EIA's propane market indicators and measures of supply adequacy

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By

U.S. Energy Information Administration

Key takeaways

- In response to stakeholder feedback, EIA has added two new measures of supply adequacy to its weekly Propane Market Update deck, issued during the heating season, which runs from the first week in October to the last week in March
- This deck is in addition to price and stocks information published on EIA's Winter Heating Fuels page, also updated weekly
- EIA continues to publish all weekly propane supply estimates, including production, stocks, imports/exports, and product supplied throughout the year
- EIA will continue to monitor winter fuels supply and prices, and issue market alerts when appropriate

EIA has been responsive to industry and stakeholder concerns

- In addition to its traditional measure of supply adequacy that is already used by many in the energy community, EIA will also publish:
  1. an estimate of current inventories divided by product disposition, which is defined as product supplied and exports, as suggested in your letter, and
  2. an estimate based on the average peak demand weeks for the previous five winters.

- These additional measures will be labeled *days of disposition* and *days of supply under severe weather conditions*.

- Along with the standard *days of supply* measure, these new measures should provide additional information so that propane dealers and customers can plan adequately.

- These ranges are included in EIA's Propane Situation Update briefing deck published every week on the widely used Winter Heating Fuels page.

Defining the terms

- Product Supplied
  - Proxy for consumption
  - Product Supplied = Production + Imports – Stock Change - Exports
- Primary Inventory
  - Primary supply level (wholesale)
- Alternate supply adequacy measures
  - Days of Supply (conventional) = Primary inventory / 4-week average product supplied
  - Days of Disposition = Primary inventory / 4-week average (product supplied + exports)
  - Severe Weather Days of Supply = Primary inventory / average of 5 highest weeks of product supplied over last 5 years

EIA's days of supply measure

U.S. weekly stocks of propane

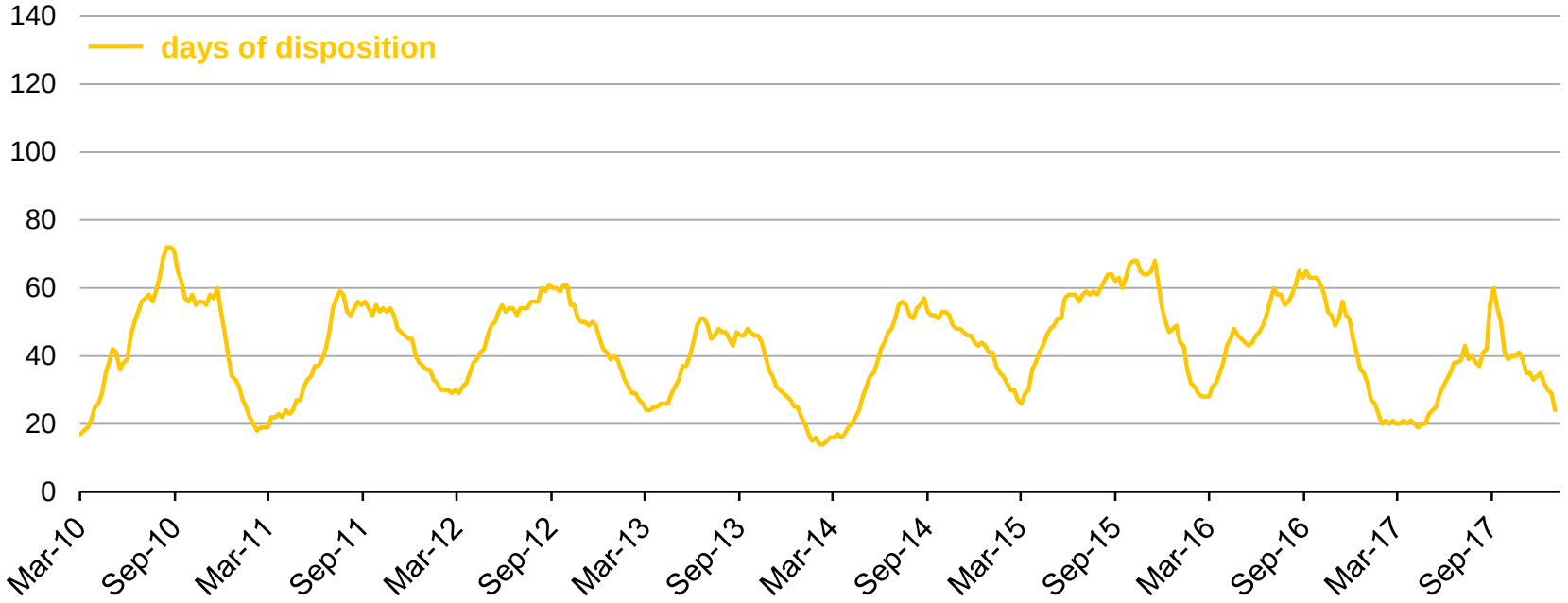
days of supply

Note: Days of Supply = Primary inventory / 4-week average product supplied

Source: U.S. Energy Information Administration, Weekly Petroleum Status Report, data through January 5, 2018

