propane Sales (Millions of Gallons)

State	Rank	Total Retail Propane Sales	Share of U.S. Propane Sales (%)	Residential Sales per Account	Commercial Sales per Account	Other Sectors Sales per Account	All Sectors Sales per Account
Michigan	1	587	5.8%	723	1,400	1,438	807
Minnesota	2	559	5.5%	897	2,863	3,606	1,280
California	3	556	5.5%	413	1,456	2,293	723
Iowa	4	544	5.4%	1,104	2,179	1,676	1,352
Illinois	5	505	5.0%	916	2,915	1,875	1,193
Wisconsin	6	488	4.8%	897	2,846	2,300	1,093
Texas	7	449	4.4%	284	1,987	2,692	546
New York	8	432	4.3%	362	1,645	1,558	473
Pennsylvania	9	402	4.0%	389	1,780	2,747	563
North Carolina	10	364	3.6%	246	1,305	2,607	438
Other States		5,262	51.9%	392	2,005	1,556	594
Total U.S.		10,148		449	1,914	1,827	661

- **Michigan** continues to be the top ranked state in total propane sales with 587 million gallons in sales in 2019. It was also the top ranked state in residential sales, with 463 million gallons for 2019.
- **Minnesota** passed California to be the second ranked state by total sales in 2019, with 559 million gallons. Minnesota was ranked second in the agriculture sector and third in the residential sector, which totaled 139 and 331 million gallons, respectively.
- **California** was the third ranked state by total sales in 2019, and was the top ranked state for the commercial, cylinder markets, and internal combustion sector, which totaled 145, 37, and 63 million gallons, respectively.

- **Iowa** continues to be the fourth ranked state by total sales in 2019. Sales in 2019 increased to 544 million gallons. The state remained the top ranked state for agriculture sales and ranked sixth in the residential sector.
- **Illinois** was the fifth ranked state by total sales in 2019 and was ranked fifth in the residential sector and ranked third in the agriculture and internal combustion sectors, which totaled 292, 104, and 37 million gallons, respectively.

2019 U.S. Retail Propane Sales by End-Use Sector

The table below shows total U.S. retail sales, and the corresponding number of retail accounts and average gallons sold per account. In 2019, the survey indicated about 13.0 million total residential accounts and about 2.3 million propane accounts in the other sectors. The table below shows total U.S. retail sales, the number of retail accounts, and average gallons sold per account.

Summary Information of Total U.S. 2019 Retail Propane Sales by End-Use Sectors

Category	Residential	Commercial	Agriculture	Industrial (Non-forklift)	Cylinder Markets	Internal Combustion	Total Sales
Gallons Sold (Millions of Gallons)	5,851	1,990	1,085	312	310	601	10,148
Total Accounts	13,039,820	1,040,009	526,744	135,418	360,217	240,362	15,342,571
Gallons per Account	449	1,914	2,060	2,301	859	2,498	661
Sector's Share of Total Sales	58%	20%	11%	3%	3%	6%	100%

- The **Residential** sector accounted for 58% of total sales, or 5,851 million gallons. The sector averaged sales of 449 gallons per account.
- The **Commercial** sector accounted for 20% of total sales, or 1,990 million gallons. The sector averaged sales of 1,914 gallons per account.
- The **Agriculture** sector accounted for 11% of total sales, or 1,085 million gallons. The sector averaged sales of 2,060 gallons per account.
- The **Industrial (Non-forklift)** sector accounted for 3% of total sales, or 312 million gallons. The sector averaged sales of 2,301 gallons per account.
- The **Cylinder Markets** sector accounted for 3% of total sales, or 310 million gallons. The sector averaged sales of 859 gallons per account.
- The **Internal Combustion** sector accounted for 6% of total sales, or 601 million gallons. The sector averaged sales of 2,498 gallons per account.

2019 Retail Propane Sales Report

The Annual Retail Propane Sales Report is a joint initiative between ICF and the Propane Education & Research Council (PERC). The 2019 Retail Propane Sales Report is the second annual report completed by ICF and is used to determine the odorized propane sales to end-use sectors for the calendar year 2019. This report is the only source of state-level end-use sector sales information for odorized propane.

Reason for the Retail Propane Sales Report:

Information for state level and end-use odorized propane sales is required by PERC in order to fulfill specific requirements of the 1996 Propane Education and Research Act (PERA). Under PERA, 20% of assessment collections are eligible for rebate back to the states. The allocation of the rebate between the states is determined by the percentage of the total odorized propane sales in each state. PERA also places limits on the share of total PERC investment in the on-road market to no more than the share of the total propane market used for motor vehicle combustion and sets a minimum of 5% of total assessments that must be allocated to the agricultural sector. This report is the only available source of retail propane sales by state and end-use sector.

The allocation of odorized propane sales between the states has a significant impact on the PERC allocation of expenditures. Each state's allocation of rebate funds is based on the latest retail sales data for residential, commercial, industrial, internal-combustion engine fuel, agricultural uses, and sales to retail dispensers that are compiled using the responses to this report. As a result, the reporting of sales volumes from propane retailers is a critical component of the PERC budgeting process.

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State level total and end-use sector sales information has been published only where sales and account information were provided by three or more participant respondents. For state level end-use sector information without three or more respondents, sector and state information has not been provided. Areas where this information has been withheld intentionally have been marked with a "**".

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National Retail Propane Sales

2019 U.S. Retail Propane Sales Summary by Sector (Millions of Gallons)

	Residential	Commercial	Agriculture	Industrial (Non-forklift)	Cylinder Markets	Internal Combustion	Total Sales
United States	5,851	1,990	1,085	312	310	601	10,148

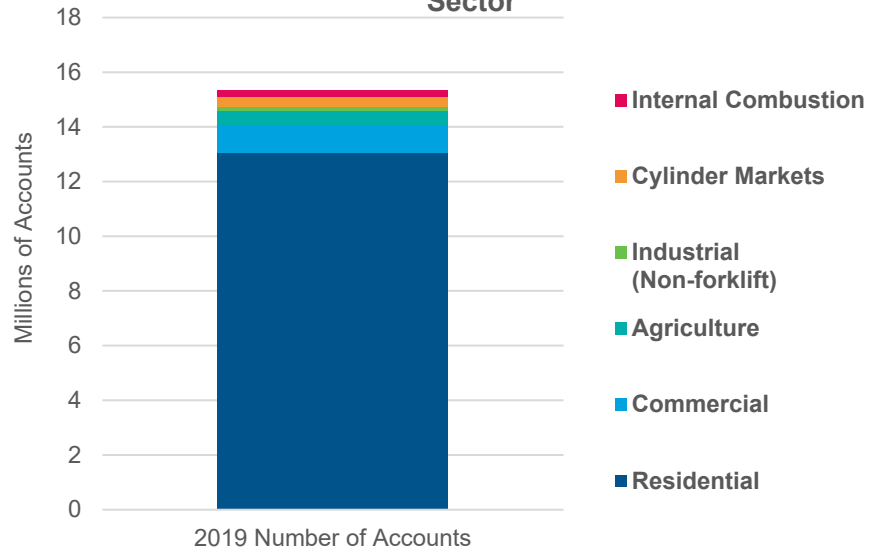
2019 U.S. Retail Propane Accounts by Sector (Number of Accounts)

	Residential	Commercial	Agriculture	Industrial (Non-forklift)	Cylinder Markets	Internal Combustion	Total
United States	13,039,820	1,040,009	526,744	135,418	360,217	240,362	15,342,571

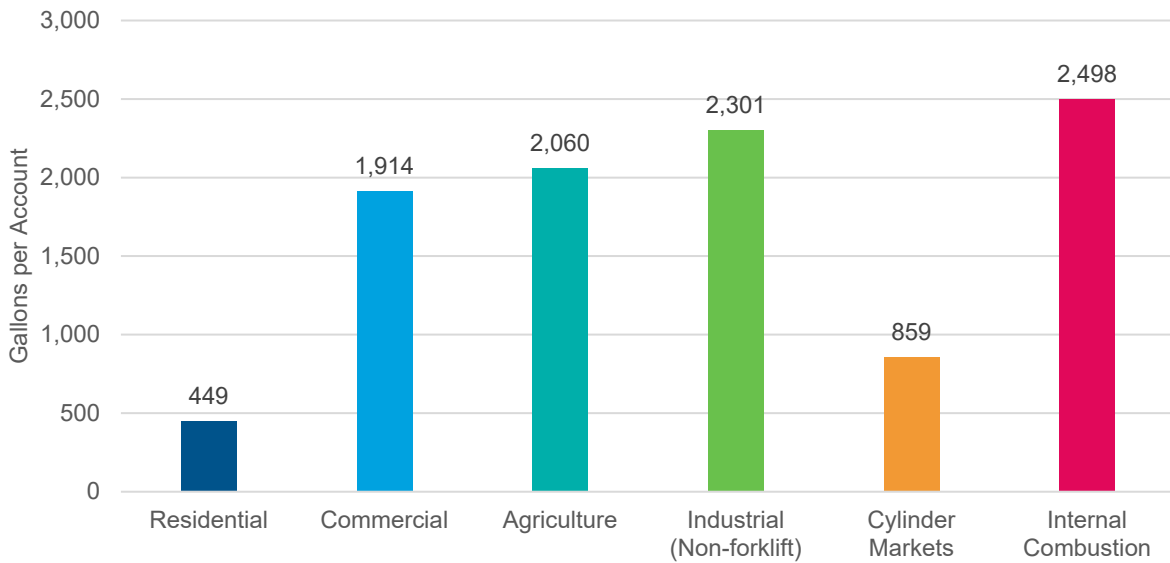
2019 U.S. Retail Propane Sales per Accounts by Sector (Gallons per Accounts)

