Natural Gas Liquids Fundamentals

MARCH 2022
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NGLs today are globally priced commodities, with the pricing outlook benefiting from moderate supply growth and strong demand, particularly from Asia. Storage levels at five year lows provide an attractive set up for 2022.

### U.S. NGL Market Overview and Outlook

**Supply**
- U.S. NGL supply growth has been moderate, due to significant barriers to entry that require long term commitments in processing plants and other infrastructure
- Producer capital discipline and maintenance level capital programs result in a low growth outlook
- Record setting LPG exports have driven U.S. propane inventories below the 5-year average

**Demand**
- Resilient domestic and international demand from petrochem and residential/commercial sectors
- New LPG demand continues to come online, including over 500 MBbl/d of new PDH demand expected in China through 2023
- Rising living standards in developing countries, particularly in Asia, create an inelastic demand pull for LPG and NGL derivative products

**Outlook for NGLs**
- The impact of a decline in shale oil activity on “associated NGL” production has been even more pronounced than the impact on associated gas production while global NGL demand increases
- U.S. NGL export capacity expansions tighten Mont Belvieu differentials to premium Brent-linked international pricing
- **Bullish** – Robust demand and flat supply has already driven C3+ pricing from an average of ~$21/Bbl in 2020 to over $70/Bbl in early 2022

Sources: February EIA Short Term Energy Outlook, S&P Global Platts estimates and J.P. Morgan Commodities Strategy Team Research. LPG is comprised of NGL components propane and butane.
U.S. NGL Production vs. LPG Export

3%
MODEST C2+ NGL PRODUCTION GROWTH FORECAST FOR 2022

+50%
GROWTH IN LPG EXPORTS 2019-2021

Limited export growth in 2022, supply forecast to stay “home” to rebuild historically low inventories

Source: Platts Analytics data as of 3/7/2022.
Propane Storage at Historical Lows

A repeat of the same weekly withdrawals as last winter would result in the U.S. ending withdrawal season with only about 12 million barrels in storage, significantly below 5-year minimum storage level.

U.S. Propane Inventories (MMBbls) and Propane Days of Supply (Days)

Source: EnVantage Inc. and Energy Information Administration (EIA) as of 03/16/2022.
Antero continues to benefit from the strength in NGL prices

AR Monthly Realized C3+ NGL Price

Source: Bloomberg actuals through March 2022. Forecasted C3+ pricing based ICE pricing and on Antero C3+ NGL component barrel consisting of 56% C3 (propane), 10% isobutane (iC4), 17% normal butane (nC4) and 17% natural gasoline (C5+). Assumes blended sales of 50% domestic and 50% international.

CURRENT AR C3+ NGL SPOT PRICE

$73.81/Bbl

OF WTI PRICE

72%
Strong NGL Price Recovery

Domestic and international LPG prices have improved on a relative basis to crude oil, driven by resilient global demand for LPG from petrochemicals and res/comm

C3+ NGL Prices & % of WTI (1)

Far East Index (FEI) Propane Prices & % of Brent

Historical MB C3+/WTI% 5-year avg: ~64%

MB C3+ NGL ($/Bbl)

C3+ Price as % of WTI

% of WTI

FEI Propane Price

Source: ICEdata Mont Belvieu, Far East Index, WTI and Brent strip pricing as of 3/16/2022.

1) Based on Antero C3+ NGL component barrel consists of 56% C3 (propane), 10% isobutane (Ic4), 17% normal butane (Nc4) and 17% natural gasoline (C5+).
The Impact of the U.S. Shale Revolution

The Shale Revolution dramatically changed the NGL landscape, turning the U.S. into a net exporter after decades of importing NGL products.

