

Propane Winter Outlook

2015 Winter Energy Outlook Conference

Kelly Van Hull
October 6, 2015

Propane Winter Outlook

» Propane Market Overview

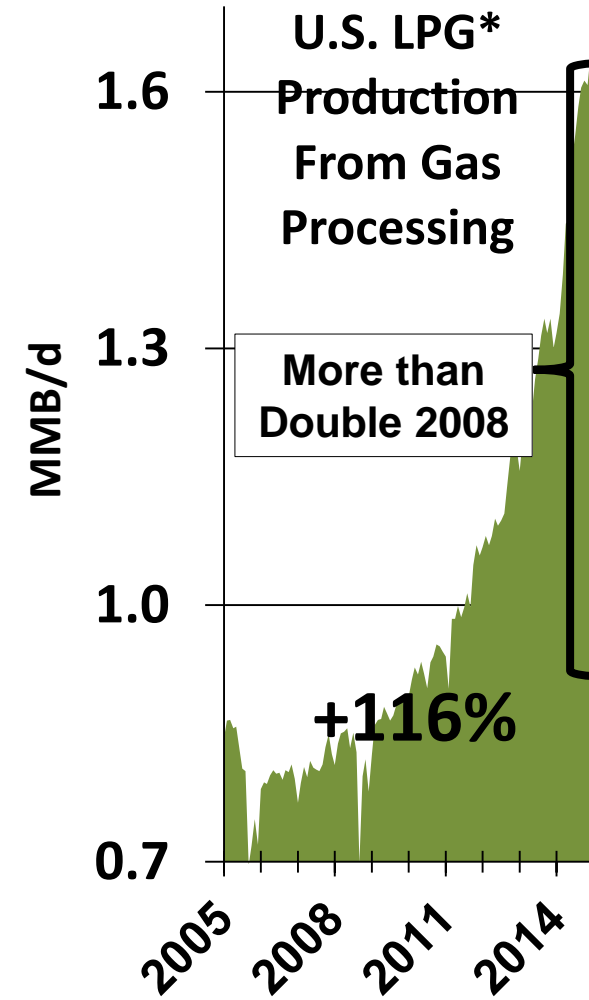
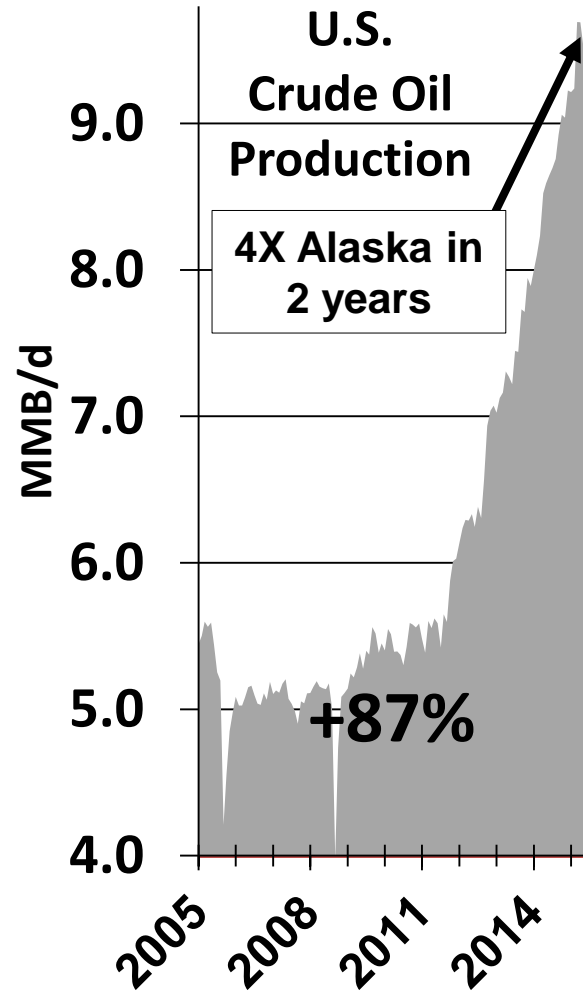
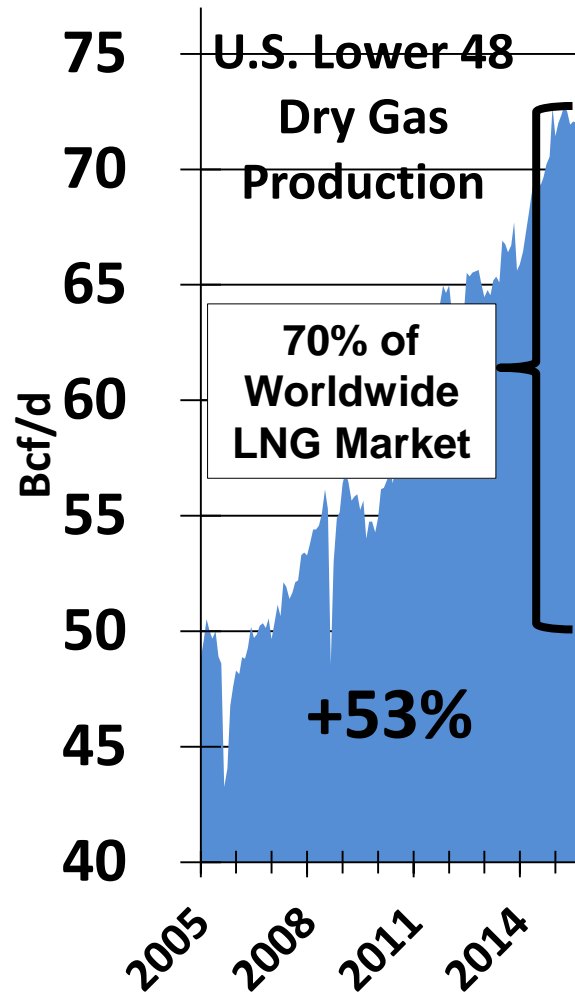
- Crude Oil, Natural Gas, and Natural Gas Liquids Production
- Trends – Historical and Post Crude Oil Price Collapse

» Propane Outlook

- Propane Supply/Demand Balance
- Project Developments
- Weather Sensitivities
- Pricing & Price Relationships
- Conclusions



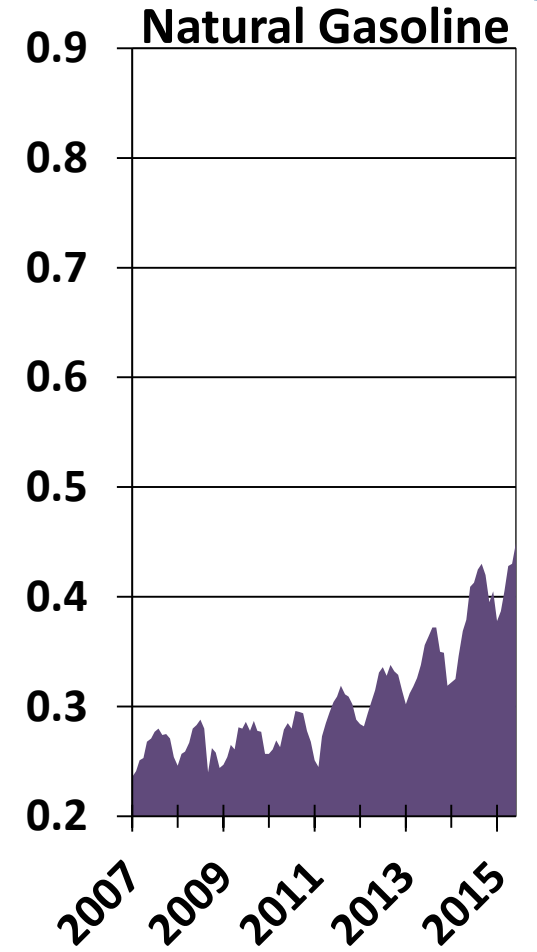
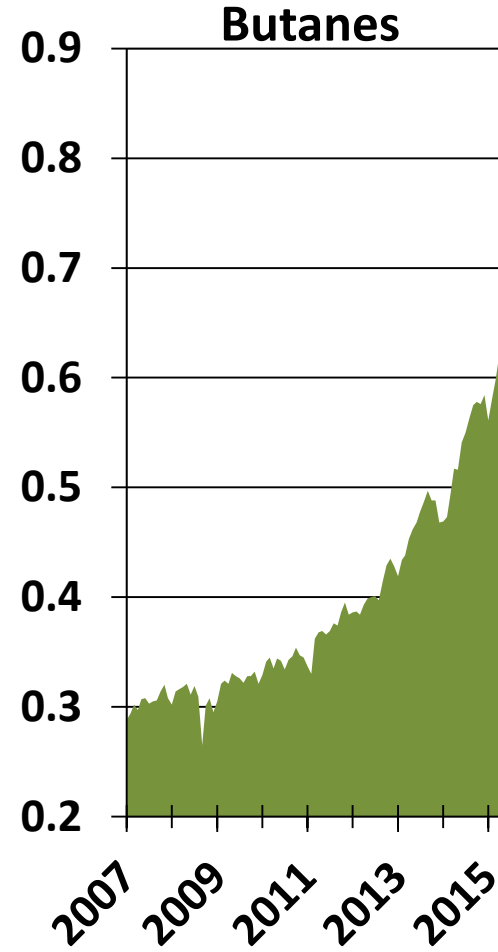
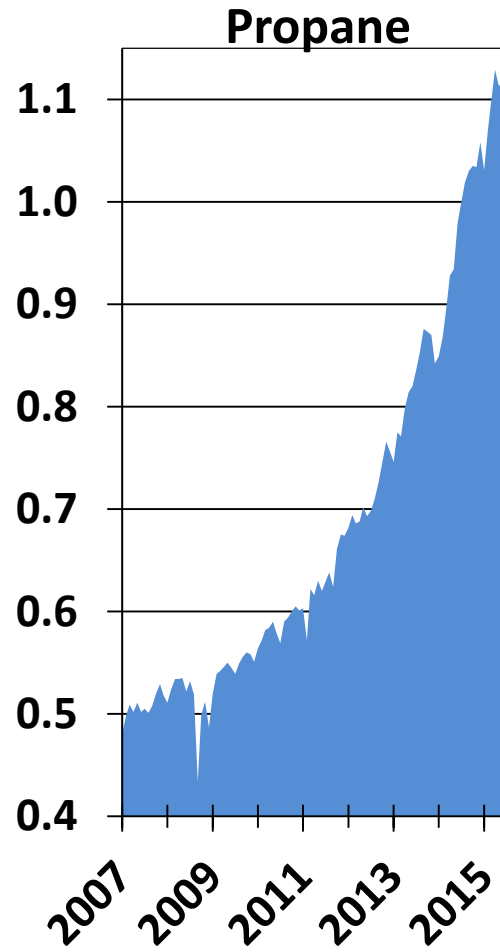
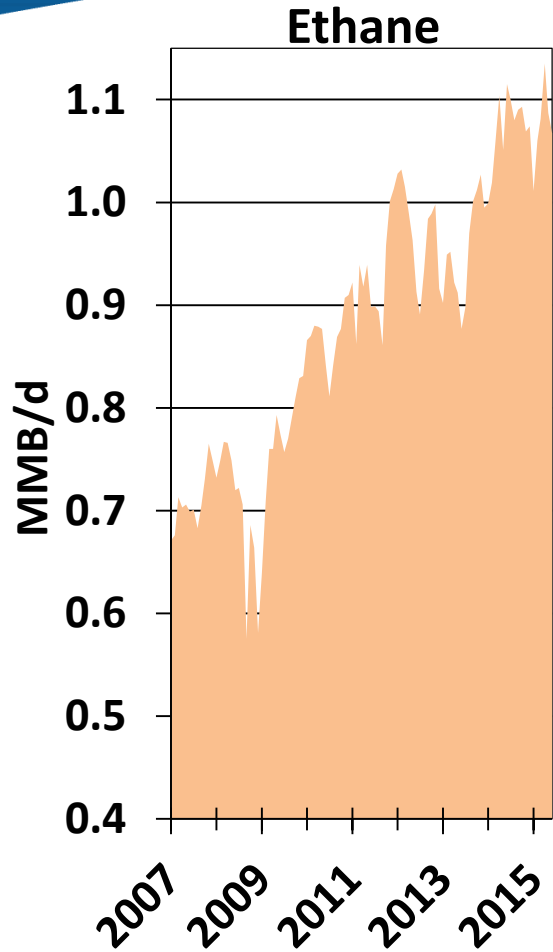
U.S. Production of Gas, Crude Oil, and NGLs