	Residential	Commercial	Agriculture	Industrial (Non-forklift)	Cylinder Markets	Internal Combustion	Total
United States	449	1,914	2,060	2,301	859	2,498	661

2019 Total U.S. Retail Propane Accounts by Sector



2019 Average U.S. Retail Propane Sales per Account



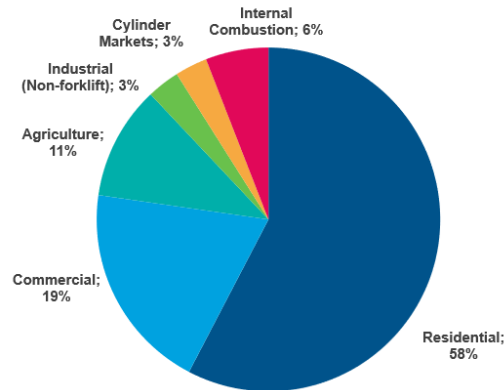
2019 U.S. Retail Propane Sales by Census Division and Sector (Millions of Gallons)

Census Division	Residential	Commercial	Agriculture	Industrial (Non-forklift)	Cylinder Markets	Internal Combustion	Total
East North Central	1,483	246	247	33	43	139	2,192
East South Central	288	95	49	10	12	41	494
Middle Atlantic	597	192	23	30	24	48	915
Mountain	479	187	23	45	34	35	803
New England	488	242	3	10	18	15	775
Pacific	397	281	70	25	52	85	910
South Atlantic	628	377	150	60	52	106	1,373
West North Central	1,145	212	448	55	25	54	1,940
West South Central	346	159	71	45	48	78	747
U.S. Total	5,851	1,990	1,085	312	310	601	10,148

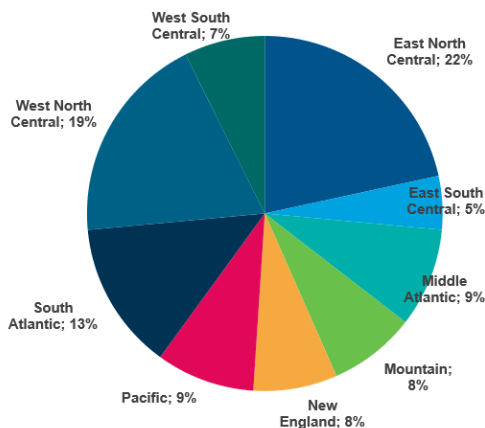
2019 U.S. Retail Propane Sales by PADD and Sector (Millions of Gallons)

PADD District	Residential	Commercial	Agriculture	Industrial (Non-forklift)	Cylinder Markets	Internal Combustion	Total
PADD I	1,713	810	176	100	95	169	3,063
PADD II	2,874	538	722	98	84	231	4,547
PADD III	436	195	96	45	49	83	904
PADD IV	359	112	19	26	20	17	553
PADD V	469	335	73	42	62	100	1,081
U.S. Total	5,851	1,990	1,085	312	310	601	10,148

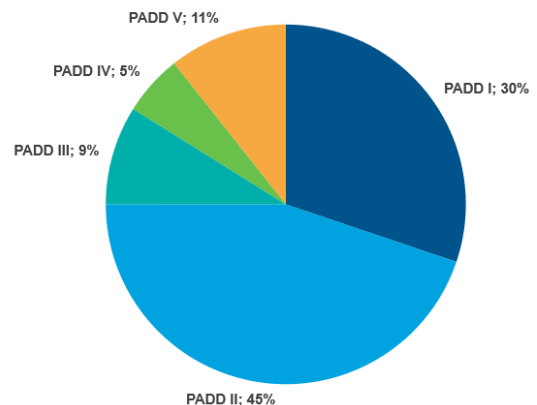
Share of 2019 Total U.S. Retail Propane Sales by Sector



Share of 2019 Total Retail Propane Sales by Census Division



Share of 2019 Total Retail Propane Sales by PADD District



State Rankings by Retail Propane Sales Metrics

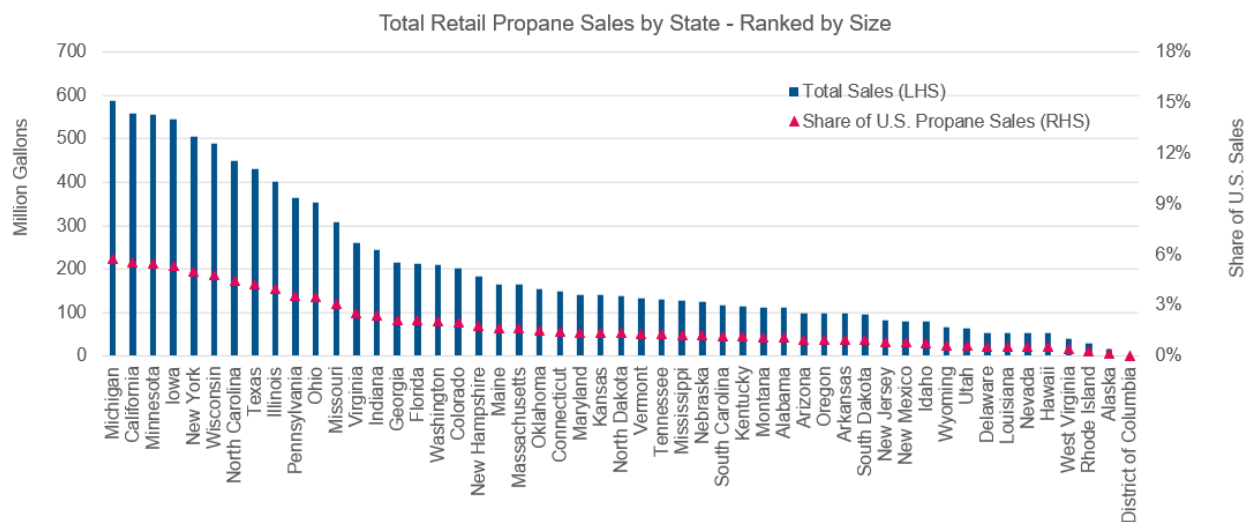
2019 Total Propane Sales: Top 10 States Shown by Millions of Gallons Sold

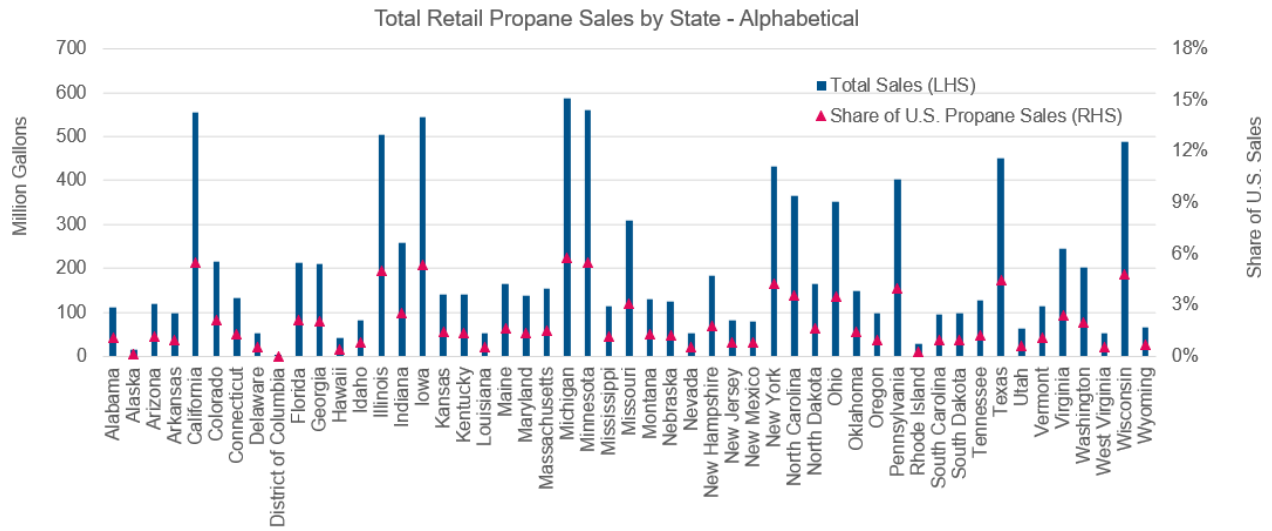
State	Rank	Total Retail Propane Sales	Share of U.S. Propane Sales
Michigan	1	587	5.8%
Minnesota	2	559	5.5%
California	3	556	5.5%
Iowa	4	544	5.4%
Illinois	5	505	5.0%
Wisconsin	6	488	4.8%
Texas	7	449	4.4%
New York	8	432	4.3%
Pennsylvania	9	402	4.0%
North Carolina	10	364	3.6%
Other States		5,262	
Total U.S.		10,148	

