

FROST & SULLIVAN

Annual Retail Propane Sales Report
U.S. odorized propane sales by state and end-use sector
Reporting year: 2023

Conducted by
Frost & Sullivan

on behalf of the
Propane Education & Research Council

Table of contents

Executive Summary	4
2023 U.S. Retail Propane Sales	4
2023 U.S. Retail Propane Sales by Region	6
Top-ranked States by Retail Propane Sales	9
2023 U.S. Retail Propane Sales by End-use Sectors	10
2023 U.S. Retail Propane Sales	11
National Retail Propane Sales	11
State Rankings by Retail Propane Sales	14
Detailed State Level Information	17
Renewable Propane Sales	22
Non-odorized Propane Sales	22
Review of Annual Retail Propane Sales Report Methodology	23
End-use Sector Definitions	23
Classification of the State by Region, Census Division, and PADD	25
Outreach and Data Collection	26
Research Methodology	26
Differences in Sales Volume Reporting and Assessment Totals	30
2023 Retail Propane Sales Report	31
Reason for the retail propane sales report	31
Confidentiality guidelines for participant responses	31

Important notice:

This report and information and statements herein are based in whole or in part on information collected directly from companies that participated in the annual retail propane sales report data collection process. Frost & Sullivan used additional public and private information, including internal databases and modeling, to ensure the highest degree of accuracy in the end results of the report. However, with any survey-based report, there is a degree of uncertainty related to the final reported information for states and end-use sectors.

Frost & Sullivan 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 2023. This information was collected from participating retail propane companies between March 2024 and June 2024. Frost & Sullivan determined and developed the annual retail propane sales report data verification, quality control, and estimation methodology based on industry best practices and Frost & Sullivan's internal expertise to minimize any bias or estimation errors arising from the collected information. Frost & Sullivan makes no assurances as to the accuracy of any such information or any conclusions based thereon.

Due to rounding, numbers presented throughout this document may not add up precisely to the totals provided and percentages may not precisely reflect the absolute figures.

Limitations of liability:

Review or use of this report by any party other than the client ("you") constitutes acceptance of the following terms. Read these terms carefully. They constitute a binding agreement between you, PERC, and Frost & Sullivan. By your review or use of the report, you hereby agree to the following terms.

You use this report at your own risk. In no event shall Frost & Sullivan or PERC be liable to any party as a result of the use of this annual retail sales report for any direct, indirect, special, incidental, or consequential damages (including, without limitation, damages for lost profits, lost data, or business interruption), whether based on warranty, contract, negligence, tort, or any other legal theory, even if PERC and Frost & Sullivan have been advised of the possibility of such damages. Neither PERC nor Frost & Sullivan are responsible for typographical, pictorial, or other editorial errors. The annual retail sales report is provided AS IS.

No warranty, whether express or implied, including the implied warranties of merchantability and fitness for a particular purpose, is given or made by Frost & Sullivan or by PERC in connection with this report.

Executive Summary

2023 U.S. Retail Propane Sales

In 2023, U.S. retail sales of odorized propane declined to 8.995 billion gallons, reflecting an 8.6% decline from the 9.84 billion gallons sold in 2022. This drop in sales is part of a broader trend of fluctuating primary energy consumption in the U.S., which peaked at 97.4 exajoules in 2007 and fell to approximately 94.3 exajoules by 2023. Despite the drop, the total sales for 2023 were close to the ten-year average of 9.04 billion gallons annually.¹

Propane sales decreased across all four U.S. regions—South, West, Midwest, and Northeast²—in 2023. This decline was largely driven by milder weather conditions, with U.S. temperatures during the 2023 winter being warmer than usual, leading to a reduction of demand in the residential, commercial, and industrial sectors. Specifically, there were nearly 4% fewer heating-degree days (HDDs) compared to the ten-year average. The lack of extreme weather events led to lower heating demand, which in turn reduced propane consumption. This trend is also evident from the increase in propane inventories, which reached 102.2 million barrels in September 2023, the highest monthly level since 2010, according to the Energy Information Administration (EIA).³

North America experienced its warmest year on record in 2023, with temperatures 2.01°C (3.62°F) above the 1910-2000 average. Out of the 12 months, 10 recorded above-average temperatures. Notably, May, August, September, and December were the warmest on record, while July, October, and November were the second warmest for their respective months. December 2023 set a new record with a temperature increase of 4.88°C (8.78°F), surpassing the previous December record set in 1939 by 1.39°C (2.50°F).

The contiguous U.S. had an average annual temperature of 54.4°F in 2023, 2.4°F above the 20th-century average, making it the fifth warmest year in NOAA's 129-year climate record. December 2023 was particularly notable as the warmest December on record, with an average temperature of 39.97°F, 7.29°F above normal, surpassing the previous record set in December 2021.

Several states experienced their warmest year on record in 2023, including Louisiana, Massachusetts, Mississippi, New Hampshire, and Texas. Connecticut, Florida, Maine, Maryland, Vermont, and Virginia had their second warmest years, while an additional 24 states recorded their top 10 warmest years.

In addition to these climatic factors, the growing popularity of heat pumps may also be impacting propane demand. In 2022, heat pump sales in the U.S. hit a record 4.3 million units, exceeding gas furnace sales for the first time. This marked a significant rise from the 1.7 million heat pumps sold in 2012. The gap between heat pump and gas furnace sales widened further in 2023, with sales increasing from 462,211 units to 627,116 units. Heat pumps now account for 55% of heating system sales, a shift from the previous dominance of gas furnaces. Between 2005 and 2020, the proportion of U.S.

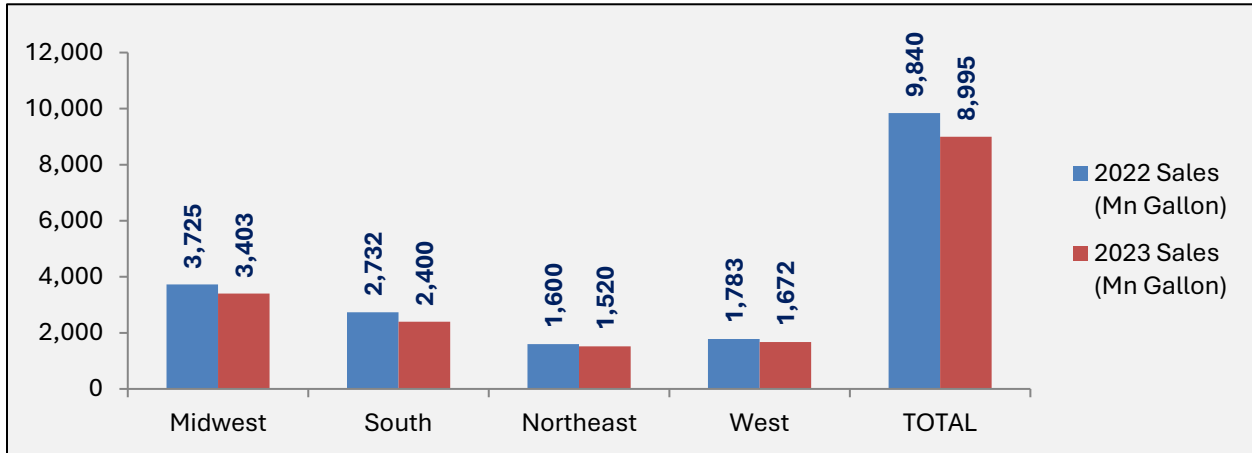
¹ *Odorized propane volumes are estimated based on PERC Assessment Collections.*

² *State listing by regions included on page 25 of this report*

³ <https://www.argusmedia.com/en/news-and-insights/latest-market-news/2522488-viewpoint-us-propane-stocks-to-be-oversupplied-in-2024>

households using heat pumps as their primary space heating source grew from 8% to 14%, with the majority (80%) located in the South, 14% in the West, and 6% in the Midwest and Northeast. ⁴

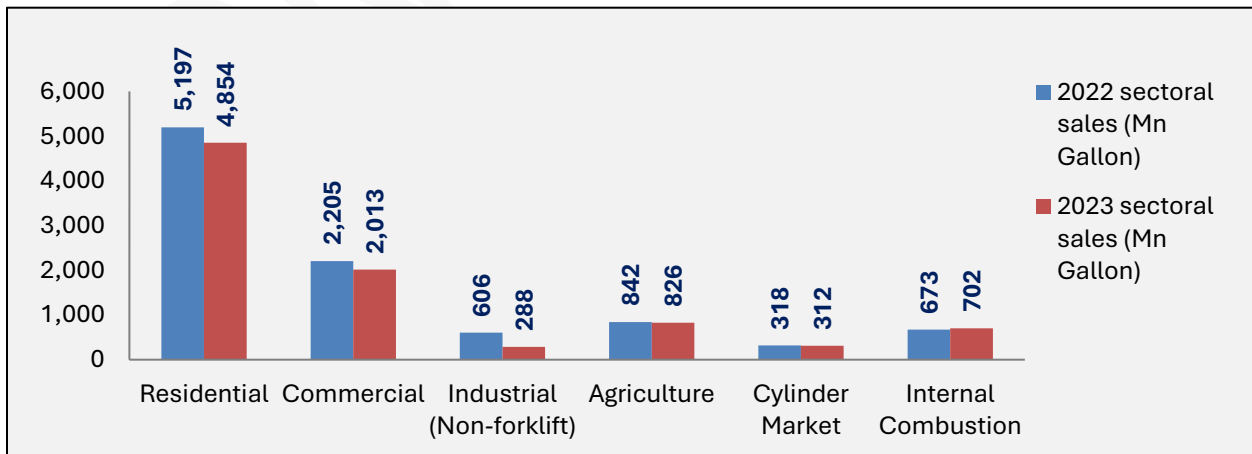
Exhibit 1: 2023 U.S. Retail Propane Sales by Region



The residential sector accounted for 54.0% of propane sales in 2023. Residential propane sales declined by 6.6%, from 5.20 billion gallons in 2022 to 4.85 billion gallons in 2023. Commercial propane sales also declined by 8.7% in 2023. While the report demonstrates a significant decline in industrial propane sales, from 606 million gallons to 288 million gallons, part of this decline is attributed to reclassification of industrial gallons and accounts to the commercial, internal combustion, and agriculture sectors in 2023 by a few major marketers.

The agriculture and cylinder sectors are the two least impacted sectors in 2023 with a modest decline of 1.9% for both the sectors. The internal combustion segment, which includes propane gallons used in forklift, non-road vehicles and autogas, on the other hand, experienced a moderate 4.3% increase in propane sales in 2023.

