

Propane Markets Overview



For

2018 State Heating Oil and Propane Program (SHOPP) Workshop

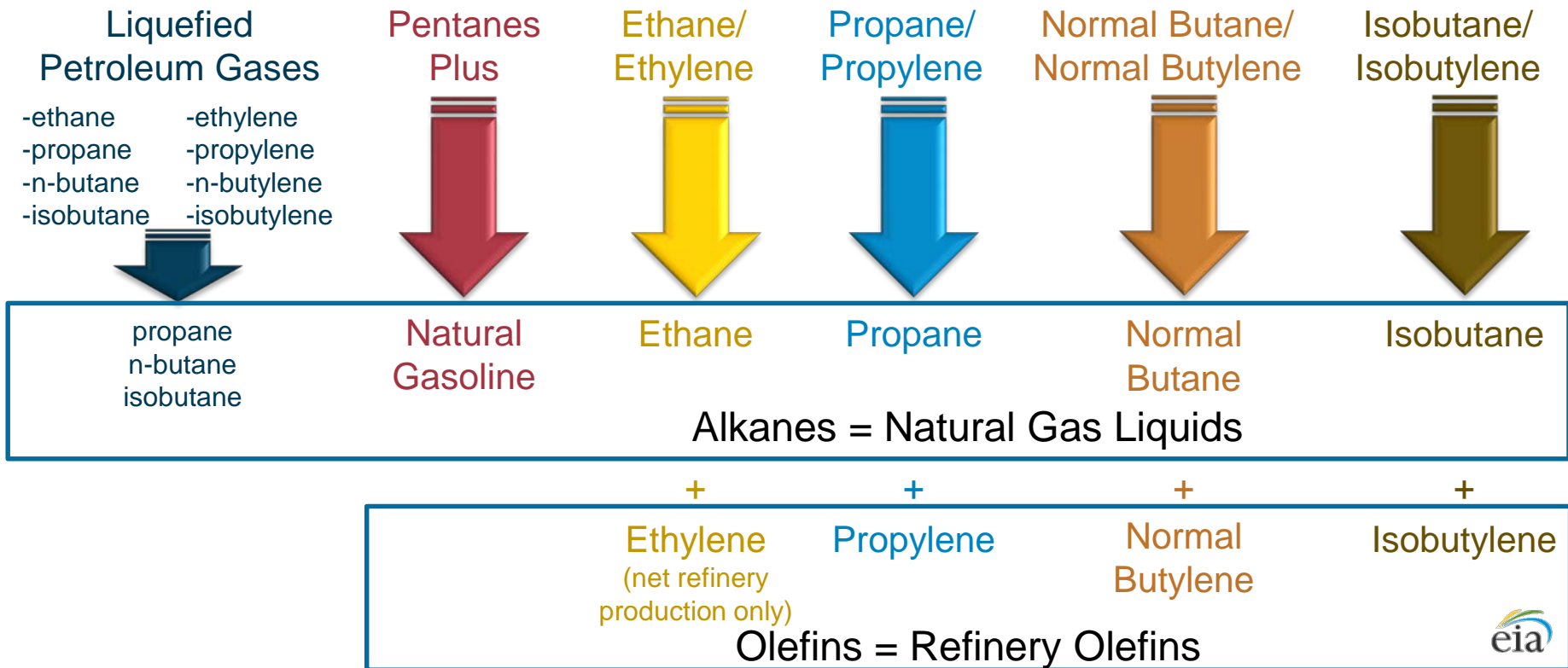
June 6, 2018 / Washington, DC

By

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Office of Petroleum, Natural Gas, and Biofuels Analysis

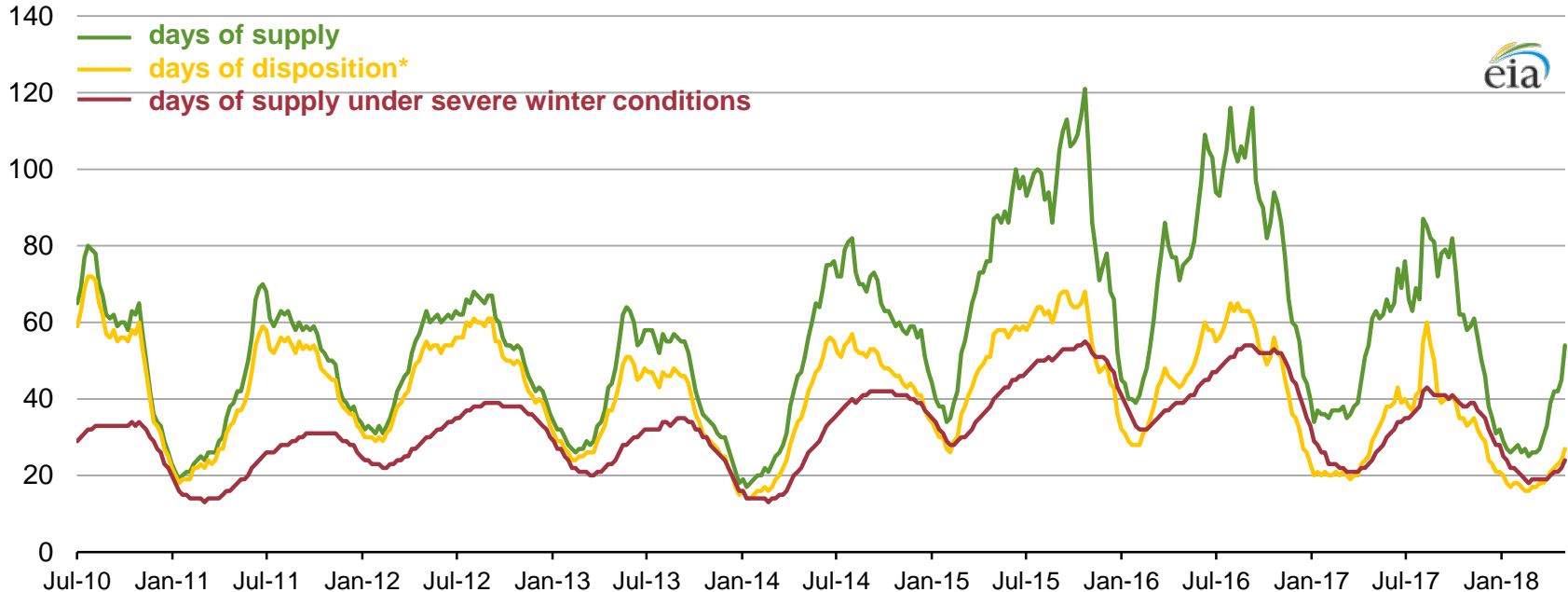
EIA's revised monthly data tables for HGL affect all natural gas liquids (alkanes) and refinery olefins (olefins)



Various days-of supply/disposition measures

U.S. weekly stocks of propane

days of supply & disposition



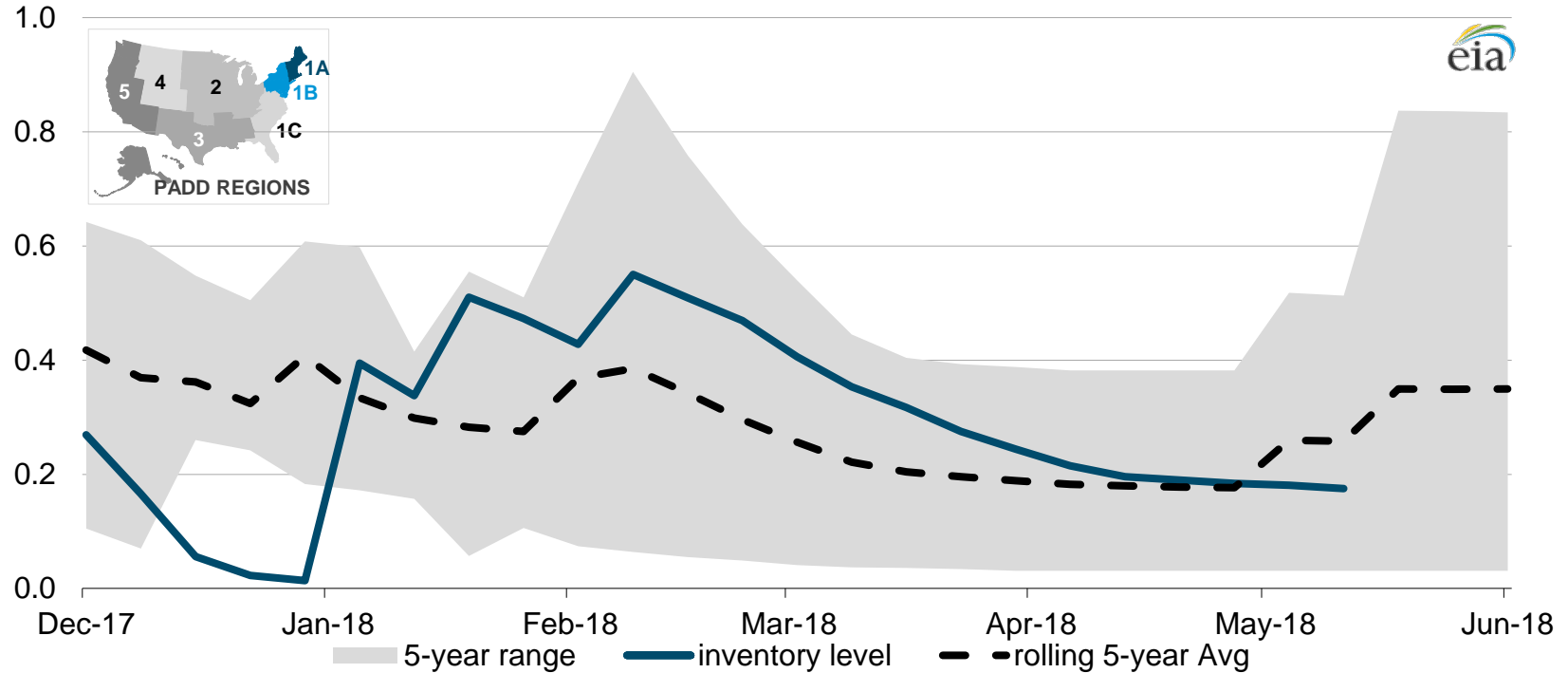
Note: *disposition = domestic product supplied + exports

Source: U.S. Energy Information Administration, Weekly Petroleum Status Report, data through June 1, 2018

For more information, please see EIA's [webinar on Propane Market Indicators and Measures of Supply Adequacy](#)