2019 Residential and Commercial Propane Sales: Top 10 States Shown by Millions of Gallons Sold

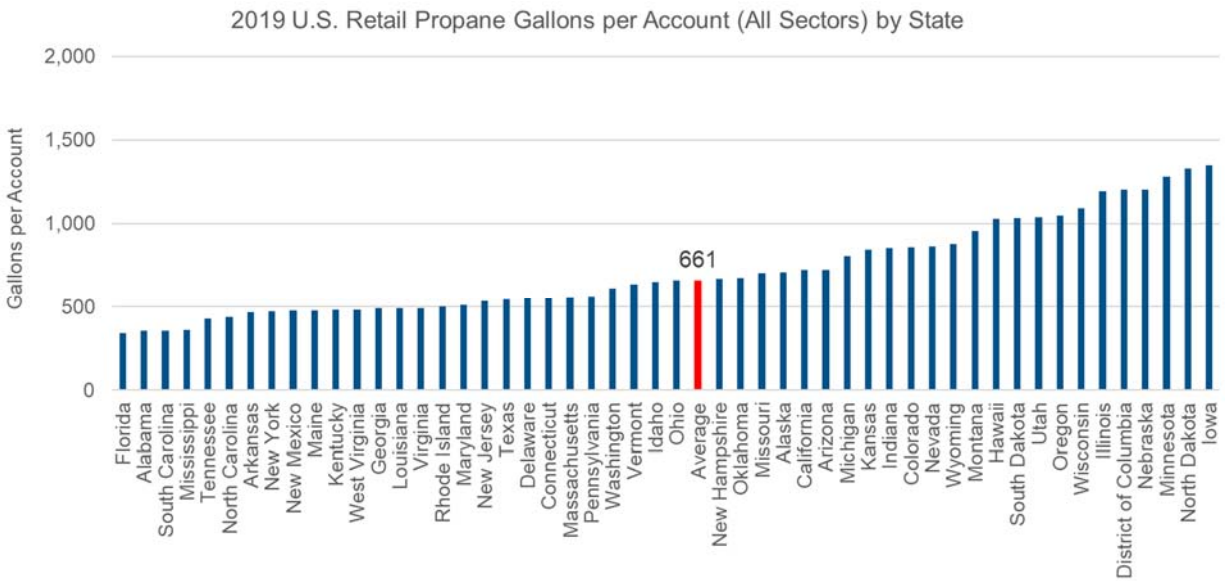
State	Rank	Total Residential and Commercial	Share of U.S. Propane Sales
Michigan	1	511	6.51%
New York	2	409	5.21%
Minnesota	3	393	5.02%
California	4	392	5.00%
Wisconsin	5	391	4.99%
Pennsylvania	6	339	4.32%
Iowa	7	337	4.30%
North Carolina	8	319	4.06%
Illinois	9	310	3.96%
Texas	10	278	3.54%
Other States		4,162	53.08%
Total U.S.		7,841	

2019 State Rankings: Retail Propane Sales (Millions of Gallons)

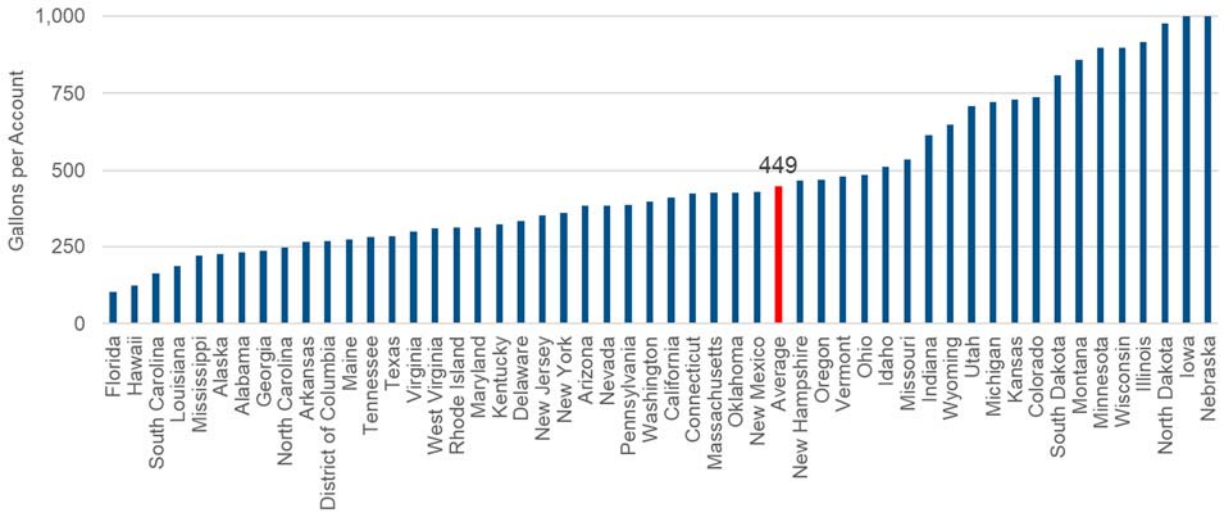




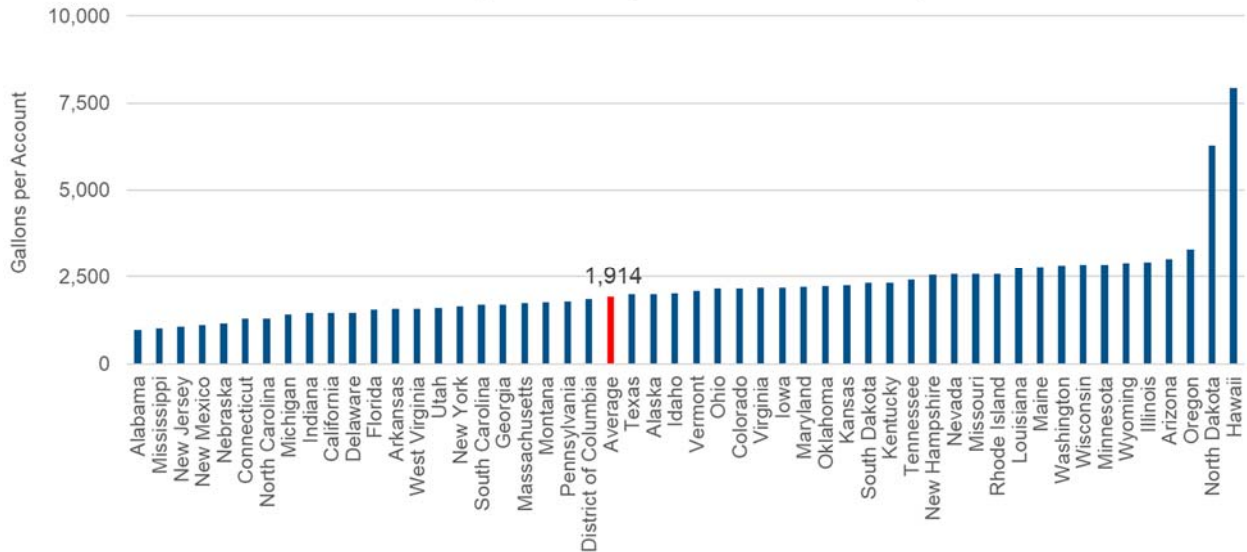
2019 State Rankings: Retail Propane Sales per Account (Gallons per Account)



2019 U.S. Retail Propane Gallons per Residential Account by State



2019 U.S. Retail Propane Gallons per Commercial Account by State



Detailed State Level Information

2019 U.S. Retail Propane Sales Summary by State and Sector (Millions of Gallons)

State	Residential	Commercial	Agriculture	Industrial (Non-forklift)	Cylinder Markets	Internal Combustion	Total Sales
Alabama	63	23	11	2	3	9	112
Alaska	3	9	0	1	1	1	15
Arizona	53	38	1	7	8	11	118
Arkansas	42	12	34	1	3	5	97
California	247	145	51	12	37	63	556
Colorado	134	39	8	13	10	10	215
Connecticut	88	32	1	2	4	5	132
Delaware	28	11	10	0	1	3	53
District of Columbia	0	0	0	0	0	0	0
Florida	54	90	8	20	15	25	213
Georgia	89	40	38	4	7	32	210
Hawaii	4	34	0	1	1	0	40
Idaho	57	16	3	1	1	1	81
Illinois	292	47	104	14	12	37	505
Indiana	151	42	35	8	6	17	259
Iowa	272	46	202	5	3	16	544
Kansas	98	15	11	5	4	8	141
Kentucky	87	30	9	1	3	10	141
Louisiana	17	15	7	2	4	7	52
Maine	86	73	0	2	3	1	166
Maryland	75	38	12	3	5	6	139
Massachusetts	106	33	1	1	7	5	154
Michigan	463	48	27	4	11	33	587
Minnesota	331	60	139	11	7	10	559
Mississippi	62	18	23	4	2	6	115
Missouri	210	47	28	7	5	12	309
Montana	102	18	3	2	2	1	129
Nebraska	84	11	22	2	2	4	124
Nevada	19	16	1	10	3	4	53
New Hampshire	115	61	0	3	2	1	182
New Jersey	47	12	2	2	6	13	81
New Mexico	49	20	2	1	4	3	78
New York	301	92	6	11	8	13	432
North Carolina	181	75	64	14	12	18	364
North Dakota	88	24	28	21	2	2	164
Ohio	226	52	30	4	9	31	353
Oklahoma	83	26	11	7	9	12	148
Oregon	33	41	9	5	3	7	98
Pennsylvania	250	88	15	17	10	22	402
Rhode Island	17	10	0	0	1	1	29
South Carolina	39	28	9	4	4	11	96
South Dakota	63	9	19	4	2	3	98
Tennessee	77	24	5	2	3	16	127
Texas	204	106	19	34	32	54	449
Utah	29	18	3	5	5	4	63
Vermont	76	33	0	1	1	0	113
Virginia	133	77	9	12	6	8	245
Washington	110	52	10	6	9	14	202
West Virginia	30	17	1	1	2	3	53
Wisconsin	351	57	51	3	5	20	488
Wyoming	37	21	1	4	1	1	65
U.S. Total	5,851	1,990	1,085	312	310	601	10,148