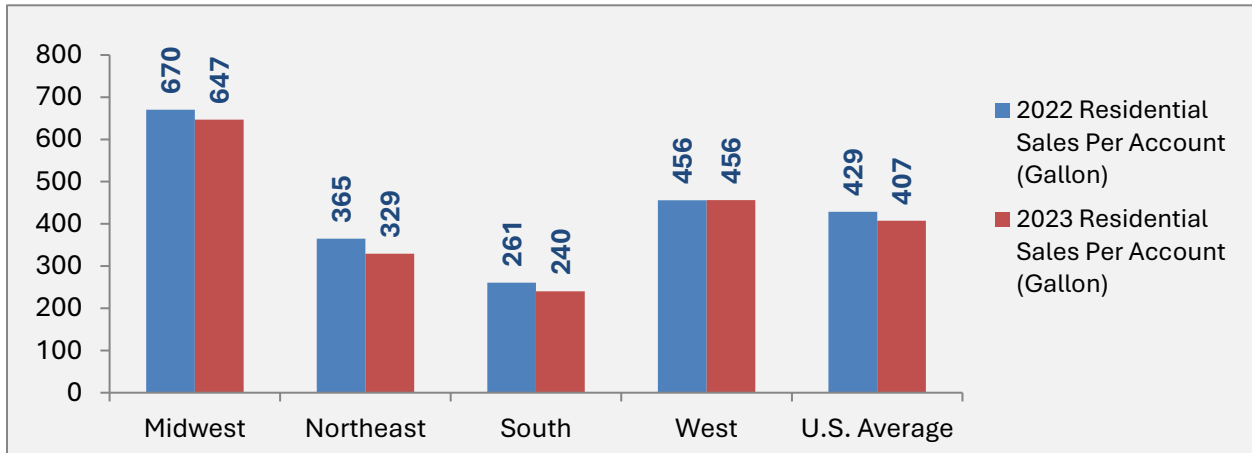
Exhibit 2: 2022 vs 2023 U.S. Propane Sales Volume by End-use Sectors



⁴<https://shorturl.at/2Y2TD>

Consistent with the decrease in residential gallon sales, the number of residential retail propane accounts also decreased by 1.7%, from 12.12 million in 2022 to 11.92 million in 2023. Average residential propane sales per account decreased by 5.1% in 2023, from 429 gallons to 407 gallons.

Exhibit 3: Change in Residential Sales per Account from 2022 to 2023



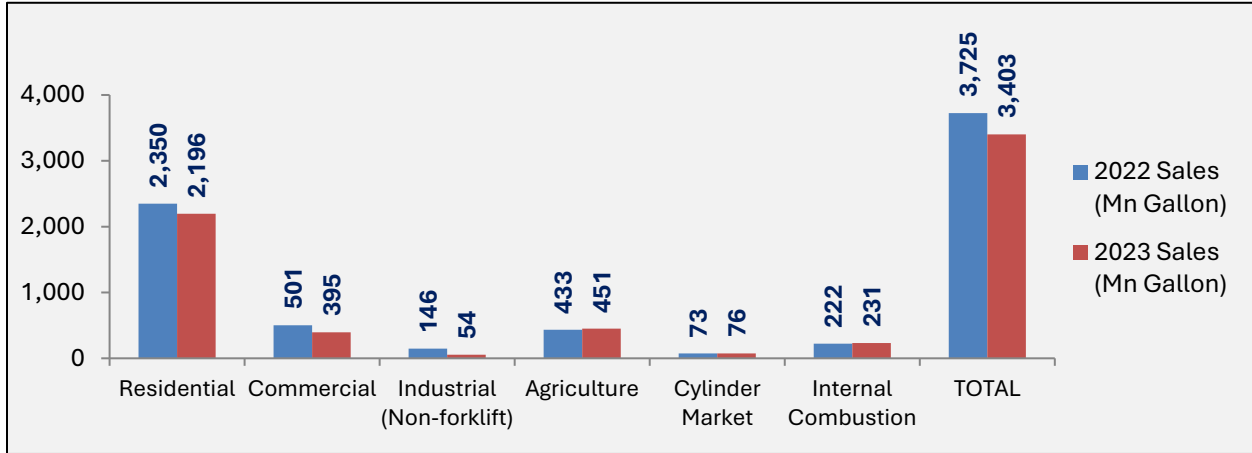
2023 U.S. Retail Propane Sales by Region

Midwest:

The Midwest region accounted for 37.8% of total U.S. propane sales in 2023, a slight decline from the 37.9% share of U.S. propane sales in 2022. Total propane sales in the region decreased from 3.73 billion gallons in 2022 to 3.40 billion gallons in 2023. Annual HDDs in the Midwest decreased by 12%, leading to a reduction in propane demand for space heating.

- Propane sales in the residential segment decreased from 2.35 billion gallons in 2022 to 2.20 billion gallons in 2023, a decline of 6.6%.
- Propane sales in the commercial and industrial segments also experienced significant decline in 2023, at 21.2% and 63.0% respectively, with marketer respondent reclassification contributing to the industrial segment decline.
- Agriculture sales on the other hand, increased by 4.2% to 451 million gallons, representing 13.3% of total propane sales in the Midwest.
- Propane sales to the cylinder and internal combustion segments in the Midwest showed a moderate increase over 2022, at 4.1% in each sector.

Exhibit 4: Propane Sales by Sector, Midwest

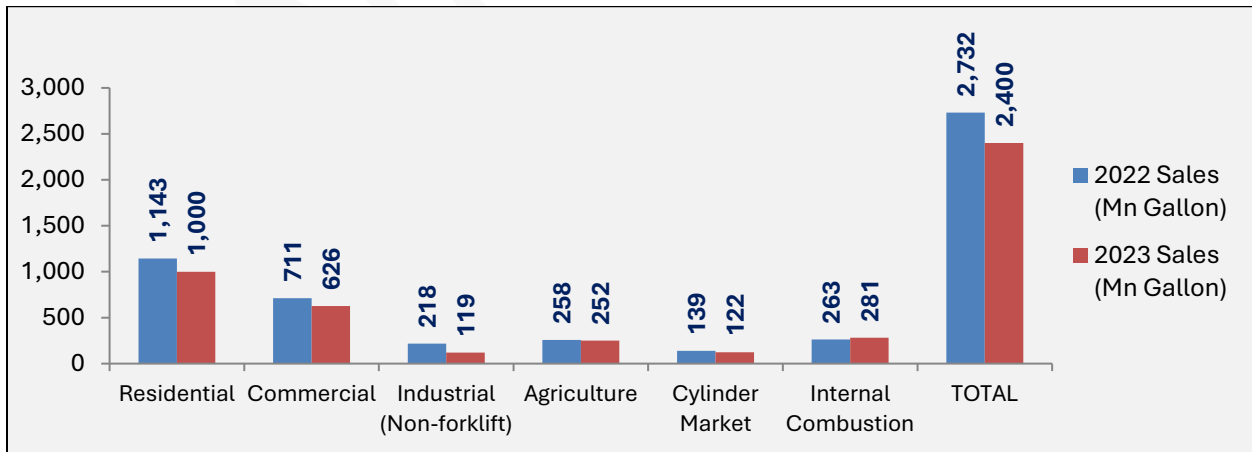


South:

The South region accounted for 26.7% of total U.S. propane sales in 2023, a 1.1% decline in market share from 2022. Total propane sales in the region decreased from 2.73 billion gallons in 2022 to 2.40 billion gallons in 2023. Annual HDDs in the South decreased by 16%, leading to a decrease in propane demand for space heating.

- Propane sales in the residential segment decreased from 1.14 billion gallons in 2022 to 1 billion gallons in 2023, a decline of 12.5%.
- Propane sales in commercial and industrial segments also experienced significant decline in 2023, at 12.0% and 45.4% respectively.
- Both agriculture and cylinder sales declined by 2.3% and 12.2% respectively in 2023, while the internal combustion segment registered a 6.8% increase in Propane sales in 2023.

Exhibit 5: Propane Sales by Sector, South

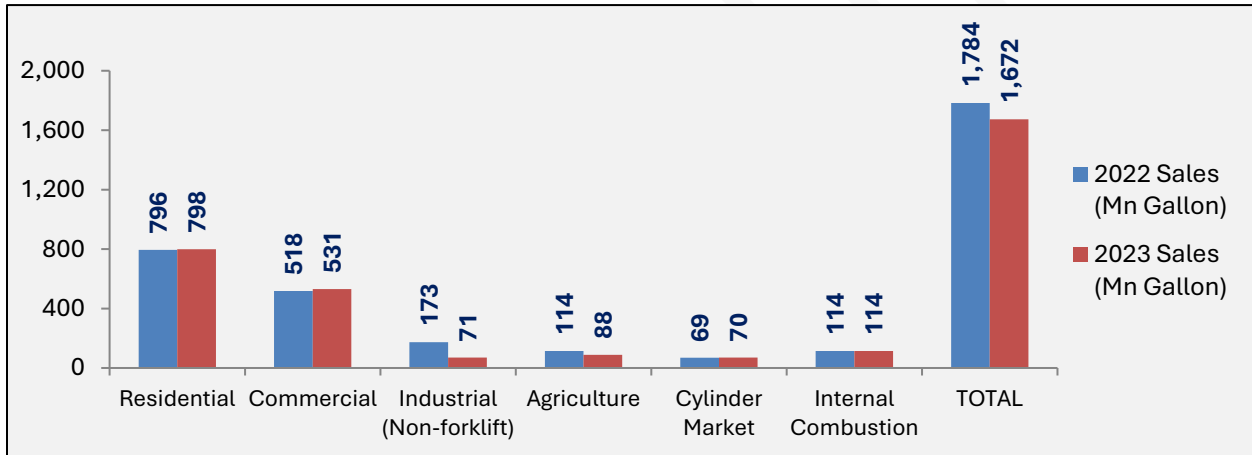


West:

The West region accounted for 18.6% of total U.S. propane sales in 2023, a slight increase from the 18.1% share of U.S. propane sales in 2022. Total propane sales in the region however decreased from 1.78 billion gallons in 2022 to 1.67 billion gallons in 2023. Unlike other regions, annual HDDs in the West increased by 2%, leading to a slight increase in propane demand for space heating in the residential and commercial segments.

- Propane sales in the residential segment slightly increased from 796 million gallons in 2022 to 798 million gallons in 2023, an increase of 0.3%.
- Propane sales to the commercial segment experienced a growth of 2.5% whereas, the industrial segment experienced a decline of 59.0% in 2023, with marketer respondent’s reclassification contributing significantly to the industrial segment decline.
- Agriculture sales decreased by 22.8% to 88 million gallons whereas, propane cylinder gallon sales showed moderate growth 1.4% and internal combustion sales remained same.

Exhibit 6: Propane Sales by Sector, West

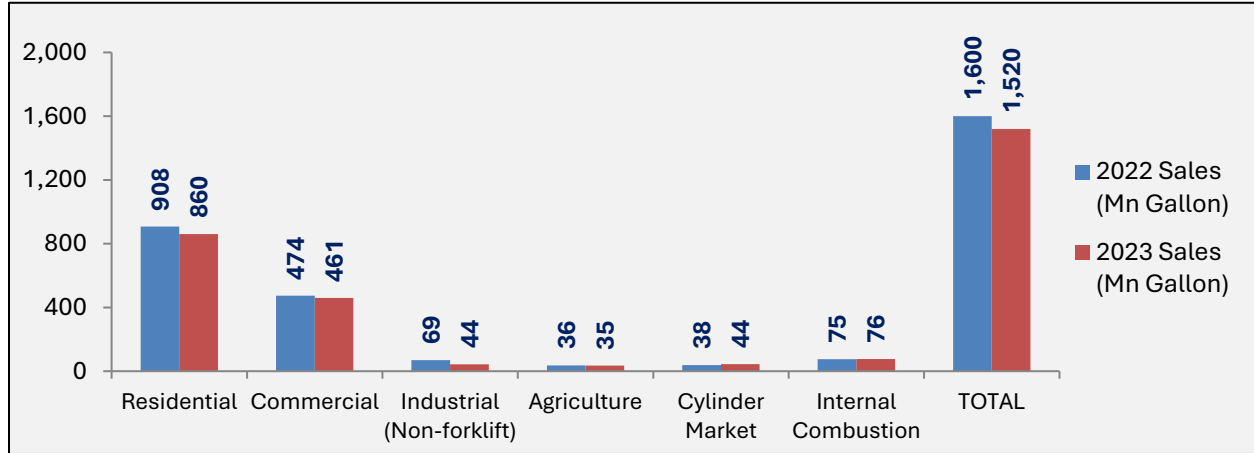


Northeast:

The Northeast region accounted for 16.9% of total U.S. propane sales in 2023, a slight increase from the 16.3% share of U.S. propane sales in 2022. Total propane sales in the region however decreased from 1.60 billion gallons in 2022 to 1.52 billion gallons in 2023. Annual HDDs in the Northeast decreased by 8%, leading to a decrease in propane demand for space heating.