PADD 1A (New England) propane inventories above the 5-year average

PADD1A propane* inventories
million barrels

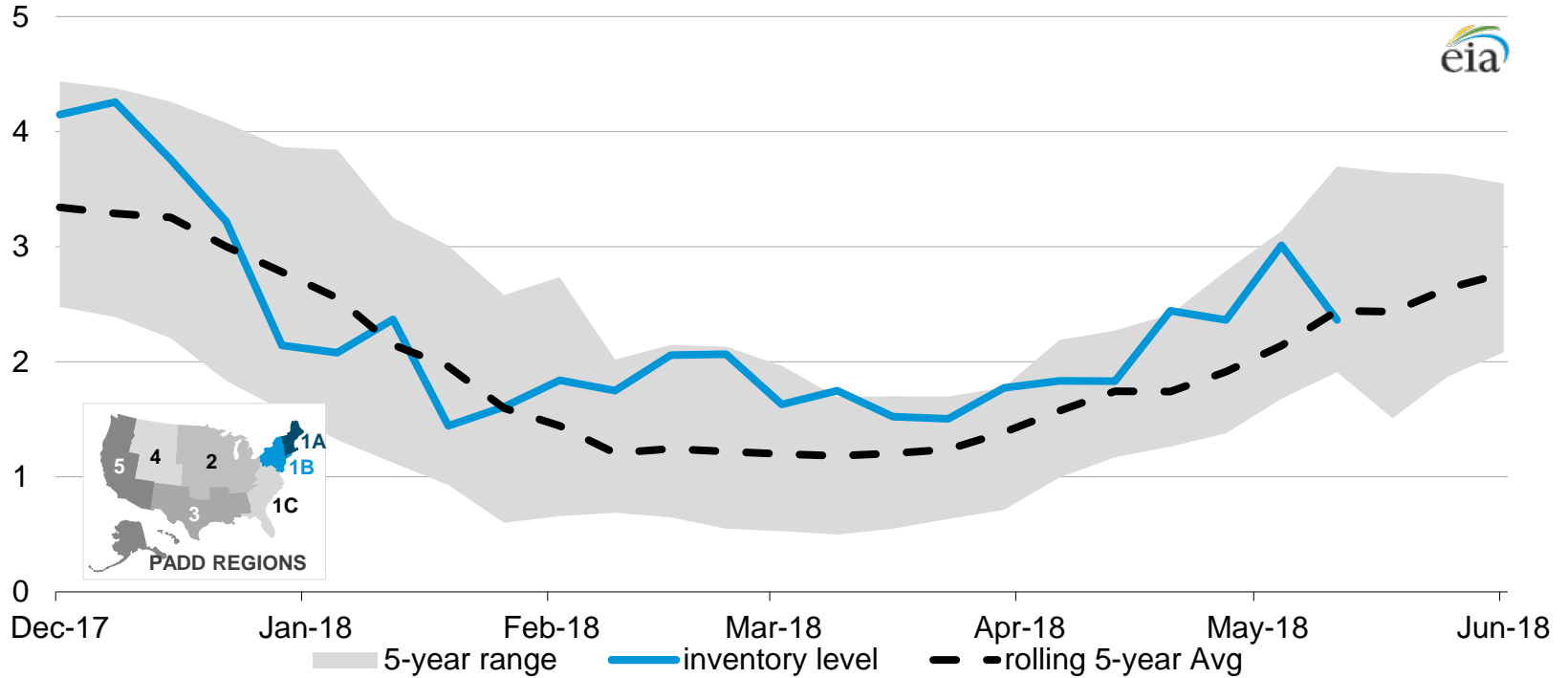


Source: EIA, Weekly Petroleum Status Report, data through June 1, 2018

*propane/propylene for fuel use only

PADD 1B (Mid-Atlantic) propane inventories above the 5-year average

PADD1B propane* inventories
million barrels

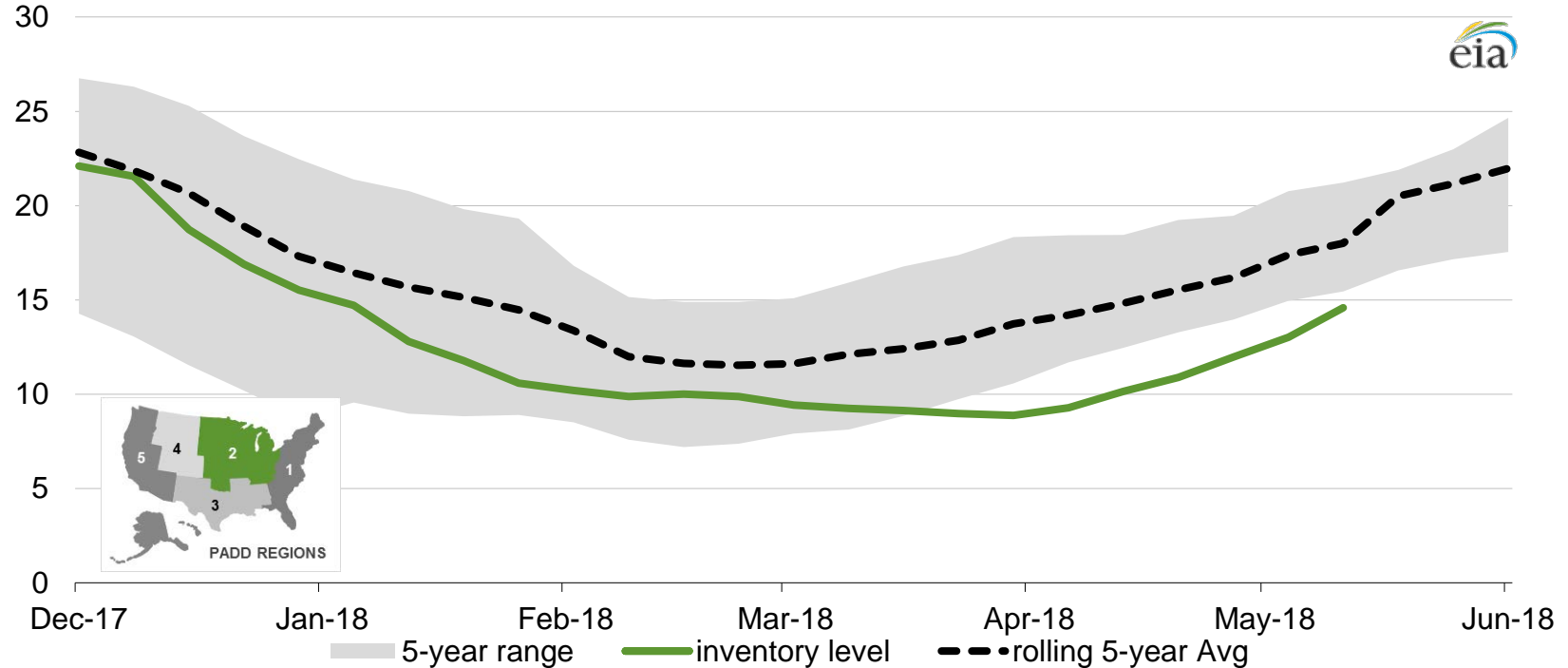


Source: EIA, Weekly Petroleum Status Report, data through June 1, 2018

*propane/propylene for fuel use only

PADD 2 (Midwest) propane inventories within the 5-year range

PADD 2 propane* inventories
million barrels



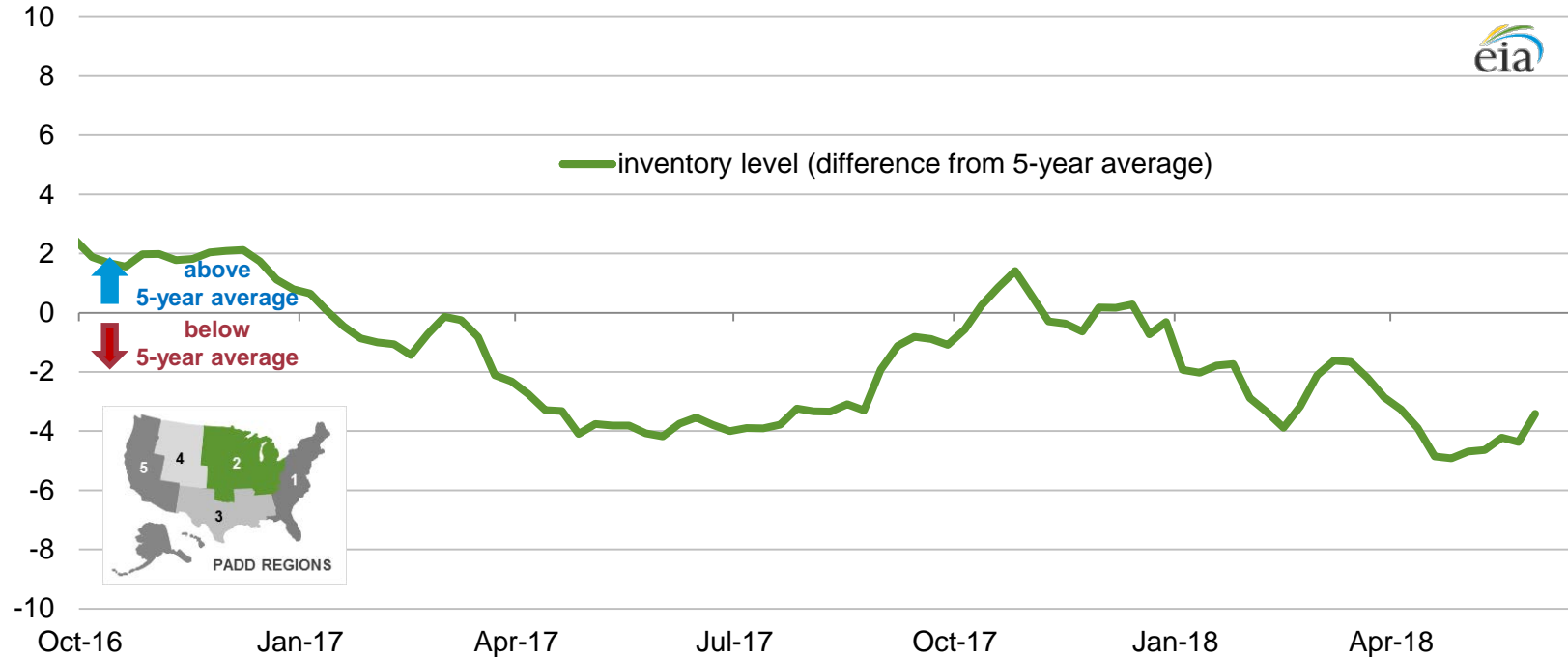
Source: EIA, Weekly Petroleum Status Report, data through June 1, 2018