2019 U.S. Retail Propane Accounts by State and Sector (Number of Accounts)

State	2019 Accounts						
	Residential	Commercial	Agriculture	Industrial (Non-forklift)	Total - Cylinder Markets	Total - Internal Combustion	Total
Alabama	271,478	23,891	4,675	3,325	4,877	5,837	314,082
Alaska	14,711	4,292	13	674	321	496	20,507
Arizona	137,749	12,566	1,360	1,472	5,199	4,515	162,861
Arkansas	157,020	7,606	13,341	487	25,760	3,030	207,244
California	597,880	99,789	20,502	7,273	8,996	34,742	769,183
Colorado	181,621	18,232	23,048	2,252	19,701	4,702	249,556
Connecticut	206,253	24,531	1,715	1,540	3,543	1,533	239,114
Delaware	82,416	7,871	4,032	660	701	329	96,010
District of Columbia	12	18	1	82	30	45	188
Florida	520,403	57,976	3,348	16,299	10,272	16,463	624,761
Georgia	374,297	23,657	14,270	2,202	8,387	5,554	428,368
Hawaii	34,291	4,257	2	345	100	114	39,109
Idaho	111,202	8,121	1,544	940	920	605	123,331
Illinois	318,958	16,083	40,166	10,952	27,725	9,782	423,666
Indiana	245,641	29,103	13,816	6,104	5,462	3,400	303,525
Iowa	246,772	21,267	122,059	3,839	2,871	5,677	402,484
Kansas	134,605	6,487	14,524	2,292	6,143	3,232	167,283
Kentucky	265,386	12,988	6,147	597	4,037	3,483	292,637
Louisiana	90,266	5,580	1,464	865	6,006	2,712	106,893
Maine	316,582	26,077	127	614	3,444	299	347,142
Maryland	236,445	17,242	4,950	2,695	4,034	4,817	270,183
Massachusetts	247,642	19,103	1,224	766	3,694	2,308	274,737
Michigan	640,307	34,044	33,770	5,167	5,815	8,105	727,208
Minnesota	368,954	21,129	34,365	2,904	4,043	5,173	436,567
Mississippi	277,989	17,573	17,784	1,706	3,120	1,387	319,559
Missouri	392,263	18,355	4,407	1,869	16,160	5,949	439,002
Montana	118,903	10,327	965	888	3,402	628	135,112
Nebraska	72,612	9,363	17,197	192	1,815	1,580	102,759
Nevada	49,548	6,218	640	1,809	1,555	1,703	61,472
New Hampshire	245,941	23,754	82	649	1,163	740	272,329
New Jersey	130,698	11,456	962	1,709	1,397	5,929	152,151
New Mexico	112,655	18,468	2,147	324	29,905	1,540	165,039
New York	831,386	56,157	3,290	11,280	2,552	7,391	912,055
North Carolina	732,974	57,719	15,004	4,810	15,013	6,712	832,232
North Dakota	89,723	3,774	2,989	557	25,806	811	123,661
Ohio	464,933	24,235	23,814	3,335	6,492	12,573	535,381
Oklahoma	192,788	11,703	6,110	517	4,533	2,831	218,483
Oregon	69,677	12,539	2,970	1,989	3,116	3,165	93,456
Pennsylvania	641,580	49,266	7,145	7,650	3,225	5,494	714,359
Rhode Island	53,113	3,808	44	49	653	291	57,958
South Carolina	238,101	16,794	1,510	1,579	5,914	3,605	267,503
South Dakota	77,453	3,908	5,533	248	6,588	1,136	94,866
Tennessee	271,214	9,936	2,655	1,312	7,816	3,359	296,291
Texas	718,393	53,411	5,801	3,758	20,380	21,778	823,519
Utah	40,382	11,184	735	2,082	4,271	2,318	60,972
Vermont	159,281	16,057	346	654	655	242	177,235
Virginia	438,872	35,446	4,919	5,068	10,719	5,327	500,350
Washington	274,980	18,393	20,650	3,874	5,198	6,011	329,106
West Virginia	94,654	10,943	317	514	3,357	739	110,523
Wisconsin	391,694	20,163	17,375	1,798	5,648	9,638	446,316
Wyoming	57,126	7,151	892	853	7,686	533	74,242
U.S. Total	13,039,820	1,040,009	526,744	135,418	360,217	240,362	15,342,571

2019 U.S. Retail Propane Sales per Accounts by State and Sector (Gallons per Accounts)

State	2019 Gallons per Account						
	Residential	Commercial	Agriculture	Industrial (Non-forklift)	Total - Cylinder Markets	Total - Internal Combustion	Total
Alabama	231	967	2,457	533	679	1,612	356
Alaska	226	2,002	1,758	1,436	3,193	1,202	708
Arizona	385	3,009	1,027	4,476	1,450	2,521	723
Arkansas	267	1,568	2,541	2,280	112	1,730	468
California	413	1,456	2,511	1,700	4,110	1,817	723
Colorado	738	2,150	352	5,975	511	2,184	862
Connecticut	425	1,286	663	1,323	1,206	3,404	552
Delaware	336	1,456	2,407	500	1,192	7,676	547
District of Columbia	269	1,847	219	698	3,104	881	1,205
Florida	104	1,546	2,443	1,234	1,503	1,548	341
Georgia	238	1,693	2,637	1,980	789	5,765	490
Hawaii	124	7,926	648	2,742	11,674	1,775	1,030
Idaho	512	2,025	2,166	1,423	1,359	2,212	654
Illinois	916	2,915	2,581	1,238	426	3,795	1,193
Indiana	614	1,449	2,530	1,235	1,175	5,026	853
Iowa	1,104	2,179	1,652	1,379	976	2,758	1,352
Kansas	730	2,238	726	2,270	700	2,602	844
Kentucky	326	2,316	1,515	2,311	749	3,014	481
Louisiana	187	2,746	4,790	2,202	713	2,578	490
Maine	272	2,796	1,997	3,778	750	4,647	477
Maryland	316	2,200	2,405	1,159	1,250	1,200	513
Massachusetts	428	1,742	1,012	1,666	1,931	2,245	561
Michigan	723	1,400	813	842	1,861	4,122	807
Minnesota	897	2,863	4,055	3,946	1,791	1,853	1,280
Mississippi	222	1,025	1,270	2,540	791	4,030	359
Missouri	536	2,567	6,305	3,606	335	2,044	705
Montana	858	1,764	3,503	2,683	670	1,321	956
Nebraska	1,150	1,154	1,290	9,249	1,071	2,357	1,206
Nevada	386	2,565	1,837	5,768	1,821	2,066	862
New Hampshire	467	2,550	109	4,774	2,039	1,725	669
New Jersey	356	1,055	1,701	1,100	4,338	2,239	535
New Mexico	431	1,105	718	3,947	133	1,649	474
New York	362	1,645	1,873	987	3,196	1,724	473
North Carolina	246	1,305	4,268	2,848	824	2,712	438
North Dakota	976	6,290	9,399	37,395	87	2,360	1,330
Ohio	486	2,147	1,274	1,168	1,449	2,484	659
Oklahoma	429	2,215	1,848	13,752	1,954	4,241	677
Oregon	470	3,307	2,868	2,284	1,048	2,291	1,047
Pennsylvania	389	1,780	2,102	2,253	3,098	4,070	563
Rhode Island	316	2,572	2,712	3,678	1,474	4,171	501
South Carolina	164	1,685	5,986	2,690	634	3,142	358
South Dakota	808	2,311	3,374	14,769	236	2,247	1,034
Tennessee	282	2,402	2,037	1,547	428	4,650	428
Texas	284	1,987	3,282	9,174	1,578	2,459	546
Utah	708	1,595	3,771	2,391	1,123	1,880	1,039
Vermont	480	2,081	725	2,015	1,221	1,237	635
Virginia	303	2,167	1,828	2,432	566	1,489	490
Washington	399	2,823	504	1,673	1,809	2,259	612
West Virginia	313	1,572	2,812	2,454	604	3,390	484
Wisconsin	897	2,846	2,931	1,764	842	2,117	1,093
Wyoming	648	2,898	1,370	5,009	184	1,092	878
U.S. Total	449	1,914	2,060	2,301	859	2,498	661

2017-2019 U.S. Retail Propane Sales Summary by State and Sector (Millions of Gallons)