- Propane sales to the residential sector decreased from 908 million gallons in 2022 to 860 million gallons in 2023, a decline of 5.3%.
- Propane sales to the commercial segment experienced a moderate decline of 2.7%.
- The industrial segment experienced a year-on-year decline of 36.2%, due in part to marketer reclassifications.
- Sales to the cylinder and internal combustion segments increased by 15.8% and 1.3% respectively.
- Agriculture sector sales declined by 2.8% to 35 million gallons in 2023.

Exhibit 7: Propane Sales by Sector, Northeast



Top-ranked States by Retail Propane Sales

In 2023, the top 10 states by total retail sales accounted for 46.7% of total U.S. propane sales, while the remaining 40 states and the District of Columbia contributed the remaining 53.3% of gallon sales.

Exhibit 8: Top 10 States by Total 2023 Retail Propane Sales (millions of gallons)

State	Rank	2023 Propane Sales (Mn Gallon)	Share	Residential Sales Per Account (Gallon)	Commercial Sales Per Account (Gallon)
California	1	535	5.9%	374	2,214
Michigan	2	491	5.5%	606	2,176
Minnesota	3	450	5.0%	704	2,887
Illinois	4	434	4.8%	683	3,538
Texas	5	414	4.6%	252	2,646
Wisconsin	6	402	4.5%	673	2,789
New York	7	401	4.5%	364	1,703
Iowa	8	380	4.2%	941	2,239
North Carolina	9	352	3.9%	245	1,205
Ohio	10	344	3.8%	503	2,184
Other States		4,792	53.3%	349	1,807
Total U.S.		8,995		407	1,895

- California** retained its No. 1 position to become the top-ranked state in total propane sales with 535 million gallons in sales in 2023. It was the top-ranked state in commercial sales, with 159 million gallons for 2023. California ranked fourth in the industrial sector, second in the internal combustion sector with total sales of 16 million gallons, and 56 million gallons respectively. California ranked second in the cylinder sales with total sales of 29 million gallons.
- Michigan** was the second-ranked state by total sales in 2023, with 491 million gallons. Michigan was the top-ranked state for the residential market with 349 million gallons and ranked third internal combustion with total sales of 45 million gallons.

- **Minnesota** was the third-ranked state by total sales in 2023 with 450 million gallons and was the fourth-ranked state for the residential sector with 288 million gallons. Minnesota ranked second in agriculture sales with total propane sales of 84 million gallons.
- **Illinois** was the fourth-ranked state by total sales in 2023. Sales in 2023 were 434 million gallons. The state ranked third in the residential sector with 290 million gallons.
- **Texas** was the fifth-ranked state by total sales in 2023 and was ranked second in the commercial sector with 414 million gallons. Texas ranked first position in industrial sales with total sales of 41 million gallons.

2023 U.S. Retail Propane Sales by End-use Sectors

The table below shows total U.S. propane retail sales, and the corresponding number of retail accounts and the average gallons sold per account. In 2023, the survey indicated about 11.92 million total residential accounts and about 2.32 million propane accounts in the other sectors.

Exhibit 9: Summary information of total U.S. 2023 retail propane sales by end-use sectors

Category	Residential	Commercial	Industrial (Non-forklift)	Agriculture	Cylinder Market	Internal Combustion	Total Sales
Propane Sold (Mn Gallons)	4,854	2,013	288	826	312	702	8,995
Total Accounts	11,916,123	1,062,487	84,264	295,379	561,269	312,360	14,231,882
Gallons Per Account	407	1,895	3,418	2,796	556	2,247	632
Sector share of total sales	54%	23%	3%	9%	3%	8%	100%

- The **residential** sector accounted for 54% of total sales, or 4,854 million gallons. The sector averaged sales of 407 gallons per account.
- The **commercial** sector accounted for 22% of total sales, or 2,013 million gallons. The sector averaged sales of 1,895 gallons per account.
- The **industrial** sector accounted for 3% of total sales, or 288 million gallons. The sector averaged sales of 3,418 gallons per account.
- The **agriculture** sector accounted for 9% of total sales, or 826 million gallons. The sector averaged sales of 2,796 gallons per account.
- The **cylinder markets** sector accounted for 3% of total sales, or 312 million gallons. The sector averaged sales of 556 gallons per account.
- The **internal combustion** sector accounted for 8% of total sales, or 702 million gallons. The sector averaged sales of 2,247 gallons per account.

2023 U.S. Retail Propane Sales

National Retail Propane Sales

Exhibit 10: 2023 Total U.S. Retail Propane Accounts by Sector

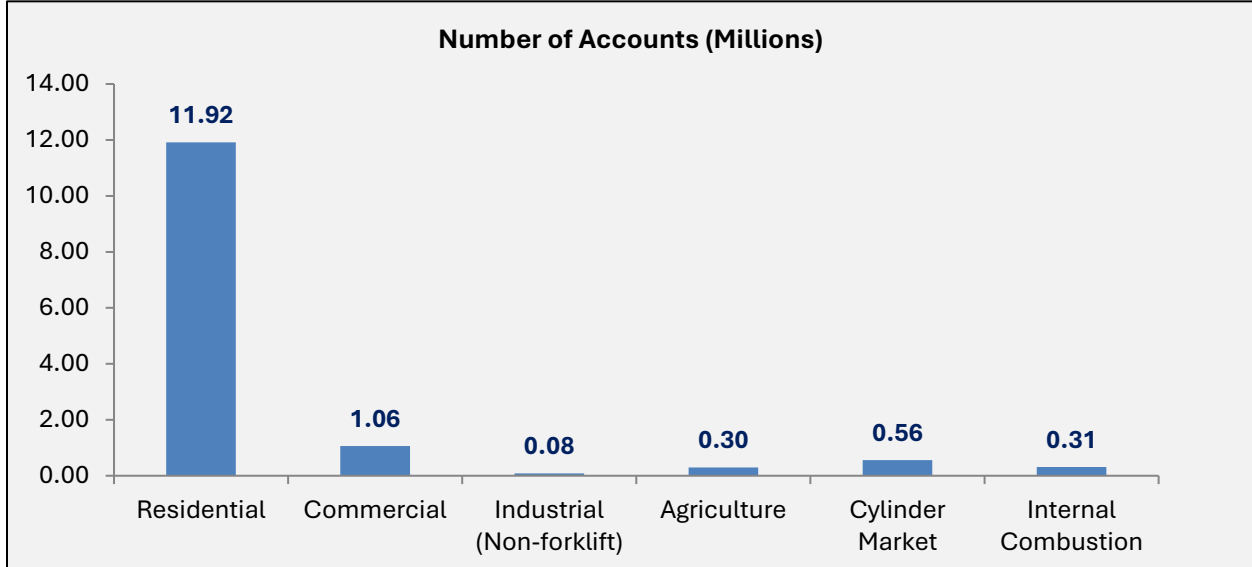


Exhibit 11: 2023 average U.S. retail propane gallon sales per account

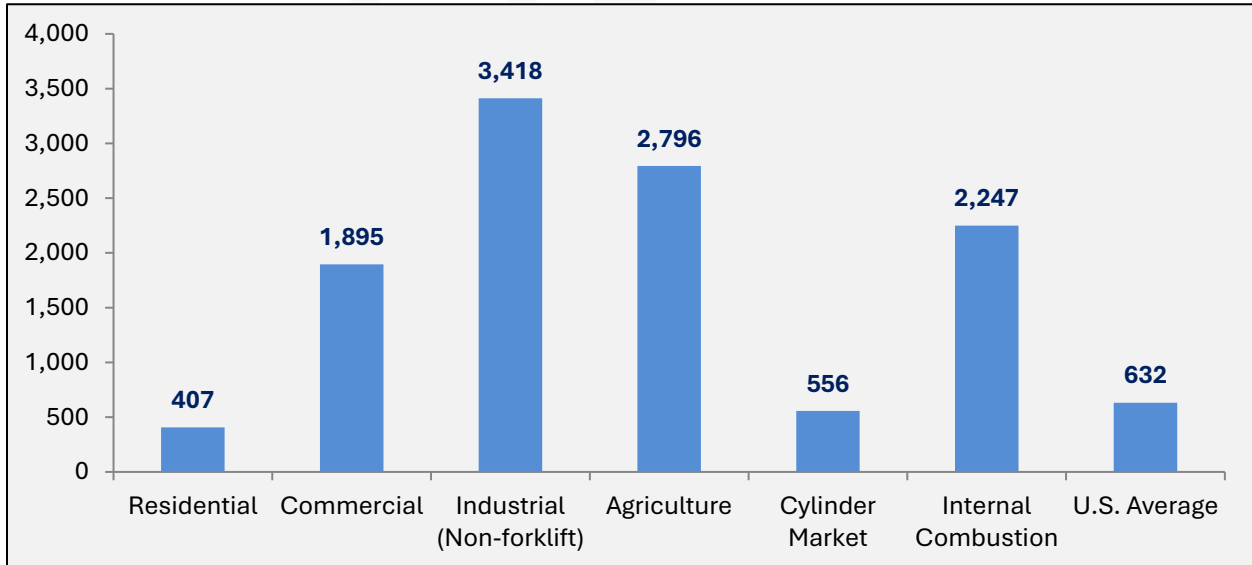


Exhibit 12: 2023 U.S. Retail Propane Sales by Census Division and Sector (millions of gallons)

Census Division	Residential	Commercial	Industrial (Non-forklift)	Agriculture	Cylinder Market	Internal Combustion	Total
East North Central	1,252	228	24	184	48	170	1,906
East South Central	211	93	9	67	14	45	439
Middle Atlantic	445	198	36	33	32	61	805
Mountain	448	231	40	16	32	38	805
New England	415	263	8	2	12	15	715
Pacific	350	300	31	72	38	76	867
South Atlantic	525	375	59	141	57	130	1,287
West North Central	944	167	30	267	28	61	1,497
West South Central	264	158	51	44	51	106	674
U.S. TOTAL	4,854	2,013	288	826	312	702	8,995

Exhibit 13: 2023 U.S. Retail Propane Sales by PADD and Sector (millions of gallons)

PADD	Residential	Commercial	Industrial (Non-forklift)	Agriculture	Cylinder Market	Internal Combustion	Total
PADD1	1,385	835	102	176	102	206	2,806
PADD2	2,389	470	66	481	88	272	3,766
PADD3	329	195	56	81	56	112	829
PADD4	330	154	22	14	16	22	558
PADD5	421	359	42	74	50	90	1,036
U.S. TOTAL	4,854	2,013	288	826	312	702	8,995