**U.S. NGL Production (MBbl/d) (1)**

Driven primarily by shale oil development with high oil prices

**U.S. NGL Exports / (Imports) (MBbl/d)**

Net exporter of NGLs

1) Includes recovered ethane volumes and natural gasoline (C5).
LPG Exports

U.S. exports surpassed the entire Middle East region combined starting in 2019

LPG Exports: U.S. versus Middle East

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

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

Source: Platts.
Notes: Propane and Butane exports only based on cFlow ship tracking data. U.S. Exports do not include exports via land to Canada and Mexico. 2022 YTD through March 1, 2022.
U.S. NGL Demand

NGL demand growth driven primarily by exports of LPG (propane/butane)

U.S. C3+ Demand by Sector (MMBbl/d)

<table>
<thead>
<tr>
<th>Sector</th>
<th>2019-2024 Growth</th>
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</thead>
<tbody>
<tr>
<td>Petrochemical</td>
<td>+2%</td>
</tr>
<tr>
<td>Residential/Commercial</td>
<td>+3%</td>
</tr>
<tr>
<td>Refining/Blending</td>
<td>+4%</td>
</tr>
<tr>
<td>Exports</td>
<td>+20%</td>
</tr>
</tbody>
</table>

Exports 2019-2024 Growth: +20%

Sources of demand growth:
- Exports in 2016: of 26% Total
- Refining/Blending 2019-2024 Growth: +4%
- Residential/Commercial 2019-2024 Growth: +3%
- Petrochemicals 2019-2024 Growth: +2%

Estimated U.S. C3+ Demand – 2024

- Exports: 50%
- Refining/Blending: 18%
- Residential/Commercial: 17%
- Petrochemical: 14%

Source: S&P Global Platts as of 3/01/2022
China is adding more than 360,000 Bbl/d of petrochemical propane demand in 2020-2022
High utilization rates prompted next round of buildout of LPG propane/butane export capacity, resulting in unconstrained exports beginning in 2020 and positive outlook for Mont Belvieu pricing relative to international pricing.

U.S. Gulf Coast LPG Exports vs. Capacity (MBbl/d)

Source: S&P Global Platts as of 3/01/2022.
Northeast NGL Producers are Advantaged

Producer Disadvantaged:
E&Ps in Permian, Rockies, Mid-Con & Bakken

Producer Advantaged & Unconstrained:
Antero Resources in Appalachia

AR is the largest C3+ producer with the most international exposure in Appalachia

Anchor shipper on ME2

Who Captures the Arb at Marcus Hook?
Answer: AR and other Appalachian E&P’s
- Direct sales to most attractive international (ARA & FEI) & domestic markets
- Fixed terminal rates
- Local fractionation & marketing to sell purity products in-basin for local demand

Results in “Mont Belvieu plus” pricing netbacks captured “at the dock” by AR

Who Captures the Arb at the Gulf Coast?
Answer: Midstream & LPG off-takers (not E&P’s)
- No direct E&P access to international markets (i.e. producers only receive Mont Belvieu linked pricing)
- No local fractionation to sell marketable purity products in-basin

Results in “Mont Belvieu Minus” pricing “before the dock”

FROM ROCKIES
FROM PERMIAN
FROM BAKKEN
Conway
Mont Belvieu
Mariner East

FROM ROCKIES
FROM PERMIAN
FROM BAKKEN
Conway
Mont Belvieu
Mariner East

13
Antero’s C3+ blended differential to Mont Belvieu has improved with the Mariner East 2 export takeaway and ability to access international markets

Northeast C3+ NGL Supply

- ~195 MBbl/d of Northeast C3+ demand vs.
- ~455 MBbl/d of Northeast supply in 2021
  - Resulted in 43% of production consumed locally
  - Remainder moved primarily by rail and exported

Differentials to Mont Belvieu tightened in 2019 as ~165+ MBbl/d of LPG exported via Mariner East 2

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

Source: S&P Global Platts as of 3/01/2022.
Northeast LPG markets became oversupplied in 2015 and were forced to transport via rail, which was relieved by Mariner East 2 in 2019.
Antero’s ethane has a natural gas value pricing floor; pricing improvements from additional petrochemical and takeaway demand is all “Upside”

~205 MBbl/d of ethane current rejected in Northeast (~38% of potentially recoverable ethane)

Antero is an anchor supplier to Shell’s cracker expected in-service 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)

Source: S&P Global Platts.
The ethane market continues to develop and creates opportunities for ethane sales outside of the domestic cracker pool.