*LPG = Propane & Butane

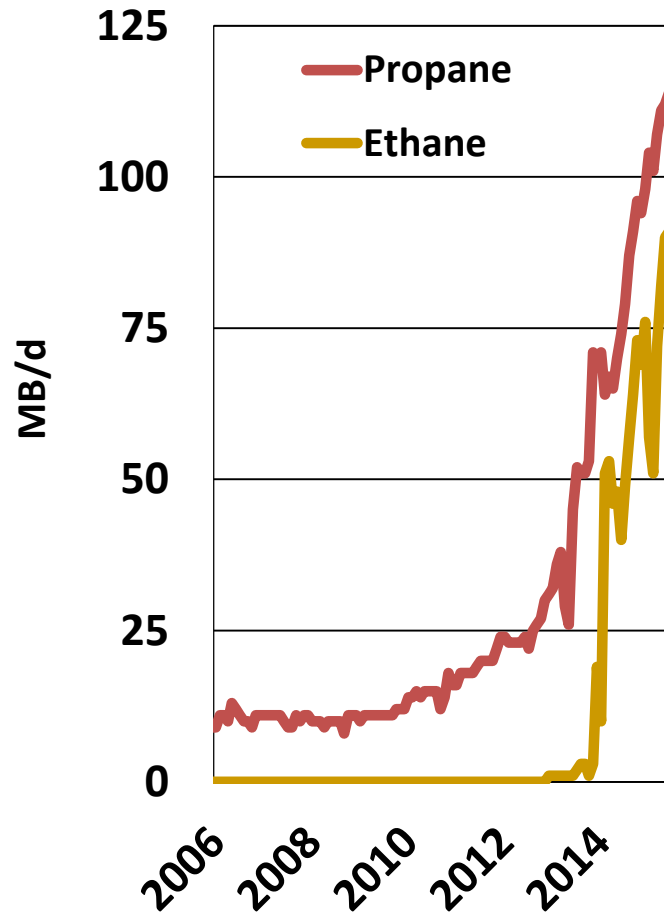
U.S. NGL Production

From Natural Gas Processing

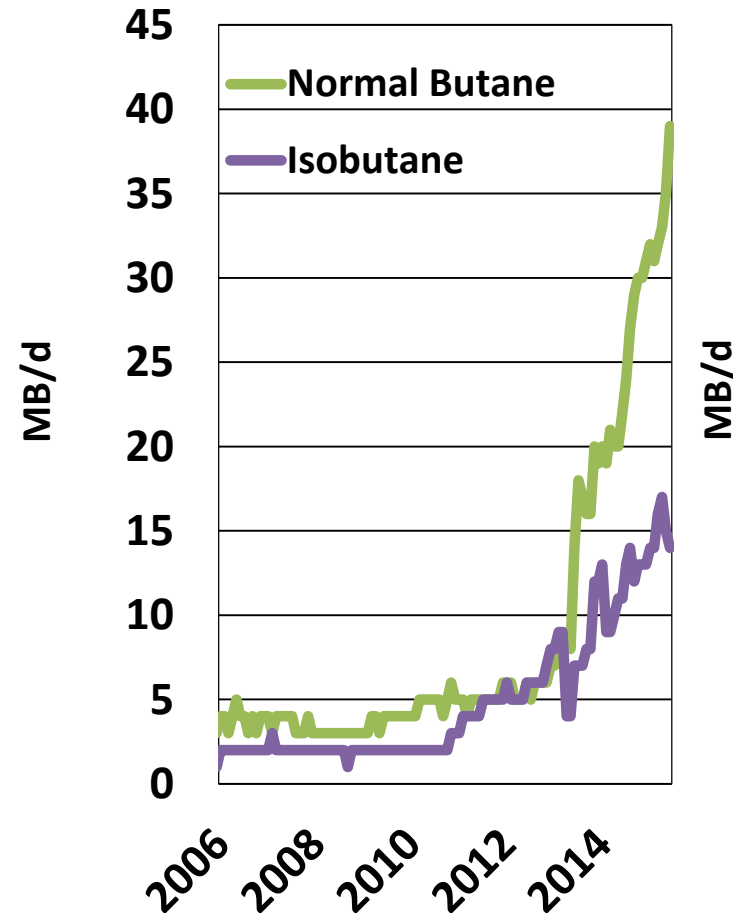


PADD 1 (Northeast) Gas Plant NGL Production Through June 2015

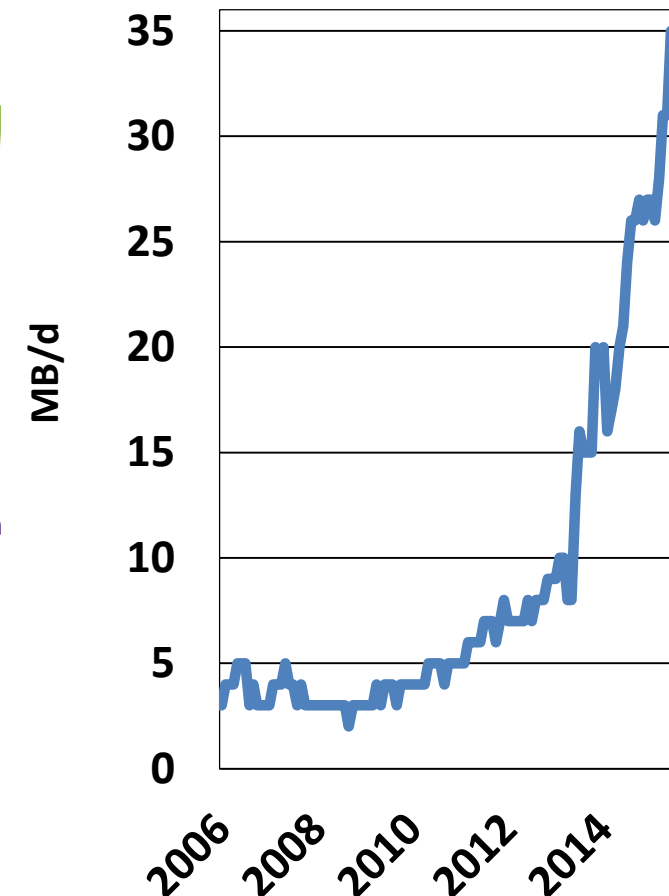
Ethane and Propane



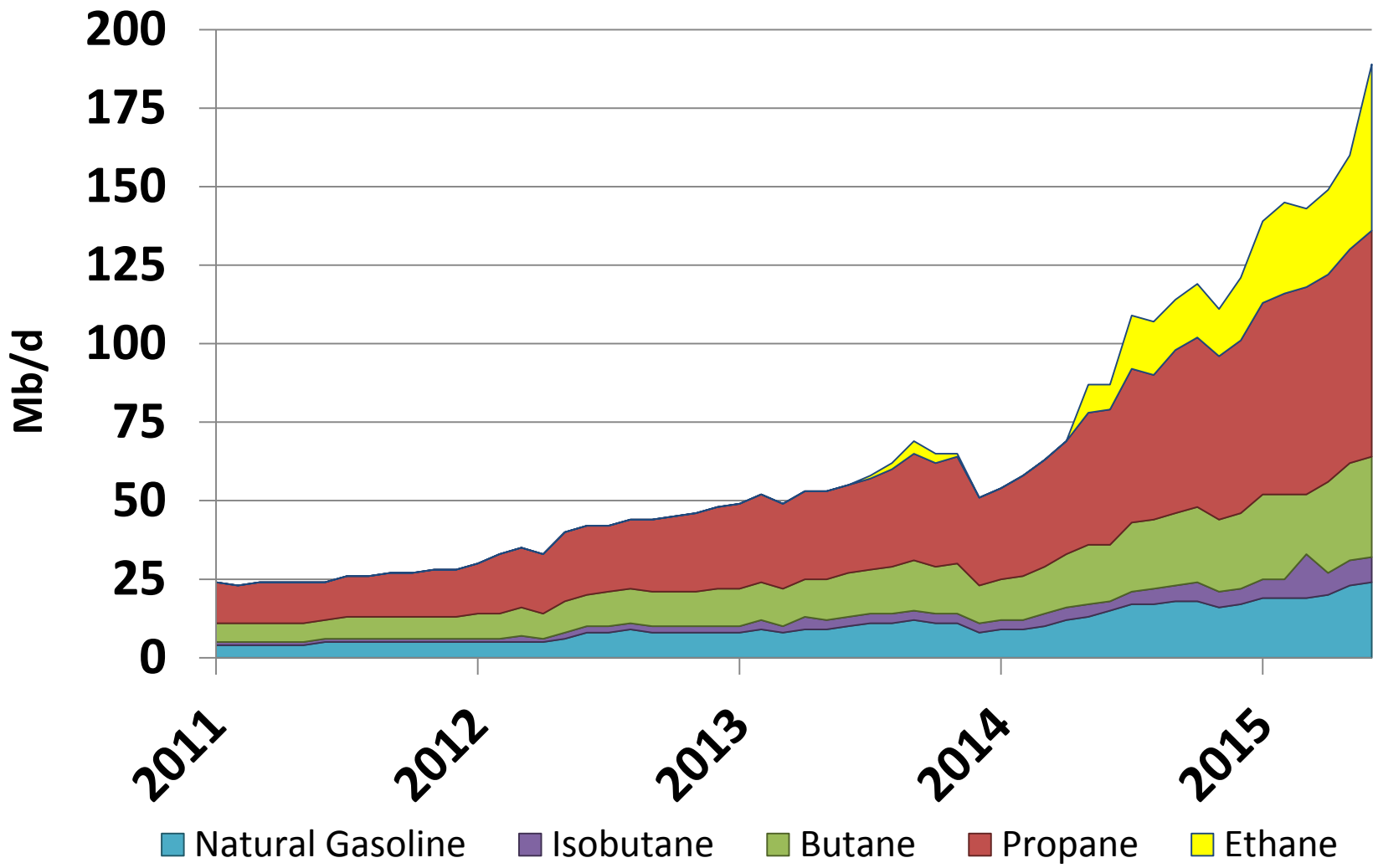
Butanes



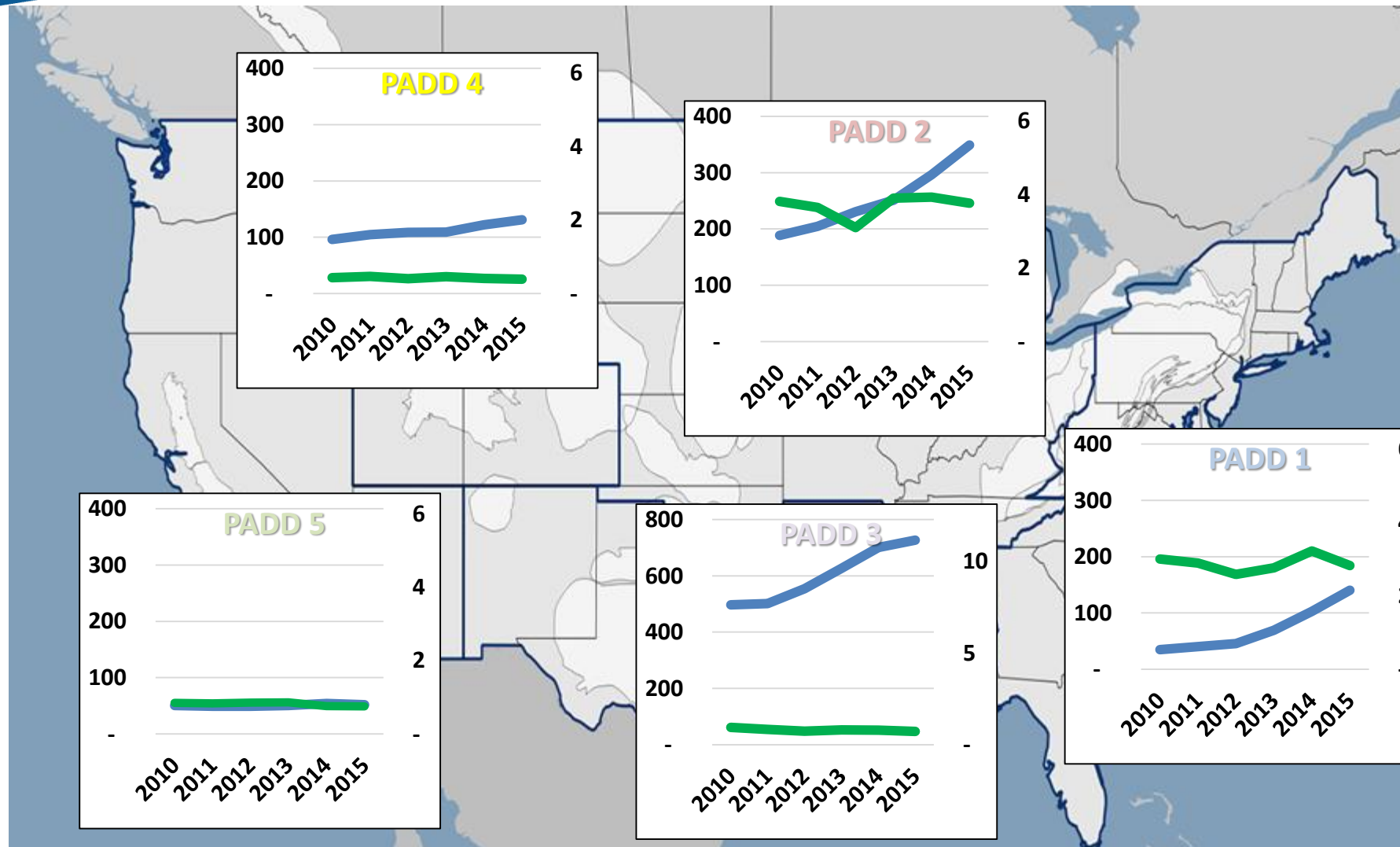
Pentanes+



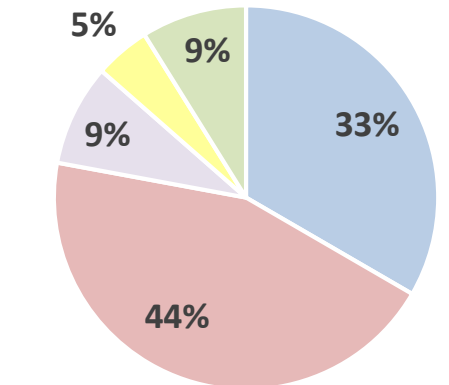
North Dakota Williston Basin Production: EIA MN,WI,ND,SD SubPADD NGL Production Through June 2015



Annual Propane Production and Consumer Demand



Projected 2015 Consumer Demand



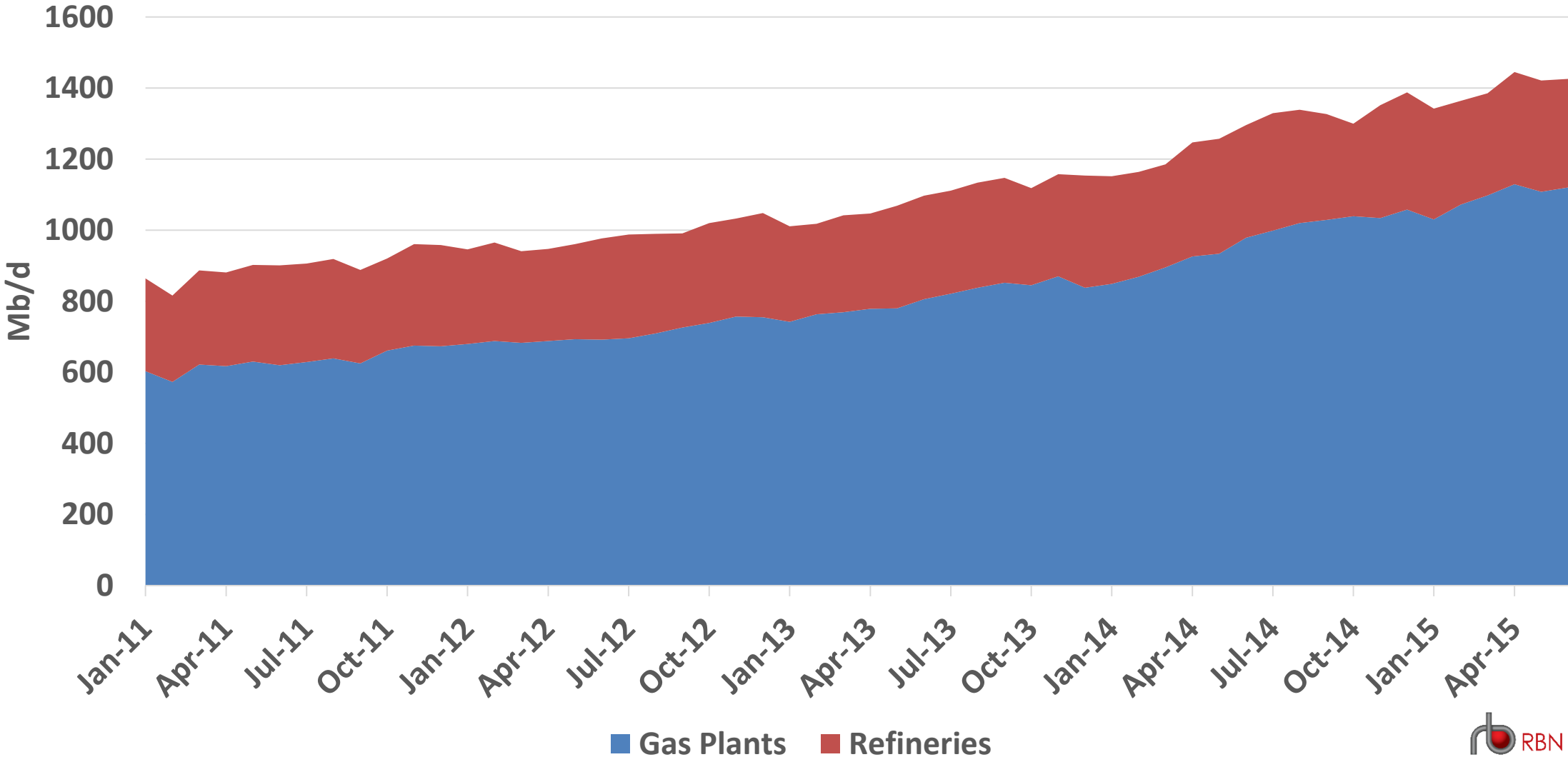
■ PADD 1 ■ PADD 2 ■ PADD 3
■ PADD 4 ■ PADD 5

— Consumer Market
— Production

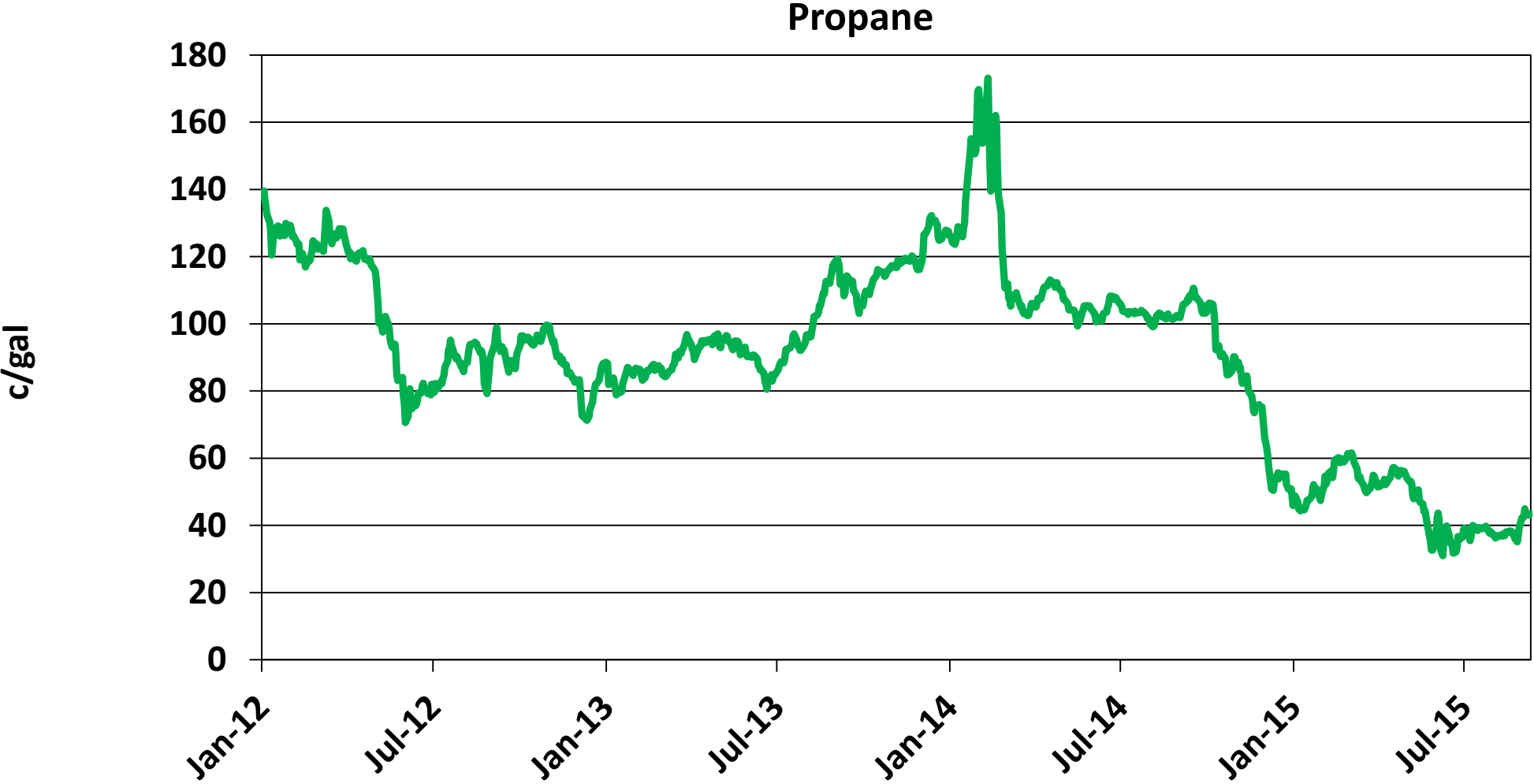
Lft Axis - Bbl/d Rt - Billions g/y
 Production = refinery & gas plant propane