*propane/propylene for fuel use only

PADD 2 (Midwest) propane inventories below 5-year-average levels

PADD 2 propane* inventories, difference from 5-year average

million barrels

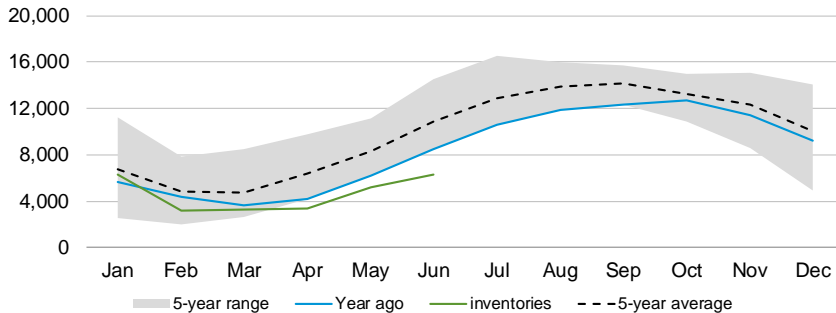


Source: EIA, Weekly Petroleum Status Report, data through June 1, 2018

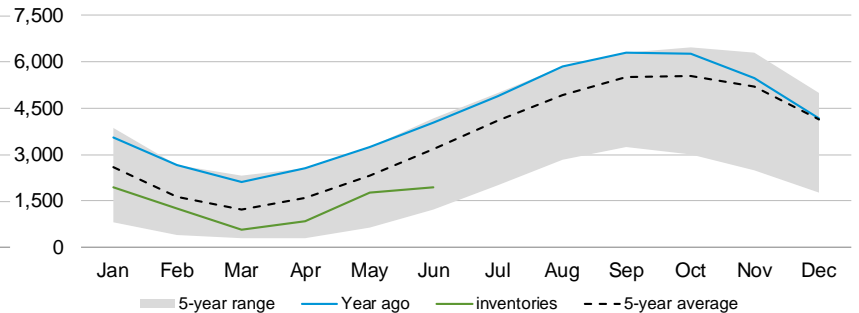
*propane/propylene for fuel use only

Selected state propane* inventories

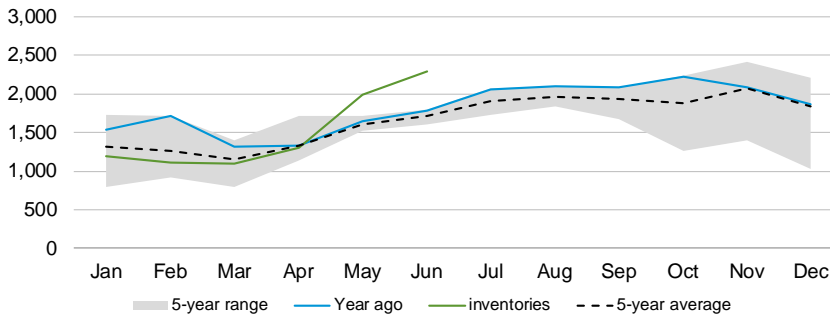
Kansas propane stocks
thousand bbls



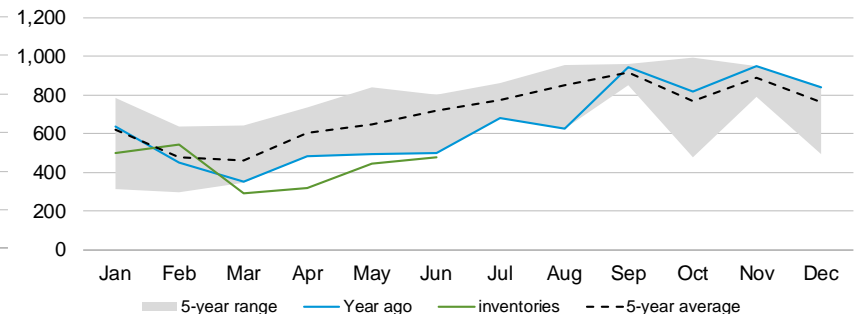
Michigan propane stocks
thousand bbls



Illinois, Indiana, Ohio propane stocks
thousand bbls



Iowa, Minnesota, Wisconsin propane stocks
thousand bbls



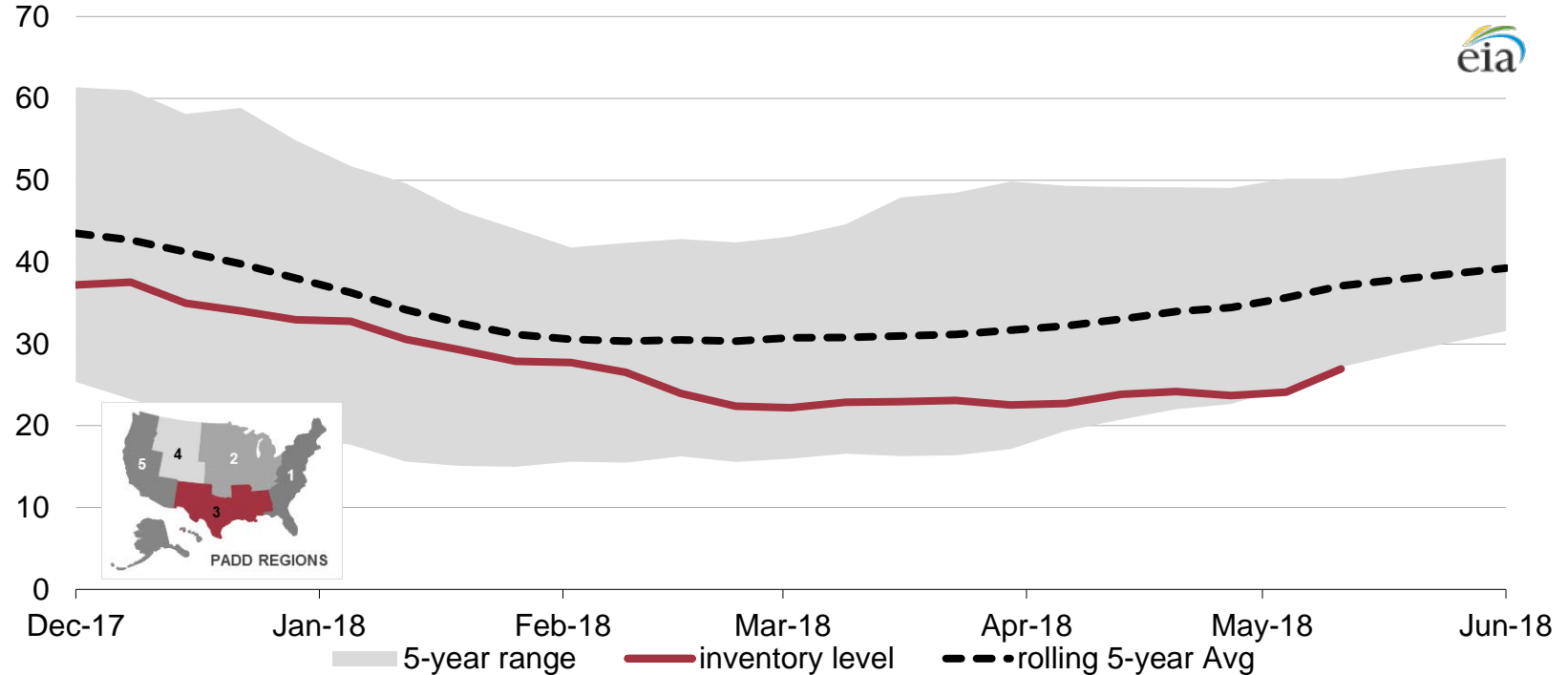
Source: EIA, Weekly Petroleum Status Report, data through June 1, 2018

*propane/propylene for fuel use only; inventories include stocks at terminals, gas plants, and refineries only

PADD 3 (Gulf Coast) propane inventories within the 5-year range

PADD 3 propane* inventories

million barrels



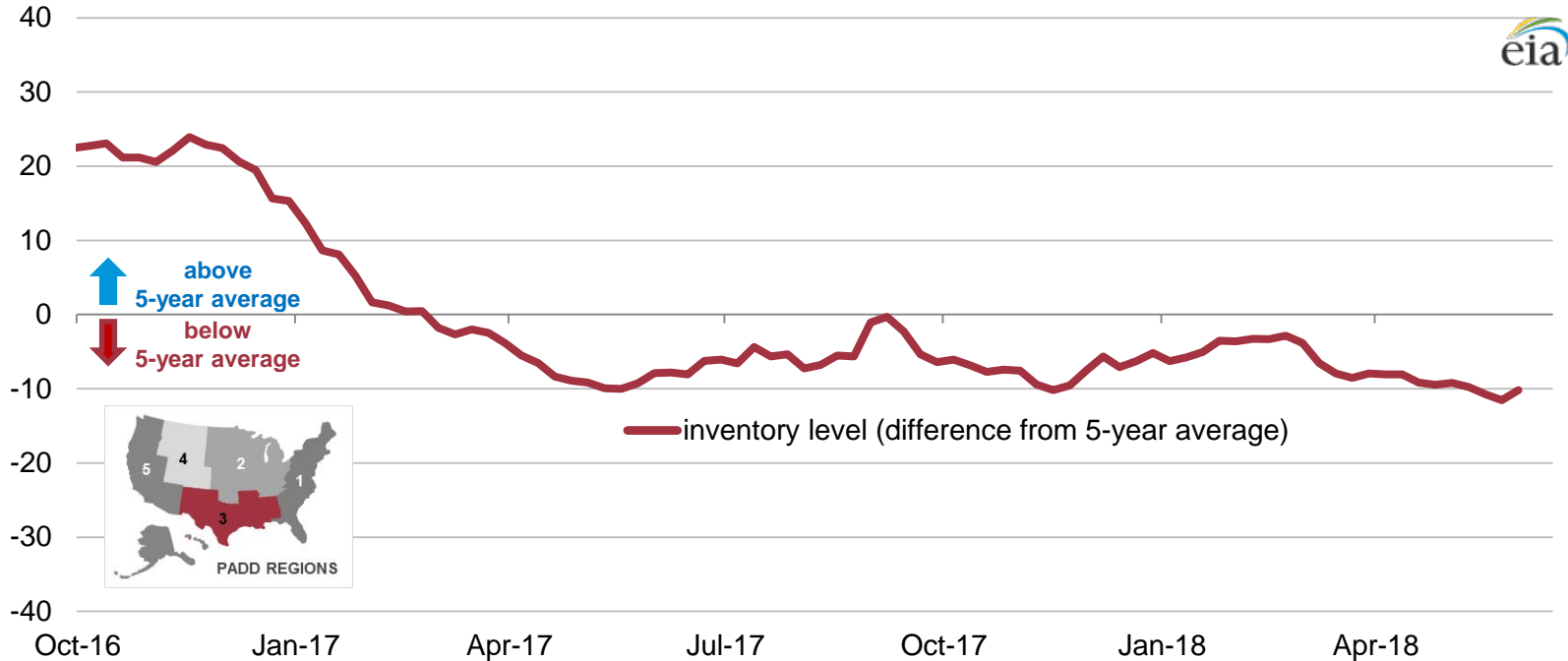
Source: EIA, Weekly Petroleum Status Report, data through June 1, 2018

*propane/propylene for fuel use only

PADD 3 (Gulf Coast) propane inventories below the 5-year average

PADD 3 propane* inventories, difference from 5-year average

million barrels



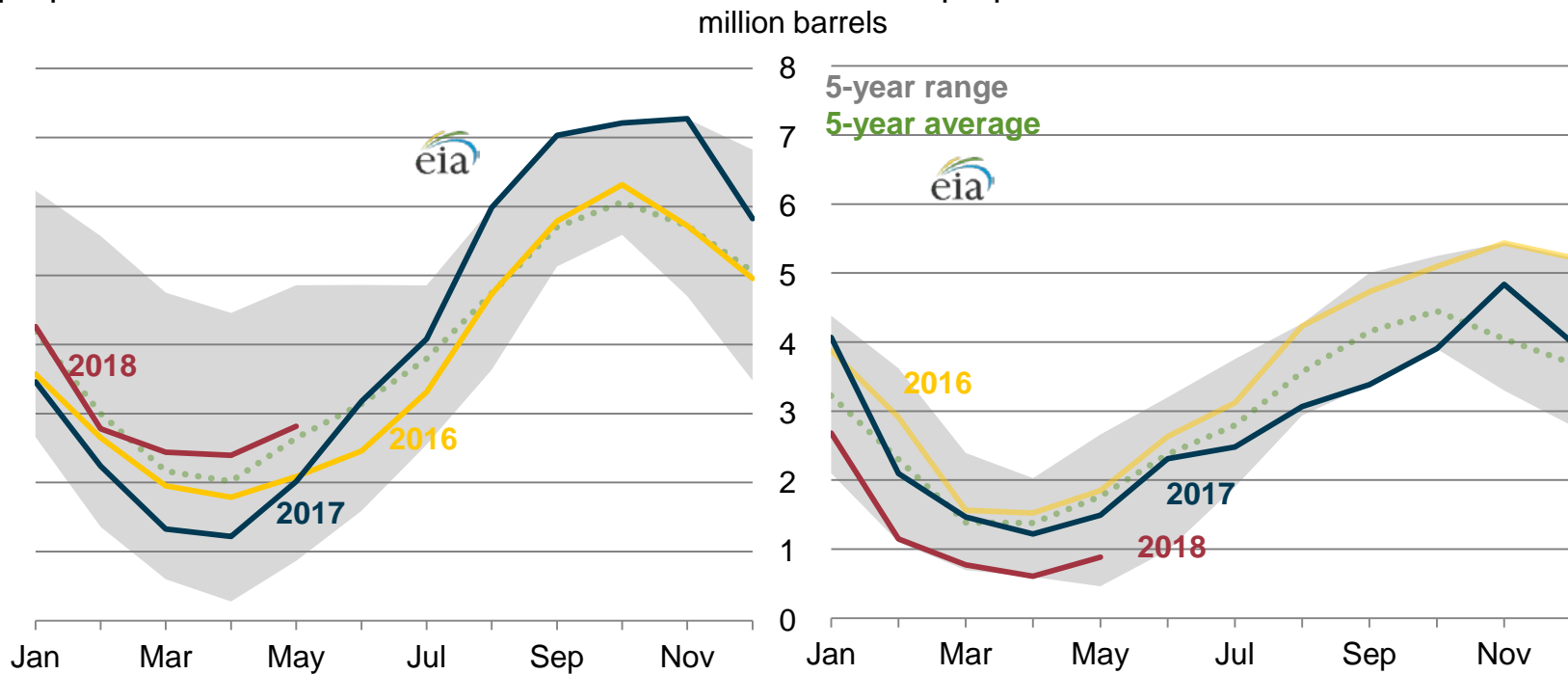
Source: EIA, Weekly Petroleum Status Report, data through June 1, 2018

*propane/propylene for fuel use only

Propane inventories in Canada coming into the heating season were at record highs. While rail challenges tapered ability to deliver out of W. Canada, E. Canadian inventories dropped to 5-year lows at close of winter

propane inventories in Western Canada

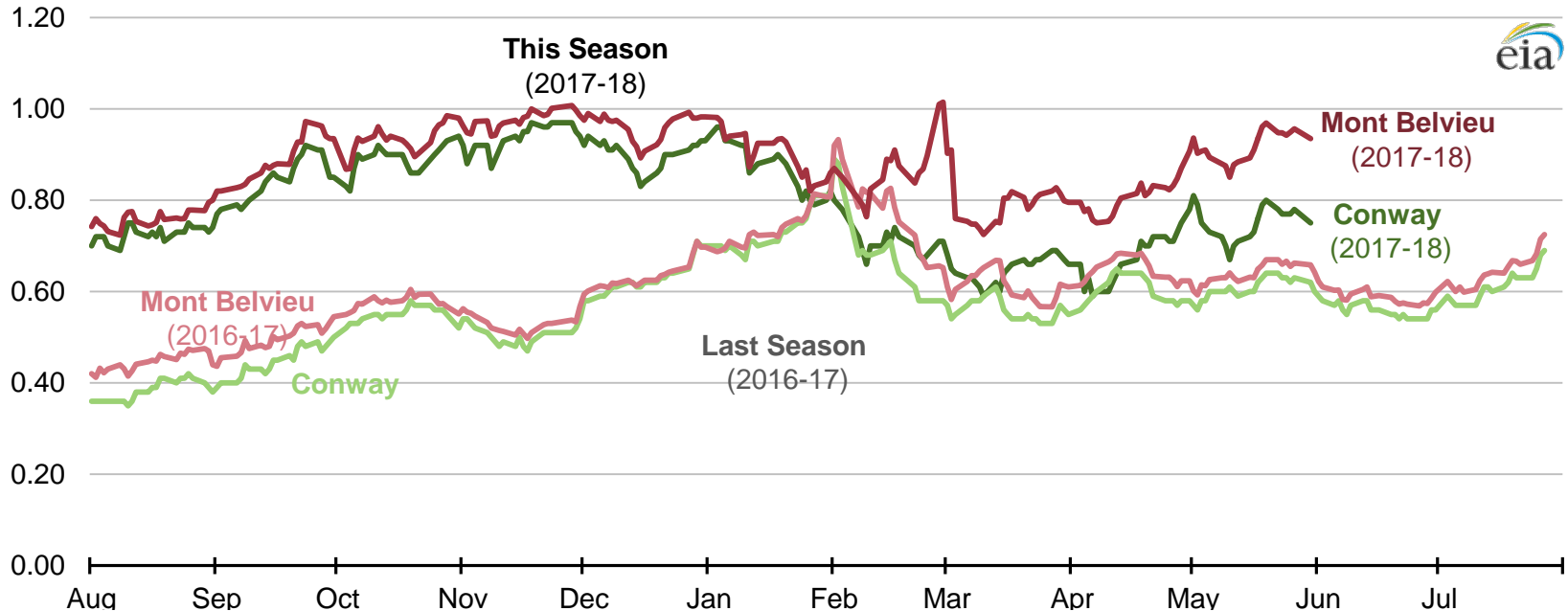
propane inventories in Eastern Canada



Source: Canada's [National Energy Board](#), May 16, 2018

Propane spot prices above same time last year; Conway, KS discount to Mt. Belvieu, TX averaging ~15¢/gal since end of heating season