Exhibit 14: Share of 2023 Total U.S. Retail Propane Sales by Sector

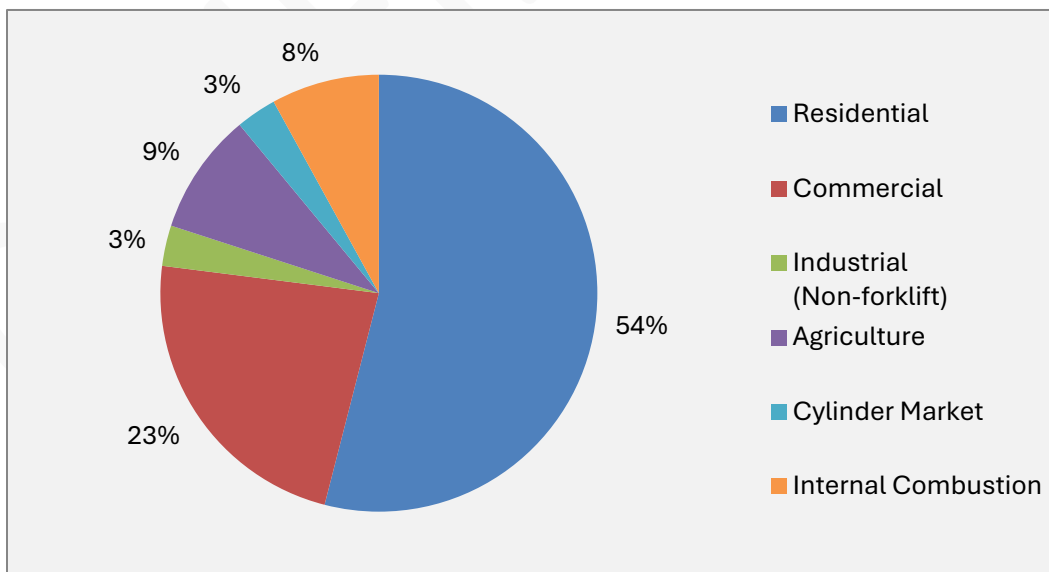


Exhibit 15: Share of 2023 Total U.S. Retail Propane Sales by Census Division

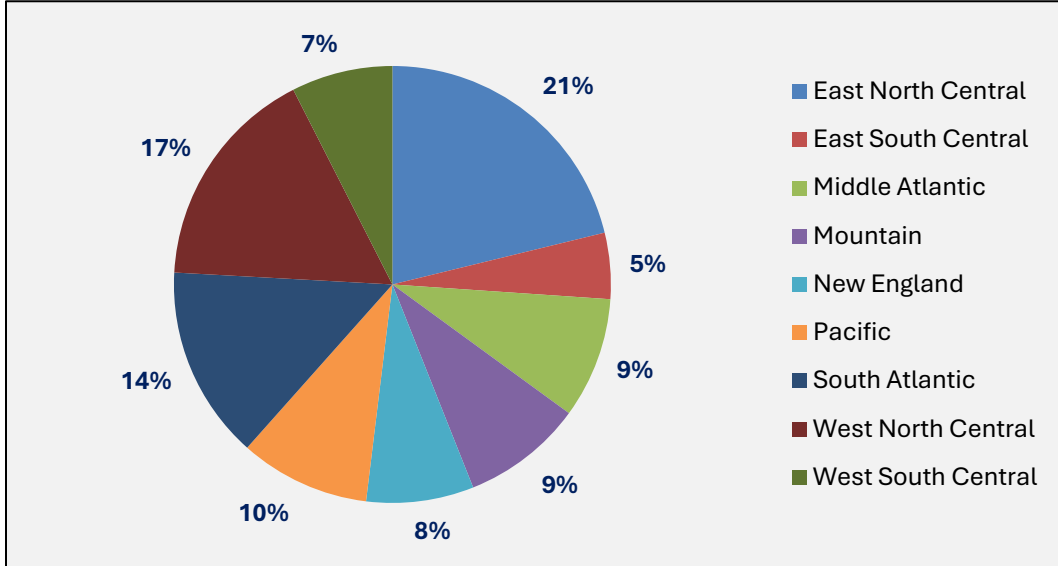
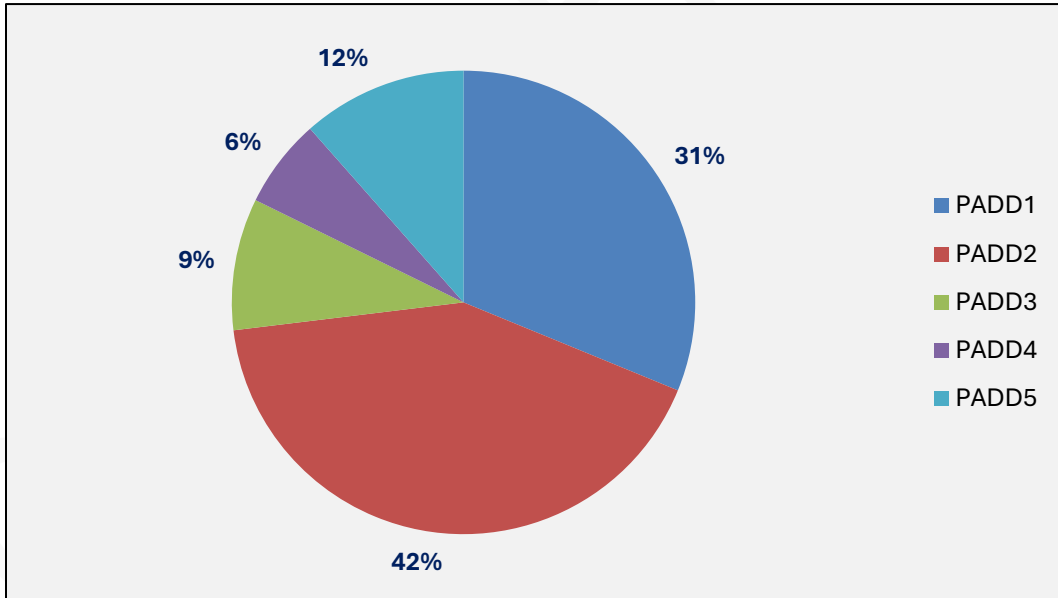


Exhibit 16: Share of 2023 Total U.S. Retail Propane Sales by PADD



State Rankings by Retail Propane Sales

Exhibit 17: Top 10 States: 2023 Residential and Commercial Propane Sales

State	2023 Residential & Commercial Propane Sales (Mn Gallons)	Share
Michigan	403	5.9%
California	390	5.7%
Wisconsin	351	5.1%
Minnesota	343	5.0%
New York	342	5.0%
Illinois	328	4.8%
Iowa	260	3.8%
Pennsylvania	257	3.7%
Texas	242	3.5%
North Carolina	240	3.5%
Other States	3,711	54.0%
U.S. TOTAL	6,867	

Exhibit 18: 2023 State Rankings: Retail Propane Sales (millions of gallons)