State	2017	2018	2019
Alabama	94	104	112
Alaska	14	14	15
Arizona	93	102	118
Arkansas	69	91	97
California	492	521	556
Colorado	173	187	215
Connecticut	123	134	132
Delaware	39	54	53
District of Columbia	0	0	0
Florida	210	217	213
Georgia	175	218	210
Hawaii	42	41	40
Idaho	66	67	81
Illinois	329	386	505
Indiana	195	233	259
Iowa	353	465	544
Kansas	99	124	141
Kentucky	85	105	141
Louisiana	48	50	52
Maine	154	166	166
Maryland	119	128	139
Massachusetts	122	139	154
Michigan	489	569	587
Minnesota	444	498	559
Mississippi	96	110	115
Missouri	242	287	309
Montana	98	105	129
Nebraska	90	108	124
Nevada	50	48	53
New Hampshire	168	186	182
New Jersey	75	82	81
New Mexico	70	80	78
New York	355	418	432
North Carolina	337	393	364
North Dakota	127	121	164
Ohio	295	312	353
Oklahoma	120	138	148
Oregon	88	92	98
Pennsylvania	331	380	402
Rhode Island	25	33	29
South Carolina	104	107	96
South Dakota	73	83	98
Tennessee	101	118	127
Texas	342	386	449
Utah	48	56	63
Vermont	99	119	113
Virginia	227	250	245
Washington	180	194	202
West Virginia	35	39	53
Wisconsin	346	405	488
Wyoming	54	58	65
U.S. Total	8,205	9,320	10,148

Total Households using Propane for Primary Space Heating Fuel by State: 2014 to 2019

State	2014	2015	2016	2017	2018	2019	Five Year Average (2015 to 2019)
Alabama	113,869	114,106	110,784	106,561	111,625	106,166	109,848
Alaska	2,843	3,713	3,726	4,456	4,211	4,879	4,197
Arizona	65,065	65,811	68,204	69,551	69,353	75,036	69,591
Arkansas	81,113	76,481	75,539	75,397	79,818	78,170	77,081
California	406,961	399,275	411,060	420,817	419,110	426,530	415,358
Colorado	95,838	97,415	98,087	98,538	99,758	107,982	100,356
Connecticut	49,540	51,915	55,631	55,608	55,429	66,974	57,111
Delaware	35,973	36,295	37,262	33,703	36,349	38,075	36,337
District of Columbia	2,802	3,343	2,508	2,821	2,948	3,304	2,985
Florida	72,578	71,936	67,492	62,817	69,190	65,262	67,339
Georgia	176,341	170,705	169,822	170,519	174,356	173,271	171,735
Hawaii	4,314	4,349	5,212	6,467	5,529	7,151	5,742
Idaho	27,837	27,508	29,878	32,187	30,149	33,933	30,731
Illinois	198,181	191,916	198,339	195,290	196,425	205,926	197,579
Indiana	181,828	177,999	177,100	179,223	182,253	184,697	180,254
Iowa	163,627	162,877	161,914	161,999	164,356	165,743	163,378
Kansas	88,639	86,149	82,676	79,341	85,364	91,295	84,965
Kentucky	106,636	104,751	105,573	100,860	106,644	108,053	105,176
Louisiana	38,279	37,623	36,189	35,678	36,083	31,301	35,375
Maine	48,027	50,511	52,621	61,816	55,461	69,241	57,930
Maryland	71,602	72,692	74,399	75,324	75,006	78,176	75,119
Massachusetts	77,135	79,528	81,858	88,756	85,505	98,388	86,807
Michigan	314,434	314,724	318,742	321,684	323,130	335,186	322,693
Minnesota	223,105	225,549	217,584	221,643	226,790	249,094	228,132
Mississippi	129,561	130,201	114,510	122,558	126,999	125,039	123,861
Missouri	219,176	211,223	202,010	202,547	211,469	222,354	209,921
Montana	50,495	49,552	47,891	52,646	51,715	59,192	52,199
Nebraska	56,850	58,229	50,453	50,971	56,195	57,234	54,616
Nevada	27,175	25,153	28,287	27,839	27,764	29,867	27,782
New Hampshire	76,212	78,670	81,949	90,341	82,755	94,024	85,548
New Jersey	62,396	61,082	59,916	62,490	63,138	71,419	63,609
New Mexico	59,610	60,267	54,610	51,066	58,239	49,317	54,700
New York	258,775	265,224	273,838	294,973	283,653	319,576	287,453
North Carolina	279,111	271,792	275,766	267,466	276,814	265,965	271,561
North Dakota	39,684	41,709	40,651	43,794	41,478	44,922	42,511
Ohio	228,782	244,024	240,410	240,591	243,009	253,741	244,355
Oklahoma	97,810	95,737	95,067	93,322	97,501	100,215	96,368
Oregon	25,335	26,882	27,363	27,026	27,150	29,180	27,520
Pennsylvania	198,296	200,754	209,719	222,650	214,809	235,490	216,684
Rhode Island	11,457	11,955	10,488	12,165	11,935	14,493	12,207
South Carolina	72,957	75,921	70,890	65,032	71,873	68,110	70,365
South Dakota	53,817	53,053	50,018	51,864	53,595	57,650	53,236
Tennessee	99,108	99,323	99,337	97,227	98,031	98,977	98,579
Texas	293,663	293,458	273,637	281,245	288,258	283,573	284,034
Utah	21,692	19,320	17,949	19,585	20,575	23,489	20,184
Vermont	38,116	40,280	42,621	43,339	42,112	48,270	43,324
Virginia	138,787	134,535	141,229	137,068	137,923	135,500	137,251
Washington	79,785	83,835	83,921	83,993	85,913	86,647	84,862
West Virginia	32,740	34,766	33,741	37,545	35,456	38,333	35,968
Wisconsin	254,773	259,440	257,731	266,776	263,840	285,657	266,689
Wyoming	22,193	22,692	20,581	21,945	22,874	28,099	23,238
U.S. Total	5,574,923	5,576,248	5,546,783	5,629,120	5,689,915	5,930,166	5,674,446

Source: U.S. Census American Community Survey

Annual Heating Degree Days¹ (HDDs) by State: 2015 to 2019

State	2015	2016	2017	2018	2019	Five Year Average	Percent Change from 2018 to 2019	Percent Change from Five Year Average to 2018
Alabama	2,300	2,229	2,044	2,510	2,190	2,255	-12.7%	-2.9%
Alaska	12,697	12,165	12,906	12,507	11,844	12,424	-5.3%	-4.7%
Arizona	2,997	1,570	1,452	1,907	2,070	1,999	8.5%	3.5%
Arkansas	3,211	2,904	2,710	3,571	3,325	3,144	-6.9%	5.8%
California	1,917	1,989	2,081	2,165	2,636	2,158	21.8%	22.2%
Colorado	6,448	6,365	6,256	6,640	7,017	6,545	5.7%	7.2%
Connecticut	6,012	5,358	5,574	5,865	5,890	5,740	0.4%	2.6%
Delaware	4,425	4,191	4,012	4,537	4,298	4,293	-5.3%	0.1%
District Of Columbia	3,656	3,594	3,286	3,842	4,251	3,726	10.6%	14.1%
Florida	378	485	396	498	365	424	-26.7%	-14.0%
Georgia	2,453	2,445	2,244	2,644	2,306	2,418	-12.8%	-4.6%
Hawaii	0	0	1	1	0	0	-100.0%	-100.0%
Idaho	5,873	6,124	6,880	6,650	6,952	6,496	4.5%	7.0%
Illinois	5,999	5,531	5,518	6,244	6,256	5,910	0.2%	5.9%
Indiana	5,595	5,178	5,079	5,786	5,602	5,448	-3.2%	2.8%
Iowa	6,581	6,218	6,356	7,303	7,264	6,744	-0.5%	7.7%
Kansas	4,605	4,304	4,369	5,235	5,218	4,746	-0.3%	9.9%
Kentucky	4,219	3,996	3,701	4,414	4,108	4,088	-6.9%	0.5%
Louisiana	1,529	1,413	1,270	1,697	1,553	1,492	-8.5%	4.1%
Maine	8,147	7,311	7,593	7,972	8,115	7,828	1.8%	3.7%
Maryland	4,601	4,335	4,092	4,626	4,251	4,381	-8.1%	-3.0%
Massachusetts	6,298	5,589	5,864	6,125	6,238	6,023	1.8%	3.6%
Michigan	7,146	6,057	6,186	6,750	6,830	6,594	1.2%	3.6%
Minnesota	7,743	7,426	7,918	8,852	9,111	8,210	2.9%	11.0%
Mississippi	2,185	2,066	1,851	2,387	2,163	2,130	-9.4%	1.5%
Missouri	4,772	4,454	4,368	5,333	5,198	4,825	-2.5%	7.7%
Montana	6,972	7,044	7,793	8,261	8,617	7,737	4.3%	11.4%
Nebraska	5,845	5,579	5,794	6,837	6,681	6,147	-2.3%	8.7%
Nevada	3,024	2,939	2,908	3,196	3,554	3,124	11.2%	13.8%
New Hampshire	7,425	6,714	6,998	7,287	7,381	7,161	1.3%	3.1%
New Jersey	5,282	4,901	4,917	5,332	5,136	5,114	-3.7%	0.4%
New Mexico	4,246	3,984	3,649	4,462	4,312	4,131	-3.4%	4.4%
New York	5,797	5,271	5,300	5,789	6,182	5,668	6.8%	9.1%
North Carolina	3,139	3,209	3,043	3,454	3,028	3,175	-12.3%	-4.6%
North Dakota	8,282	7,924	8,753	9,706	9,961	8,925	2.6%	11.6%
Ohio	5,661	5,180	5,094	5,673	5,420	5,406	-4.5%	0.3%
Oklahoma	3,458	3,103	3,016	3,891	3,713	3,436	-4.6%	8.1%
Oregon	4,499	4,890	5,479	5,267	5,543	5,136	5.2%	7.9%
Pennsylvania	5,715	5,308	5,295	5,788	5,473	5,516	-5.4%	-0.8%
Rhode Island	5,903	5,242	5,559	5,822	5,749	5,655	-1.3%	1.7%
South Carolina	2,429	2,498	2,251	2,700	2,365	2,449	-12.4%	-3.4%
South Dakota	6,848	6,646	7,087	8,171	8,287	7,408	1.4%	11.9%
Tennessee	3,721	3,591	3,362	3,977	3,571	3,644	-10.2%	-2.0%
Texas	2,663	1,490	1,346	1,961	1,858	1,864	-5.3%	-0.3%
Utah	5,457	5,697	5,972	6,288	6,728	6,028	7.0%	11.6%
Vermont	8,209	7,452	7,643	7,955	7,865	7,825	-1.1%	0.5%
Virginia	4,117	3,958	3,749	4,262	3,928	4,003	-7.8%	-1.9%
Washington	4,739	4,847	5,615	5,413	5,781	5,279	6.8%	9.5%
West Virginia	4,901	4,716	4,482	5,073	4,744	4,783	-6.5%	-0.8%
Wisconsin	7,743	6,855	7,070	7,673	7,808	7,430	1.8%	5.1%
Wyoming	7,217	7,324	7,537	7,886	8,414	7,676	6.7%	9.6%
U.S. Average	4,111	3,875	3,881	4,333	4,249	4,090	-1.9%	3.9%