New days of disposition measure

U.S. weekly stocks of propane
days of disposition

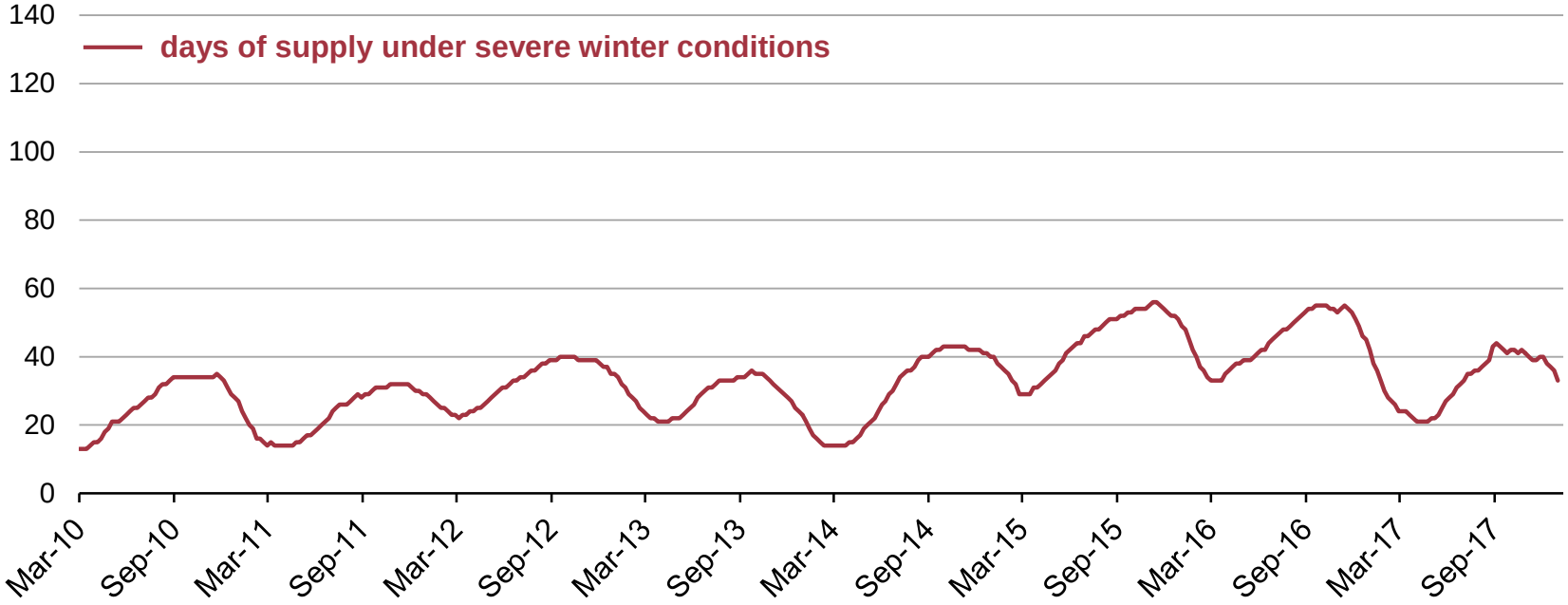


Note: Days of Disposition = Primary inventory / 4-week average (product supplied + exports)
Source: U.S. Energy Information Administration, Weekly Petroleum Status Report, data through January 5, 2018