U.S. Gas Plant and Refinery Supply of Propane



Mont Belvieu Propane Prices 2012-15 YTD



Propane Prices 2012-15 YTD

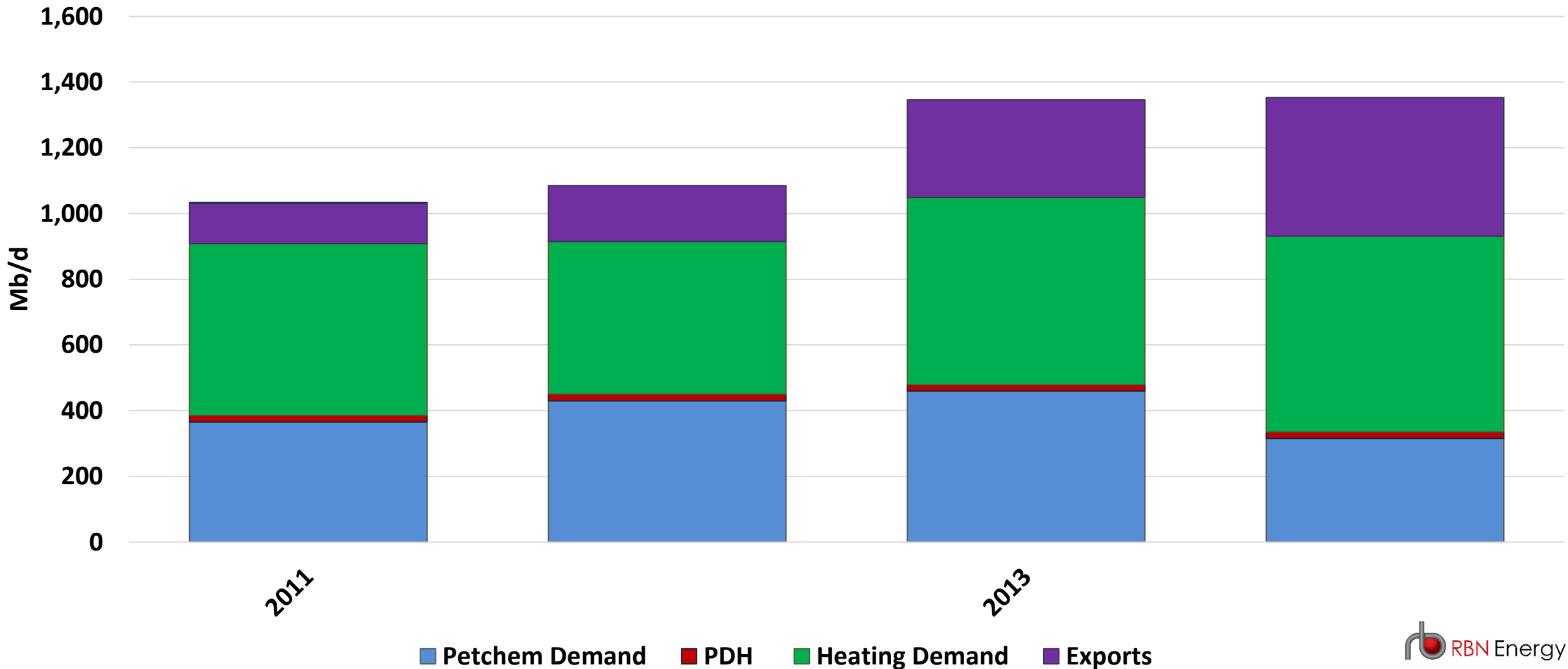
Mont Belvieu



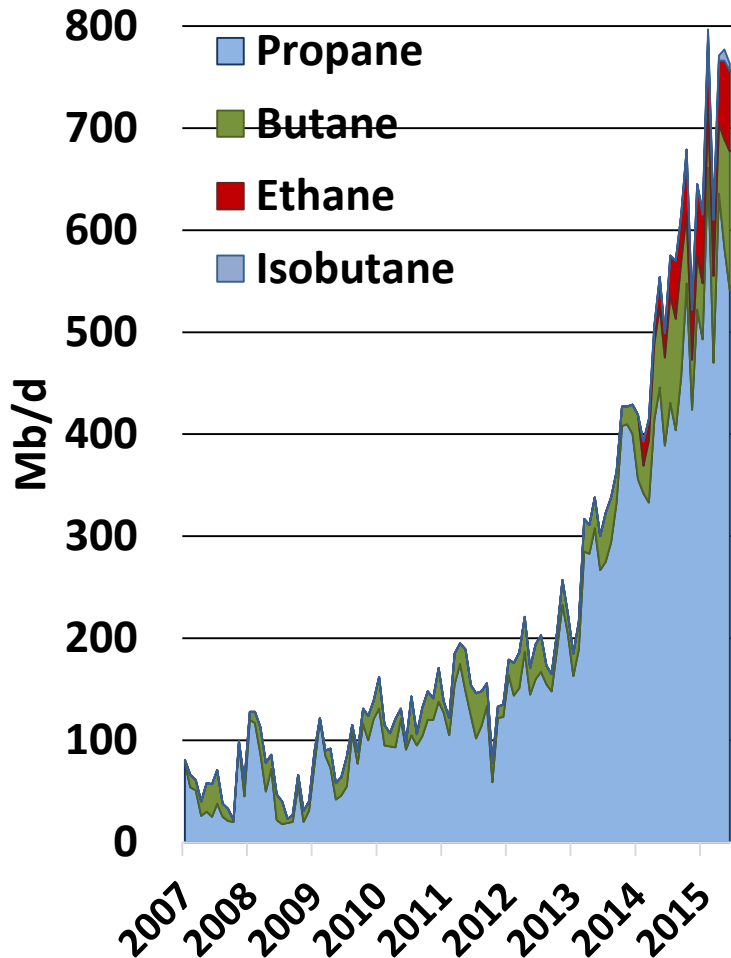
Conway



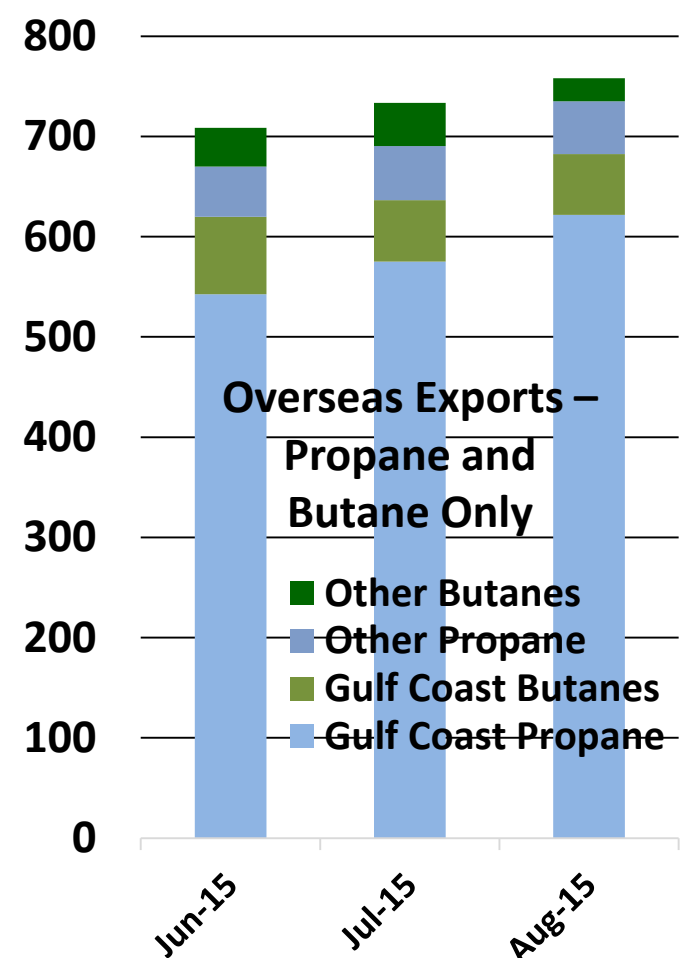
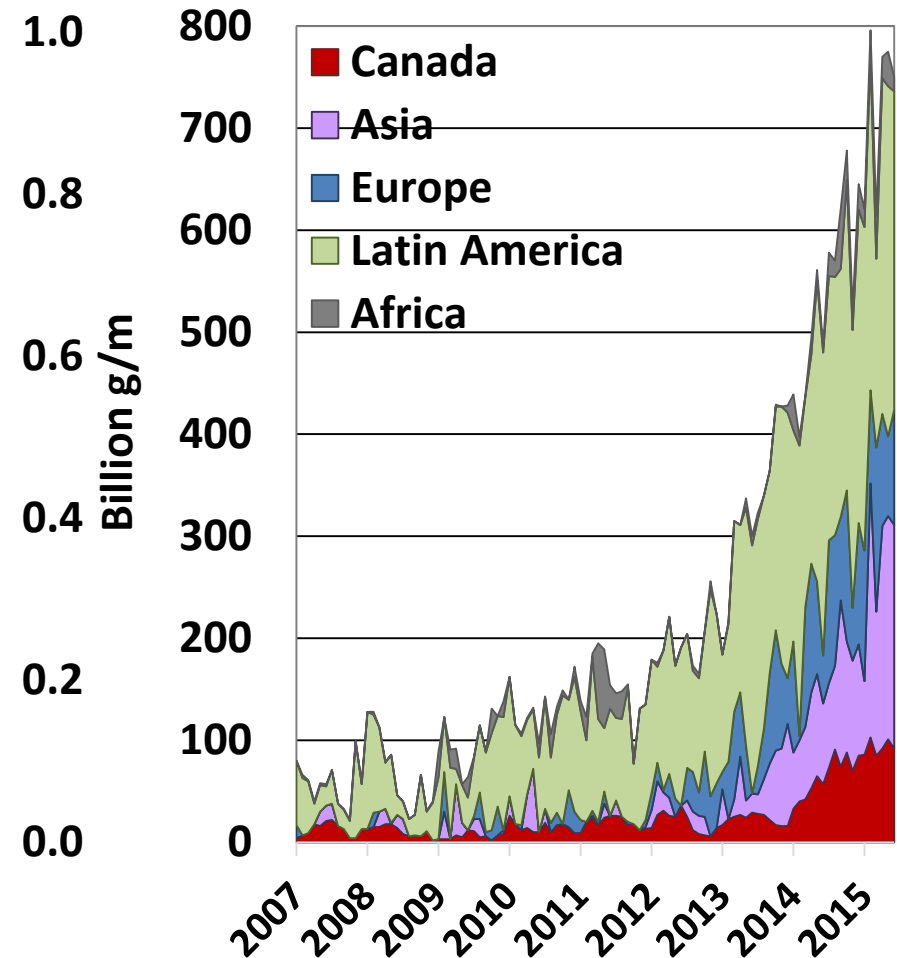
U.S. Propane Market Developments 2011 to 2014