Source: National Oceanic and Atmospheric Administration - Population Weighted HDDs

¹ A Heating Degree Day (HDD) is the difference between 65 degrees Fahrenheit and the daily mean temperature at that location. It is primarily a measure used to estimate heating requirements.

Historical Propane Volumes

Ten-Year Trend of U.S. Propane Odorization and Consumption Volumes

Over the past ten years, sales to the domestic retail propane sector have increased modestly, fluctuating with changes in weather, relative fuel pricing, and general economic conditions. From 2010 to 2019, U.S. odorized propane volumes averaged 8.7 billion gallons per year.² While odorization volume assessments do not directly indicate sales, they do represent a reliable estimate that can be used as a proxy for annual retail propane sales volumes, which totaled 10.15 billion gallons in 2019. From 2010 to 2019, residential propane sales increased from 5.1 billion gallons in 2010 to 5.9 billion gallons in 2019.

In 2019, the average propane consumption per space heating household reported in the American Community Survey³ was 987 gallons. The increase in residential propane usage per household is due to higher penetration of propane water heating and other appliances such as cooking and clothes drying.

U.S. Propane Odorization⁴ & Sales Volumes (Millions of Gallons)

Year	U.S. Odorization Volumes: Propane	Other Sectors: Total	Residential: Total	Residential: Space Heating	Residential: Water Heating	Residential: Other Appliances	U.S. Propane Heated Households	U.S. Average Heating Degree Days	Residential Gallons per Household
2009	9,210	3,826	5,384	3,754	880	751	5,846,740	4,390	921
2010	8,754	3,666	5,088	3,513	863	712	5,779,069	4,387	880
2011	8,232	3,425	4,807	3,283	848	676	5,610,519	4,225	857
2012	7,482	3,069	4,414	2,976	814	623	5,542,387	3,712	796
2013	9,091	4,760	4,331	2,881	835	615	5,566,359	4,405	778
2014	9,313	5,159	4,155	2,722	839	593	5,574,923	4,473	745
2015	8,318	4,366	3,952	2,549	835	567	5,576,248	4,111	709
2016	8,191	4,063	4,128	2,662	872	592	5,546,783	3,875	744
2017	8,208	3,840	4,365	2,815	922	626	5,629,120	3,881	775
2018	9,450	4,135	5,184	3,344	1,095	744	5,689,915	4,333	911
2019	10,148	4,297	5,851	3,774	1,236	841	5,930,166	4,249	987

Sources: PERC, ICF, NOAA, EIA RECs, U.S. Census

² Odorized propane volumes are estimated based on PERC Assessment Collections.

³ Residential space heating households from the ACS represents a subset of the total residential accounts reported elsewhere in this report.

⁴ PERC Assessment Collections represent the total assessments collected during the calendar year.

Ten-Year Trend of U.S. Propane Supply and Disposition

U.S. propane production increased from 16.8 billion gallons in 2009 to over 33 billion gallons in 2019 (including minor volumes of propylene). Current propane production is roughly three times retail propane sales. The increase in production is almost entirely due to growth in natural gas and liquids production. Propane production from gas processing plants totaled 24.4 billion gallons in 2019, up by 13.4% from 2018.

As a result of the unprecedented growth in production, the U.S. propane sector has undergone a dramatic transformation from a primarily domestically focused market, to one focused more on exports. U.S. propane / propylene exports increased from 1.3 billion gallons in 2009 to 16.8 billion gallons in 2019. Exports now represent over 50% of U.S. production and are significantly larger than odorized propane sales.

U.S. Propane / Propylene Supply and Disposition Volumes (Millions of Gallons)

Year	U.S. Production: Propane / Propylene	U.S. Gas Plant Production: Propane / Propylene	U.S. Net Refinery Production: Propane / Propylene	U.S. Imports: Propane / Propylene	U.S. Exports: Propane / Propylene	U.S. Changes in Stocks: Propane / Propylene	Net U.S. Supply: Propane / Propylene	U.S. Odorization Volumes: Propane	U.S. Sales by Prime Supplier: Propane
2009	16,607	8,375	8,232	2,254	1,299	-221	17,784	9,210	12,547
2010	17,556	8,979	8,577	1,857	1,674	-122	17,862	8,754	11,534
2011	18,132	9,670	8,463	1,679	1,900	106	17,806	8,232	11,209
2012	19,447	10,950	8,497	1,783	2,625	613	17,993	7,482	11,106
2013	21,268	12,615	8,654	1,944	4,627	-957	19,542	9,091	12,972
2014	24,100	15,096	9,004	1,650	6,482	1,375	17,893	9,313	12,237
2015	26,111	17,541	8,571	1,896	9,426	797	17,784	8,318	11,554
2016	26,954	17,927	9,028	2,187	12,285	-583	17,439	8,191	11,540
2017	28,016	18,948	9,069	2,395	14,009	-636	17,038	8,208	12,019
2018	30,585	21,476	9,109	2,403	14,553	54	18,381	9,450	12,195
2019	33,095	24,355	8,740	2,279	16,828	664	17,882	10,148	11,647

Sources: EIA, PERC

Non-Odorized Propane Sales Information

Propane can be used in a variety of manners within the petrochemical and refining sectors. The below table shows 2019 non-odorized propane sales in the U.S. for the petrochemical sector only. Within the petrochemical sector, propane is used as a feedstock in steam cracking facilities and Propane Dehydrogenation (PDH) facilities. In 2019, sales to the petrochemical sector totaled 5.32 billion gallons of propane, roughly 52% of total U.S. retail propane sales for the year.

2019 U.S. Chemical Sector Non-Odorized Sales Volumes (Millions of Gallons)

Year	Ethylene Feedstock (Steam Cracking)	PDH Feedstock	Total Chemical Sales
Texas	3,458	1,004	4,462
Louisiana	808	0	808
Iowa	47	0	47
Illinois	0	0	0
U.S. Total	4,313	1,004	5,317

Source: Petral Consulting

In recent years there have been several new PDH facilities built in the U.S. to take advantage of growing U.S. propane supply. These facilities use propane to create propylene, a primary product used in plastics manufacturing.

Review of Annual Retail Propane Sales Report Methodology

End-Use Sector Definitions

Residential Sector:

Residential propane sales include odorized propane delivered to and used by residential consumers at their place of residence for fixed applications. Uses include space heating, water heating, cooking, spa/pool use, and other household uses. Residential sector sales include delivery and replacement of 100-pound cylinders attached at fixed locations. Residential sales do not include household use of propane from 20-pound (or similar) cylinders used for portable appliances and applications.

Commercial Sector:

Commercial sector propane sales include odorized propane delivered to and used by commercial entities, such as schools, hospitals, retail outlets, office buildings, and other types of non-industrial outlets. Commercial sales do not include propane used forklifts or engine use. Commercial sales does include propane used in on-site standby or backup electric generation at the facility.

Industrial (Non-Forklift) Sector:

Industrial (non-forklift) sector propane sales include odorized propane delivered to and used by industrial or manufacturing facilities for process heating, large scale combined heat and power systems, distributed generation, or as a fuel for furnaces. Propane used by industrial customers in forklifts or other internal combustion engines is reported as Internal Combustion and is not included in industrial (non-forklift) sector.