New days of supply under severe winter conditions measure

U.S. weekly stocks of propane

days of supply



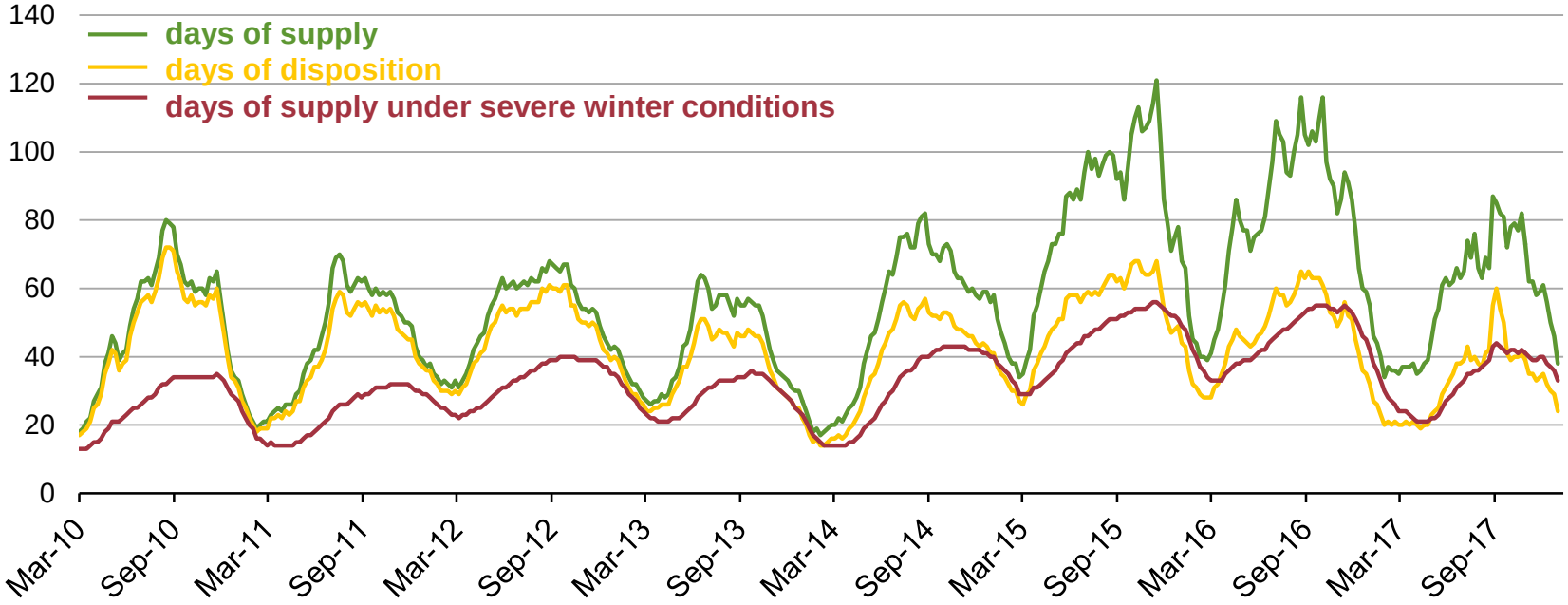
Note: Severe Weather Days of Supply = Primary inventory / average of 5 highest weeks of product supplied over last 5 years

Source: U.S. Energy Information Administration, Weekly Petroleum Status Report, data through January 5, 2018