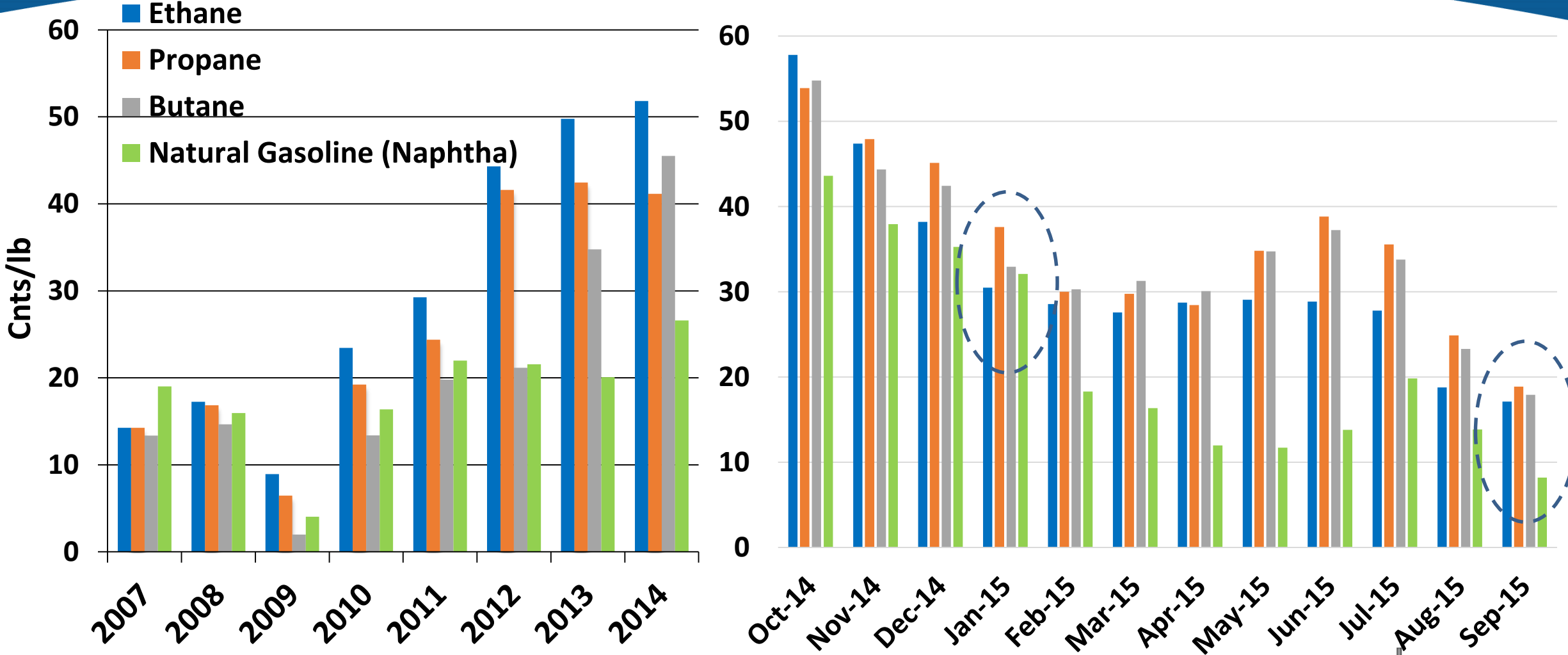
U.S. LPG Exports



Total Overseas, Pipeline, Rail and Truck exports, includes Ethane

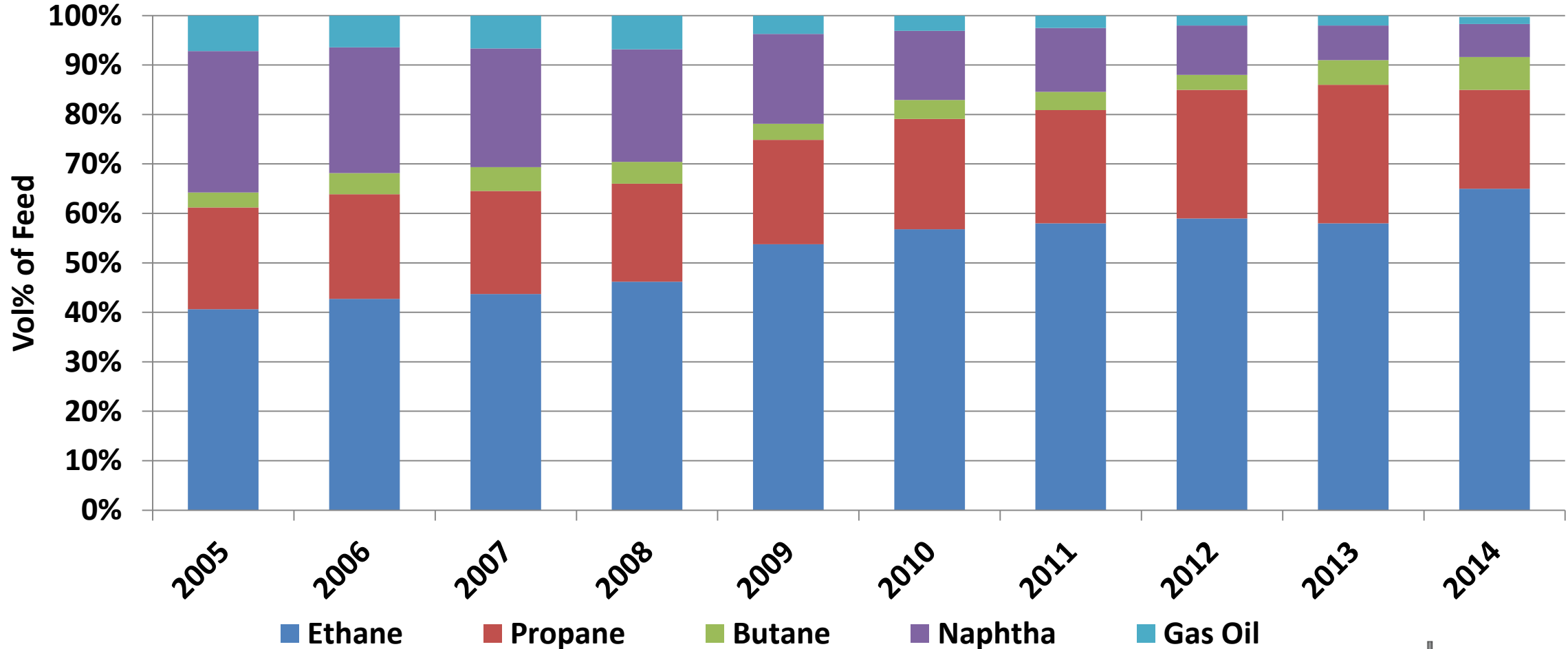


Petrochemical Cracker Margins 2007 - 09/2015

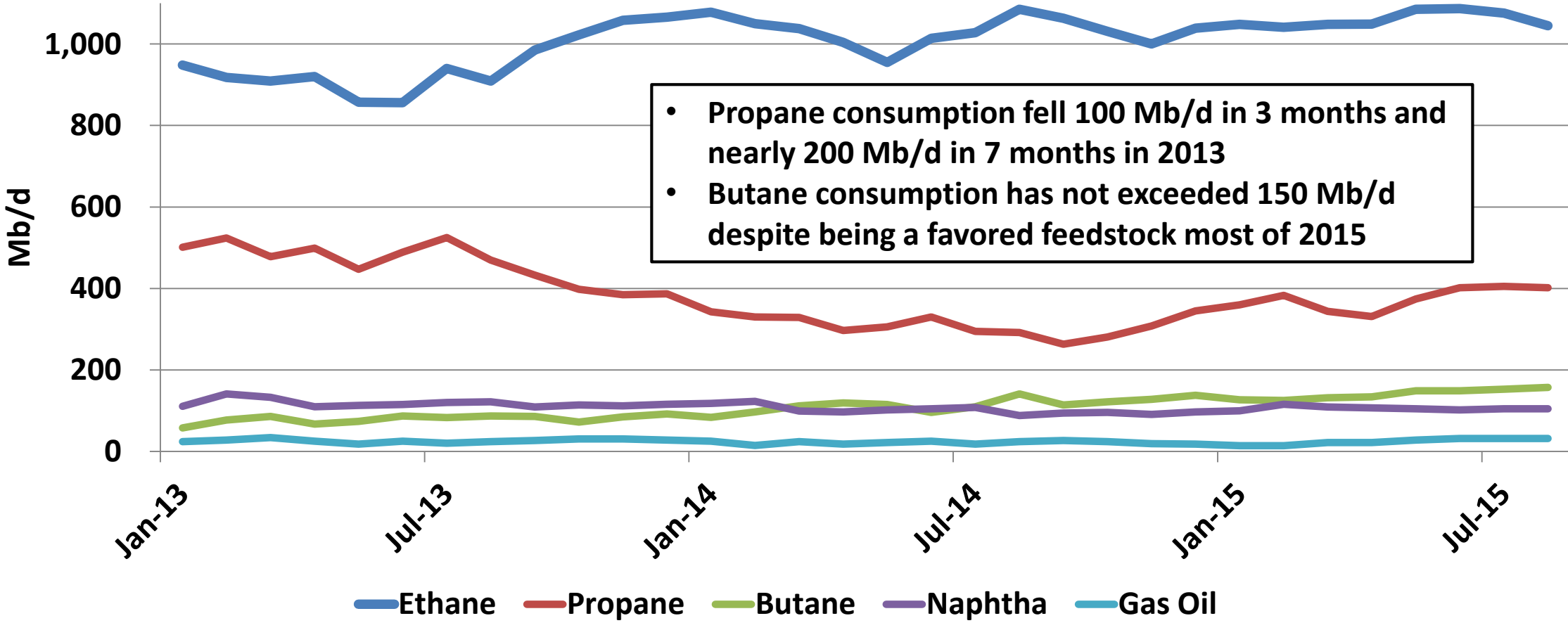


Percent of U.S. Feedstocks

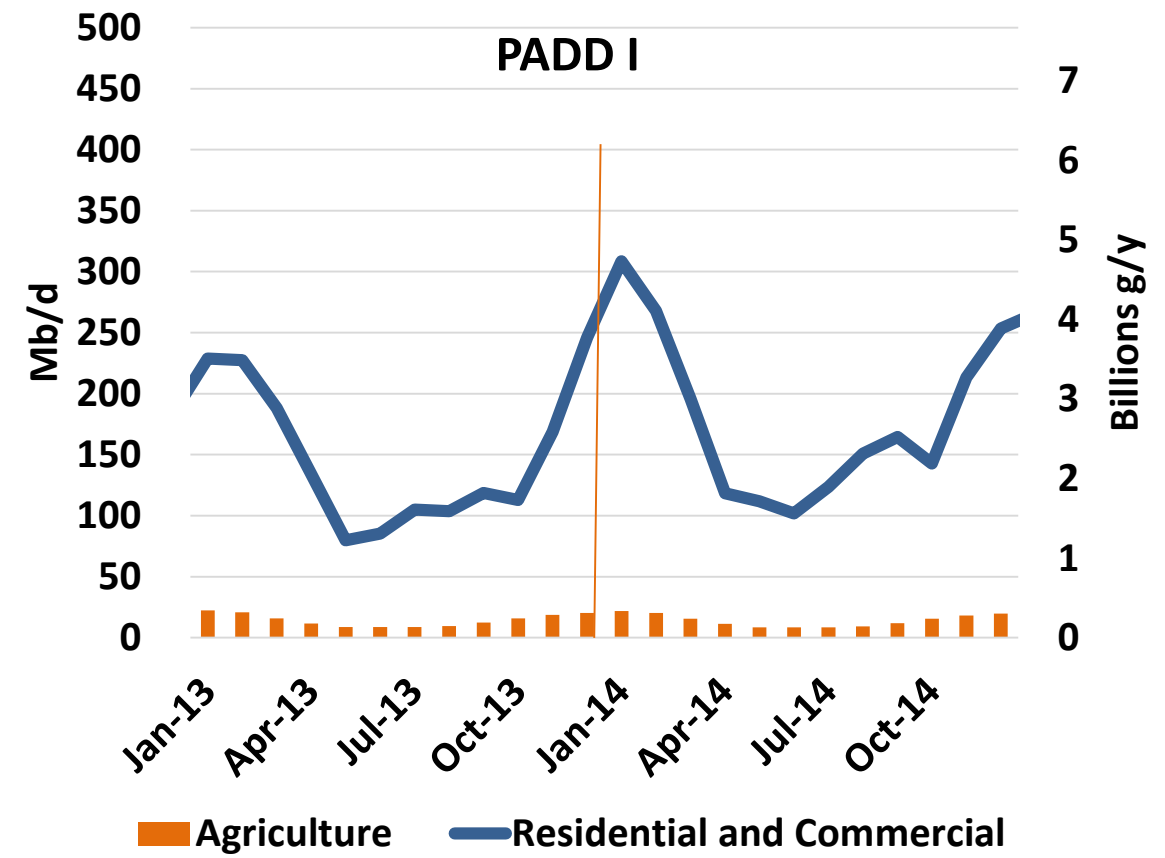
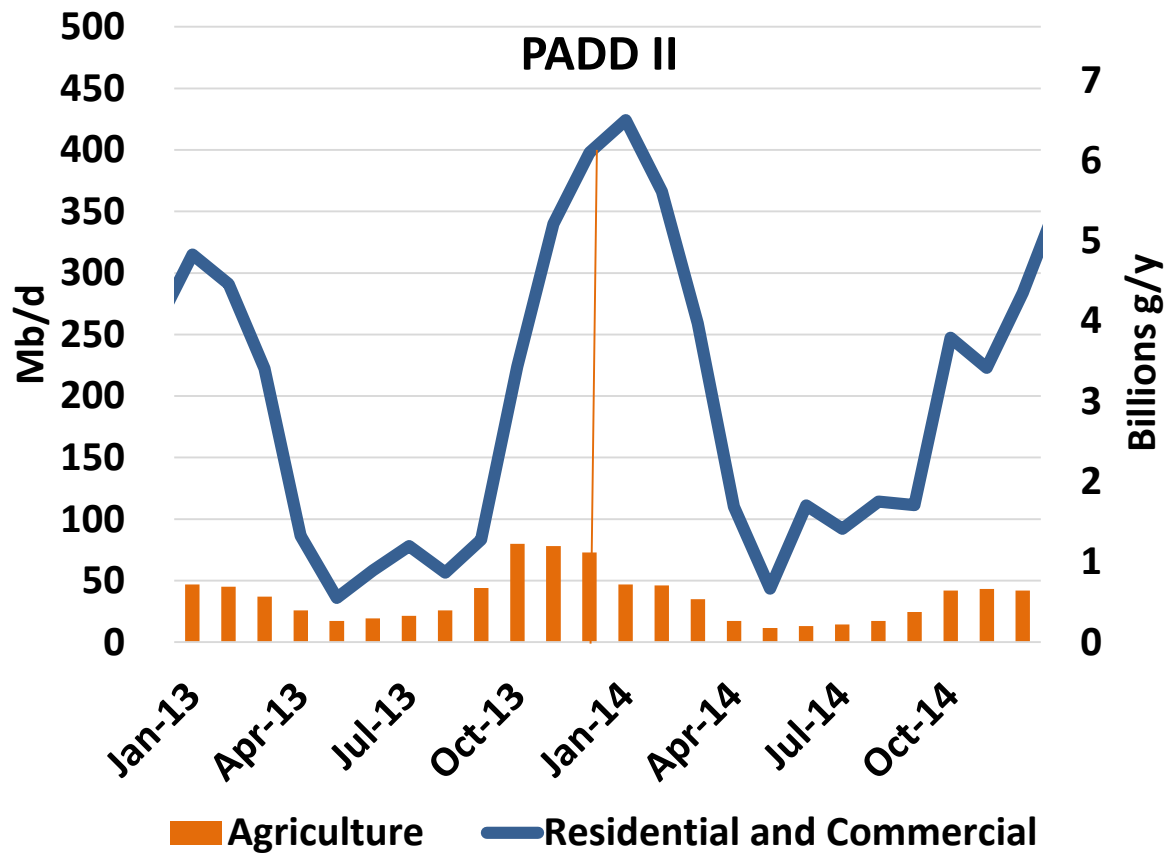
U.S. Ethylene Feedstocks



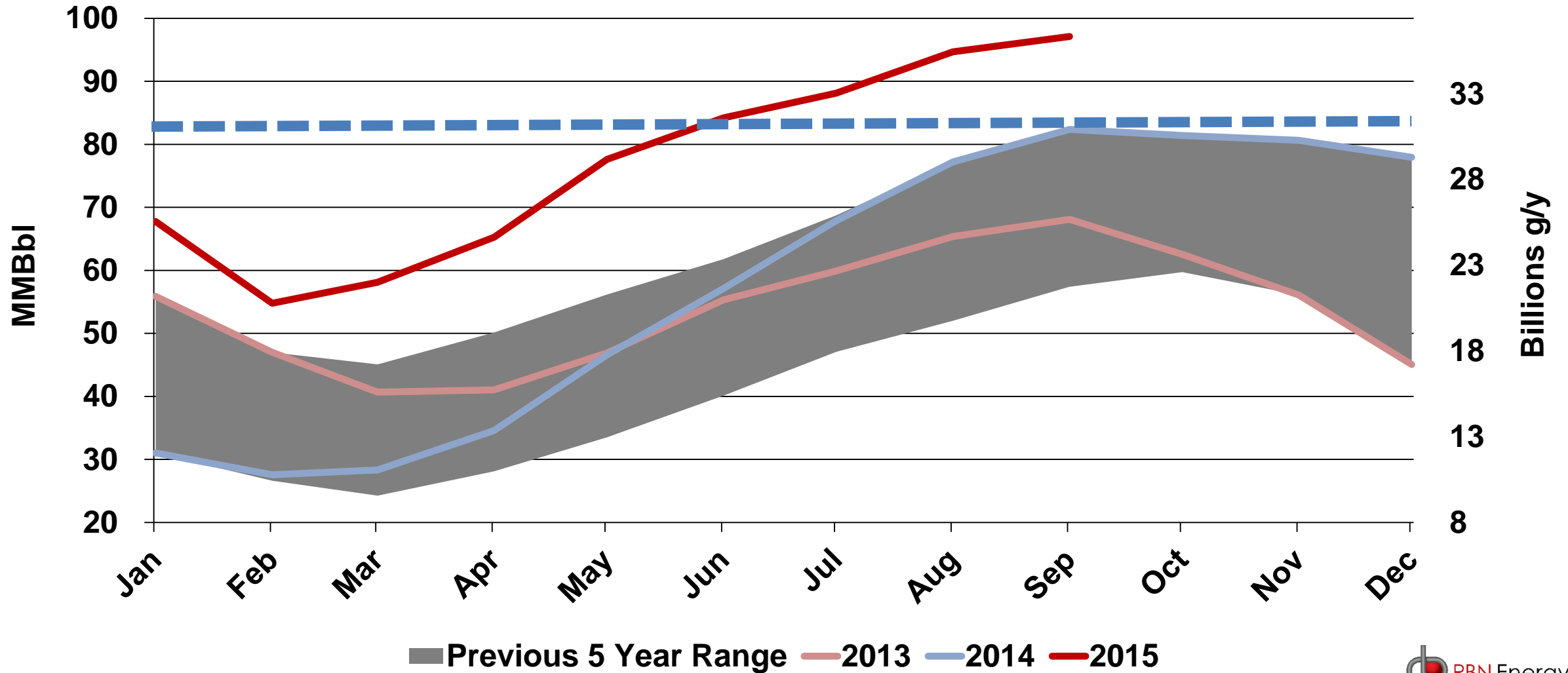
Flexible Steam Crackers Can Switch Feedstocks Relatively Quickly as Market Dynamics Shift



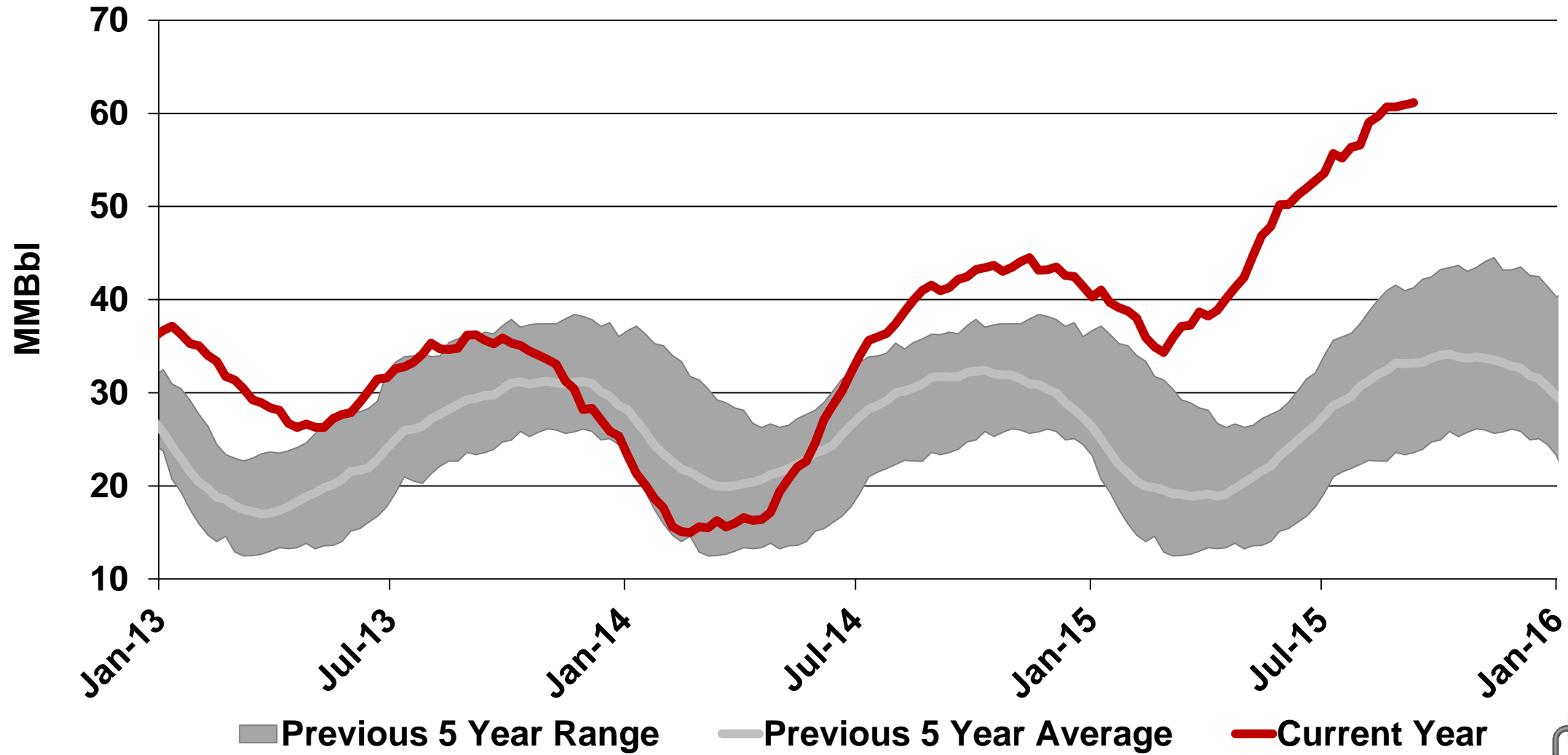
The Perfect Storm: Res/Com Propane Demand 2013-14