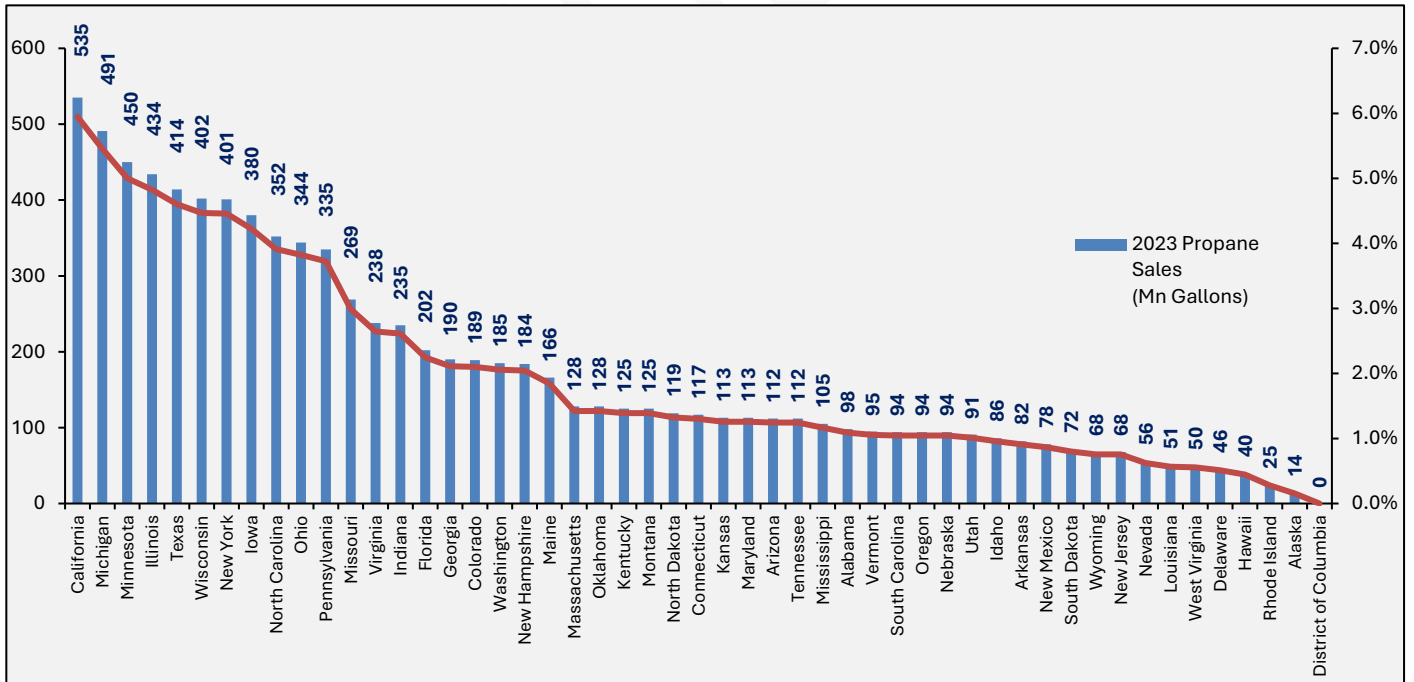


Exhibit 19: Total Retail Propane Sales by State; alphabetical

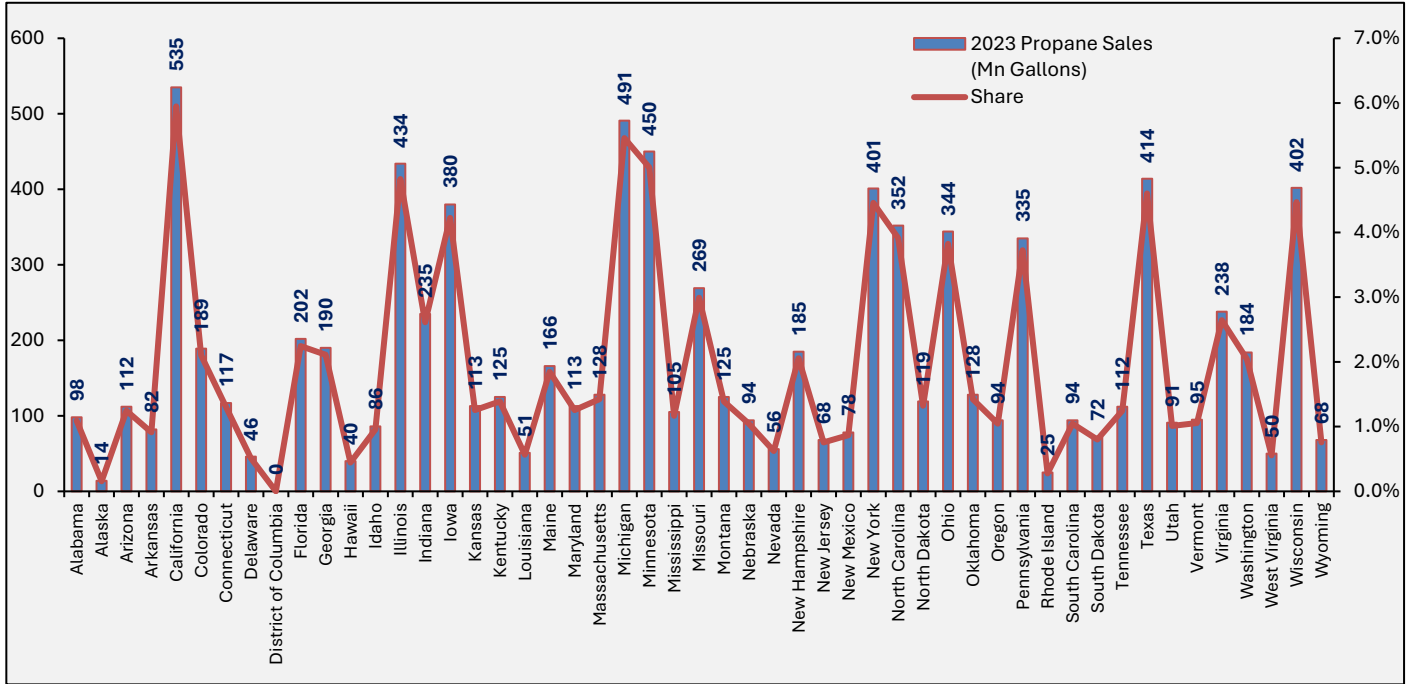


Exhibit 20: 2023 U.S. Retail Propane Gallons per Account by State

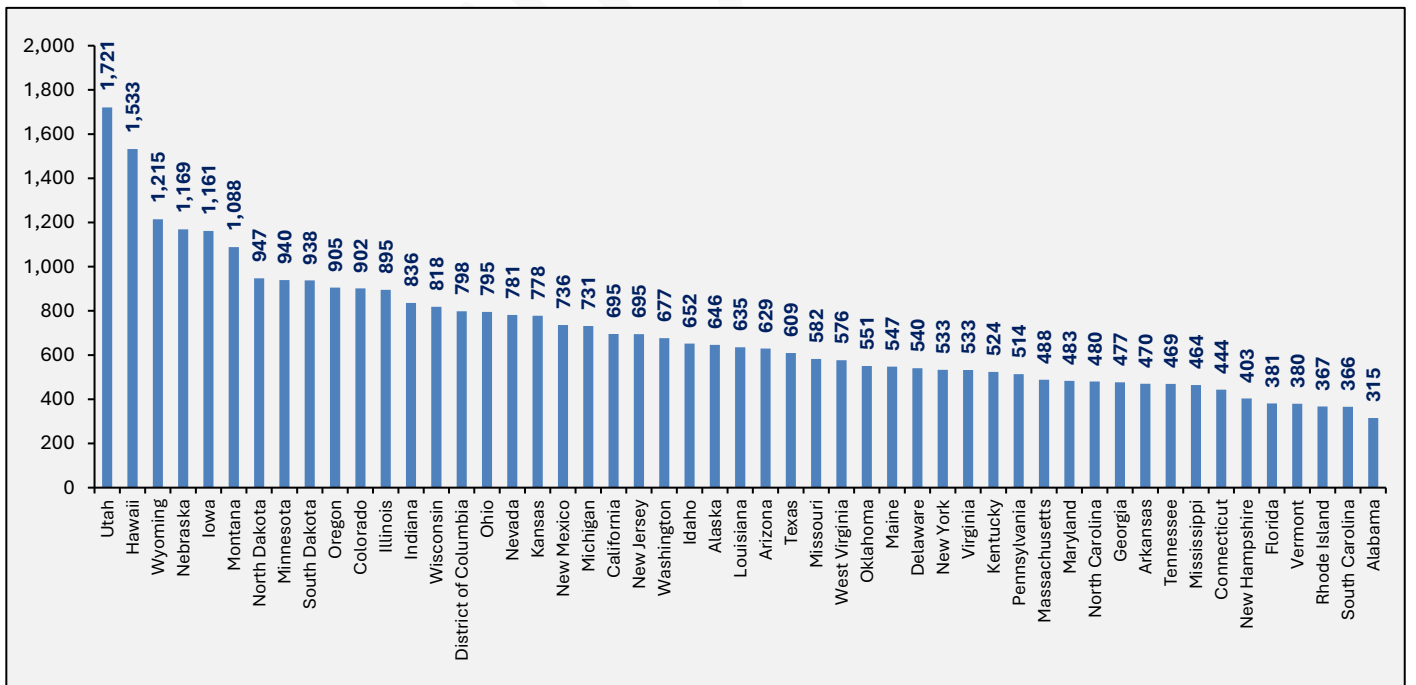


Exhibit 21: 2023 U.S. Retail Propane Gallons per Residential Account by State

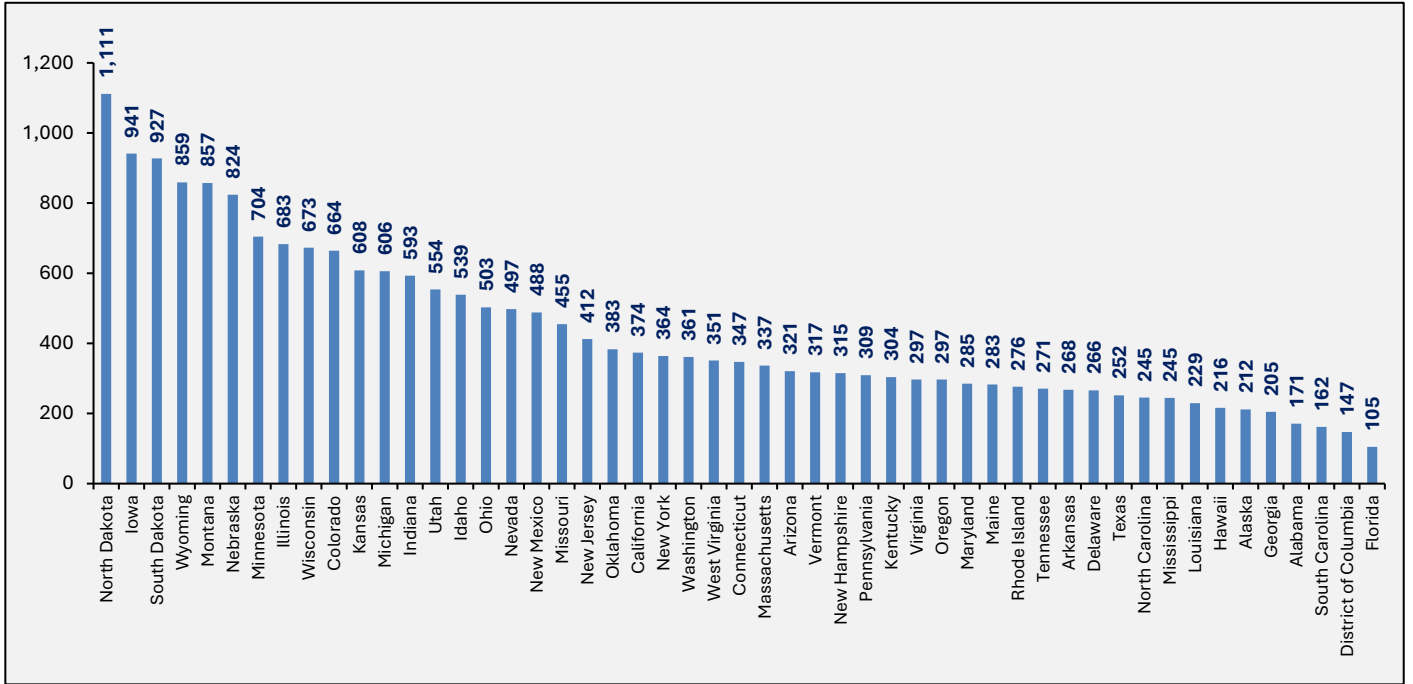
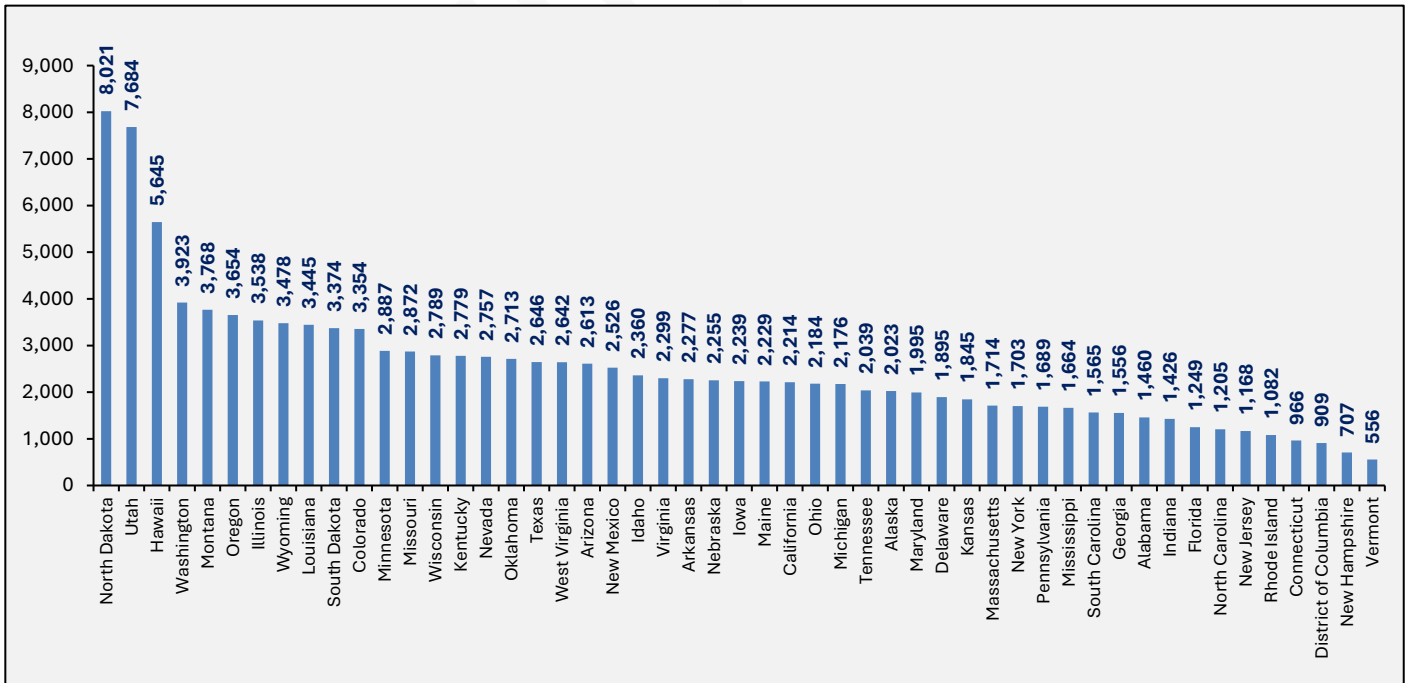


Exhibit 22: 2023 U.S. Retail Propane Gallons per Commercial Account by State



Detailed State Level Information

Exhibit 23: 2023 U.S. Retail Propane Sales Summary by State and Sector (millions of gallons)