Various days-of supply/disposition measures

U.S. weekly stocks of propane

days of supply & disposition

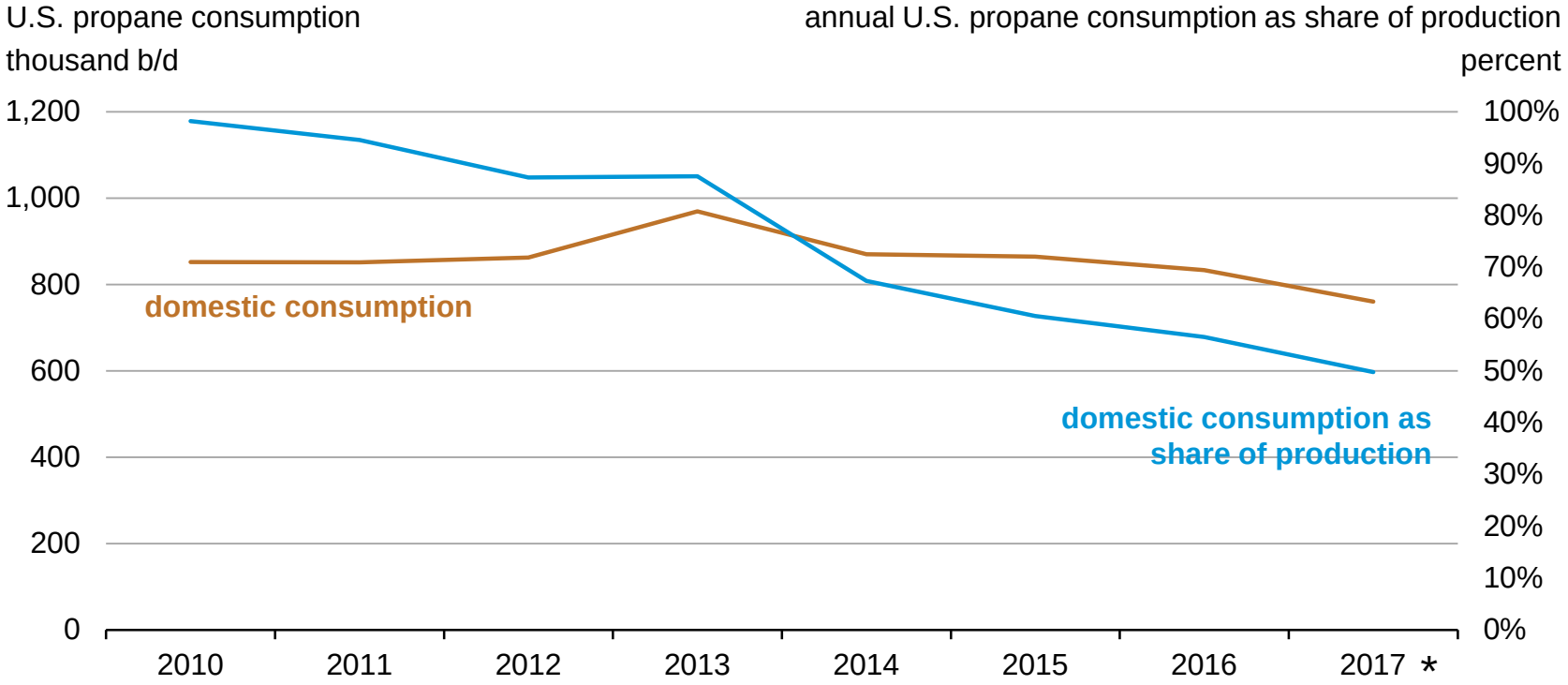


Note: disposition = domestic product supplied + exports

Source: U.S. Energy Information Administration, Weekly Petroleum Status Report, data through January 5, 2018

Propane market summary

From 2010 to 2016, as U.S. propane production rose, domestic consumption declined in absolute terms and as share of production



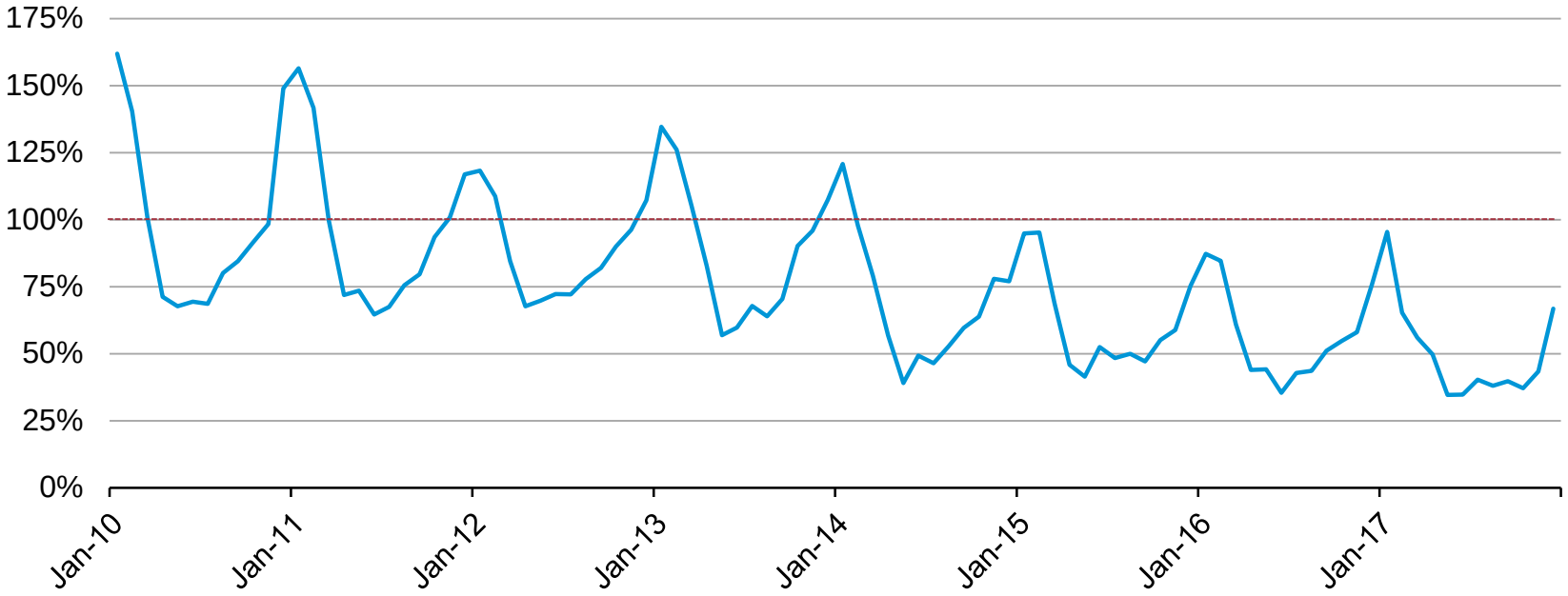
Note: product supplied ≈ domestic consumption

2017 data through October; 2017 November and December monthly totals estimated from weekly reported data