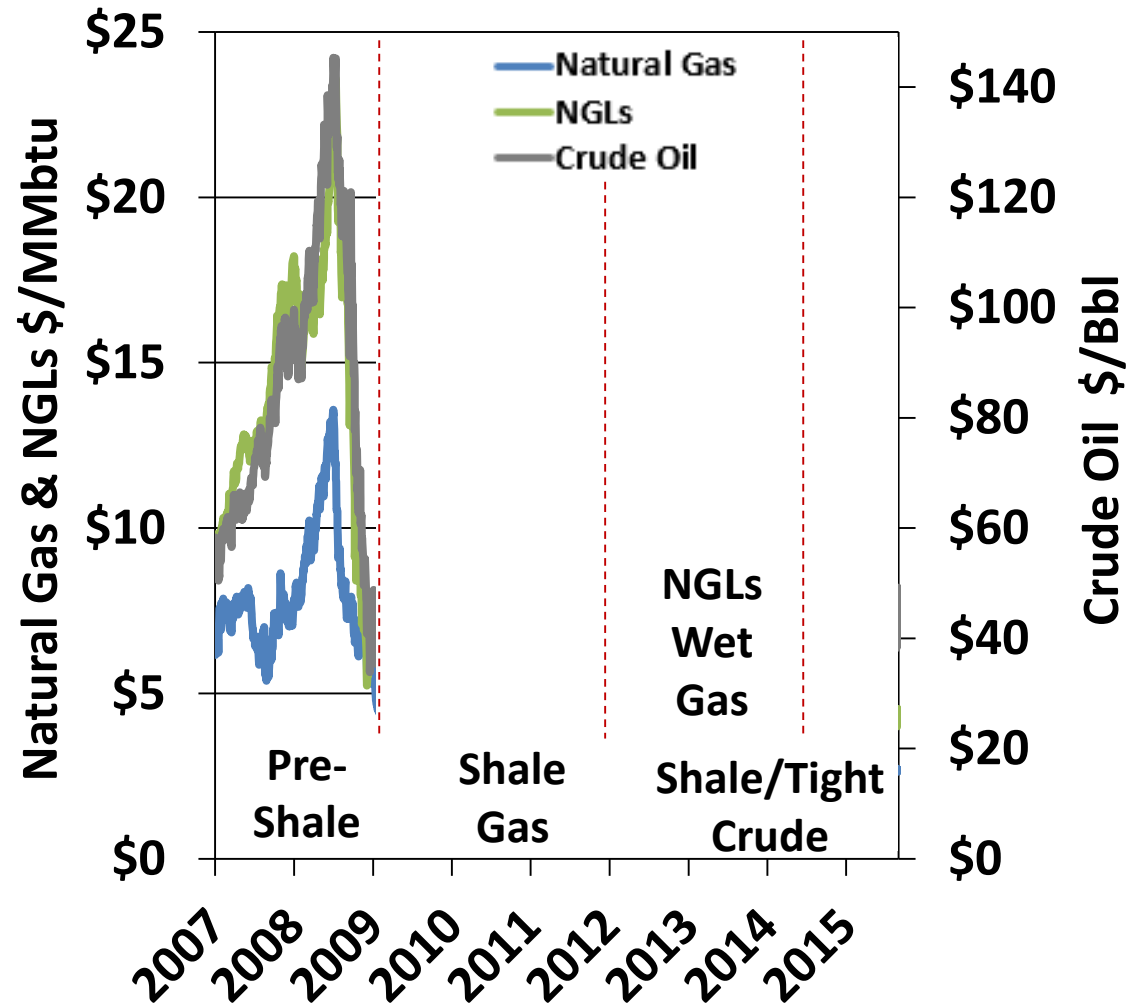
U.S. Propane Stocks



PADD III Propane Stocks

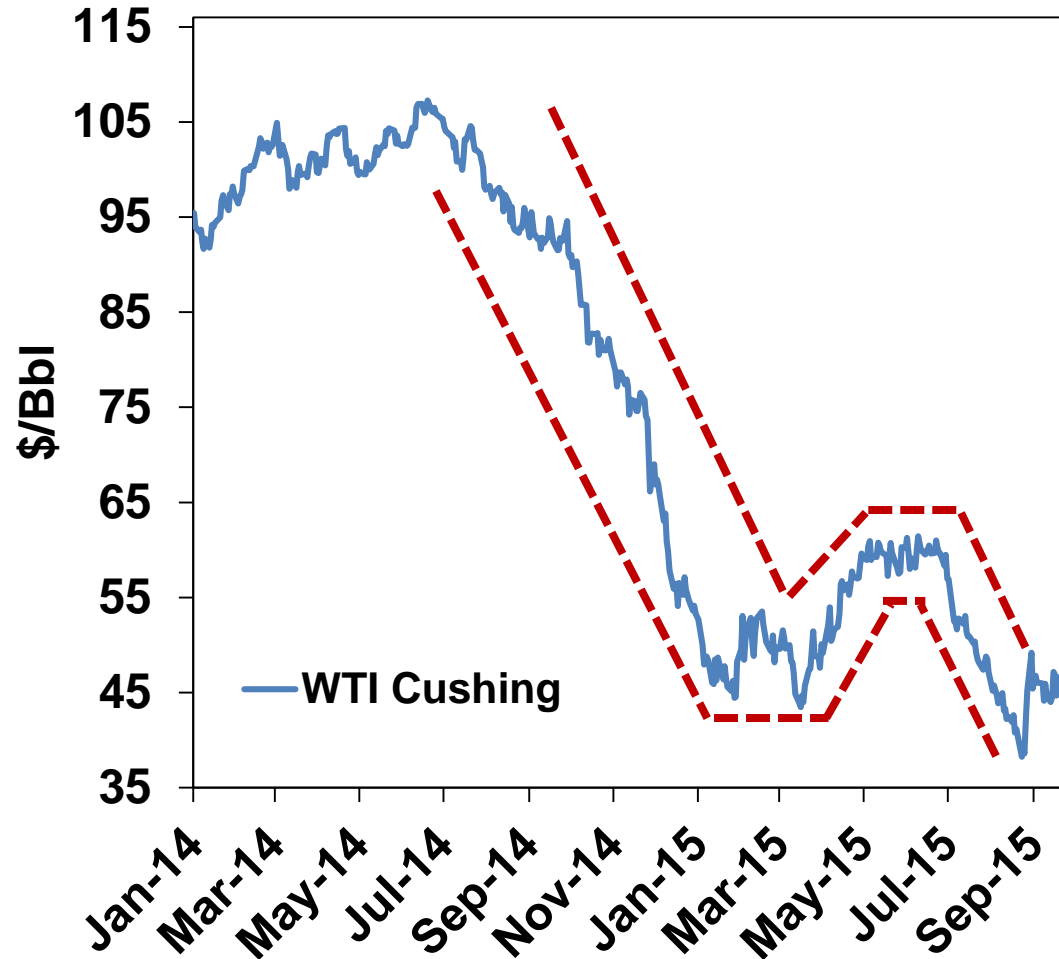


U.S. Crude Oil, Natural Gas and NGL Prices



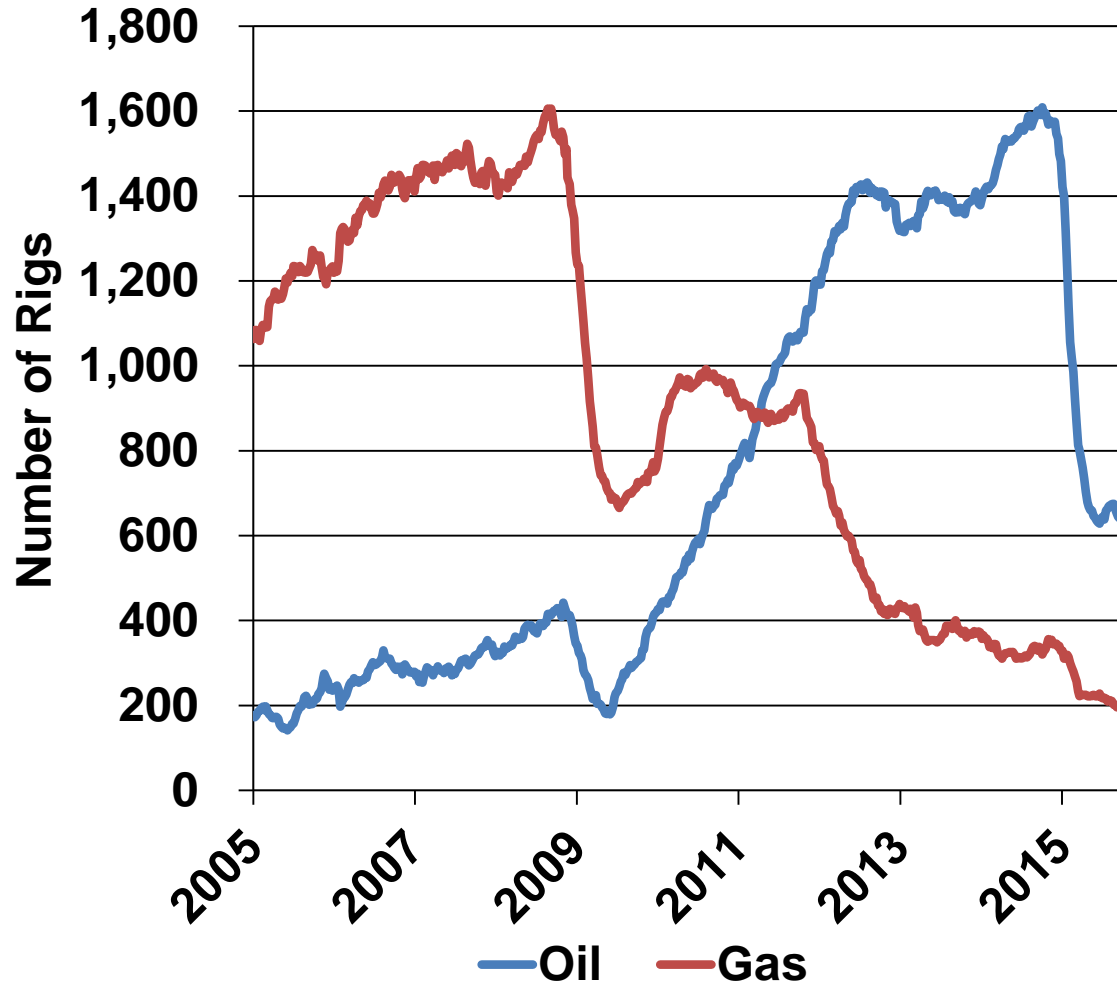
» Supply surpluses put downward pressure on prices, first in natural gas markets, then NGLs and finally crude oil

The New Reality!



- » Crude oil prices were down 60% from June 2014 to Feb 2015
- » Then up 30% from Feb 2015 to May 2015
- » Range-bound at about \$60/bbl during Summer
- » Then collapsed again into the \$40s

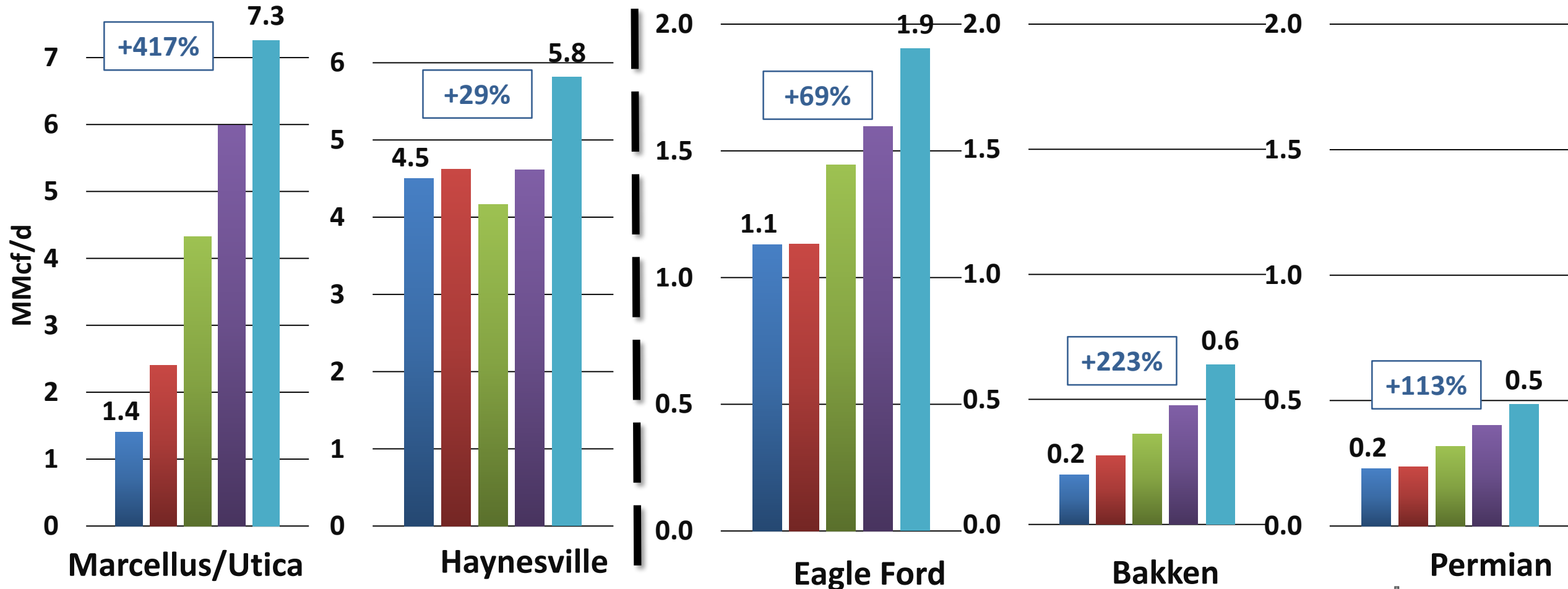
U.S. Rig Counts: Crude & Gas



- » Crude rig count down 932 since November 2014 when it was 1,572
- » Natural gas rig below 400 for 2 years, now at 197

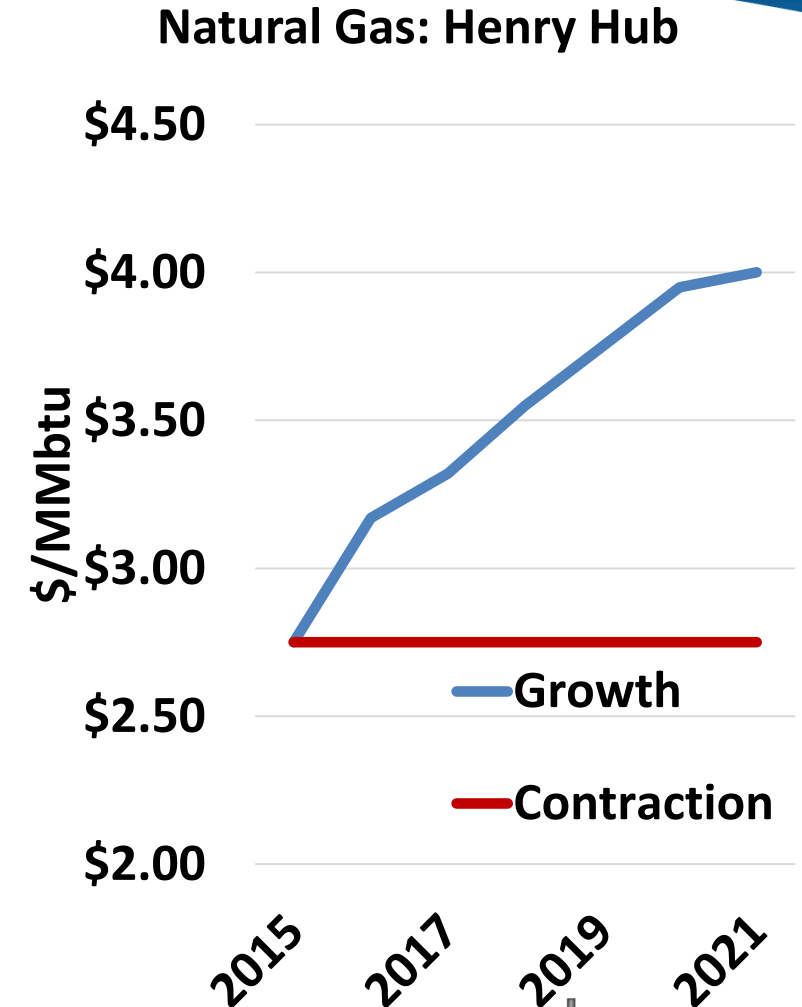
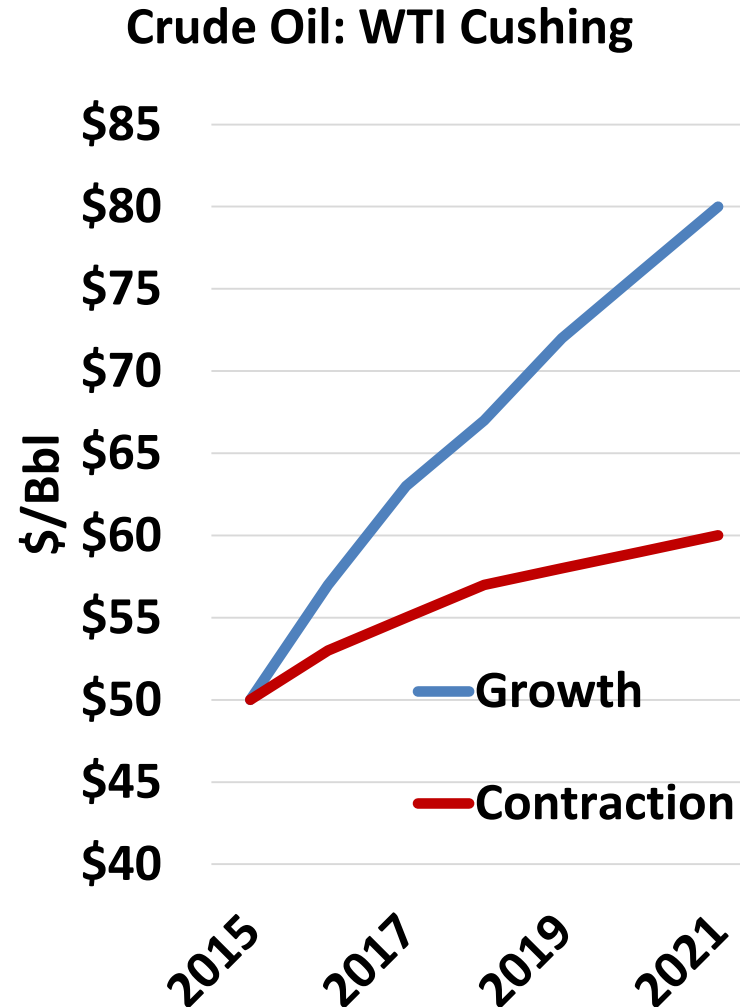
Gas Production Added Per Rig

■ 2011 ■ 2012 ■ 2013 ■ 2014 ■ 2015

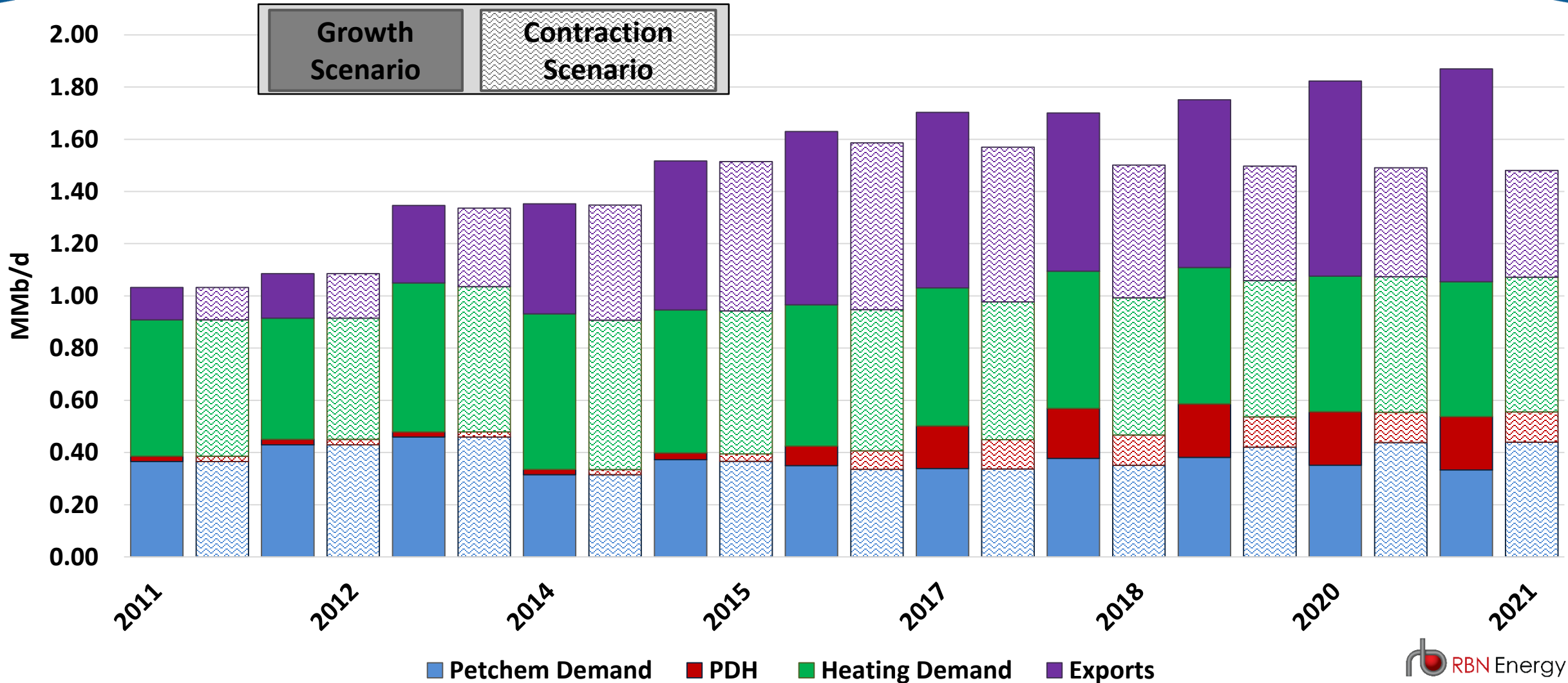


Five Year Crude and Gas Price Scenarios

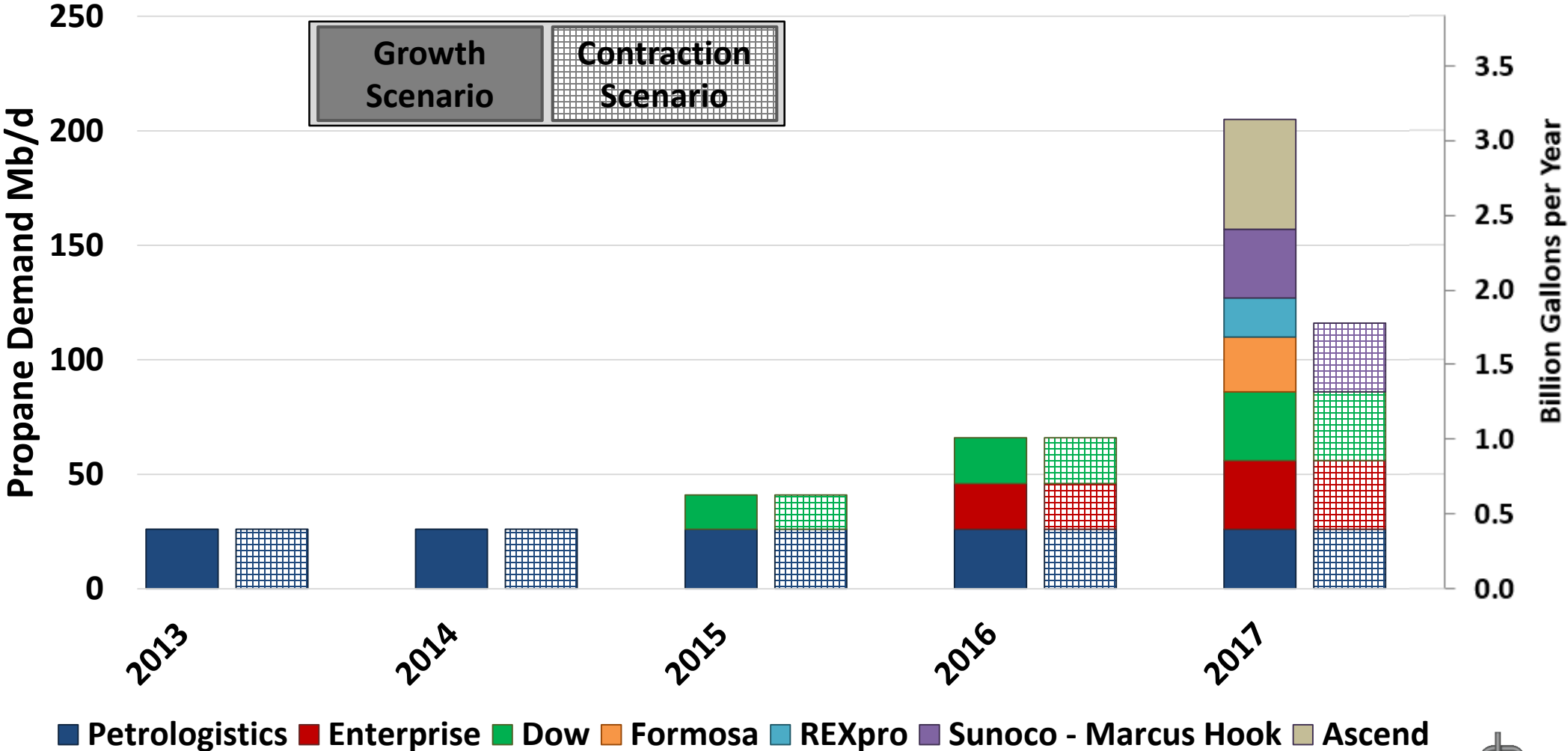
- » **Growth Scenario -- WTI** prices return to the \$80/bbl range by 2021; Natural gas increases to \$4.00/MMbtu
- » **Contraction Scenario -- WTI** prices increase, but only to average \$60/bbl in 2021; Natural gas prices flat at \$2.75/Mmbtu
- » **Note:** These are not forecasts; nor are they high and low cases. They are possible scenarios used to understand market responses