Propane spot prices (Conway, KS and Mont Belvieu, TX)
dollars per gallon

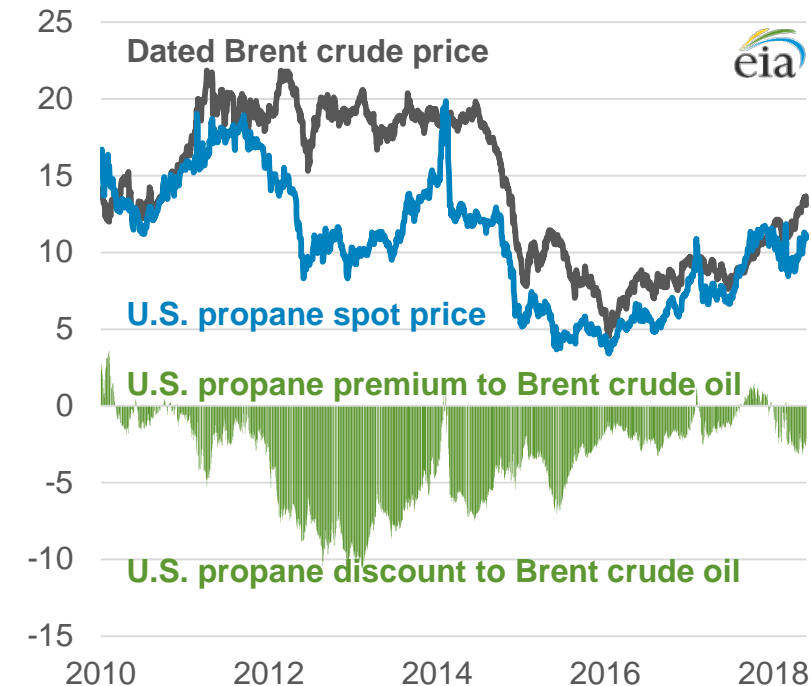


Source: EIA, Bloomberg, data through May 25, 2018

U.S. propane prices return to historical trend relative to crude and international market propane prices

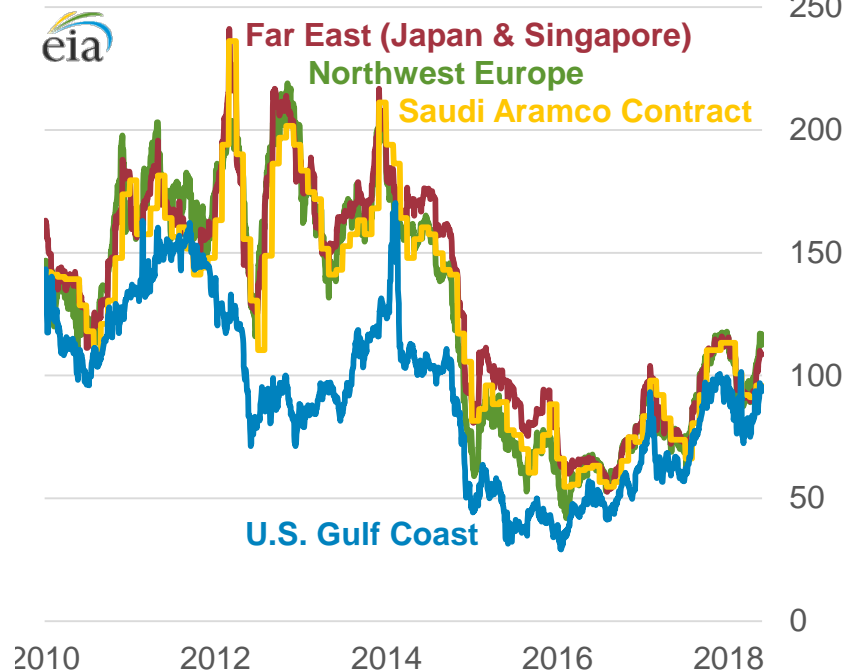
U.S. propane and Brent Dated crude oil prices

\$/MMBtu



propane spot prices

\$/U.S. gallon

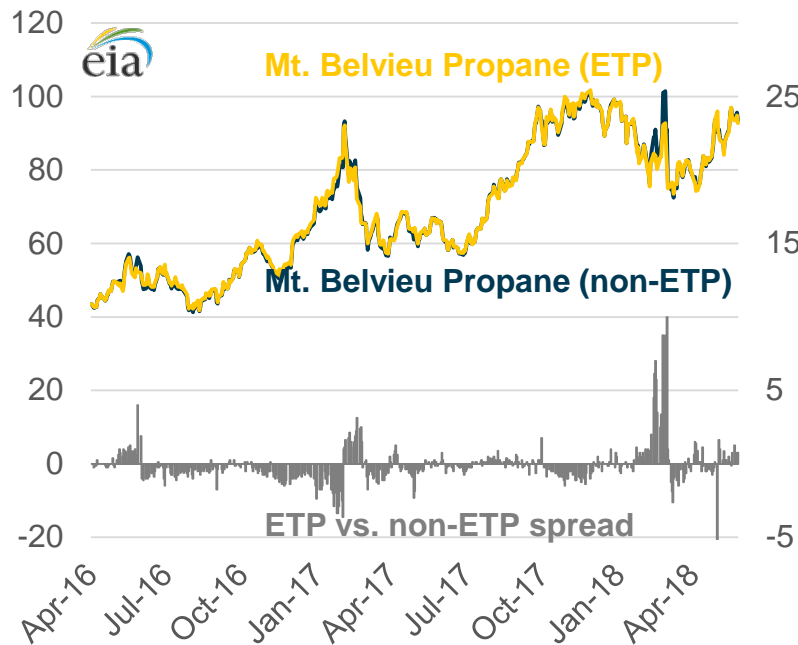


Source: EIA, Bloomberg, data through May 25, 2018

Not all price spikes are created equal: some are caused by market imbalances rather than product shortages

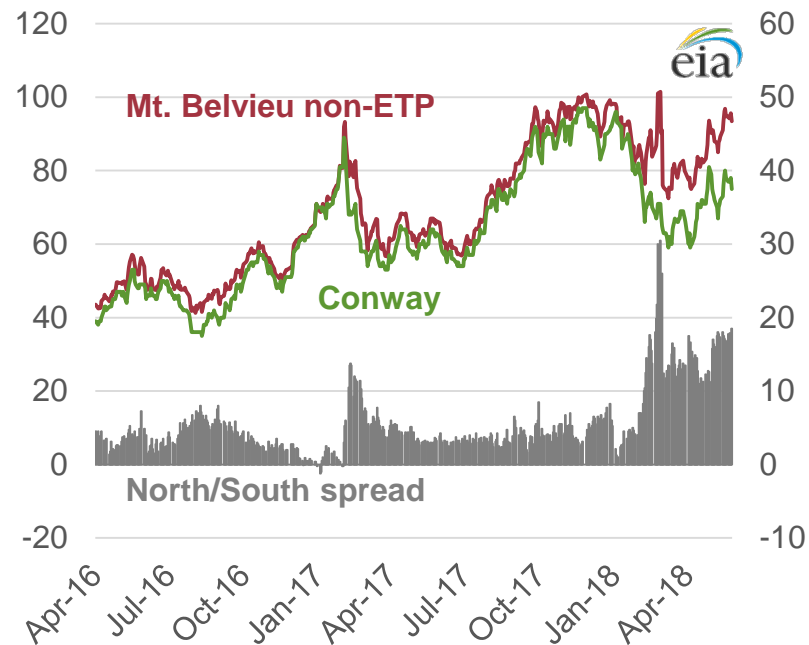
Mont Belvieu Propane Spot Prices

¢/U.S. gallon



propane spot prices

\$/U.S. gallon

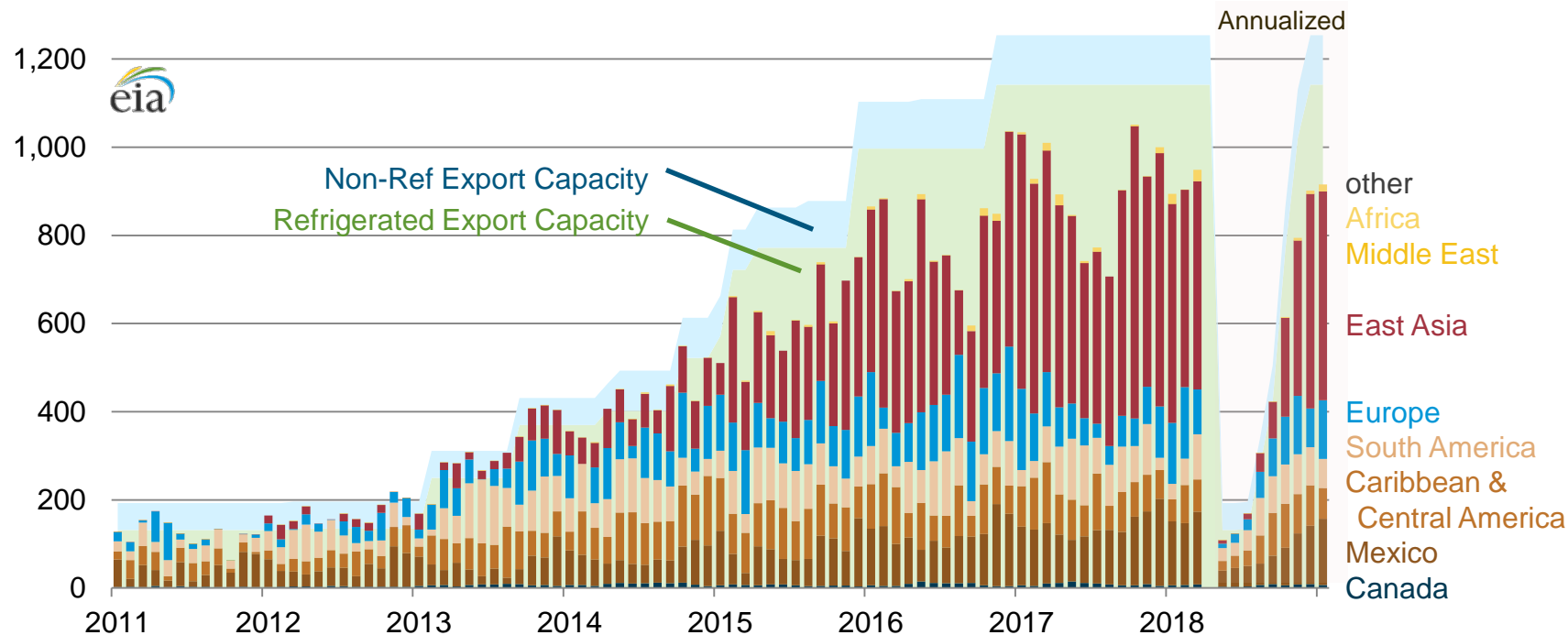


Source: EIA, Bloomberg, data through May 25, 2018

With expanding capacity and volumes, U.S. exports are reaching more distant foreign markets, with bulk of exports now going to E. Asia

U.S. propane exports by destination

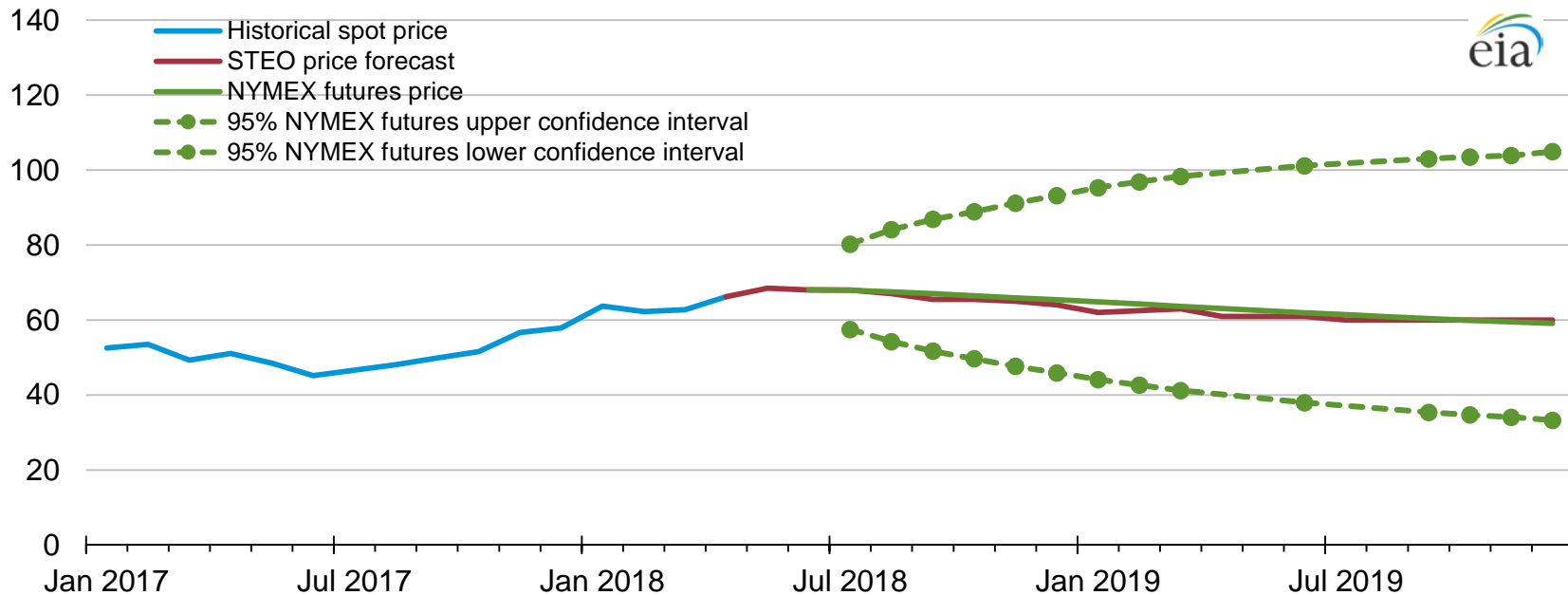
thousand b/d



Source: U.S. Department of Commerce, EIA

EIA's price projection for crude oil suggests a decline through the forecast horizon, affecting petroleum product prices