Even during coldest months U.S. propane production exceeds consumption, allowing for increased exports

propane consumption as a share of U.S. production

percent



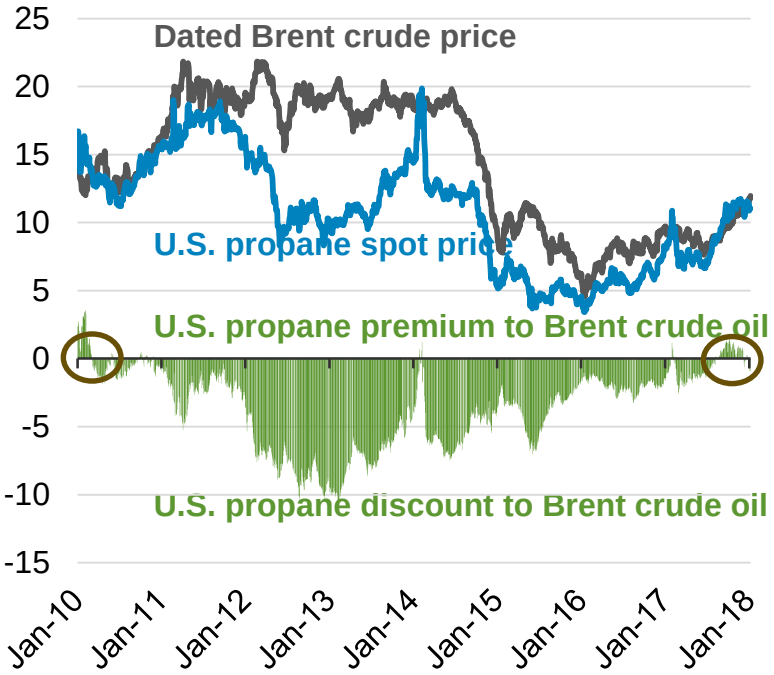
Note: consumption ≈ product supplied

Source: U.S. Energy Information Administration

Higher exports have reconnected the U.S. with the international market; U.S. wholesale prices vs. overseas prices now more tightly aligned

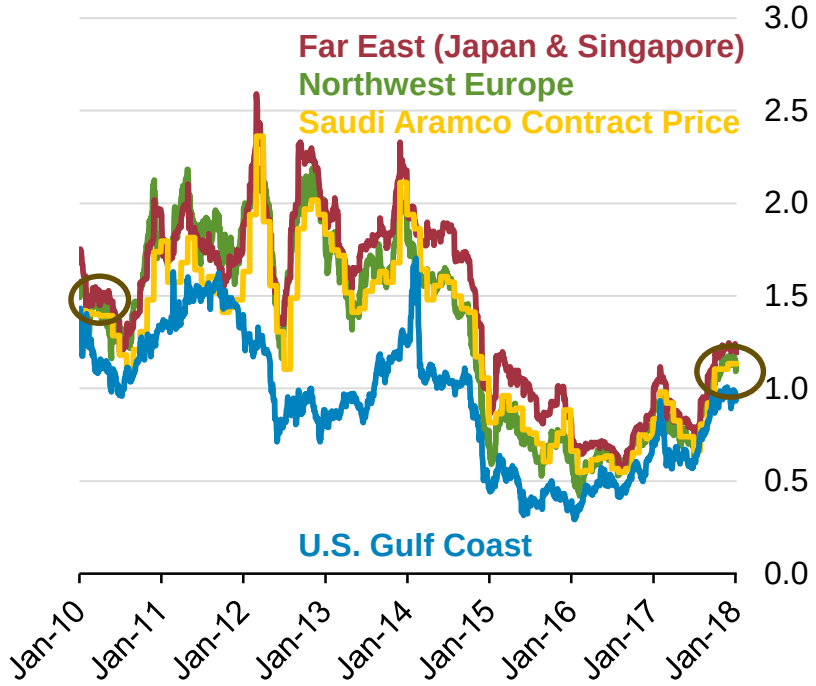
U.S. propane and Brent Dated crude oil prices

