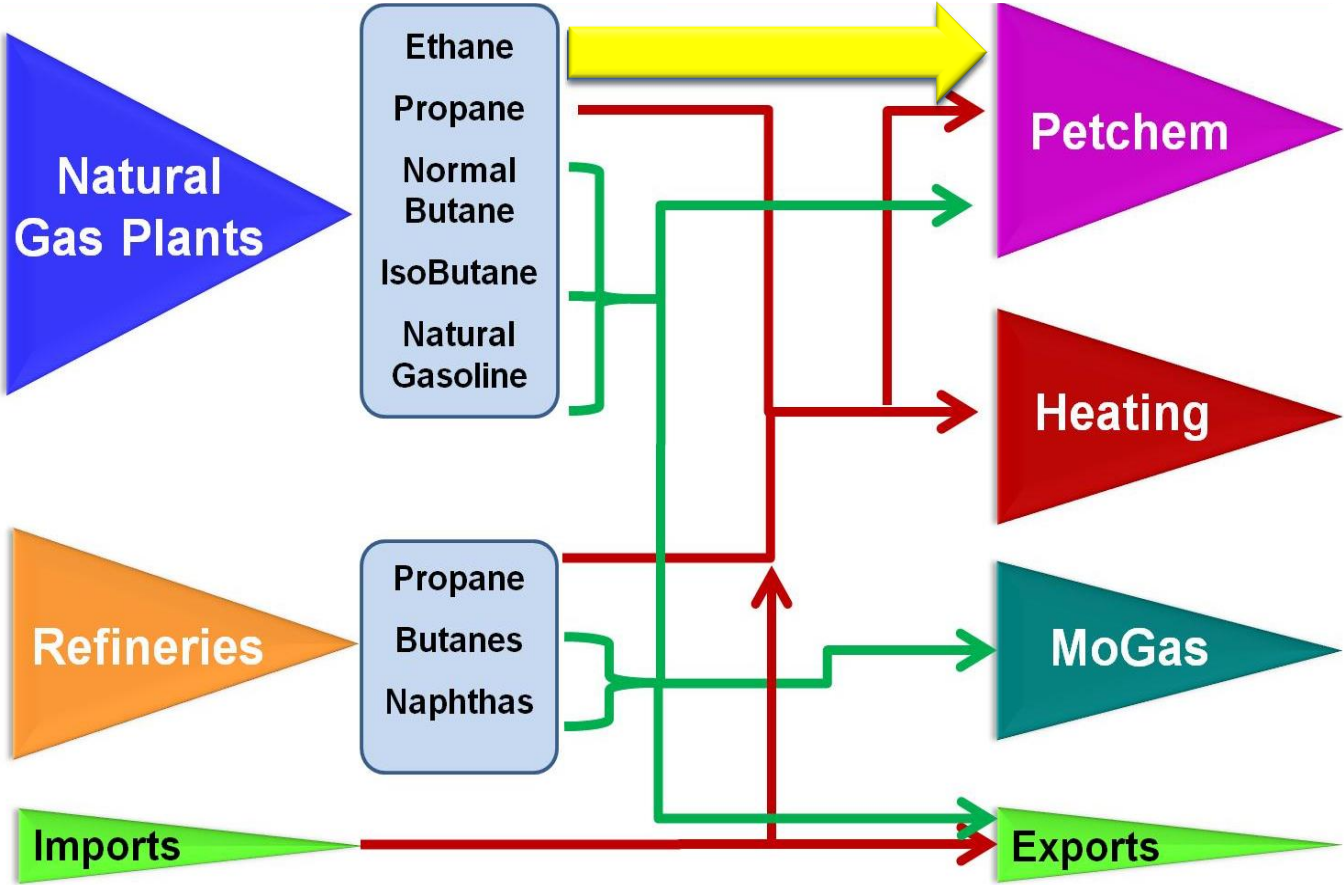


The “other” olefin & polypropylene

Bernardo Fallas, Managing Editor – Americas Petrochemicals (Olefins & Polymers)

May 8, 2014



Source: BENTEK

The polyolefins chain



Ethane vs. Naphtha price



- The North American petrochemical industry is bullish about the future thanks to the shale gas boom
- Olefins, in particular, are undergoing a renaissance – and dreaming big – less than 7 years after being left for dead

Ethylene – More than 11 million mt/year in announced greenfield expansions

– Up to 2.45 million mt/year (brownfield)