West Texas Intermediate (WTI) oil price
dollars per barrel



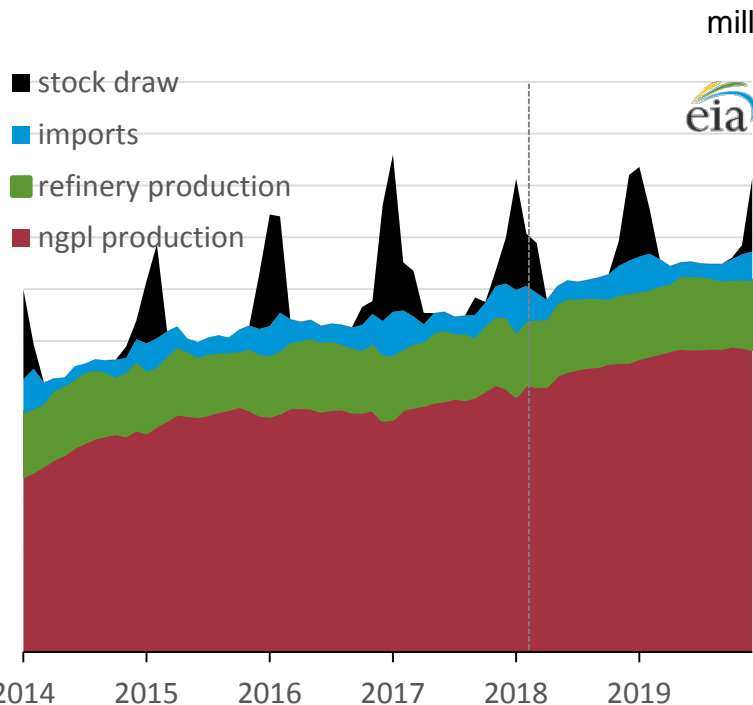
Note: Confidence interval derived from options market information for the 5 trading days ending May 3, 2018.

Intervals not calculated for months with sparse trading in near-the-money options contracts.

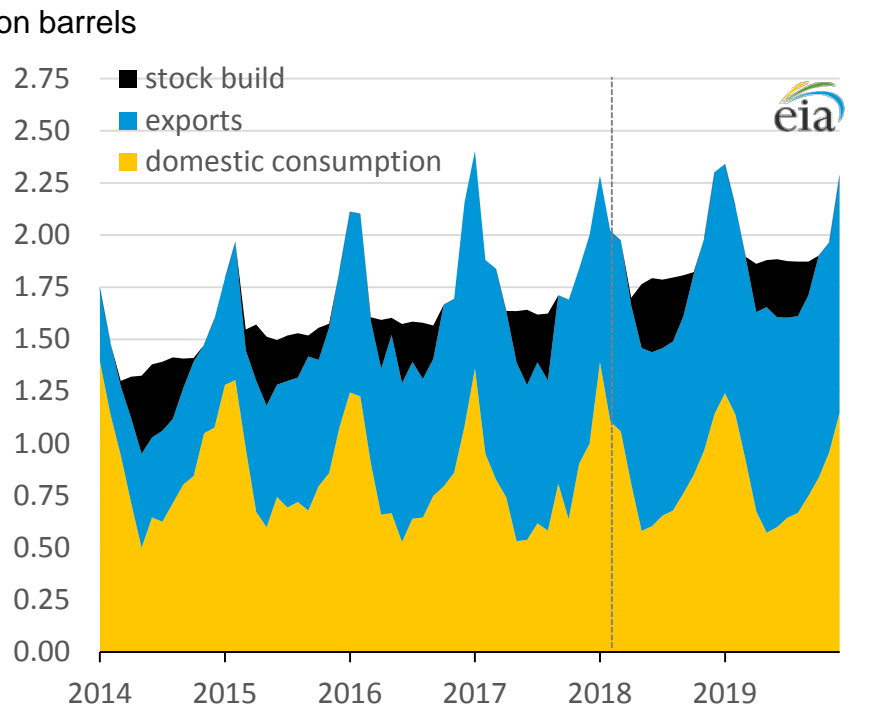
Source: Short-Term Energy Outlook, May 2018, and CME Group.

Projected production growth drives increased export volumes as well as return to inventory builds

U.S. propane production, imports, and stock draw



U.S. propane consumption, exports, and stock build

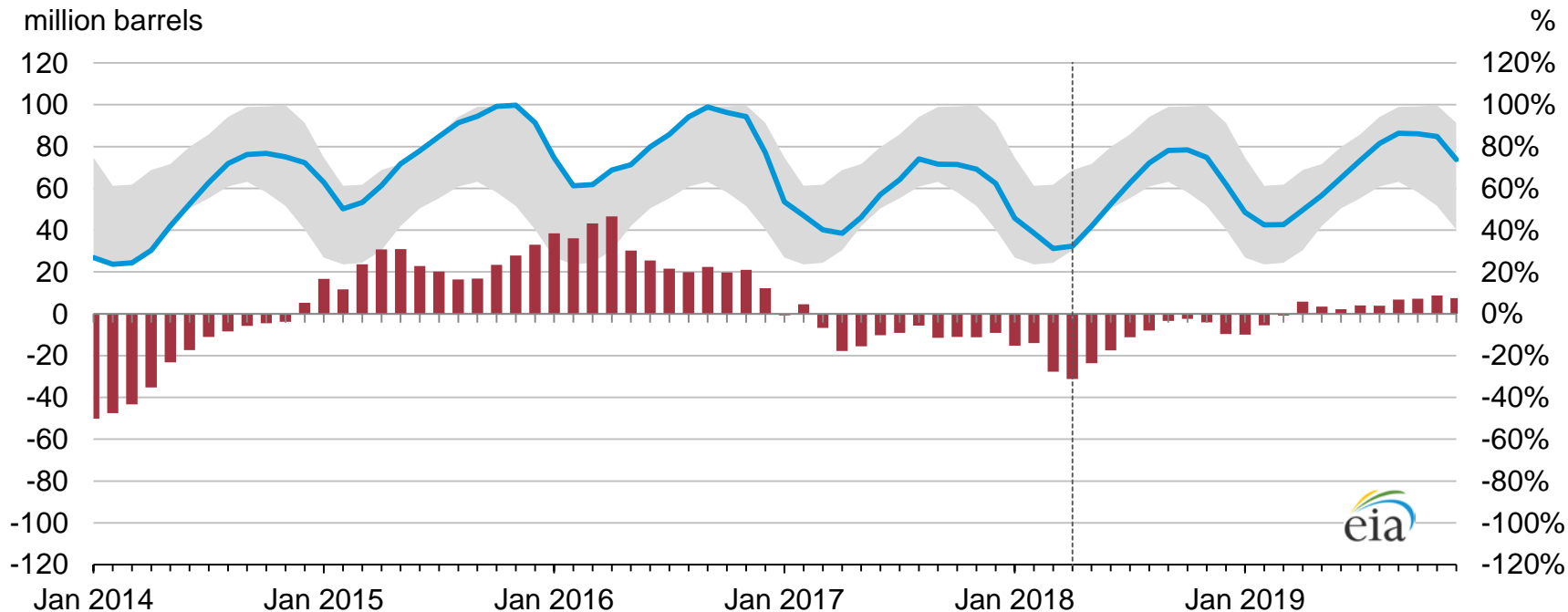


Source: Short-Term Energy Outlook, May 2018.

After two years of significant draw-downs, EIA projects propane stocks to slightly build and return to 5-year average levels

U.S. propane inventories

deviation from normal



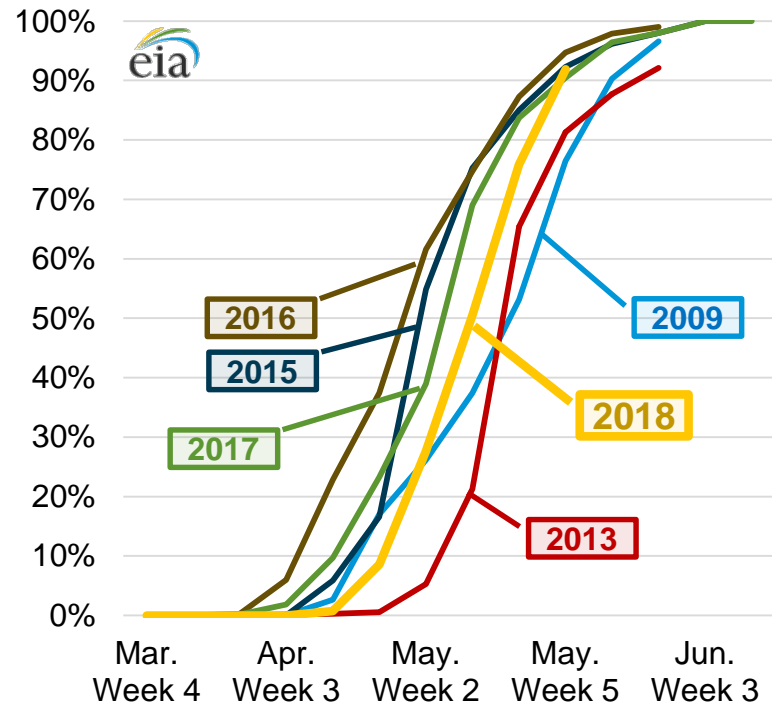
Note: Colored band around storage levels represents the range between the minimum and maximum from Jan. 2013- Dec. 2017.

Source: Short-Term Energy Outlook, May 2018.

Corn crop nearly all in the ground; emerged progress currently tracking a half-week behind last year

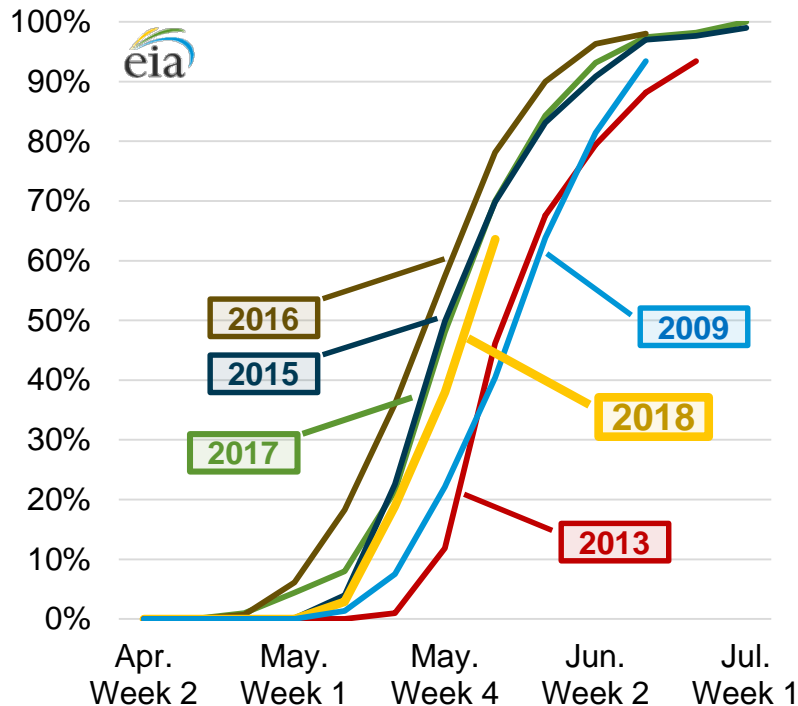
Corn crop planted

% progress, by week



Corn crop emerged

% progress, by week

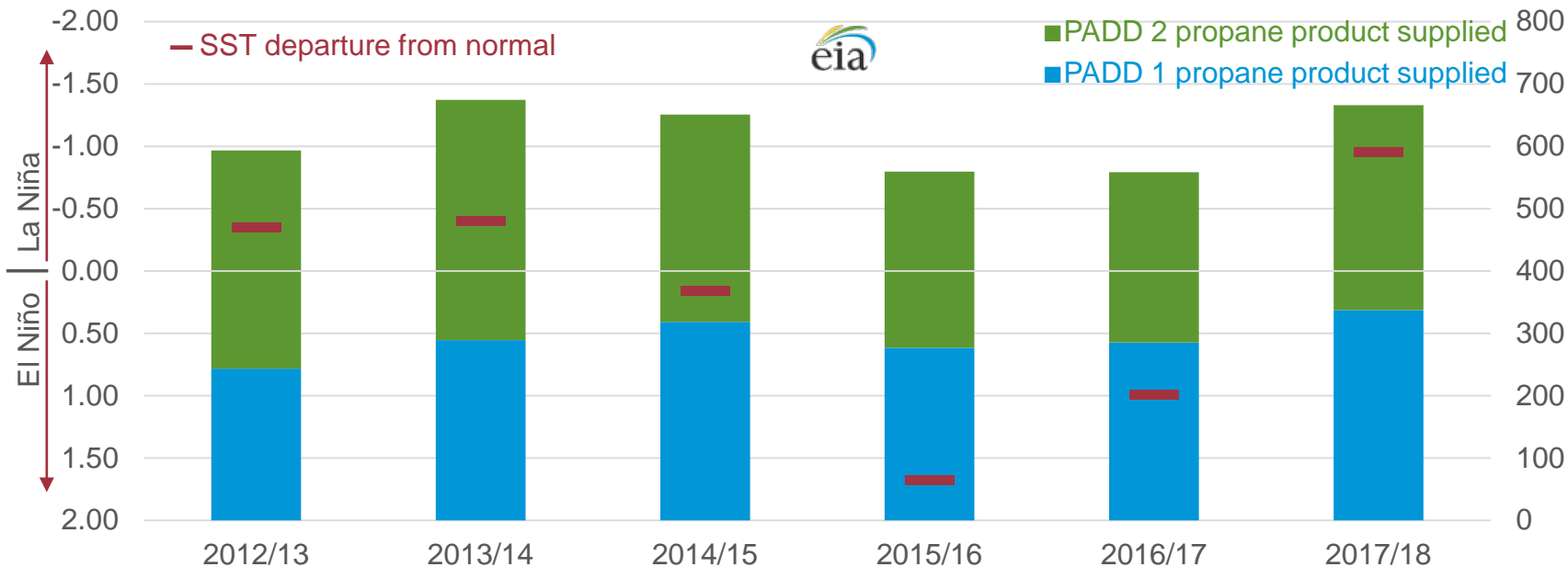


Source: USDA [National Agricultural Statistics Service](#)