State	Residential	Commercial	Industrial (Non-forklift)	Agriculture	Cylinder Market	Internal Combustion	Total Sales
Alabama	42	23	2	19	3	9	98
Alaska	3	9	1	0	1	0	14
Arizona	47	40	6	1	9	9	112
Arkansas	42	13	3	15	3	6	82
California	231	159	16	44	29	56	535
Colorado	116	42	6	5	9	11	189
Connecticut	73	33	1	1	3	6	117
Delaware	20	11	0	10	1	4	46
District of Columbia	0	0	0	0	0	0	0
Florida	44	84	22	6	17	29	202
Georgia	68	46	6	21	7	42	190
Hawaii	4	34	1	0	1	0	40
Idaho	66	14	1	2	1	2	86
Illinois	290	38	5	56	9	36	434
Indiana	128	29	7	42	6	23	235
Iowa	233	27	2	102	4	12	380
Kansas	75	14	4	5	6	9	113
Kentucky	63	27	3	17	4	11	125
Louisiana	15	13	2	7	5	9	51
Maine	73	88	2	0	2	1	166
Maryland	60	29	2	12	4	6	113
Massachusetts	79	37	1	1	4	6	128
Michigan	349	54	5	24	14	45	491
Minnesota	288	55	5	84	6	12	450
Mississippi	49	18	2	27	2	7	105
Missouri	195	35	4	14	6	15	269
Montana	86	31	3	3	1	1	125
Nebraska	46	9	1	25	4	9	94
Nevada	25	18	5	1	3	4	56
New Hampshire	114	65	3	0	2	1	185
New Jersey	33	11	2	1	6	15	68
New Mexico	46	17	7	1	4	3	78
New York	235	107	18	8	16	17	401
North Carolina	151	89	12	61	15	24	352
North Dakota	66	20	12	18	1	2	119
Ohio	180	59	6	41	14	44	344
Oklahoma	74	23	6	8	6	11	128
Oregon	24	48	4	6	2	10	94
Pennsylvania	177	80	15	24	10	29	335
Rhode Island	17	6	0	0	1	1	25
South Carolina	37	29	4	7	4	13	94
South Dakota	43	7	1	18	1	2	72
Tennessee	57	25	2	5	5	18	112
Texas	133	109	41	13	38	80	414
Utah	21	52	4	3	4	7	91
Vermont	59	34	2	0	0	0	95
Virginia	118	75	11	18	7	9	238
Washington	87	51	9	21	5	11	184
West Virginia	27	12	1	6	1	3	50
Wisconsin	303	48	2	22	5	22	402
Wyoming	42	16	8	1	1	0	68
U.S. TOTAL	4,854	2,013	288	826	312	702	8,995

Exhibit 24: 2023 U.S. Retail Propane Sales Summary by State and Sector (number of accounts)

State	Residential	Commercial	Industrial (Non-forklift)	Agriculture	Cylinder Market	Internal Combustion	Total Accounts
Alabama	245,875	15,936	370	7,068	40,302	2,561	312,112
Alaska	15,880	4,169	393	10	612	455	21,519
Arizona	146,492	15,237	1,017	827	9,272	4,525	177,370
Arkansas	158,482	5,926	591	4,531	2,593	2,625	174,748
California	617,829	71,783	6,263	29,761	16,806	27,064	769,506
Colorado	174,601	12,422	1,298	2,592	11,803	7,106	209,822
Connecticut	209,316	34,955	357	278	3,316	15,771	263,993
Delaware	76,919	5,696	203	872	507	517	84,714
District of Columbia	34	54	265		335	244	932
Florida	418,682	67,302	9,630	2,379	12,942	20,662	531,597
Georgia	331,176	29,598	1,192	4,187	22,949	9,963	399,065
Hawaii	19,673	5,920	419	7	85	213	26,317
Idaho	122,065	6,001	410	615	1,543	846	131,480
Illinois	426,072	10,614	1,525	20,249	12,658	13,206	484,324
Indiana	216,075	20,680	1,671	15,949	19,635	7,985	281,995
Iowa	247,845	11,899	931	45,931	15,916	4,780	327,302
Kansas	124,604	7,447	746	2,710	5,827	4,205	145,539
Kentucky	206,067	9,804	951	6,859	10,277	4,999	238,957
Louisiana	64,012	3,642	1,174	1,508	4,415	4,040	78,791
Maine	259,948	39,278	547	405	1,495	925	302,598
Maryland	209,947	14,586	1,452	1,317	2,626	3,349	233,277
Massachusetts	234,753	21,553	679	319	3,142	2,360	262,806
Michigan	577,279	24,907	1,731	7,082	44,543	16,098	671,640
Minnesota	407,768	19,172	1,109	26,939	18,242	5,718	478,948
Mississippi	201,711	10,942	356	3,931	3,101	5,703	225,744
Missouri	424,847	12,332	743	4,715	10,799	6,755	460,191
Montana	99,846	8,316	1,674	239	4,225	498	114,798
Nebraska	55,503	4,078	529	4,106	9,342	6,508	80,066
Nevada	49,897	6,836	481	356	12,187	2,486	72,243
New Hampshire	364,288	91,207	788	473	1,041	734	458,531
New Jersey	77,178	9,796	2,295	446	1,659	6,292	97,666
New Mexico	94,390	7,040	1,203	149	2,193	1,230	106,205
New York	647,090	62,762	1,888	2,931	28,377	8,772	751,820
North Carolina	614,110	73,543	3,429	16,597	15,313	10,292	733,284
North Dakota	59,001	2,495	438	4,516	57,788	1,363	125,601
Ohio	359,182	26,821	2,316	8,732	17,750	17,110	431,911
Oklahoma	193,159	8,521	431	4,469	20,377	5,539	232,496
Oregon	80,025	13,236	798	3,289	2,639	3,456	103,443
Pennsylvania	575,003	47,092	6,670	6,831	8,088	11,121	654,805
Rhode Island	57,739	5,810	109	70	672	2,494	66,894
South Carolina	228,385	18,748	1,516	1,424	3,092	4,536	257,701
South Dakota	46,928	2,026	67	24,406	2,817	910	77,154
Tennessee	208,698	12,108	867	2,387	6,876	6,392	237,328
Texas	528,119	41,282	12,560	3,611	67,570	26,309	679,451
Utah	37,486	6,737	1,162	613	3,025	3,704	52,727
Vermont	186,600	60,323	610	974	1,007	189	249,703
Virginia	398,052	32,698	2,056	3,436	6,309	3,888	446,439
Washington	241,931	13,052	4,646	5,715	3,347	4,809	273,500
West Virginia	76,842	4,335	313	1,696	1,789	1,021	85,996
Wisconsin	449,555	17,297	752	6,328	7,356	9,633	490,921
Wyoming	49,164	4,473	643	544	689	399	55,912
U.S. TOTAL	11,916,123	1,062,487	84,264	295,379	561,269	312,360	14,231,882

Exhibit 25: 2023 U.S. Retail Propane Sales Summary by State and Sector (average gallons per account)

State	Residential	Commercial	Industrial (Non-forklift)	Agriculture	Cylinder Market	Internal Combustion	Retail Sales Per Account
Alabama	171	1,443	5,405	2,688	74	3,514	314
Alaska	189	2,159	2,545	0	1,634	0	651
Arizona	321	2,625	5,900	1,209	971	1,989	631
Arkansas	265	2,194	5,076	3,311	1,157	2,286	469
California	374	2,215	2,555	1,478	1,726	2,069	695
Colorado	664	3,381	4,622	1,929	763	1,548	901
Connecticut	349	944	2,801	3,597	905	380	443
Delaware	260	1,931	0	11,468	1,972	7,737	543
District of Columbia	0	0	0	0	0	0	0
Florida	105	1,248	2,285	2,522	1,314	1,404	380
Georgia	205	1,554	5,034	5,016	305	4,216	476
Hawaii	203	5,743	2,387	0	11,765	0	1,520
Idaho	541	2,333	2,439	3,252	648	2,364	654
Illinois	681	3,580	3,279	2,766	711	2,726	896
Indiana	592	1,402	4,189	2,633	306	2,880	833
Iowa	940	2,269	2,148	2,221	251	2,510	1,161
Kansas	602	1,880	5,362	1,845	1,030	2,140	776
Kentucky	306	2,754	3,155	2,478	389	2,200	523
Louisiana	234	3,569	1,704	4,642	1,133	2,228	647
Maine	281	2,240	3,656	0	1,338	1,081	549
Maryland	286	1,988	1,377	9,112	1,523	1,792	484
Massachusetts	337	1,717	1,473	3,135	1,273	2,542	487
Michigan	605	2,168	2,889	3,389	314	2,795	731
Minnesota	706	2,869	4,509	3,118	329	2,099	940
Mississippi	243	1,645	5,618	6,868	645	1,227	465
Missouri	459	2,838	5,384	2,969	556	2,221	585
Montana	861	3,728	1,792	12,552	237	2,008	1,089
Nebraska	829	2,207	1,890	6,089	428	1,383	1,174
Nevada	501	2,633	10,395	2,809	246	1,609	775
New Hampshire	313	713	3,807	0	1,921	1,362	403
New Jersey	428	1,123	871	2,242	3,617	2,384	696
New Mexico	487	2,415	5,819	6,711	1,824	2,439	734
New York	363	1,705	9,534	2,729	564	1,938	533
North Carolina	246	1,210	3,500	3,675	980	2,332	480
North Dakota	1,119	8,016	27,397	3,986	17	1,467	947
Ohio	501	2,200	2,591	4,695	789	2,572	796
Oklahoma	383	2,699	13,921	1,790	294	1,986	551
Oregon	300	3,626	5,013	1,824	758	2,894	909
Pennsylvania	308	1,699	2,249	3,513	1,236	2,608	512
Rhode Island	294	1,033	0	0	1,488	401	374
South Carolina	162	1,547	2,639	4,916	1,294	2,866	365
South Dakota	916	3,455	14,925	738	355	2,198	933
Tennessee	273	2,065	2,307	2,095	727	2,816	472
Texas	252	2,640	3,264	3,600	562	3,041	609
Utah	560	7,719	3,442	4,894	1,322	1,890	1,726
Vermont	316	564	3,279	0	0	0	380
Virginia	296	2,294	5,350	5,239	1,110	2,315	533
Washington	360	3,907	1,937	3,675	1,494	2,287	673
West Virginia	351	2,768	3,195	3,538	559	2,938	581
Wisconsin	674	2,775	2,660	3,477	680	2,284	819
Wyoming	854	3,577	12,442	1,838	1,451	0	1,216
U.S. Total	407	1,895	3,418	2,796	556	2,247	632

Exhibit 26: 2019-2023 U.S. Retail Propane Sales Summary by State (millions of gallons)

State	2019	2020	2021	2022	2023
Alabama	112	111	112	109	98
Alaska	15	14	15	15	14
Arizona	118	109	115	120	112
Arkansas	97	89	88	84	82
California	556	519	546	539	535
Colorado	215	193	196	216	189
Connecticut	132	126	128	112	117
Delaware	53	47	50	54	46
District of Columbia	0	0	1	1	0
Florida	213	216	225	219	202
Georgia	210	207	205	219	190
Hawaii	40	37	46	43	40
Idaho	81	78	77	87	86
Illinois	505	486	492	408	434
Indiana	259	245	232	245	235
Iowa	544	467	409	449	380
Kansas	141	130	123	132	113
Kentucky	141	108	117	160	125
Louisiana	52	57	56	55	51
Maine	166	149	154	154	166
Maryland	139	132	136	133	113
Massachusetts	154	143	141	137	128
Michigan	587	535	522	531	491
Minnesota	559	512	484	501	450
Mississippi	115	106	116	116	105
Missouri	309	283	276	306	269
Montana	129	119	116	147	125
Nebraska	124	113	108	107	94
Nevada	53	50	54	61	56
New Hampshire	182	165	165	188	185
New Jersey	81	78	83	79	68
New Mexico	78	75	81	88	78
New York	432	417	437	428	401
North Carolina	364	372	375	382	352
North Dakota	164	131	123	123	119
Ohio	353	332	346	390	344
Oklahoma	148	141	141	141	128
Oregon	98	87	98	110	94
Pennsylvania	402	357	373	371	335
Rhode Island	29	27	28	27	25
South Carolina	96	99	107	109	94
South Dakota	98	80	81	80	72
Tennessee	127	123	123	130	112
Texas	449	432	443	493	414
Utah	63	59	64	85	91
Vermont	113	107	109	105	95
Virginia	245	243	258	268	238
Washington	202	188	207	208	184
West Virginia	53	52	52	58	50
Wisconsin	488	435	452	452	402
Wyoming	65	59	60	65	68
U.S. TOTAL	10,149	9,440	9,546	9,840	8,995