$/MMBtu



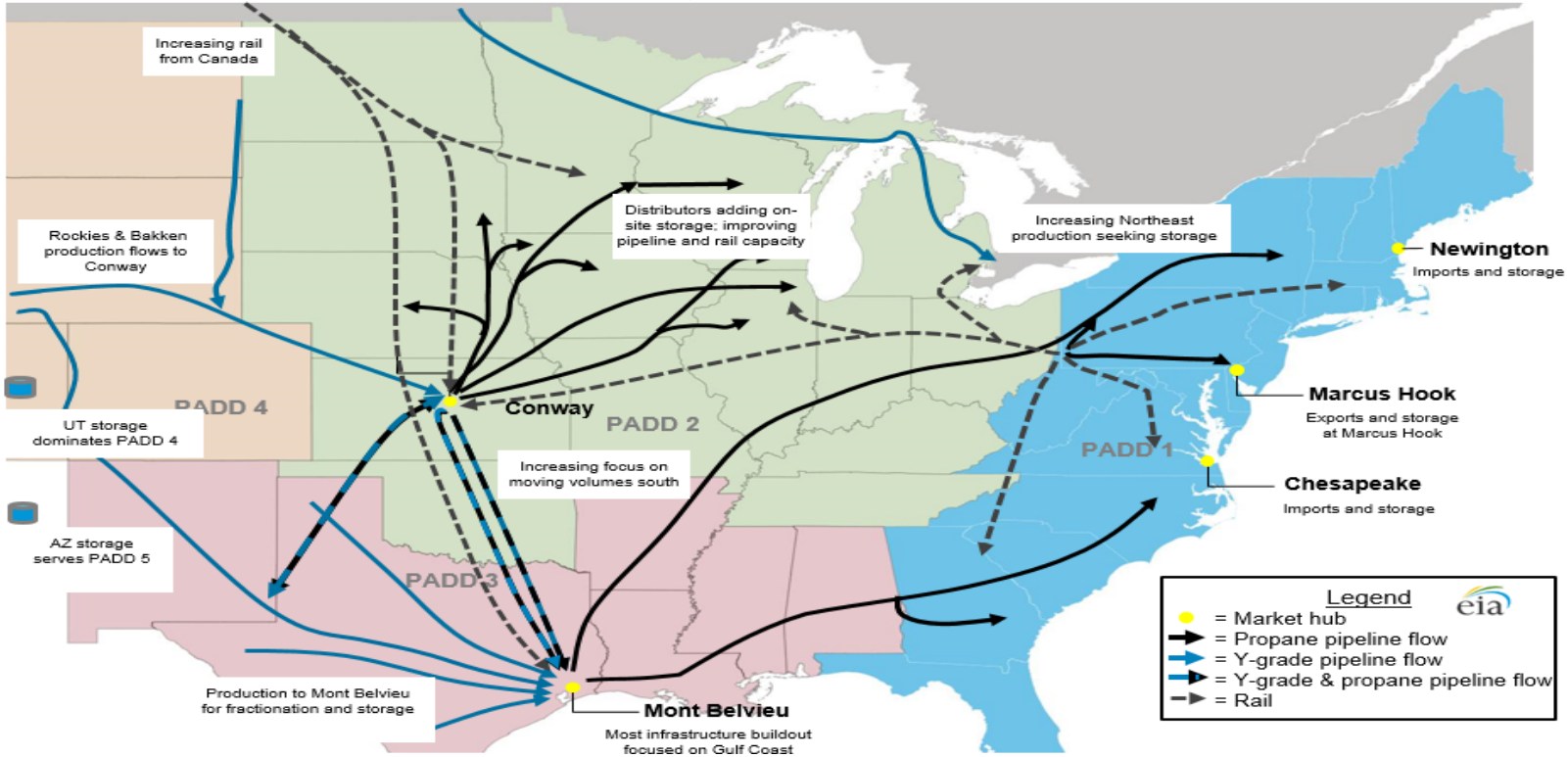
propane spot prices

$/U.S. gallon



Source: EIA, Bloomberg, data through January 8, 2018

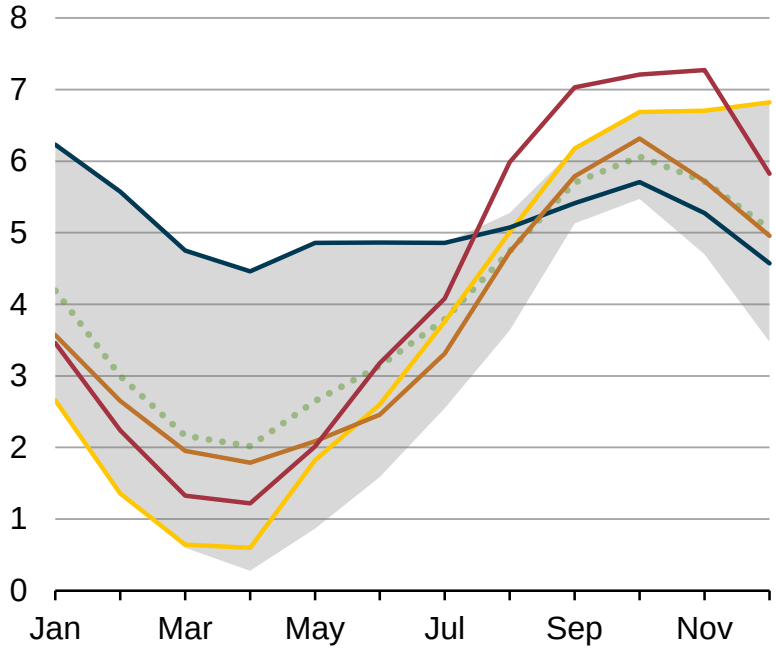
Role of rail has increased over past 5 years, as pipelines are moving volumes not used domestically to the Gulf Coast