Agricultural Sector:

Agricultural sector propane sales include odorized propane delivered to and used by agricultural entities that are primarily engaged in growing crops, raising animals, or other agricultural products. Agricultural sector sales include propane used for grain drying, agricultural harvesting activities, weed control, radiant heating systems, crop irrigation engines, and other related agricultural applications. Propane used by agricultural customers in other internal combustion engine applications is reported in the Internal Combustion category.

Cylinder Markets:

Propane that is delivered and used in a 20-pound (or similar) cylinder. The definition of propane cylinder markets does not include wholesale or bulk propane sales to other propane retailers, fixed 100-pound (or similar) cylinders attached at fixed residential locations, or cylinders used by forklifts, commercial mowers, or other internal combustion engines. Information on cylinder market sales volumes were reported by participating companies using the following two sub-categories:

- **Consumer Bottle Refill & Exchange:** Residential, or individual use bottle exchange programs. Includes bottle filling programs at grocery stores, gas stations, campgrounds, and other individual-use sites.
- **Rental Yards / RV Refill Stations / Other:** Direct sales to large direct consumer cylinder program managers. Does not include propane sales for use in public Autogas fueling infrastructure to companies such as Pilot, Menards, and U-Haul, which should be reported in the Autogas section.

These two sub-categories have been added together for the total cylinder market sales.

Internal Combustion:

The Internal Combustion sector includes odorized propane sales for use in internal combustion engines (other than agricultural irrigation engines). Information on internal combustion sales volumes were reported by participating companies for the following three sub-categories:

- **Propane Autogas:** All other odorized propane use by Internal Combustion engines for On-road vehicles. Can either be consumed from cylinders or directly.
- **Material Handling (Forklifts):** Only includes odorized propane use by forklifts at commercial and industrial sites, as well as airport and port equipment. Can either be consumed in cylinders or directly.
- **Non-Road:** Only includes propane used by commercial mower, outdoor power equipment, golf equipment, ATVs, or other non-road vehicles. Can either be consumed in cylinders or directly.

These three sub-categories have been added together for the total internal combustion sales.

Overview of Report Approach

The 2018 Retail Propane Sales Report was conducted from February 2019 to July 2019 and included several distinct stages, detailed below:

- **Pre-Launch:** The pre-launch phase began in February 2019 and the end of April 2019. Working with PERC, ICF developed the participant reporting forms, website, and other outreach material. During this phase, ICF and PERC also worked with each designated state executive to review and verify the list of propane retailers within each state and their contact information.
- **Data Collection:** The data collection and outreach phase began in April 2019 and was extended through July 2019. This phase included the collection of company retail propane sales volumes through a survey-based approach.
- **Verification and Data Checking:** ICF conducted ongoing review of submitted information and performed data verification checks and reviews of the sales and company information throughout the data collection phase. During this phase ICF reached out directly to participants where there were any concerns or questions related to the information provided.
- **Reporting:** Following the collection and verification of the submitted information, ICF then developed its estimates for state level sales to each end-use category. The methodology for this process is detailed on the following pages. ICF then worked with PERC to review the initial report results. These results were then communicated to each designated state executive for them to provide feedback and review. Following these review steps, the report totals were then finalized.

Outreach and Data Collection

Data Sources

The primary source of information used in the creation of 2019 Retail Propane Sales Report has been provided directly by the participating Retail Propane companies and PERC. All sales and customer account information provided by participants is reflective of Calendar Year 2019 totals.

Additional data sources are also used throughout the report process in order to ensure the highest degree of accuracy and reporting. These additional data sources include, but are not limited to the following:

- United States Census: American Community Survey, American Housing Survey, Manufactured Household Survey, Survey of New Construction
- Energy Information Agency (EIA): Residential Energy Consumption Survey, Commercial Buildings Energy Consumption, Manufacturing Energy Consumption Survey, State Energy Data Systems

- Industry Trade Press and Publications
- National Oceanic and Atmospheric Administration: Climate Prediction Center
- Various State Reported Information

Annual Retail Propane Sales Report Participants

All active propane retailers that sell odorized, or retail, propane to end-use customers are requested to report propane sales as part of the Annual Retail Propane Sales Report. Each company can elect to report sales for each subsidiary or operating company separately or report the parent company total sales for each state.

The list of companies active within each state is developed in collaboration between ICF, PERC, and each state propane agency. These participant lists are used in the communication with each company during the participant reporting period and are updated each year to reflect changes in contact information and corporate structure, such as mergers and acquisitions, office closures, and expansion to new states.

Annual Retail Propane Sales Report Outreach

As the contractor for the 2019 Annual Retail Sales Report, ICF conducted the primary outreach to report participants and relevant stakeholders. The 2017 Annual Retail Sales Report was the first year that a website and an online outreach strategy were used. ICF primarily communicated with report participants via email and communication through the website. To ensure a high response rate and broad outreach to all Retail Propane companies, ICF also communicated to participant companies through direct mailings and phone calls. Each participating company was provided online account credentials to log into the website through the direct mailings, phone call outreach, or email. The Annual Retail Sales Report website can be located at www.Propane.com/SalesReport. Please contact SalesReport@propane.com for any additional details on the website.

State Level Response Rates

There are over 3,000 active propane retailers in the United States. These retailers vary significantly by their regional composition, size, customer type, and sales focus areas. ICF categorized each company that was included in the Annual Retail Sales Report participants company into several different company types, the states that each company was active in, and the reported size of the company based on retail sales, reported number of employees, and number of accounts.

To help in the categorization of company types, ICF included in the participant reporting form on the website an option for a company categorization designation. Where a company provided this information, that designation was used. When this information was not provided, ICF categorized each company based on available public information and ICF's detailed knowledge of the retail propane markets.

ICF used the following four company type categories:

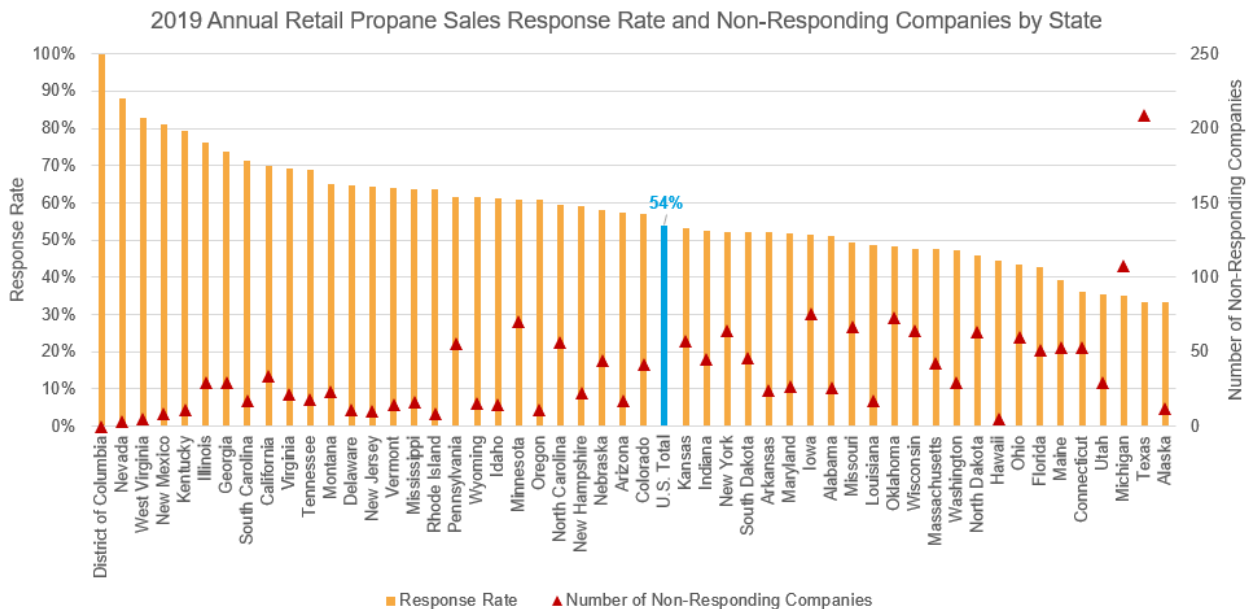
- **Investor Owned:** This category included all known public propane retailers, including those not headquartered in the U.S. but with active sales.
- **Cooperatives:** Co-ops are generalized as a corporate structure or organization that is run for the shared benefit of its members. Included in this category are all major cooperatives, as published in LP Gas' 2019 Retailer Rankings (April 2020) as well as any self-reported or known co-op.
- **Regional:** This category includes private companies that reported operations in two or more states or reported retail propane sales greater than 10 million gallons within one state.