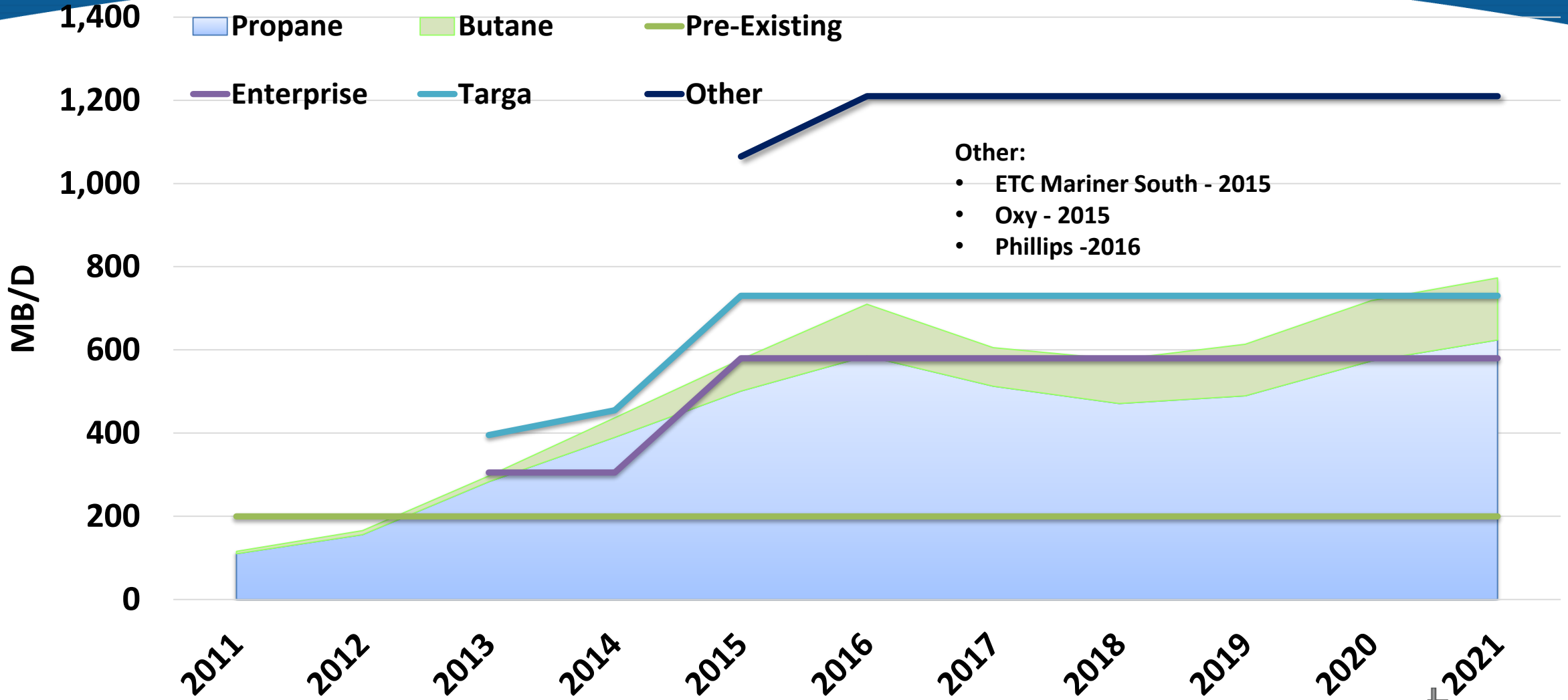
U.S. Propane Market Length to be Relieved by Petrochemical Demand and Exports



Propane Dehydrogenation Capacity



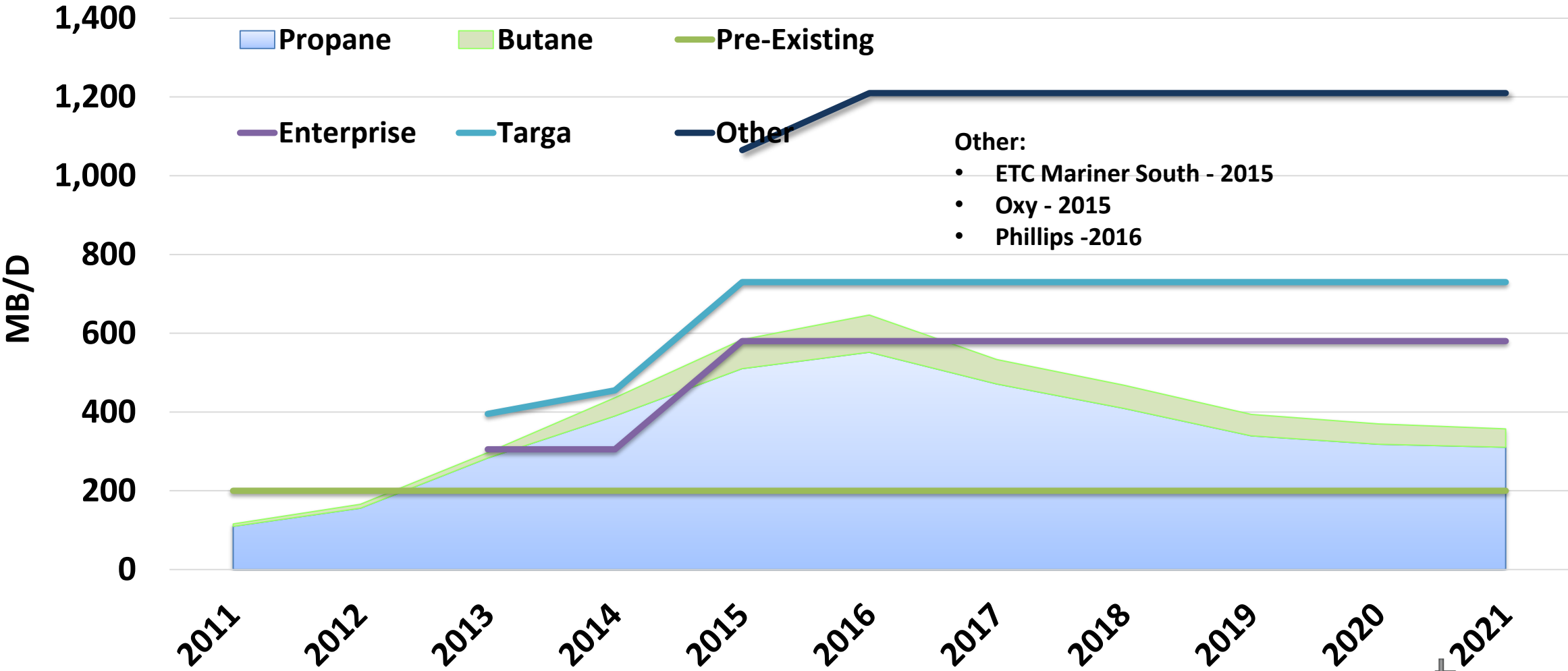
Growth Case - Gulf Coast LPG Export Capacity vs. Gulf Coast Export Volumes



Other:

- ETC Mariner South - 2015
- Oxy - 2015
- Phillips -2016

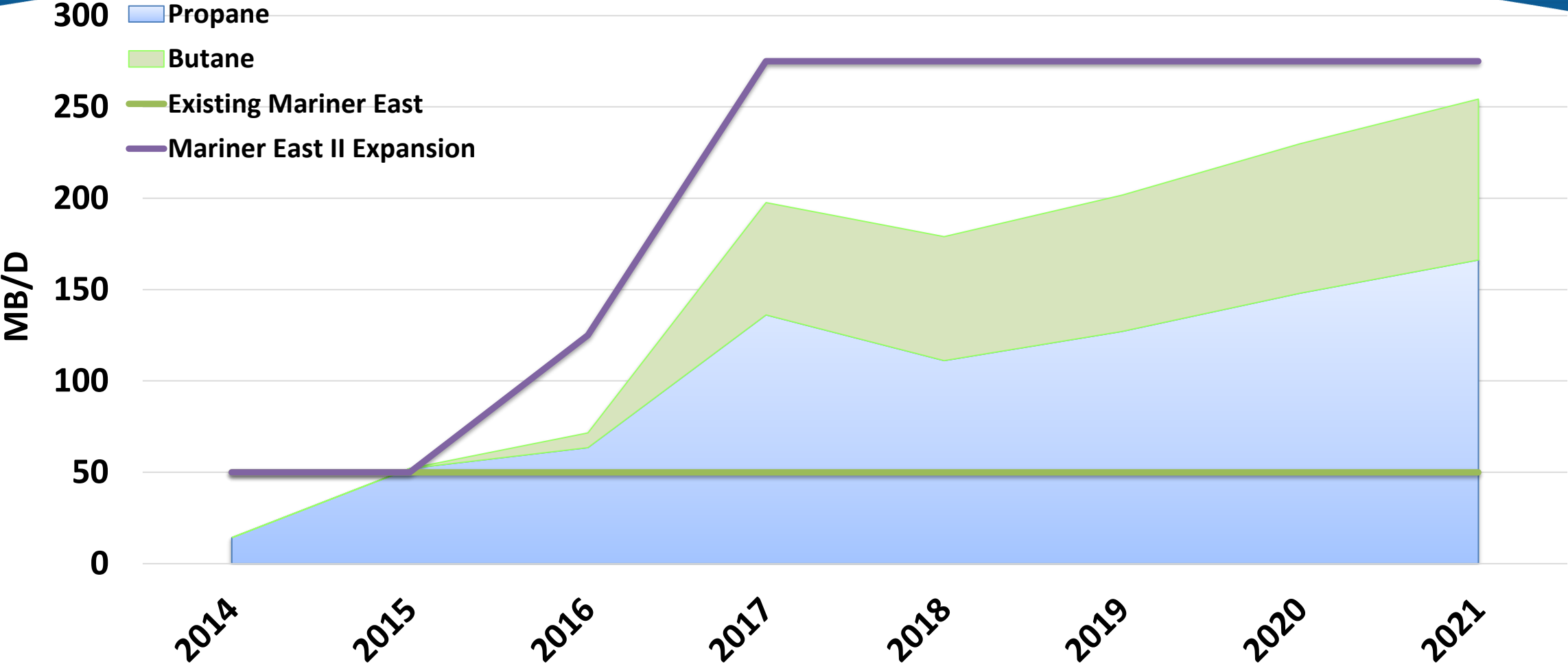
Contraction Case - Gulf Coast LPG Export Capacity vs. Gulf Coast Export Volumes



Other:

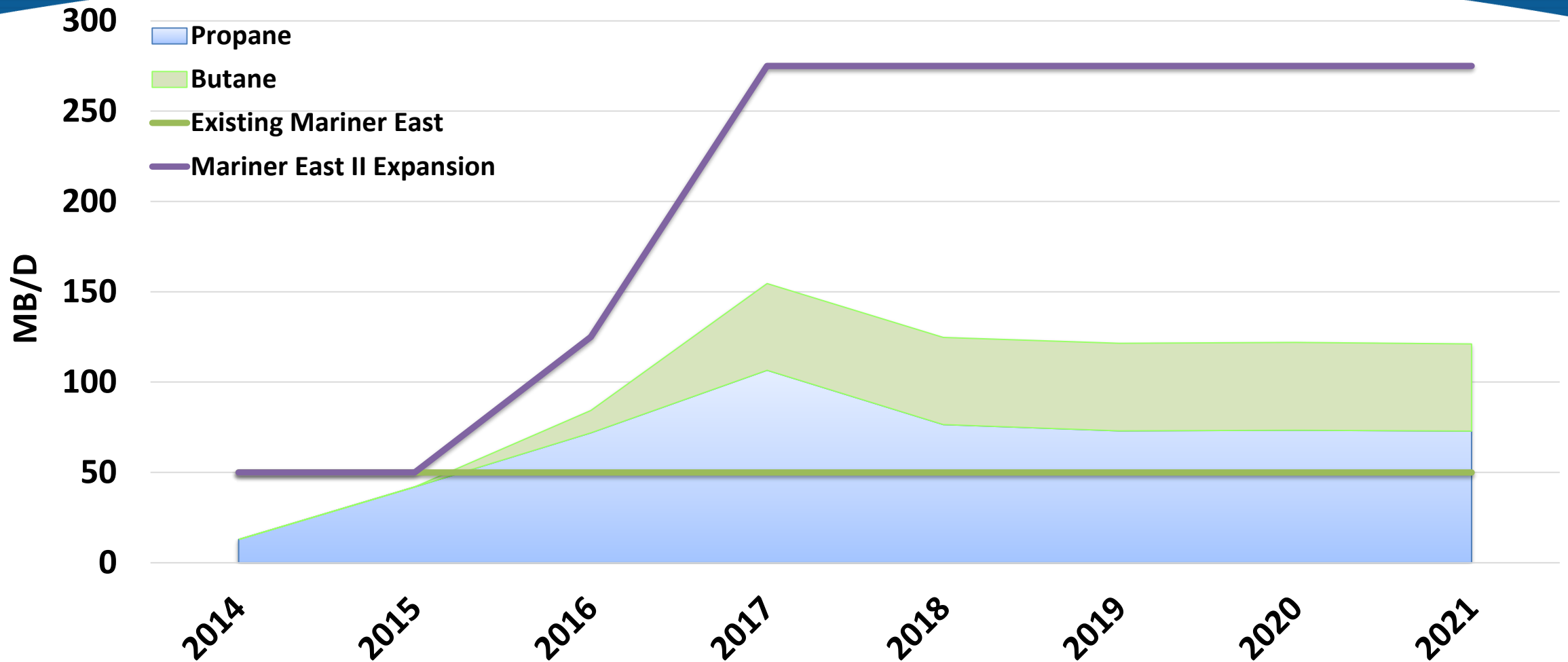
- ETC Mariner South - 2015
- Oxy - 2015
- Phillips -2016

Marcus Hook LPG Export Capacity vs. Volumes - Growth



* Contracted and forecasted ethane volumes removed from capacity and volumes

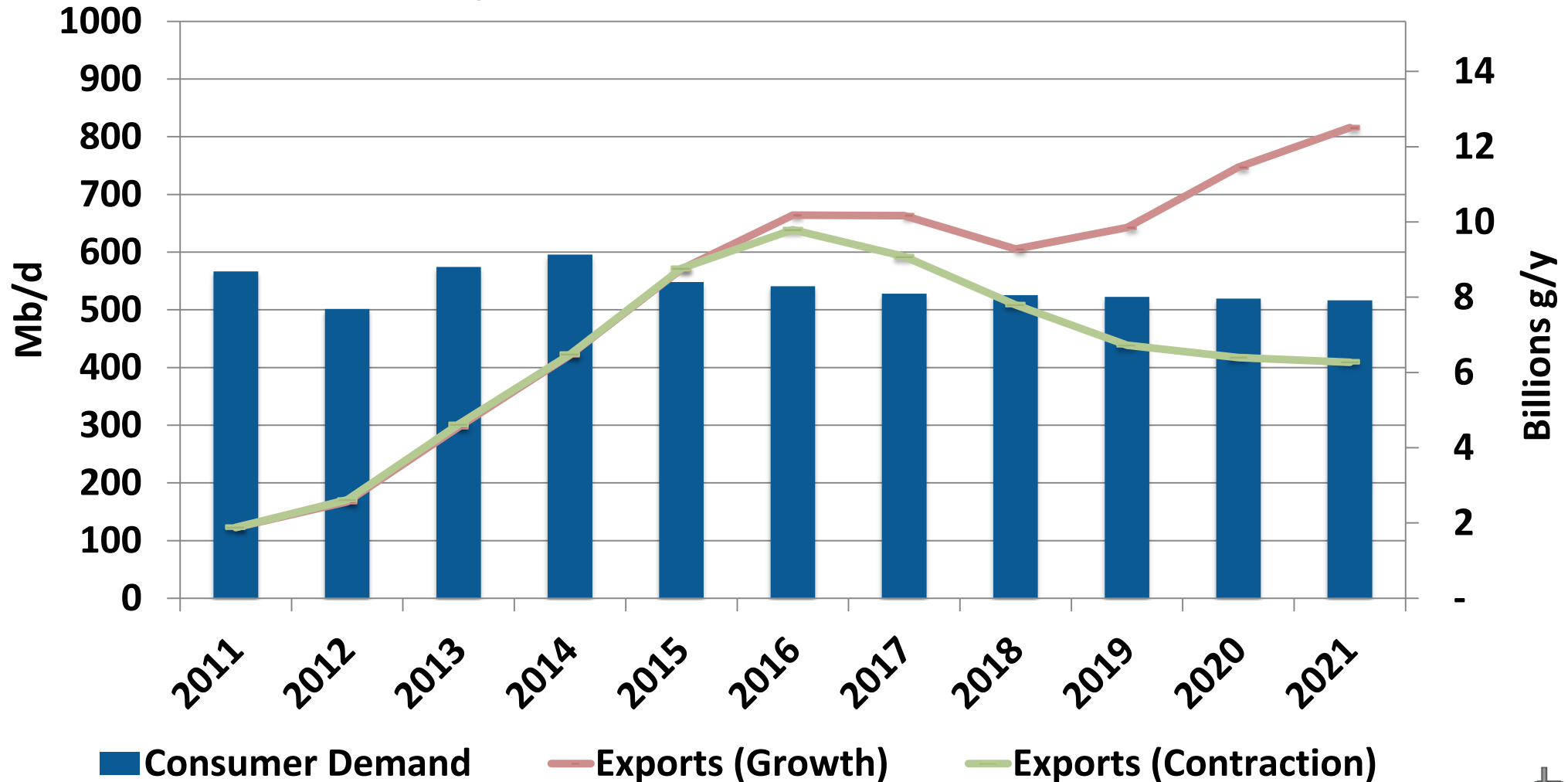
Marcus Hook LPG Export Capacity vs. Volumes - Contraction