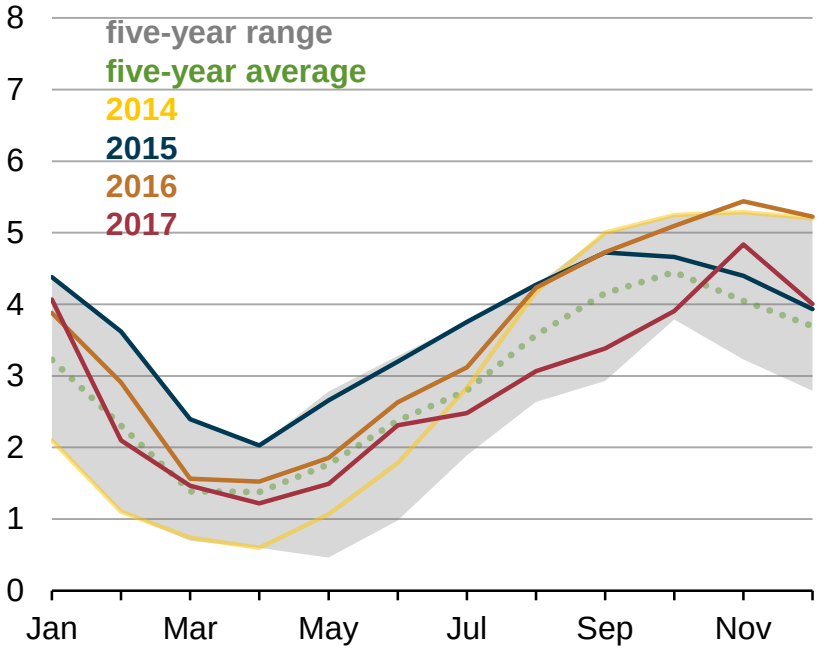
Source: EIA, Public company filings and press releases

However, PADDs 1 and 2 can, and do, call on Canadian inventories in winter - a source of propane not captured by a days-of-supply measure