Exhibit 27: Annual Heating Degree Days⁵ (HDDs) by State: 2019 to 2023

State	2019	2020	2021	2022	2023	Five Year Average (2019 to 2023)	Percent Change from 2022 to 2023	Percent Change from Five Year Average to 2023
Alabama	2,222	2,129	2,255	2,581	2,111	2,260	-18.2%	-6.6%
Alaska	8,998	10,781	10,977	10,035	10,902	10,339	8.6%	5.4%
Arizona	2,000	2,079	1,985	2,304	2,449	2,163	6.3%	13.2%
Arkansas	3,345	3,130	3,106	3,469	2,932	3,196	-15.5%	-8.3%
California	2,535	2,374	2,567	2,521	2,956	2,591	17.3%	14.1%
Colorado	7,142	6,607	6,533	7,133	7,101	6,903	-0.4%	2.9%
Connecticut	5,913	5,315	5,312	5,546	5,125	5,442	-7.6%	-5.8%
Delaware	4,212	3,862	4,121	4,615	3,931	4,148	-14.8%	-5.2%
District of Columbia	3,571	3,317	3,435	3,736	3,272	3,466	-12.4%	-5.6%
Florida	413	425	413	506	377	427	-25.5%	-11.7%
Georgia	2,346	2,366	2,371	2,630	2,270	2,397	-13.7%	-5.3%
Hawaii	0	2	13	0	0	3	NA	-100.0%
Idaho	6,927	6,612	6,575	7,531	7,129	6,955	-5.3%	2.5%
Illinois	6,321	5,749	5,590	6,233	5,259	5,830	-15.6%	-9.8%
Indiana	5,690	5,325	5,209	5,704	4,840	5,354	-15.1%	-9.6%
Iowa	7,440	6,720	6,327	7,235	6,121	6,769	-15.4%	-9.6%
Kansas	5,326	4,810	4,579	5,218	4,642	4,915	-11.0%	-5.6%
Kentucky	4,095	4,001	4,092	4,472	3,709	4,074	-17.1%	-9.0%
Louisiana	1,617	1,393	1,543	1,880	1,616	1,610	-14.0%	0.4%
Maine	8,113	7,266	7,082	7,315	6,944	7,344	-5.1%	-5.4%
Maryland	4,347	4,114	4,109	4,539	3,868	4,195	-14.8%	-7.8%
Massachusetts	6,231	5,626	5,591	5,837	5,510	5,759	-5.6%	-4.3%
Michigan	6,836	6,336	6,109	6,787	6,042	6,422	-11.0%	-5.9%
Minnesota	9,026	8,164	7,781	9,086	7,848	8,381	-13.6%	-6.4%
Mississippi	2,231	2,014	2,111	2,374	1,942	2,134	-18.2%	-9.0%
Missouri	5,247	4,874	4,651	5,288	4,344	4,881	-17.9%	-11.0%
Montana	8,650	7,865	7,847	8,507	7,902	8,154	-7.1%	-3.1%
Nebraska	6,787	6,039	5,690	6,452	5,894	6,172	-8.6%	-4.5%
Nevada	3,531	3,682	3,620	3,844	4,174	3,770	8.6%	10.7%
New Hampshire	7,463	6,737	6,529	6,902	6,382	6,803	-7.5%	-6.2%
New Jersey	5,163	4,713	4,760	5,123	4,521	4,856	-11.8%	-6.9%
New Mexico	4,502	4,362	4,294	4,853	4,771	4,556	-1.7%	4.7%
New York	5,827	5,240	5,605	5,942	5,416	5,606	-8.9%	-3.4%
North Carolina	3,165	3,005	3,050	3,267	2,859	3,069	-12.5%	-6.8%
North Dakota	10,074	8,799	8,207	9,610	8,726	9,083	-9.2%	-3.9%
Ohio	5,478	5,230	5,119	5,662	5,014	5,301	-11.4%	-5.4%
Oklahoma	3,806	3,574	3,412	3,863	3,347	3,600	-13.4%	-7.0%
Oregon	5,439	5,155	5,351	5,527	5,505	5,395	-0.4%	2.0%
Pennsylvania	5,541	5,174	5,162	5,723	5,026	5,325	-12.2%	-5.6%
Rhode Island	5,881	5,258	5,233	5,488	5,131	5,398	-6.5%	-4.9%
South Carolina	2,420	2,361	2,398	2,506	2,153	2,368	-14.1%	-9.1%
South Dakota	8,312	7,270	6,888	7,882	7,296	7,530	-7.4%	-3.1%
Tennessee	3,648	3,618	3,549	3,878	3,208	3,580	-17.3%	-10.4%
Texas	1,880	1,533	1,610	2,031	1,624	1,736	-20.0%	-6.4%
Utah	6,782	6,279	6,542	7,191	7,190	6,797	0.0%	5.8%
Vermont	8,138	7,454	7,142	7,452	7,074	7,452	-5.1%	-5.1%
Virginia	3,929	3,724	3,879	4,238	3,665	3,887	-13.5%	-5.7%
Washington	5,536	5,338	5,752	6,055	5,821	5,700	-3.9%	2.1%
West Virginia	4,679	4,683	4,755	5,122	4,469	4,742	-12.7%	-5.7%
Wisconsin	7,951	7,180	6,781	7,676	6,643	7,246	-13.5%	-8.3%
Wyoming	8,508	7,787	7,703	8,352	8,235	8,117	-1.4%	1.5%

⁵ A heating degree day (HDD) is the difference between 65°F and the daily mean temperature at that location. It is primarily a measure used to estimate heating requirements.

Renewable Propane Sales

For 2023, Propane marketers reported retail sales of nearly 102 million gallons of renewable propane and renewable propane blends, a 52 million gallons increase from 2022, resulting in a CO₂ equivalent emissions reduction of between 15,454⁶ and 24,140⁷ metric tons over traditional fossil-based propane.

Non-odorized Propane Sales

Propane can be used in a variety of manners within the petrochemical and refining sectors. The below table shows 2023 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 2023, sales to the petrochemical sector totaled 3.94 billion gallons of propane, roughly 43.8% of total U.S. retail propane sales for the year.

In 2023, total propane sales to ethylene plants in Texas, Louisiana, and Iowa were 2.922 billion gallons. Sales in 2022 were 0.03 billion gallons or 1.3% higher than in 2023.

Total sales to chemical feedstock market declined 153,341 thousand gallons (-3.7%). Demand in 2023 was lower in all states. Total ethylene production declined 0.15% in 2023 and sales to multi-feed ethylene plants declined 3.1%. Ethylene production from multi-feed plants declined 9.6% but production from ethane only and LPG plants increased 8.1%.

The combination of the increase in ethylene production from "ethane only" crackers and propane's cost disadvantages versus ethane and normal butane were the primary factors that resulted in the drop in propane sales into US chemicals feedstock markets.

Exhibit 28: 2023 U.S. Chemical Sector Non-odorized Sales Volumes (millions of gallons)

Year	Ethylene Feedstock	PDH Feedstock	Total Chemical Sales
Texas	2,289	1,024	3,313
Louisiana	611	0	611
Iowa	22	0	22
U.S. Total	2,922	1,024	3,946

Source: Petral Consulting

⁶ CO₂ emissions calculated based on a carbon intensity of 43.5 gCO₂eq/MJ

⁷ CO₂ emissions calculated based on a carbon intensity of 20.5 gCO₂eq/MJ

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 do 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 the 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:

The cylinder market is defined as propane that is delivered 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 was reported by participating companies using the following two sub-categories:

Consumer bottle refill & exchange: Residential or individual use bottle exchange programs. This 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. This 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 was 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.

Material handling: Only includes odorized propane use by forklifts at commercial and industrial sites, as well as airport and port equipment. This can either be consumed in cylinders or directly.

Non-road: Only includes propane used by commercial mowers, outdoor power equipment, golf equipment, ATVs, or other non-road vehicles. This can either be consumed in cylinders or can be supplied directly.

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

CONFIDENTIAL

Classification of the State by Region, Census Division, and PADD

State	Region	Census Divison	PADD Classification
Alabama	South	East South Central	PADD3
Alaska	West	Pacific	PADD5
Arizona	West	Mountain	PADD5
Arkansas	South	West South Central	PADD3
California	West	Pacific	PADD5
Colorado	West	Mountain	PADD4
Connecticut	Northeast	New England	PADD1
Delaware	South	South Atlantic	PADD1
District of Columbia	South	South Atlantic	PADD1
Florida	South	South Atlantic	PADD1
Georgia	South	South Atlantic	PADD1
Hawaii	West	Pacific	PADD5
Idaho	West	Mountain	PADD4
Illinois	Midwest	East North Central	PADD2
Indiana	Midwest	East North Central	PADD2
Iowa	Midwest	West North Central	PADD2
Kansas	Midwest	West North Central	PADD2
Kentucky	South	East South Central	PADD2
Louisiana	South	West South Central	PADD3
Maine	Northeast	New England	PADD1
Maryland	South	South Atlantic	PADD1
Massachusetts	Northeast	New England	PADD1
Michigan	Midwest	East North Central	PADD2
Minnesota	Midwest	West North Central	PADD2
Mississippi	South	East South Central	PADD3
Missouri	Midwest	West North Central	PADD2
Montana	West	Mountain	PADD4
Nebraska	Midwest	West North Central	PADD2
Nevada	West	Mountain	PADD5
New Hampshire	Northeast	New England	PADD1
New Jersey	Northeast	Middle Atlantic	PADD1
New Mexico	West	Mountain	PADD3
New York	Northeast	Middle Atlantic	PADD1
North Carolina	South	South Atlantic	PADD1
North Dakota	Midwest	West North Central	PADD2
Ohio	Midwest	East North Central	PADD2
Oklahoma	South	West South Central	PADD2
Oregon	West	Pacific	PADD5
Pennsylvania	Northeast	Middle Atlantic	PADD1
Rhode Island	Northeast	New England	PADD1
South Carolina	South	South Atlantic	PADD1
South Dakota	Midwest	West North Central	PADD2
Tennessee	South	East South Central	PADD2
Texas	South	West South Central	PADD3
Utah	West	Mountain	PADD4
Vermont	Northeast	New England	PADD1
Virginia	South	South Atlantic	PADD1
Washington	West	Pacific	PADD5
West Virginia	South	South Atlantic	PADD1
Wisconsin	Midwest	East North Central	PADD2
Wyoming	West	Mountain	PADD4

Outreach and Data Collection

Data sources

The primary source of information used in the creation of 2023 retail propane sales report has been provided directly by the participating propane retail companies and PERC. All sales and customer account information provided by participants is reflective of the calendar year 2023 totals.

Additional data sources have also been used during the research in order to ensure the highest degree of accuracy in reporting. These additional data sources include, but are not limited to the following:

- Energy Information Agency (EIA)
- Industry trade press and publications
- National Oceanic and Atmospheric Administration
- Information reported by State associations and foundations
- NASA GISS

Research Methodology

Survey coverage

Propane Education & Research Council (PERC) conducted a web-based survey of U.S. propane retailers between March and June 2024. Out of a universe of 3,954 U.S. retailers, 1,803 retailers undertook the survey. These retailers reported a total of 6.483 billion gallons or 72% of the assessed propane sales for 2023, demonstrating that most of the large and multi-state retailers participated in the survey. With a gap of 2.512 billion gallons between the assessment total and the sales reported through a web survey, Frost & Sullivan adopted three extrapolation methodologies to determine sales by states and sectors.