* Contracted and forecasted ethane volumes removed from capacity and volumes

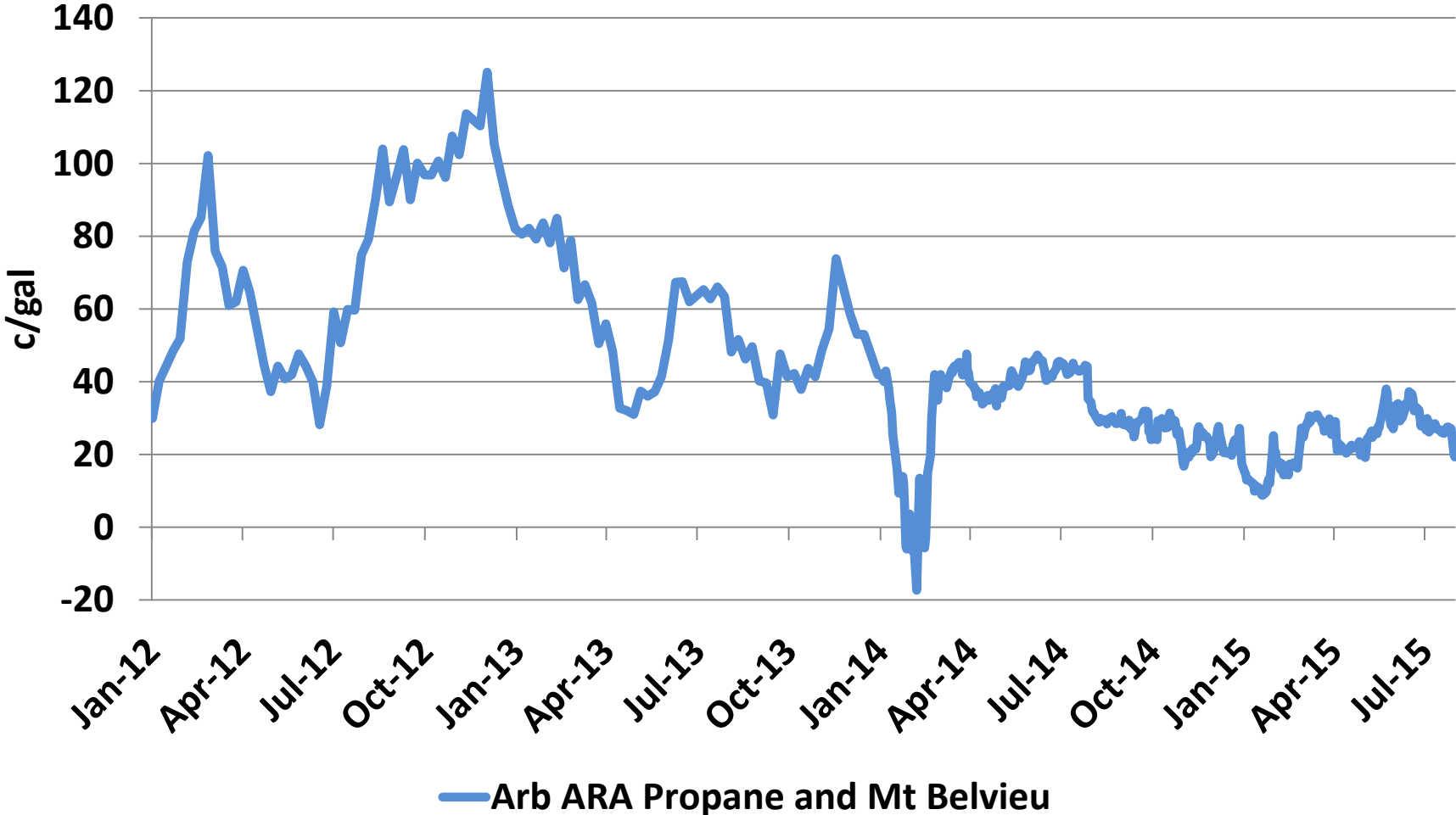
Retail Propane vs. International Exports

Impact of Crude Oil Price Scenarios



Propane Arbs 2012-2015

Europe ARA - Mt Belvieu



U.S. LPG Export Terminal Contracts

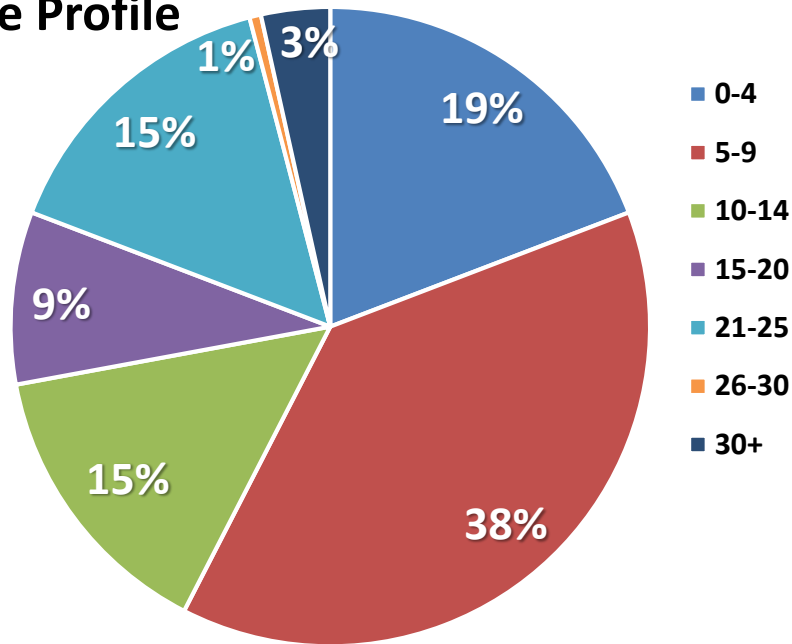
- » **Rates:** Loading rates have varied over the last 3 years and are dependent on market conditions when the contracts are negotiated. Long term rates at Enterprise and Targa ranged from 14 – 20 cents per gallon for contracts negotiated before the market decline in late 2014. Current rates are 8 – 10 cents per gallon.
- » **Term:** LPG export terminal contracts vary in length from a minimum of 1 year to as long as 10 years. Terms have been getting shorter; typical term today is 1-3 years. These term contracts usually have an evergreen rollover provision with a cancellation notice period of 60-90 days.
- » **Commitment:** Export term contracts are negotiated on a take or pay basis for the total volume commitment. The penalties for cancellation can have a decreased liability dependent on the time of notification before the loading window. (e.g., 45 days notice 75% penalty, 30 days notice 80% penalty, 15 days notice 90% penalty, less than 15 days 100% of the contract).
- » **Seasonality:** Most LPG export contracts are not affected by seasonal demand since they are with year round end users. (ethylene crackers, PDH plants, cooking/auto, or power generation).
- » **Panama Canal:** The most dramatic change in LPG exports will occur in mid 2016 with the opening of the new expansion of the Panama Canal. This will allow VLGC vessels to traverse the canal for voyages to the Far East. Currently only a specialized Panamax vessel can go through the Panama Canal.



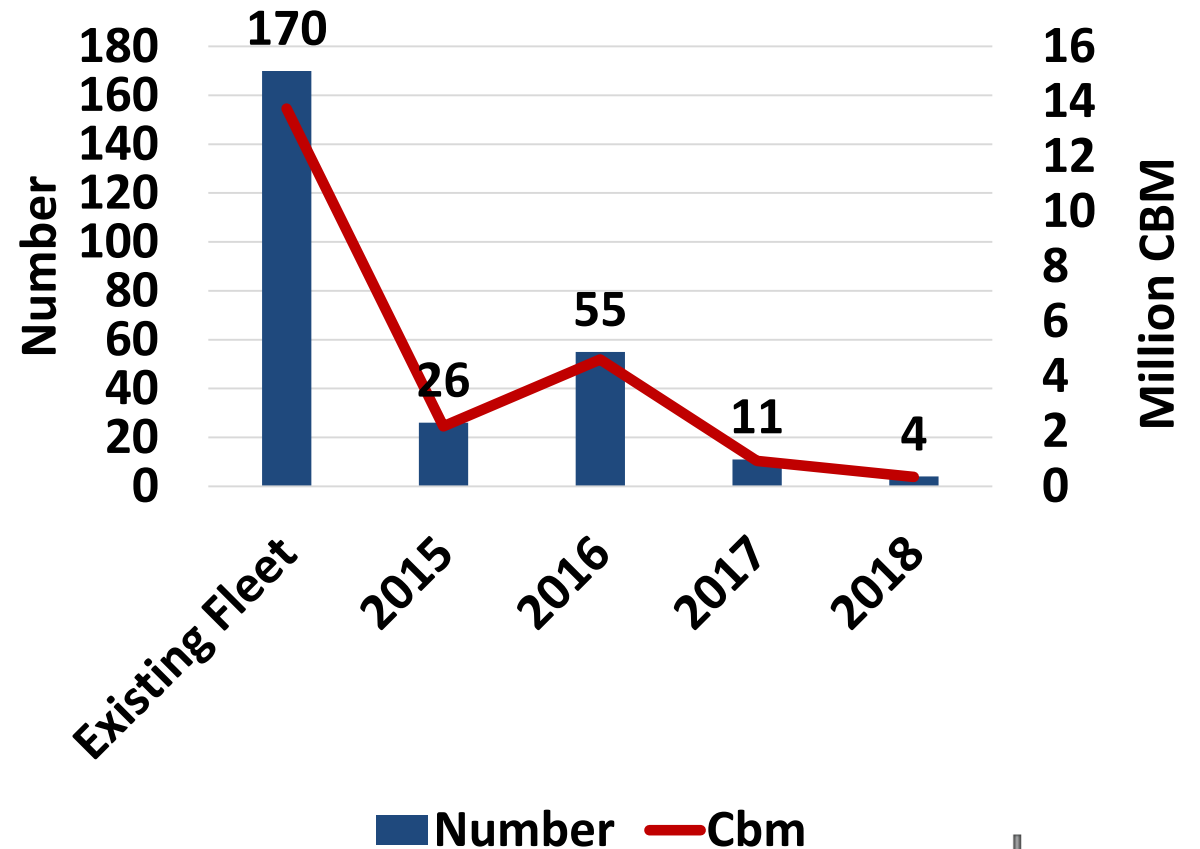
VLGC Fleet (60,000-85,000 CBM)

- » Fleet: 170 units
- » Fleet age 25+: 4%
- » Orderbook: 96 units

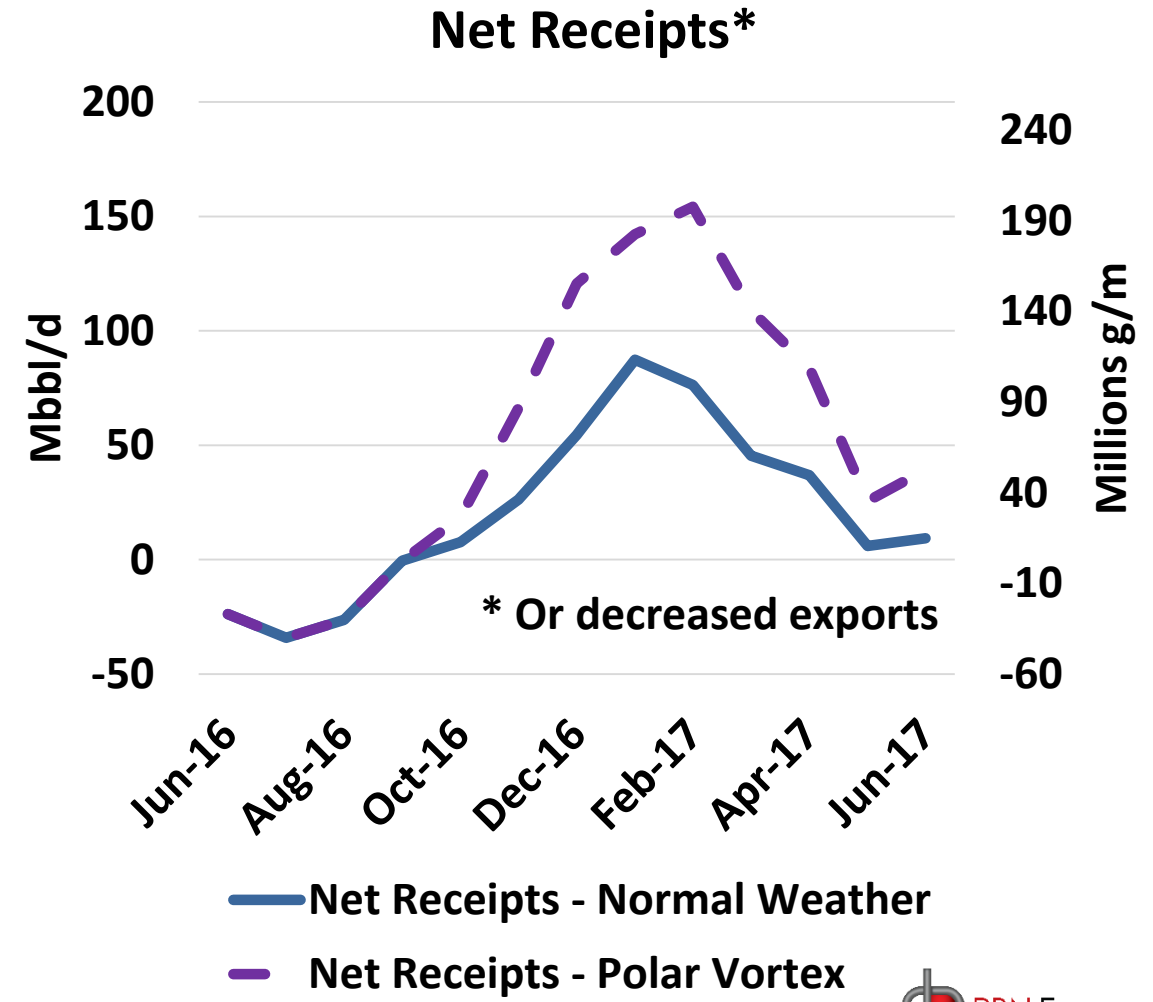
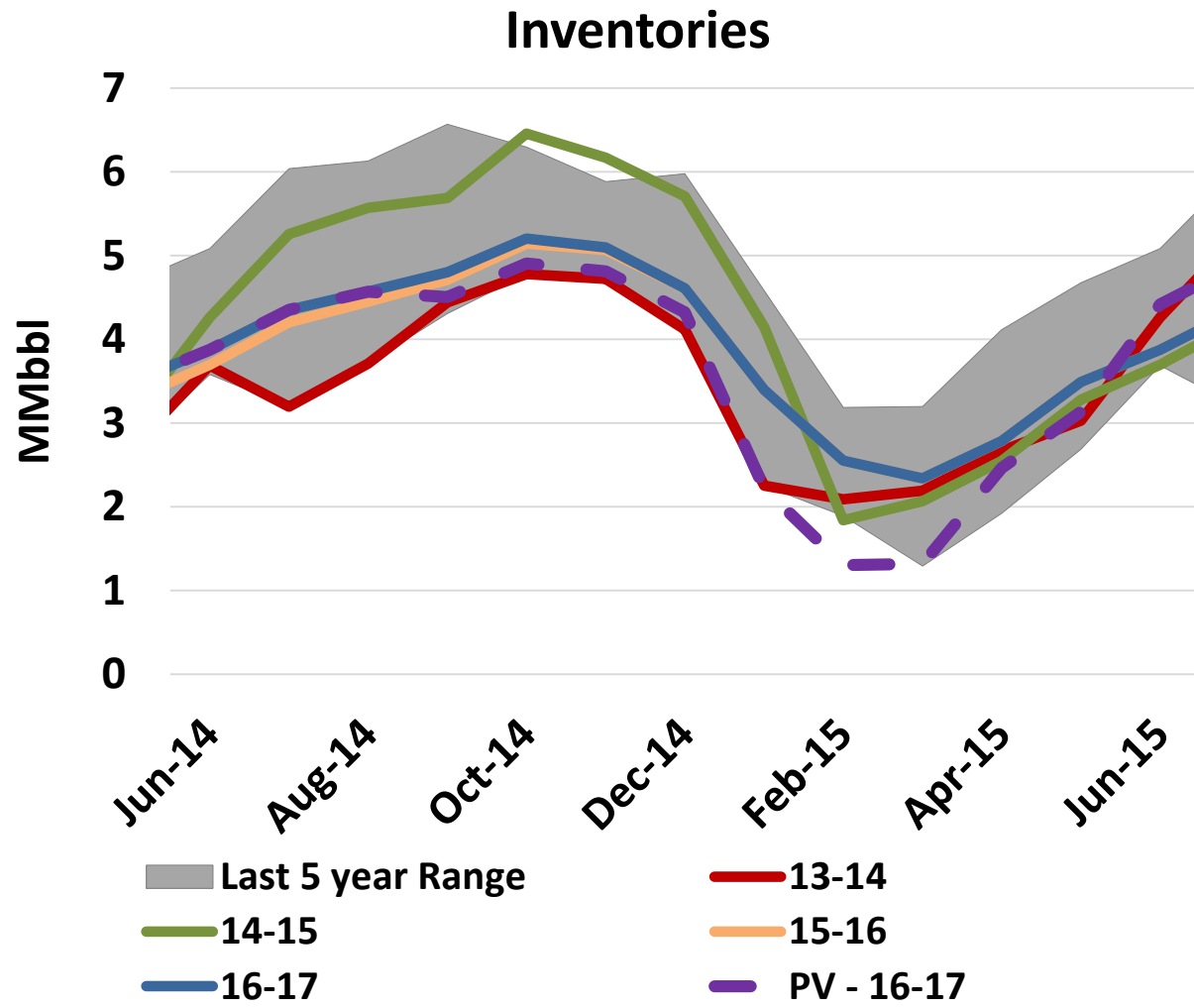
VLGC Age Profile