propane inventories in Western Canada
million barrels



propane inventories in Eastern Canada
million barrels

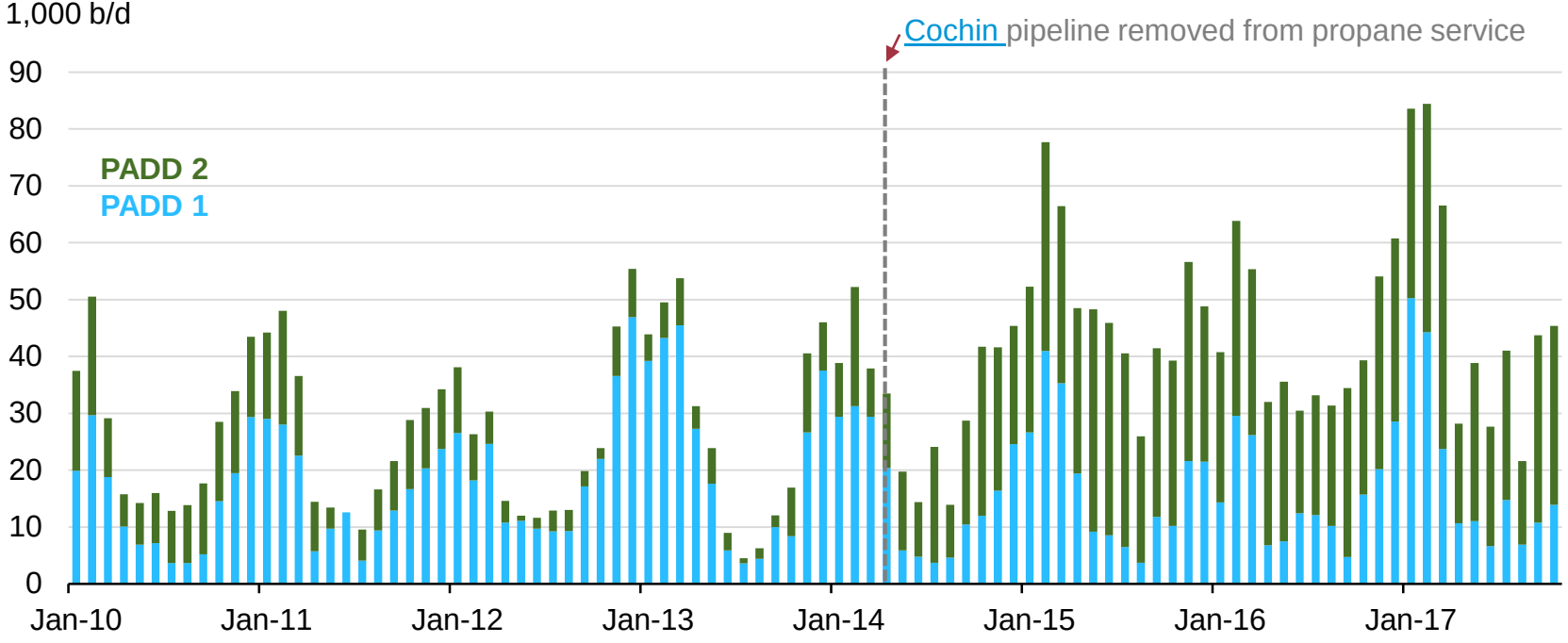


Source: Canada's National Energy Board, December 14, 2017

Since 2014, when the Cochin pipeline was removed from propane service, imports from Canada by rail have increased

receipts of propane by rail from Canada

1,000 b/d



Source: EIA, Movements of Crude Oil and Selected Products by Rail: Propane

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_mbbl_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

Q&A

Questions and Answers

- Why wasn't highest of 5 year exports included in the new days of supply under severe winter conditions measure, to create a days of disposition under severe winter conditions?
  - In developing the two alternatives to Days of Supply presented today, we tried to pick options that seemed the most useful and/or realistic, given the caveat made during the presentation that none of these scenarios should be taken literally, nor are any of them realistic. So we chose to add exports to the product supplied (conventional) scenario, and to assume the most severe weather as other options to show the impact vs. our *Days of Supply* measure. However, EIA makes all the data available to our users to conduct whatever alternative scenarios or sensitivity analysis they choose or think is most likely, to conduct their own analysis.

    As to the specific request, again, we tried to provide the most realistic alternatives, and to assume that during the most severe weather that exports would also continue unabated at the highest levels seems to defy the likely impact that prices would have to lessen those exports. Export cargos can be, and often are, canceled for economic reasons, and it seems even more unlikely that under severe weather, which is likely to raise domestic prices, that with all supplies cut off, that exports would be leaving the U.S. at their highest all-time levels. But again, EIA makes the data available for our users to model that scenario if they choose.

Questions and Answers

- Why is Consumer (specifically Petchem) inventory NOT considered as part of primary inventory and reported monthly and weekly?
  - There is a significant amount of propane stored past the wholesale level. By some estimates more propane is stored at such facilities than at the terminals EIA surveys. At this time EIA has no survey administered that collects data on inventory levels at the consumer level. This includes proprietary inventories held by large petrochemical companies, retailer inventories, and other such storage facilities.
- The weekly propane data includes propylene volumes from refineries. Roughly 300,000 b/d. Would it be an idea to report weekly data stripped from the propylene volumes?
  - Our weekly inventory numbers, as well as production, imports, and product supplied, are a sum of propane and propylene. While we have split up alkanes and olefins in our monthly data, as covered in a previous webinar, our weekly numbers continue to report the total of both. We have looked into stripping out propylene from the inventory number and calculating days of supply that way. Unfortunately a lot of our other data is also comingled in our weekly surveys, and breaking propylene out of the propane/propylene total would not be workable from a statistical perspective. There are simply too many unknowns.

Questions and Answers

- How low can inventories go?
  - It is difficult to answer this question, because the propane market, especially during the heating season, is highly regional, and in each region there are different supply/demand dynamics at play. The various *Days of Supply/Disposition* measures can only be calculated at the national level on a weekly basis because EIA is unable to estimate inter-regional (inter-PADD) movements on a weekly basis. However, it is at the regional level where most of the supply disruptions might have an effect.

    For example, when Hurricane Harvey hit the Gulf Coast, petrochemical demand was affected and exports were curtailed, affecting PADD 3 supplies. Production and consumption across the rest of the country continued without interruption.

    Likewise, during the 2013/14 winter, supply disruptions were reported for PADD 2, and PADD 2 inventories reached 10-year lows. PADD 3 inventories, on the other hand, were within the 5-year range. Yet due to infrastructure constraints this propane could not effectively be moved from terminals in PADD 3 to consumers in PADD 2.

- Where can I find the data for the Days of Supply measures on the website?
  - *Propane/Propylene Days of Supply* measure is available in EIA's Weekly Supply Estimates table. The two alternate measures of supply adequacy, *Days of Disposition*, and *Days of Supply Under Severe Winter Conditions*, are available in graphical form in the Weekly Propane Market Update deck.