Data quality

To ensure the quality of the data, Frost and Sullivan crosschecked the reported data through multiple dimensions – 2023 vs 2022 reported data for the leading 50 retailers, gallons per state, and gallons per account comparison for different category retailers, etc. While the reported data was consistent in most of the cases, there were a few cases where there were some inconsistencies and retailers made some reporting errors in the survey form. Those retailers were contacted to validate the reported data before proceeding with the analysis. As for the number of propane accounts, there were a significant number of respondents that chose not to report this information. On follow-up, to obtain this information supplemental reporting was not provided in most cases.

The following are the three methodologies used for extrapolating the survey findings and determining the 2023 U.S. propane retail sales estimates:

1. Methodology 1: through change in reported propane sales per retailer and share of states
2. Methodology 2: retailer universe estimation and extrapolation of the survey data
3. Methodology 3: establishing the correlation between state HDD and propane sales

Explanation of the Propane Sales Estimation and Extrapolation Methodologies

A. Methodology 1: through change in reported propane sales per retailer and share of states

In this methodology, state-wise percentage change in propane sales has been derived using two factors:

- a. Change in Propane sales reported per retailer
- b. Change in historical share of the states

Change in Propane sales reported per retailer

In this methodology, total Propane sales reported for a state has been divided by the no. of reporting to derive the state-wise average Propane sales reported per retailer. The 2022 and 2023 values have been compared to compute the state-wise change.

Change in historical share of the states

In this methodology, percentage share of the states in the country's overall Propane sales for a five-year period (2018-2022) has been used to compute the historical average share of the state in the country's overall propane sales.

The first factor has been assigned a 65% weightage as it considers the 2023 reported data. The second factor has contributed 35% weightage as the methodology is limited till 2022 data. The weighted average change thus derived has been applied on the 2022 Propane sales to derive the 2023 Propane sales for a state. The total sales are then rationalized to 8.995 billion gallons to derive the propane sales in all 50 states and the District of Columbia.

B. Methodology 2: Retailer universe estimation and extrapolation of the survey data

The second methodology was based on a 'Bottoms Up' approach. First, Frost & Sullivan split the retailers who participated in the survey into six categories, then derived state propane sales norms for each category, and finally used extrapolation to arrive at 2023 state propane sales. Using the geographic spread as the categorization parameter, retailers were split into the following six categories:

- a. Retailers present only in one state
- b. Retailers present in 2 to 5 states
- c. Retailers present in 6 to 10 states
- d. Retailers present in 11 to 15 states
- e. Retailers present in 16 to 30 states
- f. Retailers present in more than 30 states

In this methodology, if a retailer is present across 10 states, the retailer was considered as 10 retailers (i.e., each state entity was considered as one retailer). This new definition of retailers created a total of 3,954 state entities present in the U.S., of which 1,803 (1,037 retailers) were survey participants. Out of these 1,803 state entities, 40% entities belonged to the first category, 36% were in the second category, 3% were in the third category, 4% were in the fourth category, 7% were in the fifth category, and the remaining 10% were in the last category.

Once the above was established, state cumulative gallon sales for each category were computed and then used to derive averages/norms for state propane sales for each category. Ideally, the same norm would then be used for extrapolation to the universe. However, in this specific case, the following observations were made:

- 1,803 retailers who had participated in the survey accounted for 72% of sales, while the remaining 2,151 retailers accounted for only 28% sales.
- Average Propane sales for the reported retailers were 3.6 million gallons against the national average of 2.3 million gallons. The average sales for the non-reported retailers were 1.2 million gallons, 51% less than the national average.

Hence, it was necessary to conduct a rationalization of the propane sales norm for extrapolation. To derive the overall propane sales number of 8.995 billion gallons, extrapolation norms for each category were reduced by the following percentages:

- Category 1: 52% of the propane sales norm
- Category 2: 62% of the propane sales norm
- Category 3: 74% of the propane sales norm
- Category 4: 100% of the propane sales norm
- Category 5: 100% of the propane sales norm
- Category 5: 100% of the propane sales norm

The total sales thus derived is then rationalized to 8.995 billion gallons to derive the propane sales in all 50 states and the District of Columbia.

C. Methodology 3: establishing a correlation between state HDD and propane sales

The fourth methodology was based on a 'Top Down' approach. In this methodology, Frost & Sullivan tried to identify a specific macro variable that could be strongly correlated with propane sales in the states. After much discussion, HDD was shortlisted for analysis as propane is primarily used for space heating and grain drying applications, and thus HDD bears a strong correlation with propane sales.

An analysis of HDD and propane sales data between 2018 and 2023 showed a moderate degree of correlation (coefficient of correlation of 0.41) between U.S. HDD and national-level propane sales. Hence, 2023 U.S. national and state-level HDD data was considered to estimate 2023 propane sales for all U.S. states. This method estimated 2023 overall U.S. propane sales at 9.540 billion gallons – approximately 545 million gallons higher than the actual data. However, to compare the output from all four methodologies, propane sales numbers for each state were rationalized and decreased in the same ratio to achieve an overall sales total of 8.995 billion gallons.

Rationalization Among Methodologies and Finalization of Propane Sales and Account Number Estimates

A. State Propane sales finalization

As a first step, the pros and cons of the four methodologies were deliberated at length.

Methodology	Pros	Cons
Methodology 1	<ul style="list-style-type: none"> Quantitative methodology Based on ground level facts and survey data Rigid methodology as it considers historical shares of the states 	<ul style="list-style-type: none"> Assignment of weightages is based on subjective assessment of impact of individual factors on the state / national level propane sales
Methodology 2	<ul style="list-style-type: none"> This method fully utilizes the data collected through the survey Since most of the large retailers participated in the survey, this method provided visibility to a significant portion of a state’s propane sales. 	<ul style="list-style-type: none"> Accuracy of state-wise retailer universe is an area of concern. There are significant number of retailers whose sales are extremely low or some of them may have started operations only in 2023, however their contribution could become significant due to extrapolation Iterative method had been used to decide the reduction factors. Multiple combinations were possible, and each combination showed different propane sales estimates for the states; however, the differences were not significant.
Methodology 3	<ul style="list-style-type: none"> HDD is an important parameter that indicates changes in temperature which in turn indicates an increase/decrease in space heating requirements Moderate correlation between HDD and national propane sales 	<ul style="list-style-type: none"> Difficult to explain the reasons for the poor / negative coefficient of correlations for certain states

After weighing the Pros and Cons of the above three methodologies, joint decision has been taken to assign the following weightages to estimates the Propane sales for each state.

- Methodology 1: 40% weightage

- Methodology 2: 20% weightage
- Methodology 3: 40% weightage

By applying these weightages, state and national level Propane sales estimates were established for 2023. Wherever applicable, propane sales estimates were then verified with the sales figures provided by the states themselves.

B. Sector Propane sales finalization for each state

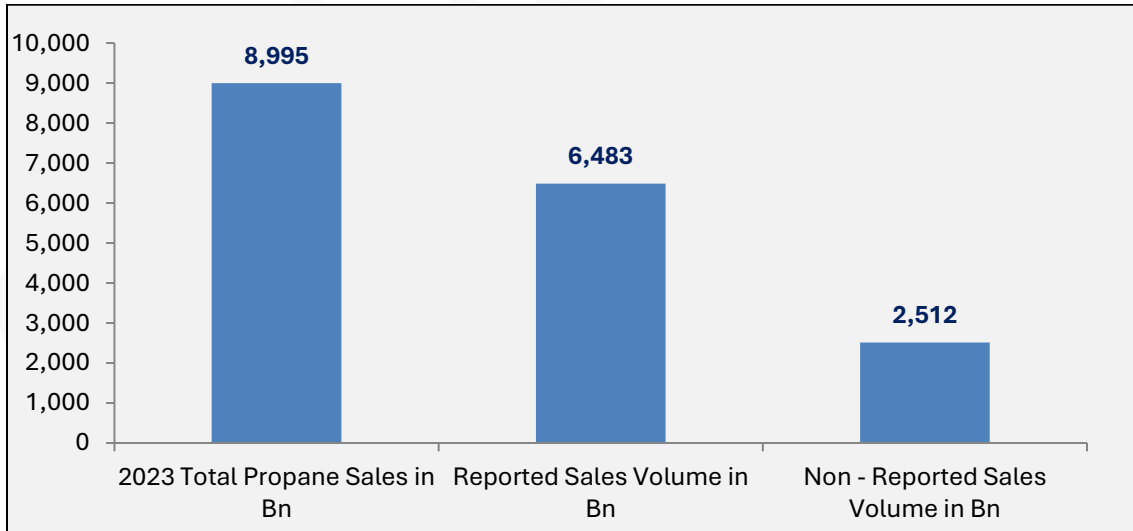
Once the state-level propane sales estimates were finalized, 2023 survey data was used to derive the sector splits and subsequently, sector propane sales. As approximately three-fourths of the propane sales volume was covered through the survey, reported data represented a true and fair assessment of sector-level propane consumption for each state.

C. Market sector account number finalization for each state

Average propane sales per account were calculated for each state and sector, and retailers who did not report their accounts during the survey were not considered for this calculation. Average propane sales norms were then used to divide the state and sector-level propane sales to derive the market sector account numbers for each state.

Differences in Sales Volume Reporting and Assessment Totals

For the 2023 retail propane sales report, the total U.S. sales volume was 8,995 million gallons of propane. The companies that participated in the study reported 6,483 million gallons in 2023, a decrease from 7,153 million gallons of propane sales reported in 2022. Both 2023 and 2022 reported Gallons were around 72% of the overall final Gallons. Frost & Sullivan attributed the remaining volume of 2,512 million gallons to the companies that did not report sales volumes.



2023 Retail Propane Sales Report

The annual retail propane sales report is a joint initiative between the Propane Education & Research Council (PERC) and Frost & Sullivan. The 2023 retail propane sales report has been used to determine the odorized propane sales to end-use sectors for the calendar year 2023. 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 to fulfil 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, and 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.

Confidentiality guidelines for participant responses

PERC and Frost & Sullivan understand that the U.S. retail propane market is a highly competitive market. All company and contact information that is collected as part of this annual report will be held under Frost & Sullivan's confidential information data handling guidelines.

Proprietary or confidential information provided by respondents and developed by Frost & Sullivan as part of the 2023 retail propane sales report has been clearly labelled and identified as 'confidential information and stored in a manner consistent with Frost & Sullivan's standard practices. Confidential information shall not be disclosed by Frost & Sullivan to third parties or used for anything other than the stated purpose of completing the annual retail propane sales report.

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.

Data Ownership

The annual retail propane sales report was prepared for PERC by Frost & Sullivan. As the contractor of this report, Frost & Sullivan will keep all proprietary company information shared by PERC during the data collection process in accordance with the company's confidentiality guidelines. PERC retains all ownership rights to this publication and its underlying data.



Frost & Sullivan is the Growth Pipeline Company™. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service™ provides the CEO and the CEO's growth team with a continuous and rigorous platform of growth opportunities, ensuring long-term success. To achieve positive outcomes, our team leverages over 60 years of experience, coaching organizations of all types and sizes across 6 continents with our proven best practices. To power your Growth Pipeline future, visit Frost & Sullivan at <http://www.frost.com>.

The contents of these pages are copyright ©2024 Frost & Sullivan.