El Niño – Southern Oscillation (ENSO) conditions in El Niño Region 1+2 are a reliable predictor of propane heating in PADDs 1 and 2

El Niño Region 1+2 Sea Surface Temperature (SST) departure from normal (C°)

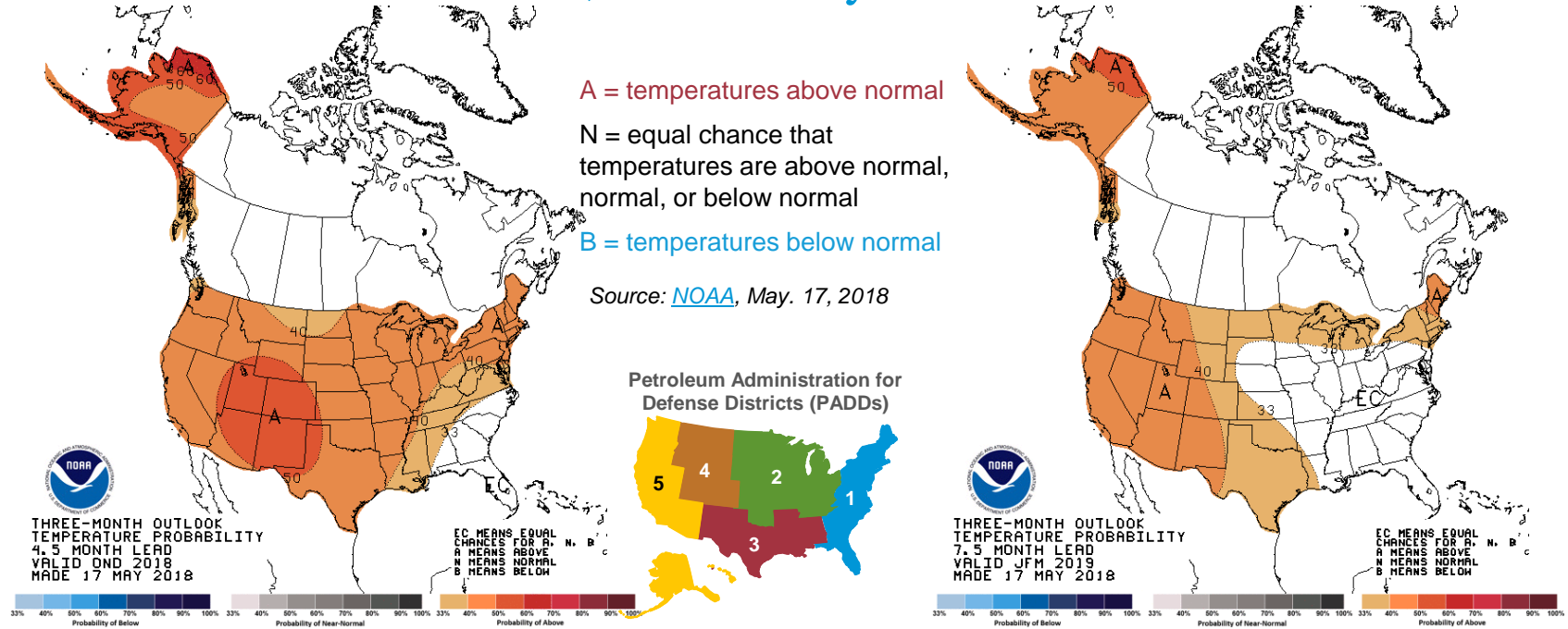
average heating season propane product supplied
1,000 b/d



Sources: [U.S. Energy Information Administration](#); [National Oceanic and Atmospheric Administration](#)

NOAA's projected temperatures:

October – December 2018, and January – March 2019

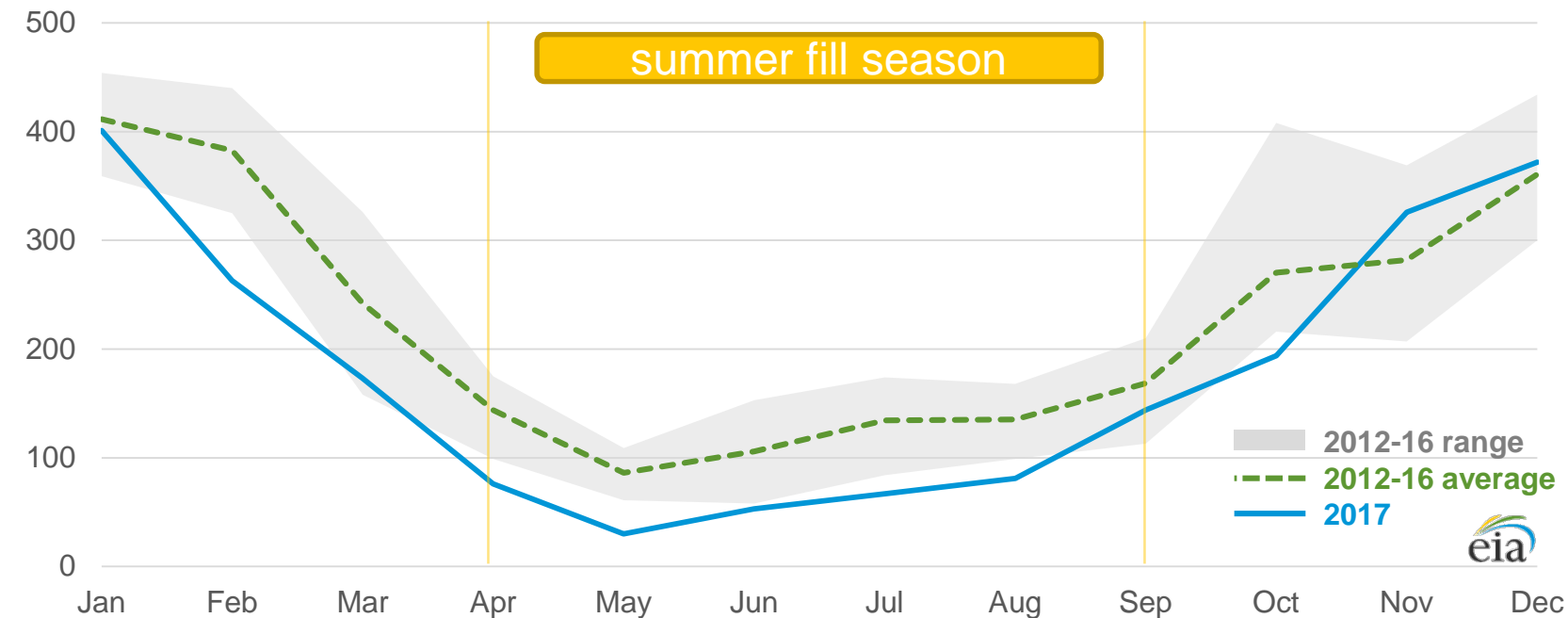


- Early in the heating season NOAA projects above-normal temperatures all across the country with the exception of the South Atlantic region, where temperatures are expected to be within NOAA's 30-year normal range
- Further into the heating season, above-average temperatures are expected throughout the west, with equal-chance of above/below normal stretching across much of PADDs 1 and 2, as well as eastern PADD 3

Midwest propane product supplied in the summer, an indicator of summer fill, was lower in 2017 than in past 5 summer fill seasons

Midwest (PADD 2) product supplied of propane

1,000 b/d



Source: U.S. Energy Information Administration, [Midwest \(PADD 2\) Product Supplied of Propane](#)

Above-trend January 2018 propane product supplies in PADDs 1 & 2 reflected fast-rising HDDs and low start-of-season inventories

PADD 1

PADD 2

propane product supplied

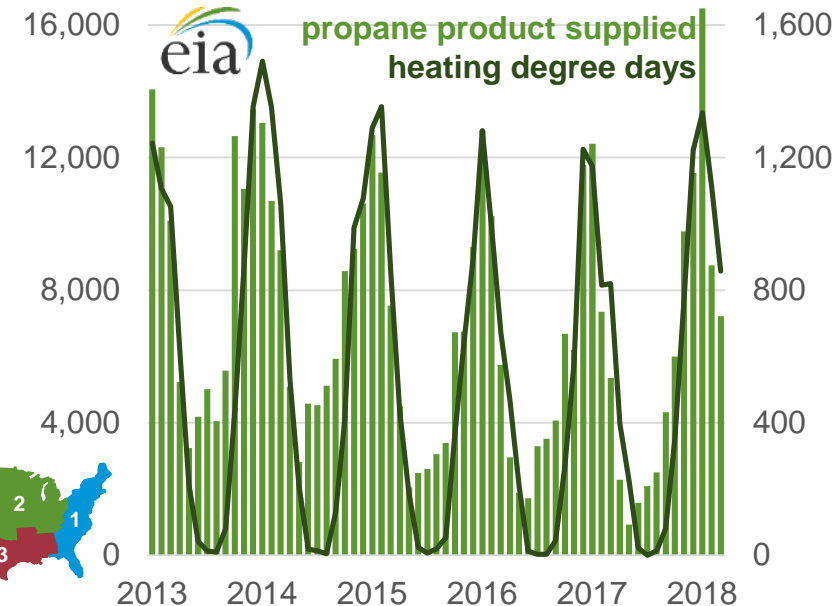
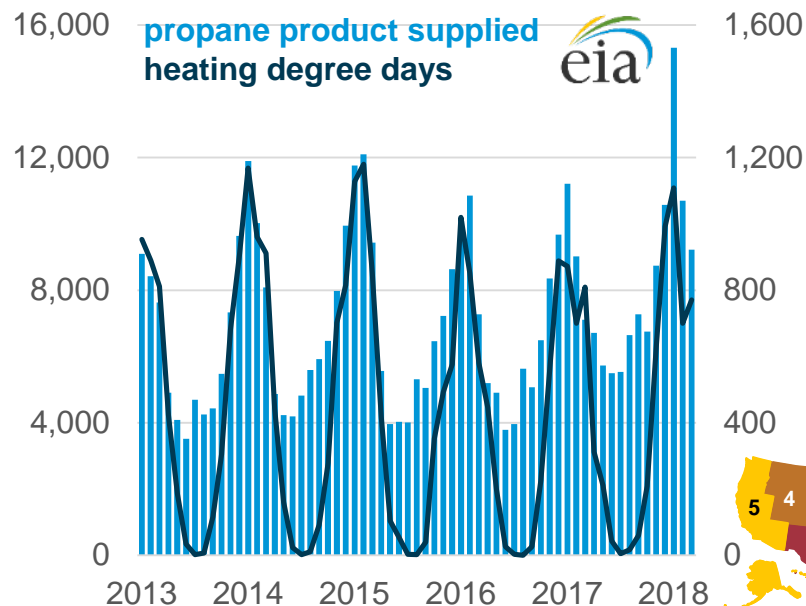
thousand barrels/month