Propylene – Up to 4.1 million mt/year (greenfield)

Butadiene – TPC Group to expand on-purpose production

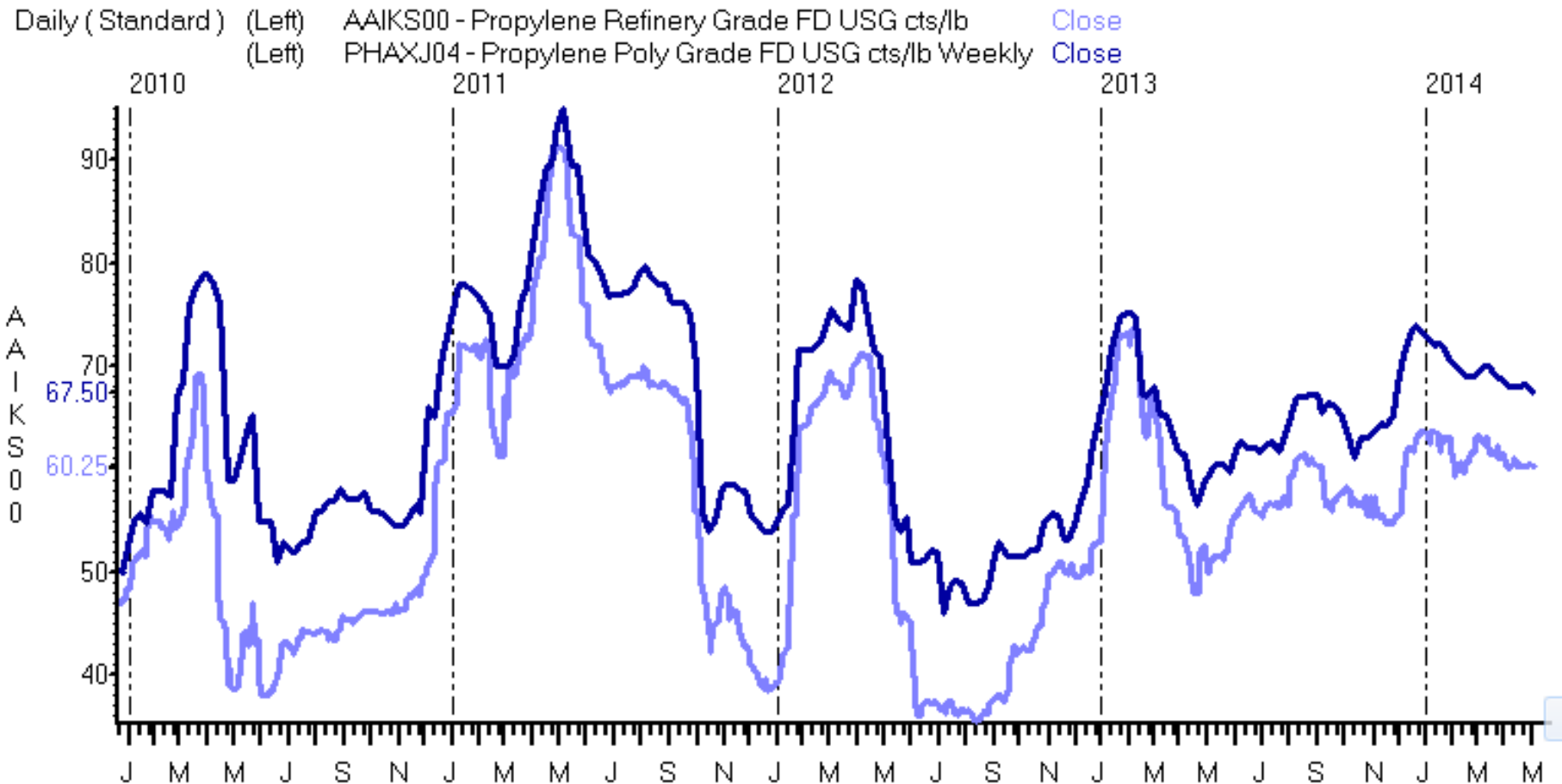
- Derivative plants are also in the works, mostly for polyethylene resin, which could see capacity expanded by 7 million mt/year
- Methanol production in North America is staging an impressive comeback after years of exile