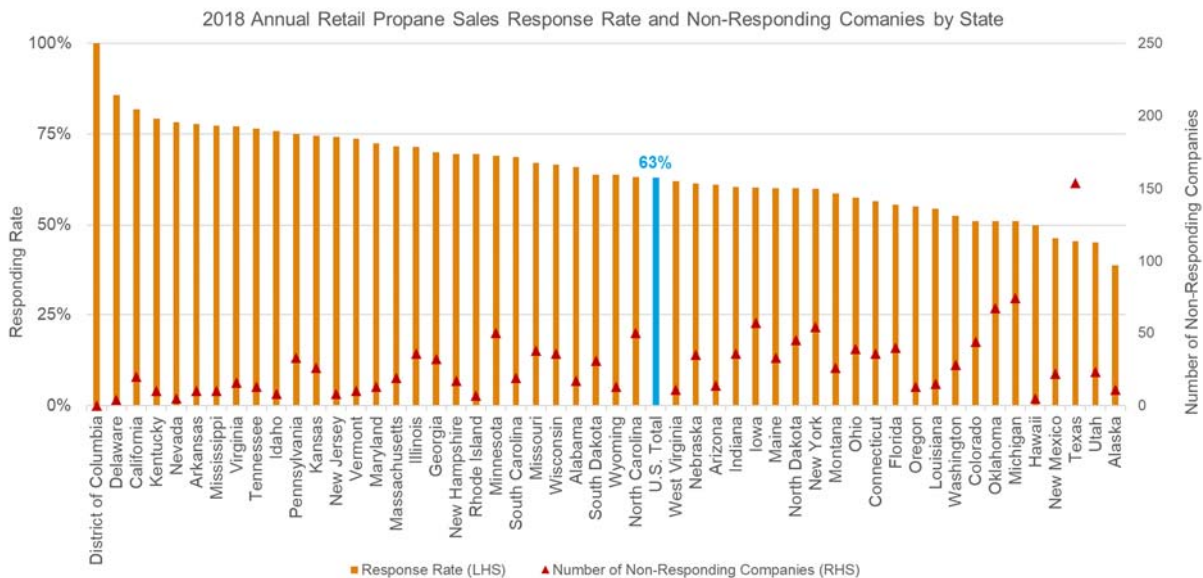
- **Private:** This category includes all private retail propane companies. Companies that did not provide a response, and for which no publicly available information could be found, were categorized as private firms.

ICF and PERC conducted direct phone calls and emails, in addition to the standard survey-based outreach methods, to the largest propane retailers to ensure a 100% response from the largest propane retailers, including all of the investor-owned companies as well as the major co-ops, and regional companies.

The response rate and number of companies that were active within a given state but did not provide information on the company sales is a key metric used in the estimation of total retail propane sales within each state. The chart below shows the response rate and number of non-responding companies for each state.

The national response rate was 54%, shown in the figure below, representing over 1,300 unique companies and over 2,200 submissions for state-level sales volumes. The response rate and number of companies responded in 2019 propane sales survey decreased slightly comparing to 2018 propane sales survey. In 2018, the national response rate was 63%, and over 2,400 companies reported state-level sales volumes. Based on feedback received by companies during the survey process, the decline in response rate was primarily due to the impact of Covid-19 pandemic on propane company office staffing. The decline in the company response rates was not reflected in the total gallons reported, which increased between 2018 and 2019. Given the lack of impact on reported gallons, the decline in response rate is viewed as unlikely to significantly impact the overall results of the survey. The response rate is likely to increase in the 2020 propane sales survey, without of the influence of Covid-19.





To create a state-level response rates for the private company category, ICF categorized each reported private company into two separate designations. These designations were customized for each state and region based on the average size of private company response within that state and region.

- **Large:** Companies that meet a region and state level designation for being a large private company.
- **Small:** Companies that meet a region and state level designation for being a small private company. This designation typically reported sales less than 5 million gallons for 2019.

ICF then used the small company participant list that have reported sales to develop a profile for a private company that has not provided sales information for the 2019 Retail Propane Sales Report. This profile includes total company sales for each state and region as well as an end-use sector breakout of those sales volumes. This profile is then used in the estimation of state and end-use retail propane sales.

Adjustments to Corporate Structure

During the outreach to each participant, ICF asked for any details related to changes in the company's corporate structure, including acquisitions, mergers, divestments or other changes. Additionally, ICF and PERC conducted a review of publicly available information on reported mergers and acquisitions to identify any changes that needed to be accounted for during 2017. This information was used to during the verification and data checking stage to ensure that sales were reported properly.

Estimation of State and End-Use Retail Propane Sales

The Annual Retail Propane Sales Report uses a survey-based data gathering approach to gather information on the total sales breakouts by state, end-use category and company type from domestic propane retailers. This information is used to develop the final reported state-level sales by end-use category.

To develop the total domestic retail propane sales number, ICF uses information on the total volumes of propane odorized provided by PERC. This number represents the total volumes that PERC collects assessments on in a given calendar year. There is a difference between the total volumes of odorized propane in a given year and total sales to end users. Several factors for differences in sales versus odorization assessments include changes in propane storage levels, timing of sales to end-users, volumes in transit, customer refilling schedules, as well as others. ICF makes adjustments to the total reported assessment volumes based on changes in storage levels and weather patterns to account for these differences.

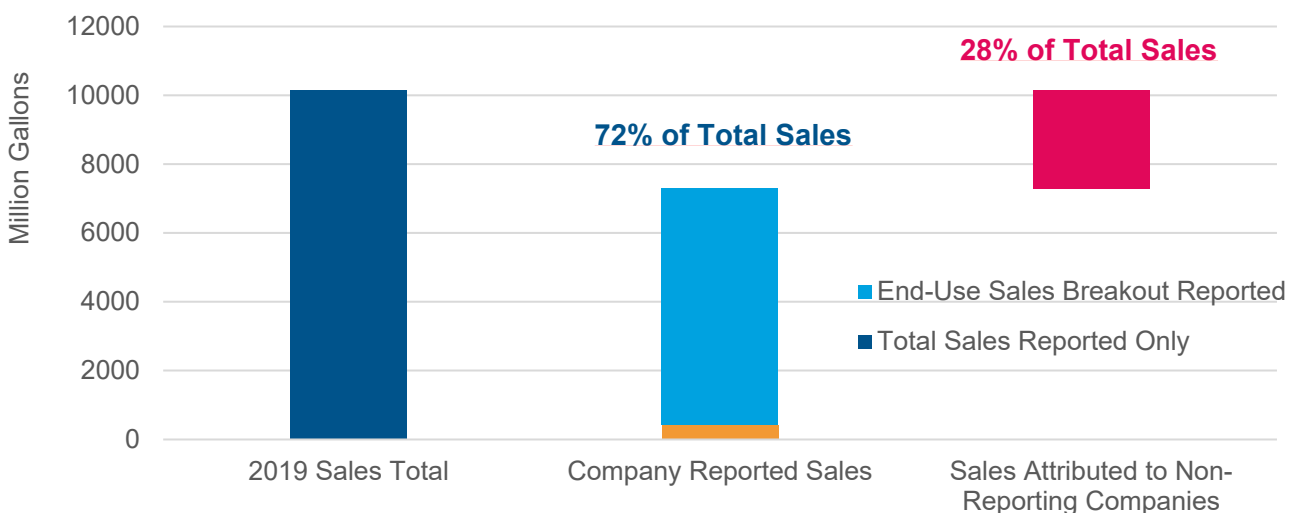
Using publicly available information on propane production, movements, imports, exports, changes in storage levels, as well as information on the volumes of propane used within the petrochemical sector, ICF develops an independent assessment of expected retail propane consumption within the U.S. Given the unique nature of the retail propane industry and differences in treatment of odorized and non-odorized propane, this sales assessment is used only as a reference point against the PERC assessment totals.

Differences in Sales Volume Reporting and Assessment Totals

For the 2019 Retail Propane Sales Report, the total U.S. sales volume was 10,148 million gallons of propane. The companies that participated in the study reported 7,291 million gallons in 2019, an increase from 7,260 million gallons of propane sales reported in 2018. The 2019 reported propane sales takes up 72% of 2019 total retail propane sales. ICF attributed the remaining calculated a total of 2,857 million gallons to the companies that did not report sales volumes.

The majority of sales volumes reported from propane retailers were attributed to an end-use sector. Less than 6% of reported sales were reported only as a total for the participating company.

2019 Annual Retail Propane Sales Totals - Reported and Non-Reported Volumes



Non-Reported Sales Volume Assessments

The majority of total retail propane sales by state were derived through the reported sales volumes of company participants. However, as with any survey-based approach there was less than 100% response rate, and the response rate varied from state to state. To allocate the volumes for the non-

reported assessment, ICF developed a multi-step process to allocate un-reported sales volumes to each state. These steps included the following:

- **Step One:** ICF created a sample set of companies that had provided both total sales and sales by end-use category. This sample set included only companies that were categorized as Private and were also categorized as a small company in the state and regional breakouts.
- **Step Two:** Using the number of non-responding companies within each state, ICF calculated an estimate of the total sales volumes associated with non-responding companies.
- **Step Three:** This estimate was then reviewed for data accuracy and benchmarked on a state and regional basis using average company size, reported gallons, number of accounts as well as several additional metrics.
- **Step Four:** ICF then compared the total volume estimate that was created by steps one through three to the assessment of total non-reported sales, 2,031 million gallons, and scaled the estimation of total non-reported volumes to match the U.S. odorized propane sales control total.

Total State Level Sales Volume by End-Use Category

To ensure an accurate reporting of end-use sales, company sales volumes not reported by end-use sector were allocated to specific sectors. This was done through a two-step process.

- **Step One:** Using the four company type categories, ICF developed a breakout of the percent of end-use sales for each company category and state
- **Step Two:** Following a review of the categorization of each company that only reported total company sales, ICF then developed the sales by end-use category for each company within each state.



Retail Propane Sales Report Contact Information

For any questions on the 2019 Retail Propane Sales Report please
contact:

SalesReport@Propane.com