heating degree days

propane product supplied

thousand barrels/month

heating degree days

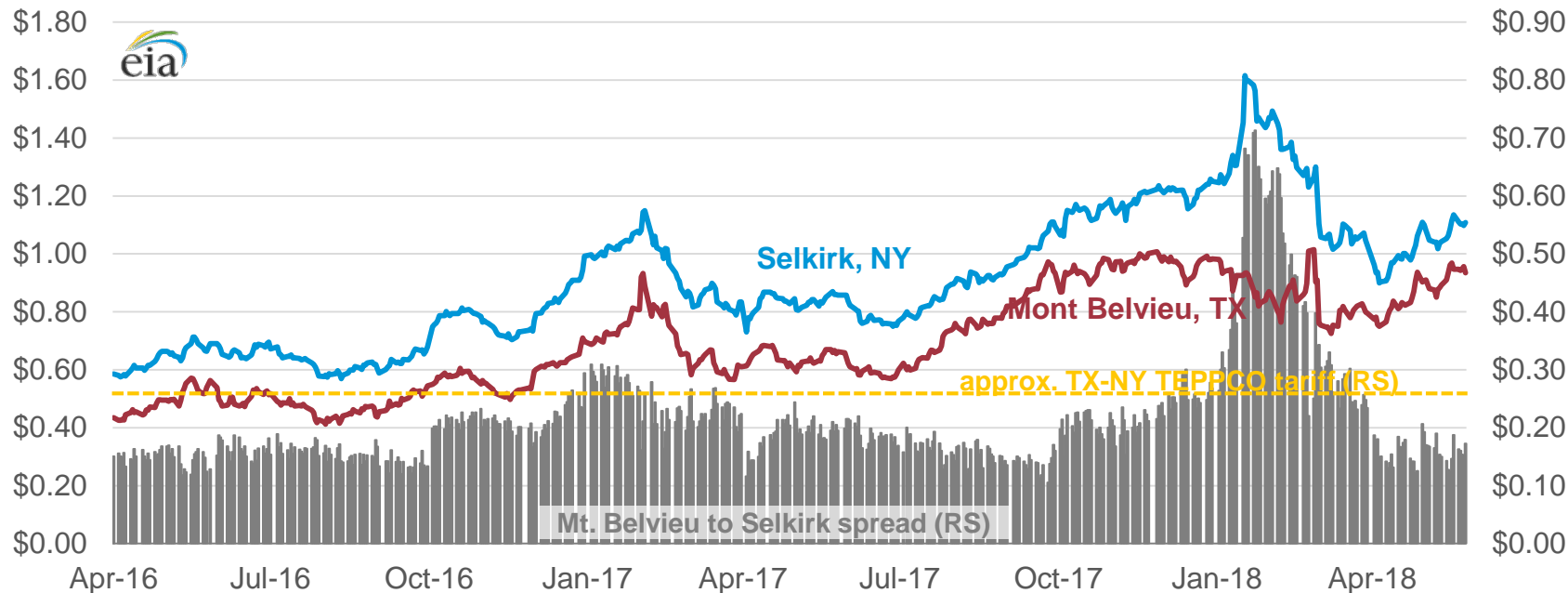


Source: EIA [Propane Product Supplied](#); National Oceanic and Atmospheric Administration, [Weighted Heating Degree Days](#)

Generally, tariff on the TEPPCO* pipeline sets the ceiling in the Northeast, unless supplies come from overseas, as was the case this past winter

propane spot prices
dollars per gallon

propane price spread
dollars per gallon



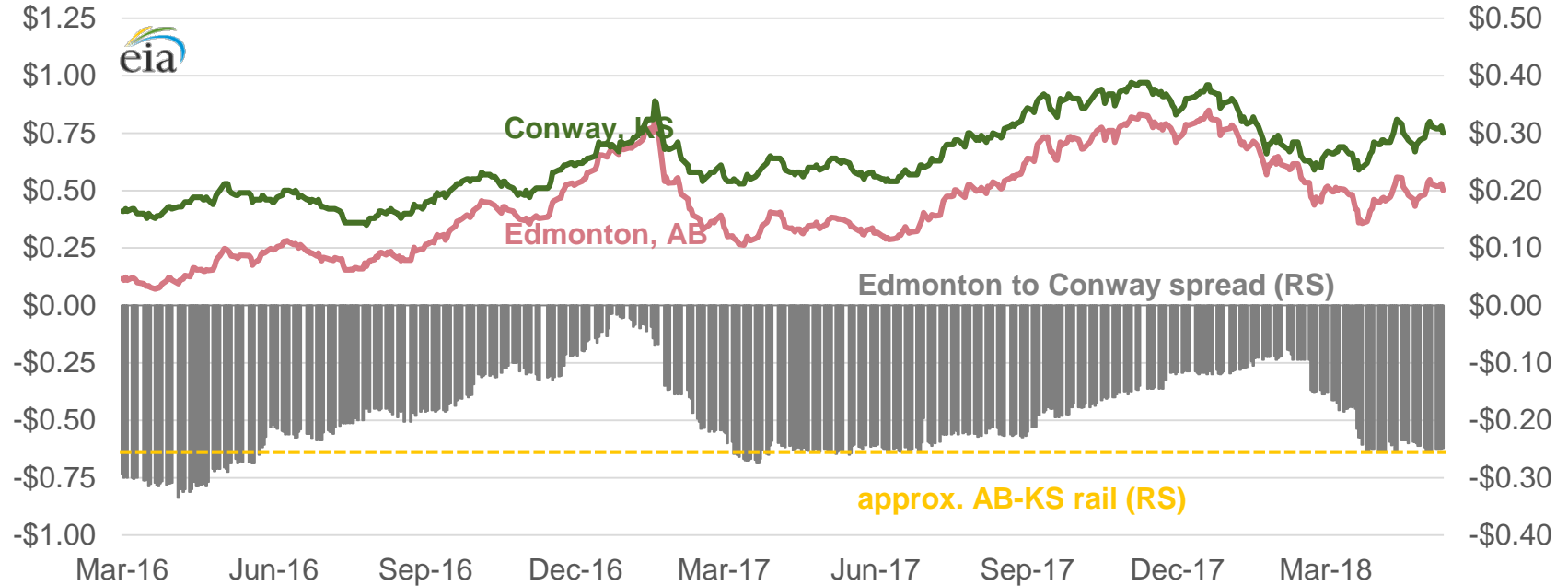
TEPPCO = Enterprise TE Products Pipeline Company LLC

Source: EIA, Bloomberg, data through May 25, 2018; Enterprise Products Partners L.P., [Effective Tariffs](#), FERC No. 54.42.0

With heating season over, Edmonton to Conway spread is back to the cost of rail

propane spot prices
dollars per gallon

propane price spread
dollars per gallon



Source: EIA, Bloomberg, data through May 25, 2018

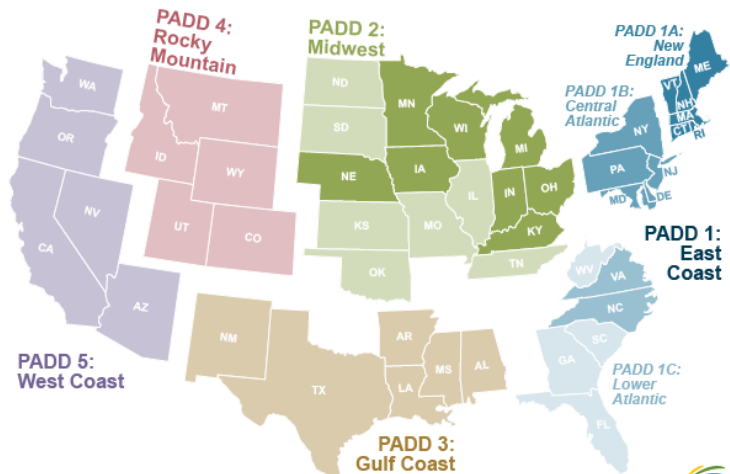
State Heating Oil and Propane Program (SHOPP) updates

- SHOPP is a collaborative program between states and EIA that provides weekly wholesale and retail prices for heating oil and propane at the state level
- EIA has extended SHOPP (beginning October 2014) to include 14 additional states in propane price data collection
- 10 new states were added to the wholesale propane price survey in 2016. This should be taken into consideration when comparing the average prices for last year (2015-2016 season) for the U.S., PADD 1, PADD 1B, PADD 1C, and PADD 2 averages
- EIA is providing more granular inventory data to states on a weekly basis since the 2016/2017 heating season
- New winter fuels page provides easier access to state-level information:
www.eia.gov/special/heatingfuels

Maps of states participating in Winter Fuels Survey

Petroleum Administration for Defense Districts

Winter Heating Fuels Survey — PADD 1 and 2 represented States



HEATING OIL



PADD 1: East Coast

PADD 1A: New England
Connecticut New Hampshire
Maine Rhode Island
Massachusetts Vermont

PADD 1B: Central Atlantic
Delaware New Jersey
District of Columbia New York
Maryland Pennsylvania

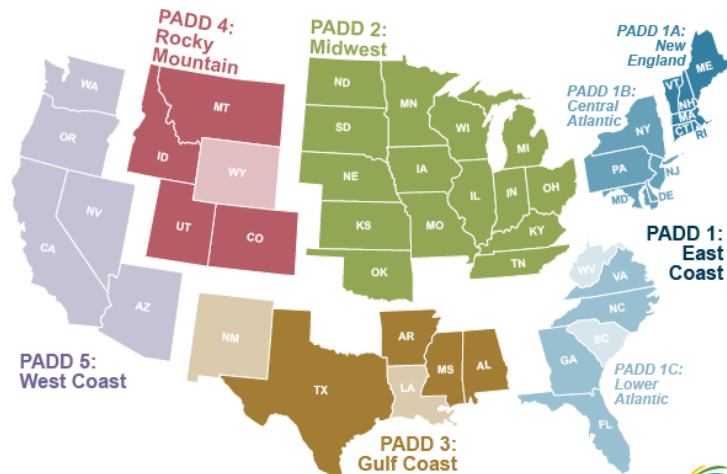
PADD 2: Midwest

Indiana Minnesota
Iowa Nebraska
Kentucky Ohio
Michigan Wisconsin

PADD 1C: Lower Atlantic
North Carolina Virginia

Petroleum Administration for Defense Districts

Winter Heating Fuels Survey — PADD 1, 2, 3, and 4 represented States



PROPANE



PADD 1: East Coast

PADD 1A: New England
Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

PADD 1B: Central Atlantic
Delaware
Maryland
New Jersey
New York
Pennsylvania

PADD 1C: Lower Atlantic
Florida
Georgia
North Carolina
Virginia

PADD 2: Midwest

Illinois Nebraska
Indiana North Dakota
Iowa Ohio
Kansas Oklahoma
Kentucky South Dakota
Michigan Tennessee
Minnesota Wisconsin
Missouri

PADD 3: Gulf Coast

Alabama Mississippi
Arkansas Texas

PADD 4: Rocky Mountain

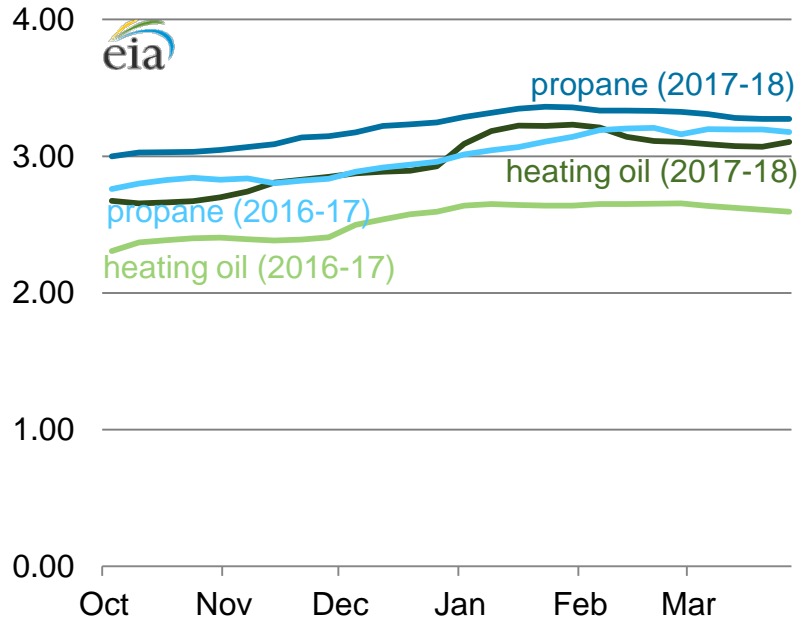
Colorado Montana
Idaho Utah

Source: EIA, [Heating Oil and Propane Update](#)

Retail propane prices this heating season in PADD 1 and PADD 2 are above prices reported for the same week last year

