Summary

The U.S. NGL market continues to recover, with record propane exports year to date 2023, as China drastically increases its PDH capacity and utilization rates, while relying increasingly on the U.S. for LPG imports.

• US propane exports have increased by 16% YoY due to post-COVID recoveries from Chinese demand
  – Propane inventories could correct to 5-year averages by mid-2023 assuming strong exports continue

• 2023 is expected to be a pivotal year for the liquids market due to the large number of VLGC deliveries and significant Chinese PDH capacity additions

• The U.S. is the incremental global supplier of NGLs to meet this increasing international demand

Antero is well-positioned to benefit from increasing global NGL demand as a top U.S. NGL producer and with over 50% of NGL volumes being exported
US Exports of Propane Hit Record Highs in 2023

US Exports of Propane/Propylene, Quarterly Average (MMBbl/d)

- **2020** Avg: 1.15 MMBbl/d
- **2021** Avg: 1.18 MMBbl/d
- **2022** Avg: 1.35 MMBbl/d
- **2023** Avg YTD: 1.57 MMBbl/d

- Initial COVID Onset
- COVID ‘Normal’ and China Lockdowns
- Western Economies Reopening
- China Reopening

Weekly Record High Set on April 14, 2023 of 1.85 MMBbl/d

Source: EIA.
Although China PDH Utilization is Trending Down, Outright China PDH Propane Demand is Expected to Increase 50% from 2022 to 2024

Source: S&P Global Commodity Insights.
China PDH Buildout Continues

China is Adding Over 400 MBbl/d of New PDH Capacity in 2023-2024, a 70% Increase to the Existing Operational Capacity of 570 MBbl/d

Globally planned PDH units will require over 570 MBbl/d of incremental propane feedstock from 2023-2024

Source: Argus, Energy Aspects.
U.S. is the Likely Incremental LPG Supplier

The U.S. is the incremental supplier and exporter of NGLs for growing global demand

World C2+ NGL Production

- **U.S. AND WORLD C2+ NGL PRODUCTION GROWTH FORECAST FOR 2024 vs. 2022**
  - **+7% Global Growth**
  - **U.S. 2024E vs. 2022: 13% growth**
  - **Rest of World 2024E vs. 2022: 1% growth**

**Note:** Includes recovered ethane only.

U.S. Gulf Coast LPG Export Capacity

- **Export Capacity Unconstrained Through End of 2026 with Announced Expansions**
- **LPG Exports**
  - **Existing Capacity**
  - **Expansions**

**Recent OPEC+ additional oil output cuts to decline OPEC+ LPG supply by 8% from May 2023 to Dec 2023**

The U.S. is the incremental supplier and exporter of NGLs for growing global demand.

**Source:** S&P Global Commodity Insights data as of April 2023.
“VLGC” Shipping Buildout Will Reduce Freight Rates

- Very Large Gas Carriers ("VLGC") transport LPG (propane and butane)

Propane VLGC Additions of +0.3 MMBbl/d in 2023 will Lower Shipping Costs

Source: Poten

46 New Ships in 2023 (11 delivered through April)

The Baltic Rate is the USD Per Metric Ton Rate for the LPG Freight Route from Ras Tanura, Saudi Arabia to Chiba, Japan for Cargoes of 44,000 Metric Tons.

Source: CME
Bearish U.S. Propane forecasts are fading due to strong exports

High Inventories Due To:
- Lack of Winter Weather
- PDH Outages

Offset by:
- Strong US Exports Driven by Demand from China Reopening

Current US propane inventories are below 3rd party forecasts made at the start of the year due to stronger than expected exports
Maintaining current propane export levels would drive storage below the 5-Year range in the 2H’23

Forecast with 2023Exports Maintained at 1.6 MMBbl/d (the Current YTD Export Average)

Source: US EIA, Antero Modeled Calculations.
The Shale Revolution dramatically changed the NGL landscape, turning the U.S. into a net exporter after decades of importing NGL products.

Driven primarily by shale oil development with high oil prices +182% from 2010-2023

U.S. NGL Production

Driven primarily by shale oil development with high oil prices

Total NGL production includes ethane, propane, normal butane, isobutane, and natural gasoline. 1)

Ethane

Propane

Butane

Pentanes

Isobutane

Net importer of NGLs

U.S. NGL Exports / (Imports)

Net exporter of NGLs

The U.S. is the incremental supplier for growing world demand.