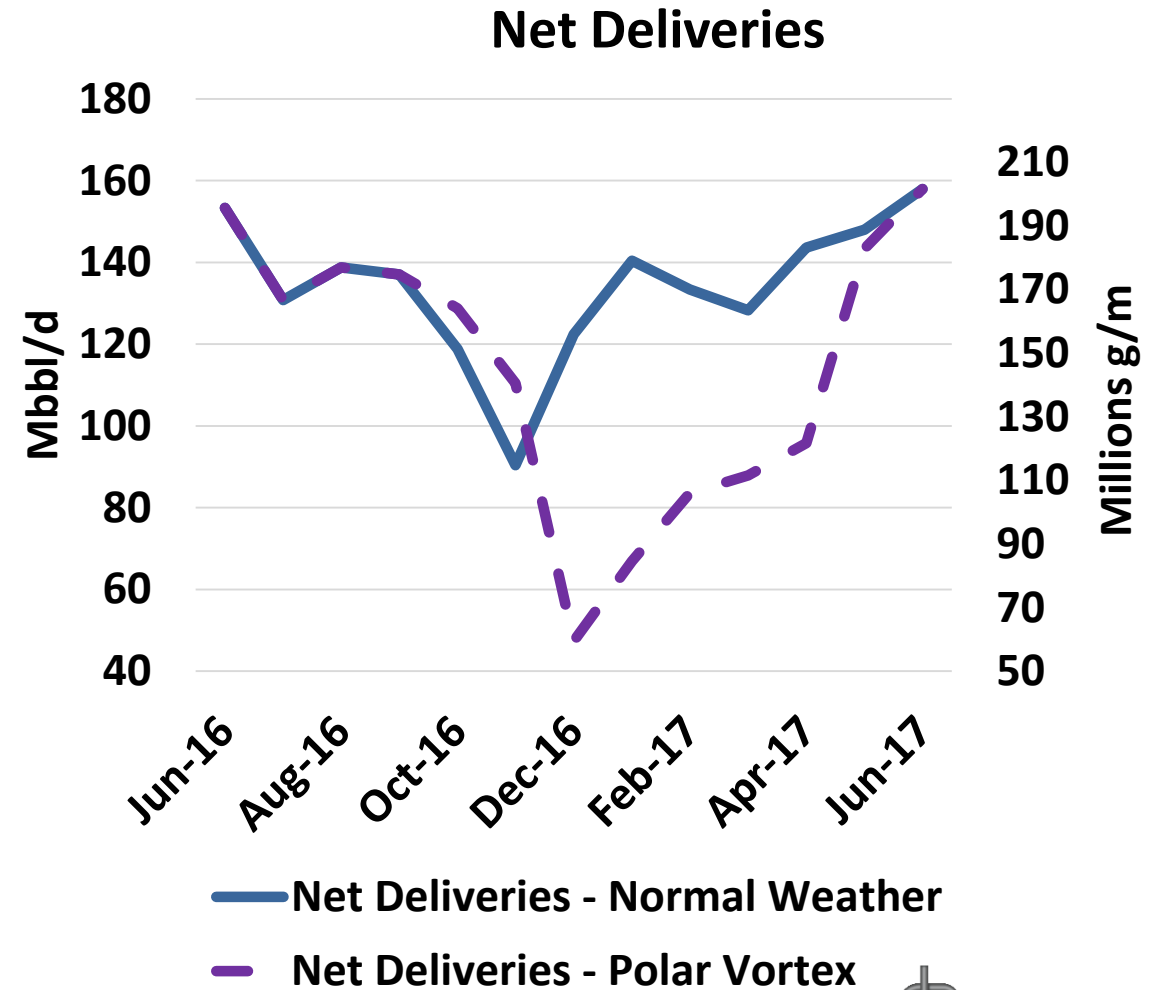
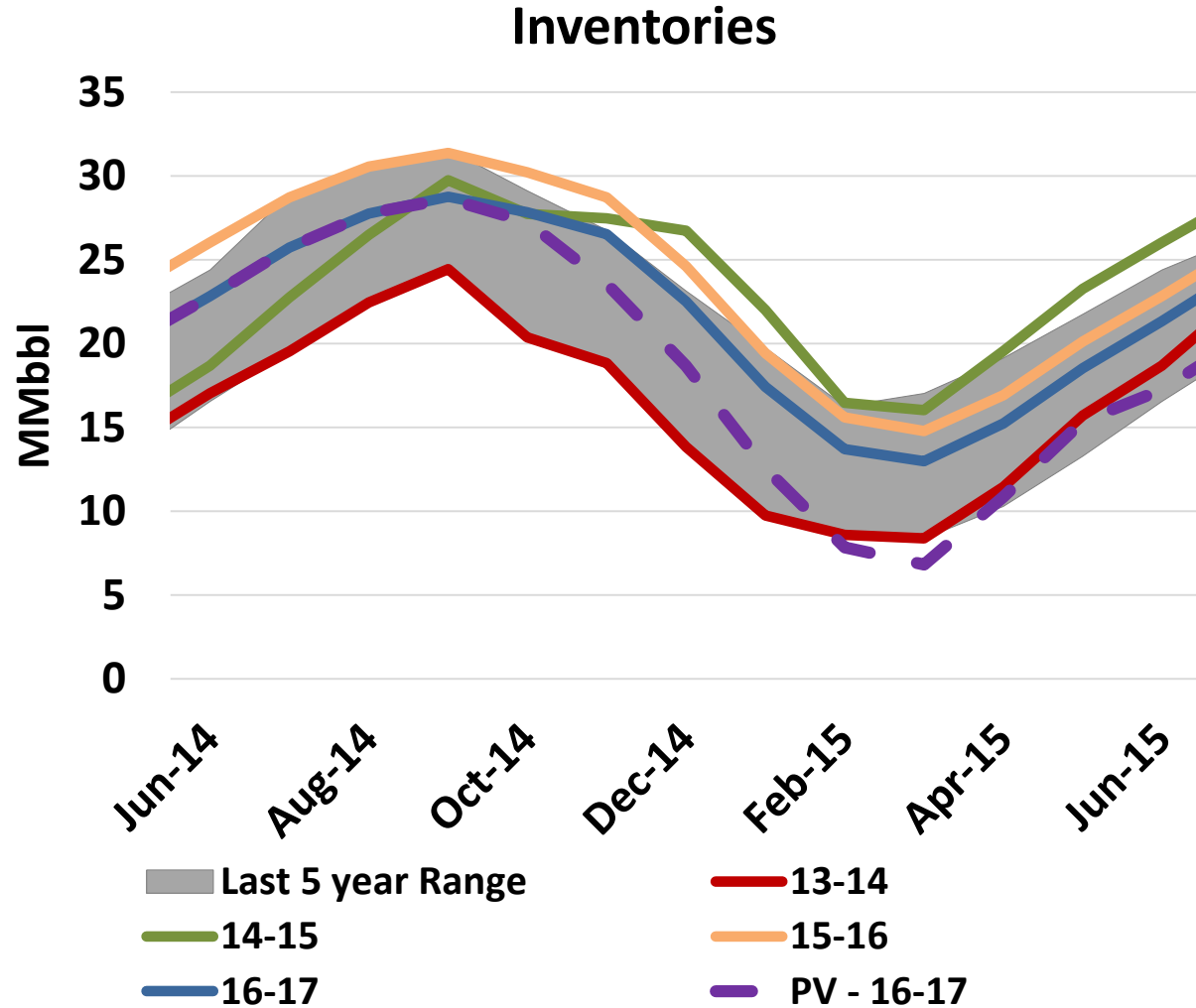
VLGC Fleet and Orderbook



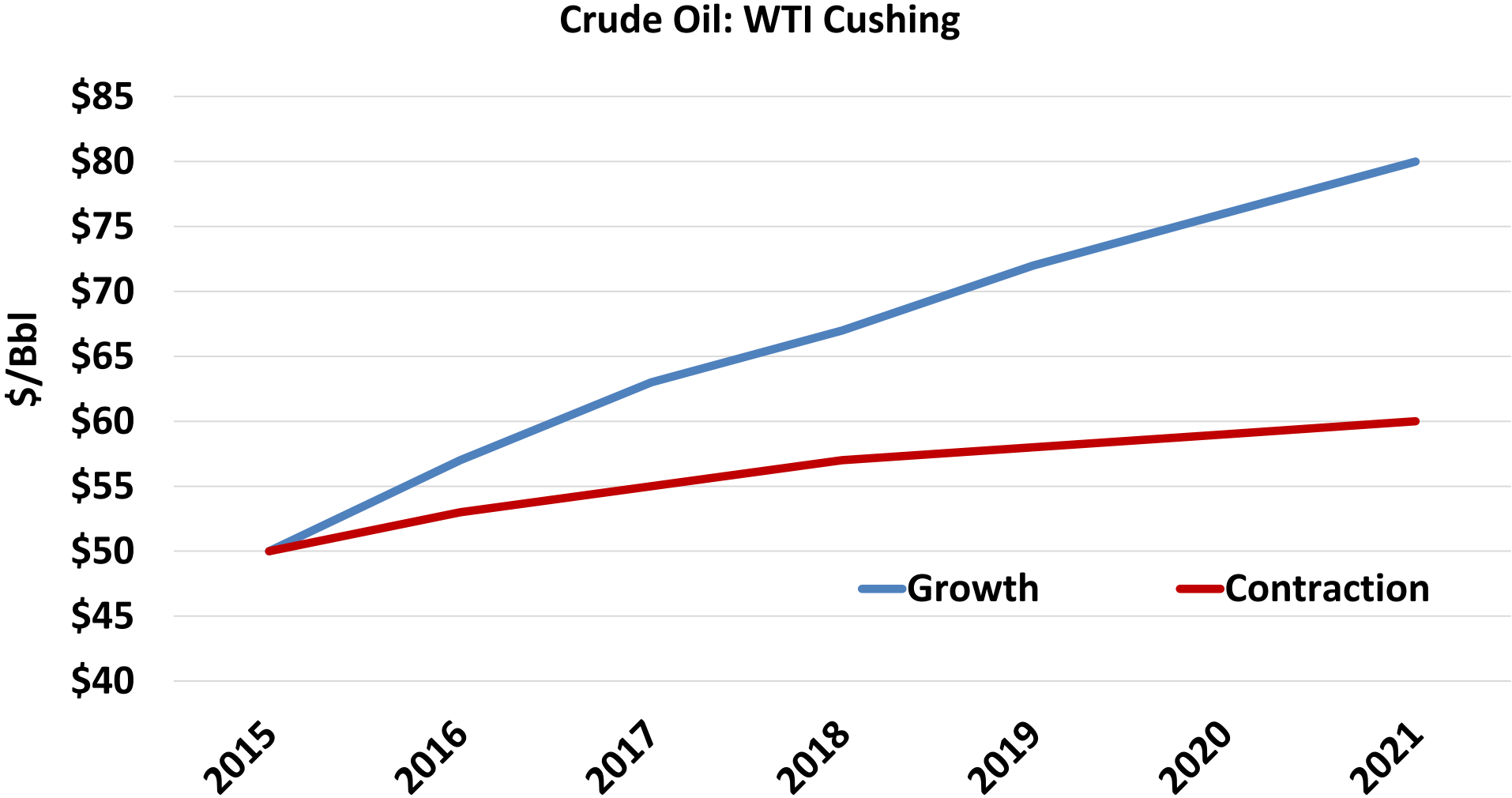
PADD 1 – Weather Sensitivities - Contraction



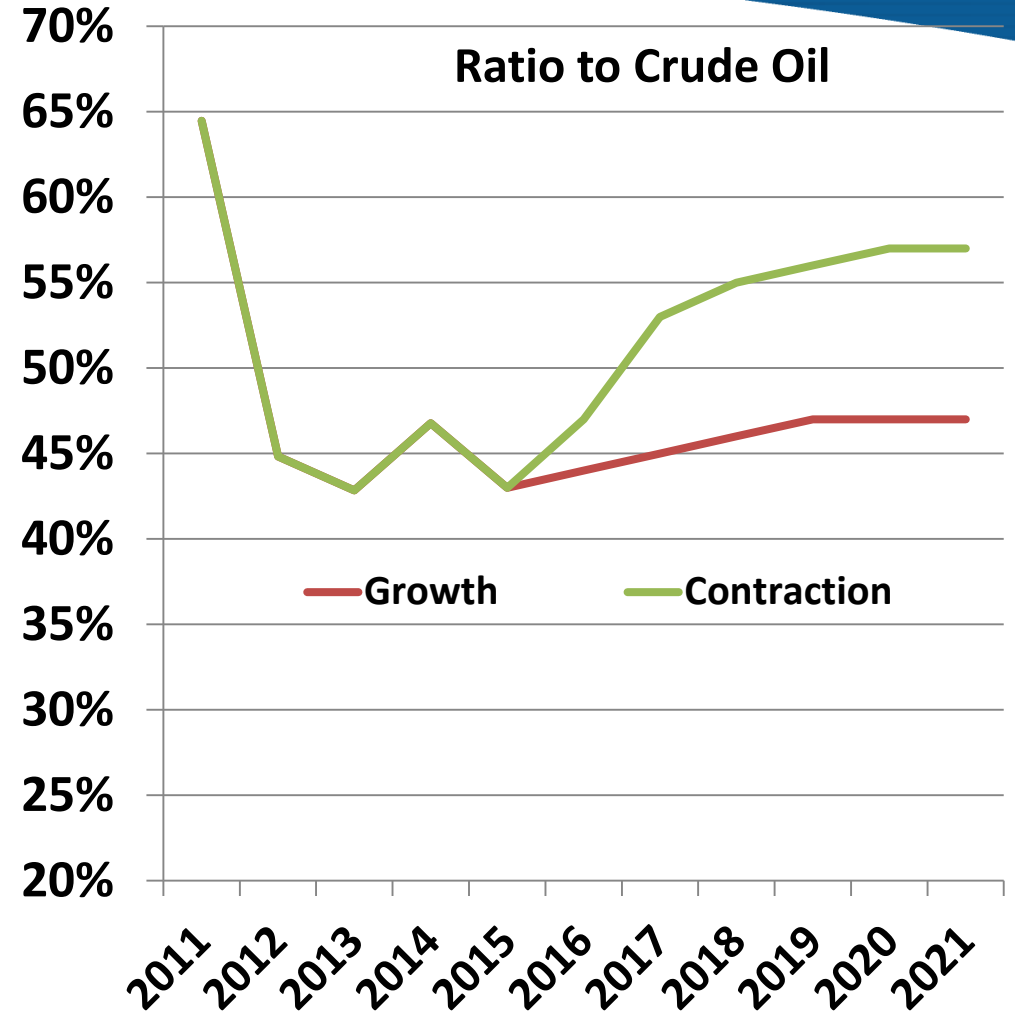
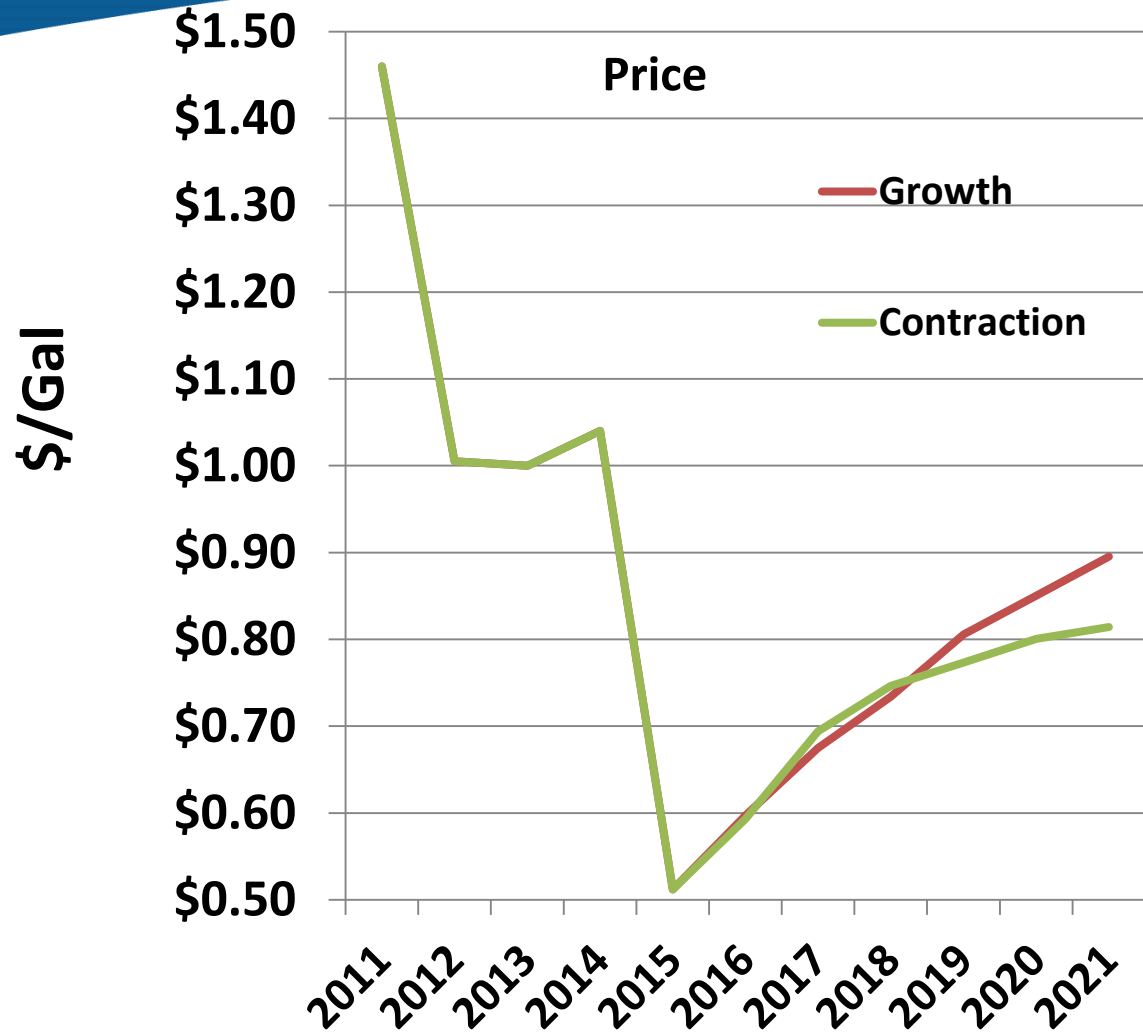
PADD 2 – Weather Sensitivities - Contraction



Forward Crude Oil Price Scenarios

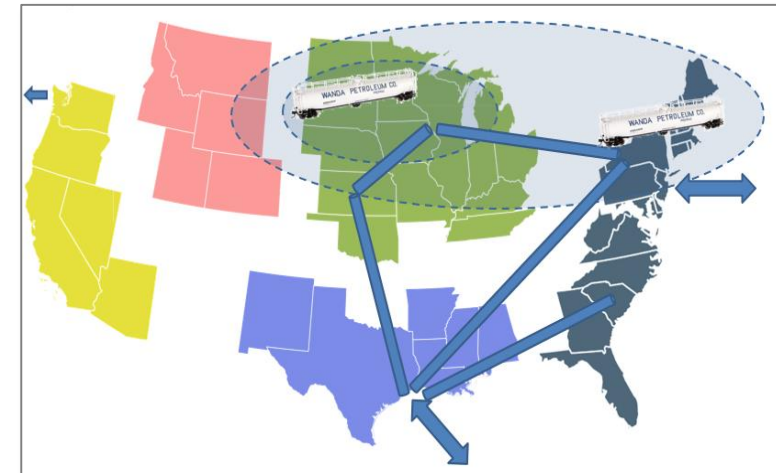


Propane Price and Ratio to WTI



Propane Winter Outlook

- » Propane inventories are currently at historical highs, keeping prices low
- » Given the combination of winter heating demand, rising export volumes with Enterprise's export facility expansion coming online, along with Dow's PDH unit starting up in 2015 propane inventories will draw in the coming months tightening up propane's price relationship to crude
- » It will likely be summer 2016 before aggregate U.S. inventories return to more normal levels
- » With increasing production near demand regions, better connectivity from both pipeline and rail, and export volumes that can be bid away from global markets, the U.S. propane industry is in much better position to handle a Perfect Storm of events than it was in the Winter of 2013-14.





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