Ethane Export Suppliers and Customers

- **U.S. Gulf Coast**
- **Marcus Hook**
- **Europe**
  - Borealis
  - INEOS
  - ExxonMobil
  - Sabic
- **South Asia**
  - Reliance
- **Southeast Asia**
  - SP Chem
  - Nanshan Satellite
- **South America**
  - Braskem
- **Mexico**
  - Pemex

New Build crackers in Europe, Asia looking to U.S. C2 for supply

<table>
<thead>
<tr>
<th>U.S. Terminals</th>
<th>Export Capacity (MBbl/d)</th>
<th>ISD</th>
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</thead>
<tbody>
<tr>
<td>ETP Marcus Hook</td>
<td>70</td>
<td>2016</td>
</tr>
<tr>
<td>EPD Morgan's Point</td>
<td>200</td>
<td>2016</td>
</tr>
<tr>
<td>ETP/Satellite</td>
<td>175</td>
<td>2021</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>445</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: S&P Global Platts, Company Reports.
Moderate U.S. C3+ NGL production growth expected in 2022 as producers remain disciplined

Propane days of supply at 5-year lows could result in an undersupplied U.S. market in 2022

Inelastic global NGL demand growth driven by improvements in living standards and subsidies

U.S. NGL differentials have tightened vs. global prices as exports provide uplift with premium Brent-linked pricing

Price outlook for U.S. LPG exports is strong as global demand grows and export supply growth from the middle east and the U.S. subsides

Appalachian producers are geographically advantaged vs. U.S. Gulf Coast producers – captures the international pricing uplift by selling at the export dock (Marcus Hook)

Historically low NGL inventory, disciplined producer activity, and “inelastic” international LPG demand provide bullish backdrop for NGL prices
Appendix
Antero currently recovers only 30% of the ethane in its rich gas stream while rejecting 70% of the ethane, sending it to pipeline sales in the natural gas stream.

Antero NGL Barrel Composition (2022 Guidance)

**AR’s C2+ NGL Barrel Composition**
- Ethane: ~63,500 Bbl/d
- C3+ NGLs: ~107,500 Bbl/d

**AR’s C3+ NGL Barrel Composition**
- Propane (C3): 56%
- Normal Butane (C4): 17%
- IsoButane (iC4): 10%
- Pentanes (C5+): 17%

Note: Based on Antero 2022 production guidance. Antero C3+ NGL component barrel consists of 56% C3 (propane), 10% isobutane (iC4), 17% normal butane (Nc4) and 17% natural gasoline (C5+).
Natural Gas Liquids “NGLs” are contained in the rich natural gas stream, but after processing, condense into liquid form for storage, shipping and consumption.

*Primary NGL export products are propane, butane, and ethane.*
NGLs play an essential role in the domestic and international industrial, residential, commercial and transportation industries.

<table>
<thead>
<tr>
<th>Primary Sectors</th>
<th>Methane</th>
<th>Ethane</th>
<th>Propane</th>
<th>Butane</th>
<th>Iso-Butane</th>
<th>Pentane</th>
</tr>
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<tbody>
<tr>
<td>All</td>
<td>Natural Gas</td>
<td>C2</td>
<td>C3</td>
<td>C4</td>
<td>IC4</td>
<td>C5</td>
</tr>
</tbody>
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<tr>
<th>Primary Uses</th>
<th>Power</th>
<th>Ethylene Production (For plastics)</th>
<th>Heating, Crop drying, Commercial, Propylene</th>
<th>Winter Gasoline Blending</th>
<th>Alkylate feed to produce gasoline</th>
<th>Gasoline blend and diluent</th>
</tr>
</thead>
</table>

### Higher Heating Value

- **1000 Btu**
- **4000 Btu**
• Antero’s 11,500 Bpd C2 sales contract with Borealis commenced on November 1, 2018
• Expect to load ~1 ship per month, bound for Borealis’ steam cracker in Stenungsund, Sweden, for duration of 10-year contract
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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<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>
</tr>
<tr>
<td>FEI C4</td>
<td>Far East</td>
<td>Butane Argus Futures</td>
</tr>
<tr>
<td>MB C3</td>
<td>MT.B-ENT</td>
<td>Propane OPIS Futures</td>
</tr>
<tr>
<td>MB C4</td>
<td>MT.B-ENT</td>
<td>Normal Butane OPIS Futures</td>
</tr>
</tbody>
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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.