Supply from Middle East nations flat, OPEC policies limit growth potential

Recently announced OPEC+ cuts could limit OPEC LPG production and exports even further
US NGL demand growth driven primarily by exports of LPG (propane/butane); China’s dependence on US LPG imports is increasing and hit 50% of total imports in March.

U.S. C3+ Demand by Sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>2022-2024 Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petrochemicals</td>
<td>+10%</td>
</tr>
<tr>
<td>Refining/Blending</td>
<td>+1%</td>
</tr>
<tr>
<td>Residential/Commercial</td>
<td>-12%</td>
</tr>
<tr>
<td>Exports</td>
<td>+14%</td>
</tr>
</tbody>
</table>

7% Demand Growth (2022-24)

Estimated U.S. C3+ Demand – 2024

Exports 56%

China LPG Demand

China’s LPG demand growth driven by the petrochemical industry, fueled by PDH and steam cracker buildout

China LPG Demand by Sector (MMBbl/d)

Forecast China LPG Demand – 2024

- Petrochemical: 45%
- Res/Comm: 36%
- Industrial: 11%
- Transport: 6%
- Own Use (Refinery): 2%

Transport 2022-2024 Change: +5%
Own Use (Refinery) 2022-2024 Change: +6%
Industrial 2022-2024 Change: +4%
Petrochemical 2022-2024 Change: +90%
Res/Comm 2022-2024 Change: -4%

26% Demand Growth (2022-24)

U.S. NGL supply growth is expected to decline by 2030 despite the continued growth in demand well into the 2040’s. The S&P Global Commodity Insights and Energy Aspects call for Peak Shale (2024). Year on Year Growth by Basin shows "Peak Shale" after 2026.
Demand for NGLs will continue to grow to meet the needs of the energy transition and growth in global petrochemical demand.

Change in Demand by Liquids Product

- LPG demand up 1.44 MMBbl/d by 2030
- Oil demand peaking
- Gaining Petrochemical and Res/Comm
- Demand Increases NGL Demand

Change in Market Share

- NGL share increases
- Crude and Condensate share decreases

Increasing res/comm needs of the world to be met with the benefits of cleaner burning LPG fuel sources to 3 billion people

In 2021, over 21 million barrels of Antero propane and butane were shipped to international markets. On average, that is over 58,500 barrels per day and roughly 39 very large gas carrier (VLGC) cargoes over the course of 2021. A significant portion of Antero's LPGs were sent to Africa, Asia and Europe.

- Around 3 billion people, over one-third of the world's population, are required to cook using solid fuels (wood, crop wastes, charcoal, coal and dung) and kerosene in open fires and inefficient stoves.

- These cooking practices produce high levels of household air pollution with a wide range of damaging health impacts.

In 2021, approximately 1/4 of Antero's LPG exports were shipped to developing countries as defined by the United Nations. These LPG exports have supplied cleaner energy to households in developing countries for heating and cooking.
Antero’s C3+ blended differential to Mont Belvieu has improved with Mariner East 2 export takeaway and ability to access international markets.

Northeast C3+ NGL Supply

- Pentanes
- IsoButane
- Normal Butane
- Propane

Northeast C3+ NGL Takeaway

- Mariner East 2: ~275+ MBbl/d
- TEPPCO: ~200 MBbl/d
- U.S. Gulf Coast: ~450 MBbl/d

- Resulted in 44% of production consumed locally
- Remainder moved primarily by rail and exported

Differentials to Mont Belvieu tightened in 2019 with Mariner East 2 coming online.

Mariner East 2, placed in service at YE 2018 and fully completed in 2022, provides baseload demand and access to international LPG markets.

Antero’s ethane has a natural gas value pricing floor; pricing improvements from additional petrochemical and takeaway demand is all “Upside”

~140 MBbl/d of ethane current rejected in Northeast (~25% of potentially recoverable ethane)

Antero is an anchor supplier to Shell’s cracker which began operations in 2022

Antero ethane firm sales contracts ~50% gas-linked and ~50% Mont Belvieu-linked

Northeast Ethane Takeaway and Capacities

Northeast Ethane Supply (MBbl/d)

Natural Gas Liquids “NGLs” are contained in the rich natural gas stream, but after processing, condense into liquid form for storage, shipping, and consumption.