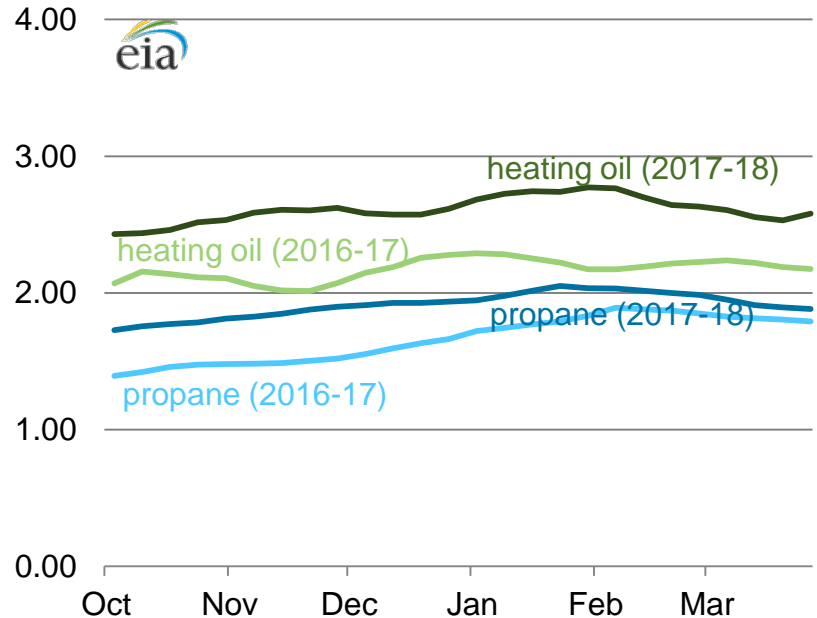
PADD 1

dollars per gallon



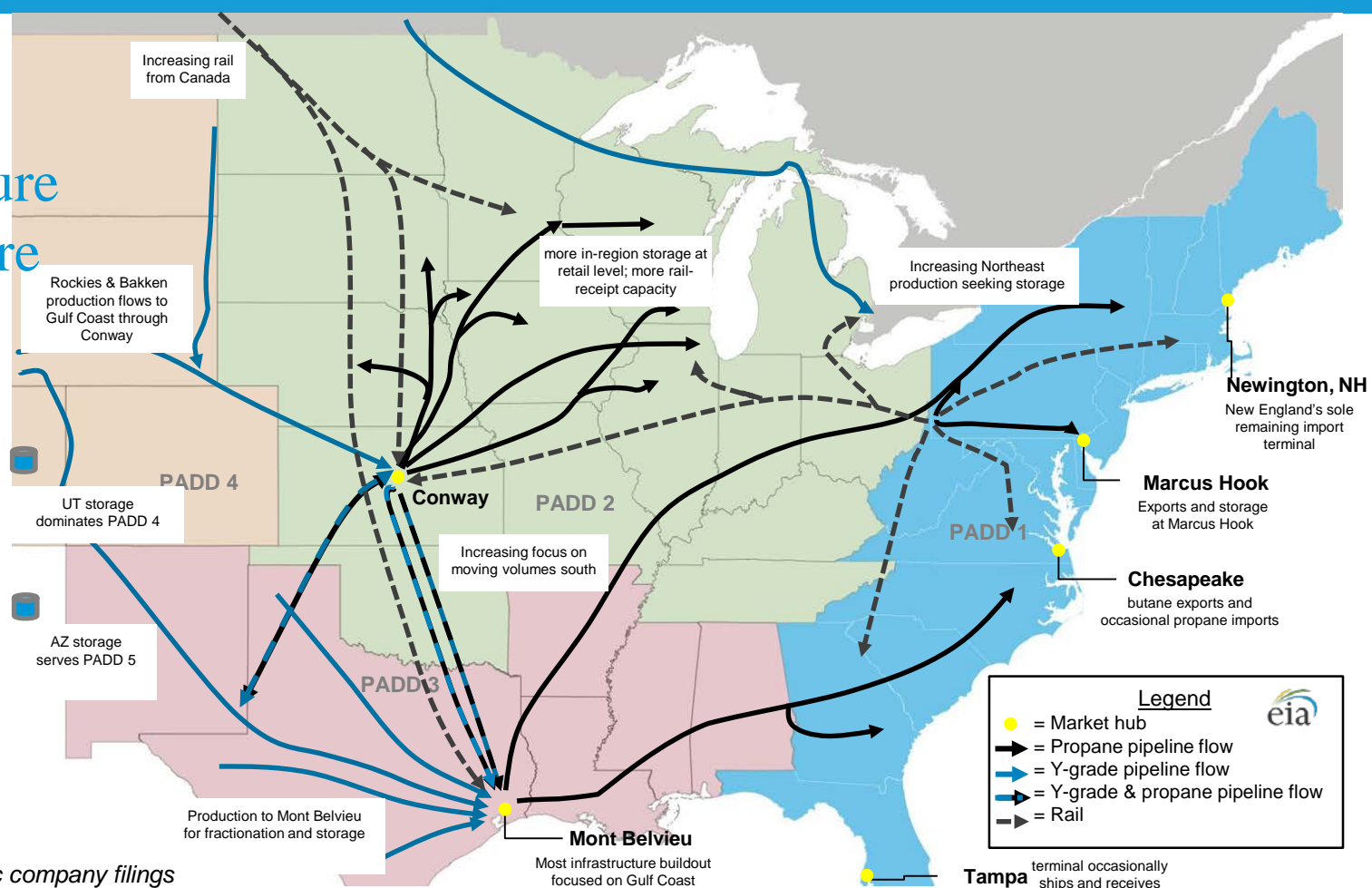
PADD 2

dollars per gallon



Source: State Heating Oil and Propane Program, data through March 27, 2018

Propane-oriented infrastructure getting more complex / diversified

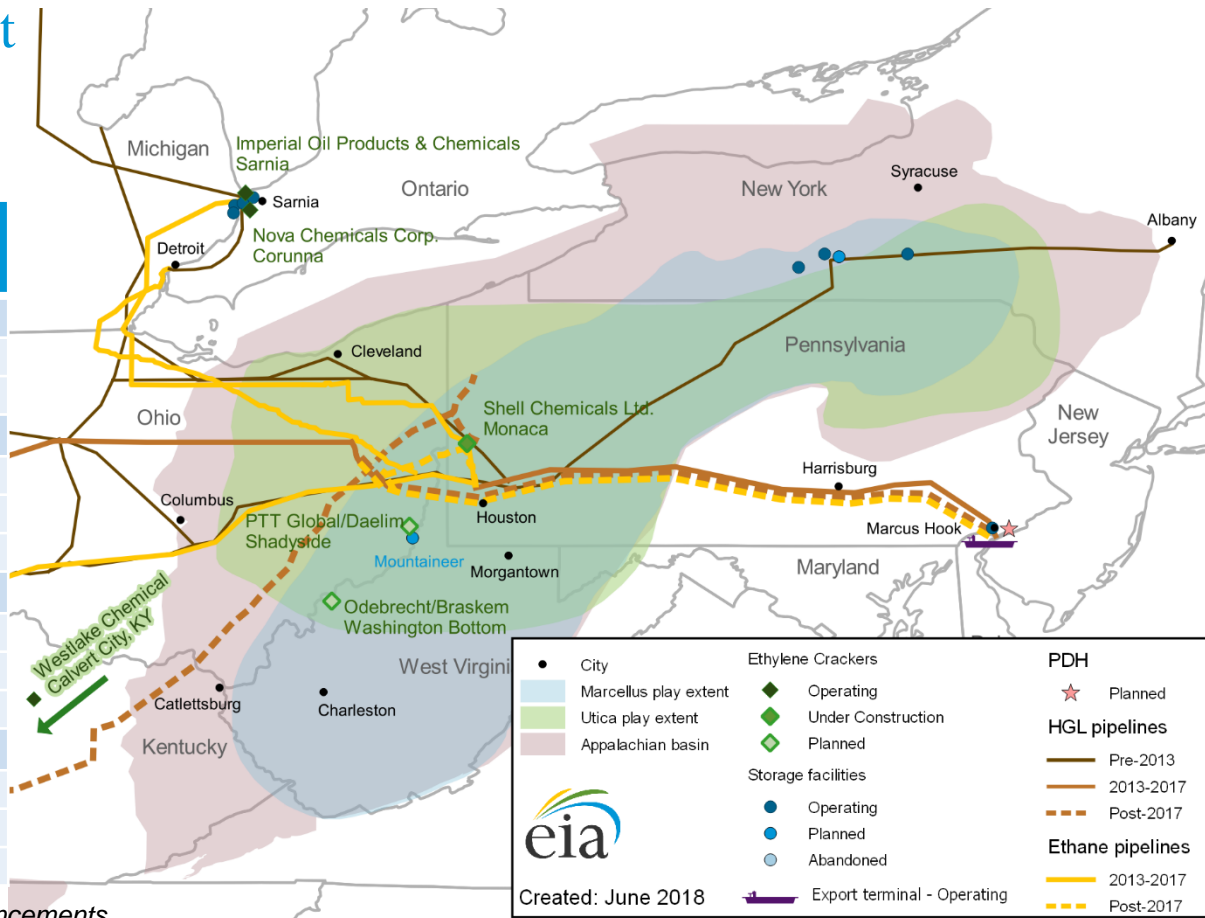


Source: EIA, public company filings

Projects to ship HGL out precede development of in-region demand

HGL pipeline	Throughput (1,000 b/d)	Start
To Canada		
Mariner West	50	2013 Q4
Utopia East	50	2018 Q1
To U.S. Gulf Coast		
ATEX	125	2014 Q1
ATEX expansion	25	2017 Q4
UMTP	430	2019+
To overseas export markets		
Mariner East	70	2015 Q3
Mariner East II	275	2018 Q3
Mariner East IIx	250	2019 Q2
To local market		
Teppco	60	2014 Q1
Cornerstone	100	2016 Q4
Falcon (Shell)	107	±2020

Source: EIA, company filings and public announcements



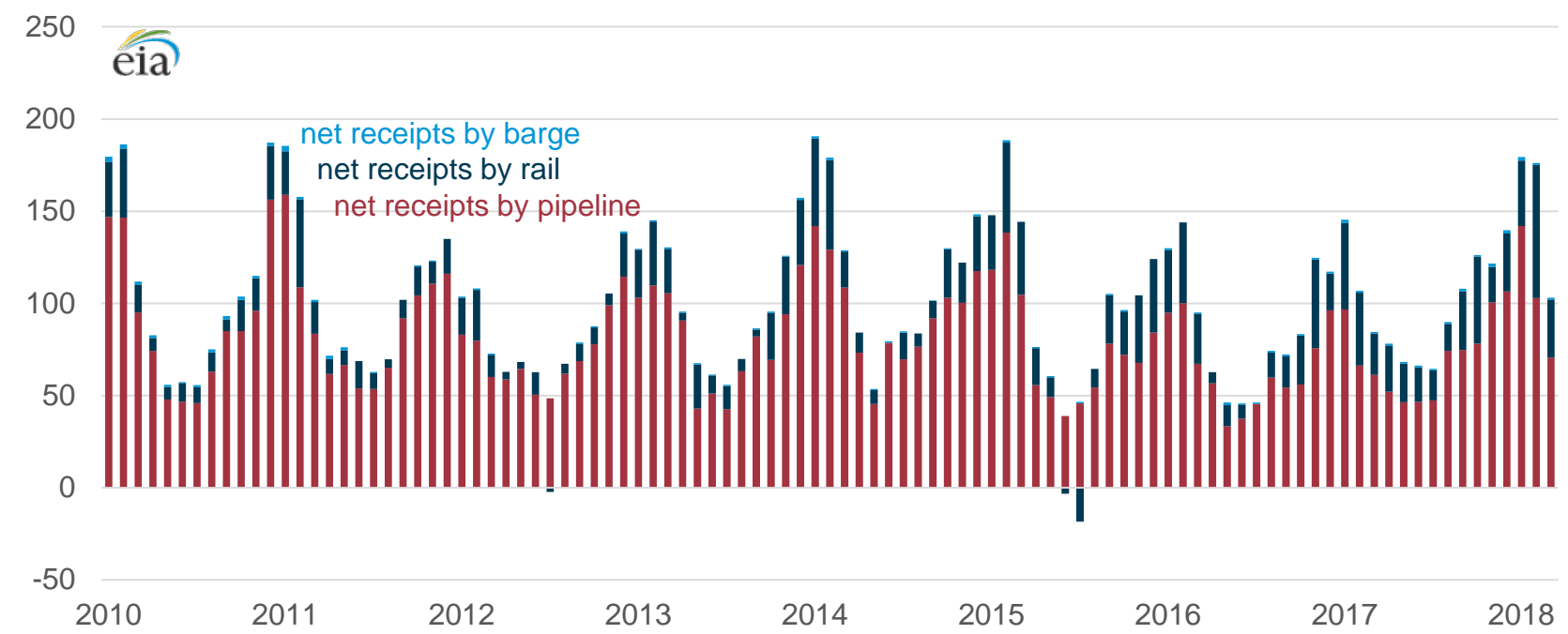
Created: June 2018

<ul style="list-style-type: none"> • City ■ Marcellus play extent ■ Utica play extent ■ Appalachian basin 	<p>Ethylene Crackers</p> <ul style="list-style-type: none"> ◆ Operating ◆ Under Construction ◆ Planned <p>Storage facilities</p> <ul style="list-style-type: none"> ● Operating ● Planned ● Abandoned 	<p>PDH</p> <ul style="list-style-type: none"> ★ Planned <p>HGL pipelines</p> <ul style="list-style-type: none"> — Pre-2013 — 2013-2017 - - - Post-2017 <p>Ethane pipelines</p> <ul style="list-style-type: none"> — 2013-2017 - - - Post-2017
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PADD 1, now a major producer, is both a source of supply and a major consumer of propane

PADD 1 net receipts of propane by mode

thousand b/d



Source: EIA, [Movements by Tanker and Barge between PAD Districts](#), [Movements of Propane by Rail between PAD Districts](#), [Movements by Pipeline between PAD Districts](#)

For more information

U.S. Energy Information Administration home page | www.eia.gov

State Energy Portal | www.eia.gov/state

Winter Heating Fuels Site | www.eia.gov/special/heatingfuels/

Movements of Propane by Rail |

http://www.eia.gov/dnav/pet/pet_move_railNA_a_EPLLPA_RAIL_mdbl_m.htm

Today in Energy | www.eia.gov/todayinenergy

Short-Term Energy Outlook | www.eia.gov/steo

Energy Explained – Hydrocarbon Gas Liquids |

http://www.eia.gov/energyexplained/index.cfm?page=hgls_home

Annual Energy Outlook | www.eia.gov/aeo

International Energy Outlook | www.eia.gov/ieo

Monthly Energy Review | www.eia.gov/mer