**Processing**

- **Wellhead Gas**
  - **Rich Gas (>1100 Btu)**
  - **Dry Gas (<1100 Btu)**

**Natural Gas**

- **De-ethanization**
  - **Y-Grade**
  - **C3+ Raw NGLs**

**Fractionation**

- **Ethane**
  - **Ethane***
- **Propane***
- **Butane***
- **Isobutane**
- **Pentane**

**Purity Products**

**Dry Gas**

**Pipeline Export Markets**

- **LNG**
- **Domestic Consumption**
- **Export Markets**

*Primary NGL export products are propane, butane, and ethane*
**Natural Gas Liquids Primer**

*NGLs play an essential role in the domestic and international industrial, residential, commercial and transportation industries*

<table>
<thead>
<tr>
<th>Gas Linked Pricing</th>
<th>Crude Linked Pricing</th>
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<tbody>
<tr>
<td>Methane</td>
<td>Butane</td>
</tr>
<tr>
<td>Natural Gas</td>
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<tr>
<td>Ethane</td>
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</tr>
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<td>C2</td>
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<td>Propane</td>
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<td>C4</td>
<td></td>
</tr>
<tr>
<td>Iso-Butane</td>
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<td>C5</td>
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<tr>
<td>Primary Sectors</td>
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<tr>
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<td>Transportation</td>
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</tr>
<tr>
<td>Primary Uses</td>
<td>Power</td>
</tr>
<tr>
<td>Power</td>
<td>Ethylene Production (For plastics)</td>
</tr>
</tbody>
</table>

**Higher Heating Value**

1000 Btu

4000 Btu
This material is intended for benchmark pricing estimates only and does not reflect Antero actual contracted prices

Key Terms and Definitions:

• **ARA** – “Amsterdam-Rotterdam-Antwerp.” ARA is a port and refining area in the Belgian-Dutch region of Europe.
• **CIF** – “Cost, Insurance, Freight.” CIF means that the seller delivers the goods on board the vessel or procures the goods already so delivered. Note that the CIF ARA LPG prices represent a delivered cargo into Europe.
• **FEI** – “Far East Index.” The Argus Far East Index is the average of the Argus Japan CFR propane quotation and the Argus South China CFR propane quotation. Note that the FEI LPG prices represent a delivered cargo into Asia.
• **CFR** – “Cost and Freight.” CFR means that the seller delivers the goods on board the vessel or procures the goods already so delivered.
• **Baltic Index** - The Baltic LPG Index is a shipping cost estimate based on a voyage from Ras Tanura, Saudi Arabia to Chiba, Japan round trip, laden (full) on the outbound journey and ballast (empty) on the return trip, carrying a fully refrigerated cargo of 44,000 MT (+/- 5%) propane, butane, or a mixture. The index is published by the Baltic Exchange.

Intercontinental Exchange (ICE) provides the benchmark pricing Information used in this presentation. For more information, visit https://www.theice.com/energy/natural-gas-liquids

<table>
<thead>
<tr>
<th>ANTERO LABEL</th>
<th>HUB</th>
<th>PRODUCT</th>
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</thead>
<tbody>
<tr>
<td>ARA C3</td>
<td>CIF ARA</td>
<td>Propane Argus Futures</td>
</tr>
<tr>
<td>ARA C4</td>
<td>CIF ARA</td>
<td>Butane Argus Futures</td>
</tr>
<tr>
<td>FEI C3</td>
<td>Far East</td>
<td>Propane Argus Futures</td>
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<tr>
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<tr>
<td>MB C4</td>
<td>MT.B-ENT</td>
<td>Normal Butane OPIS Futures</td>
</tr>
</tbody>
</table>

Relevant Conversions:

• Propane = 521 gallons per metric ton
• Butane = 453 gallons per metric ton

Antero Internal Shipping Estimates are derived by Antero using several sources, including Baltic LPG Index Futures and broker estimates.

• Rates are adjusted based on travel time from Marcus Hook, PA to Northwest Europe (Amsterdam-Rotterdam-Antwerp Region) and Marcus Hook, PA to Asia (Chiba, Japan).
• Antero’s actual shipping rates may differ from these estimates.