North American propylene at a glance

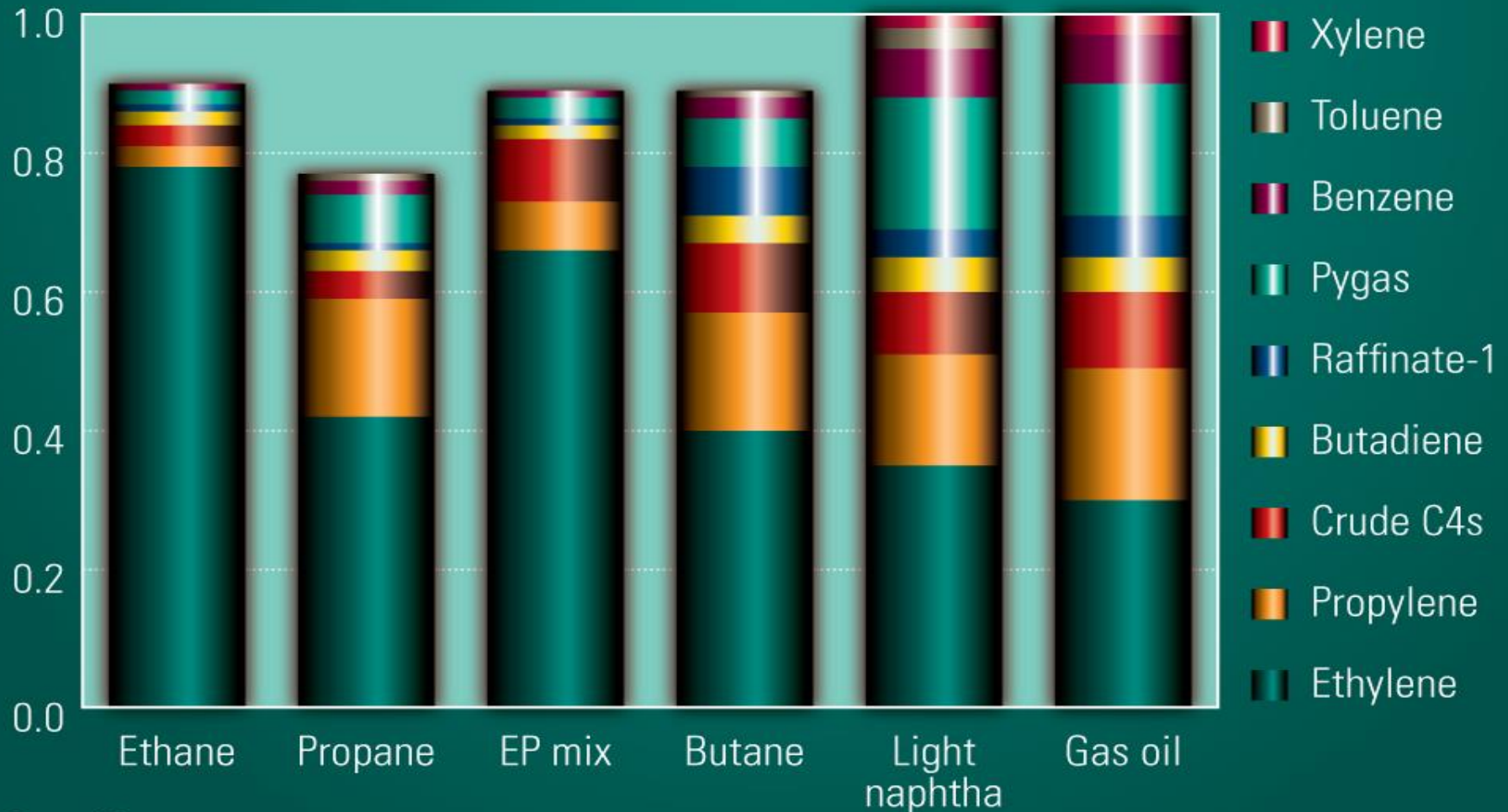
Shift to light feeds at the cracker has diminished production, thus injecting volatility into polypropylene pricing

- Shift to lighter feedstocks in US has significantly reduced high-purity propylene production from the steam cracking process
- Weak gasoline demand during economic downturn and poor refining economics have also hurt propylene output.
- Lower operating rates in refineries/closures in recent years has meant less refinery-grade propylene available.
- Tightness in RGP affects availability of higher-purity propylene
- Market has become more volatile over the past 3-4 years, but relief could be on the way

Tightening supply yields volatility



IMPACT OF SHALE GAS ON POLYPROPYLENE

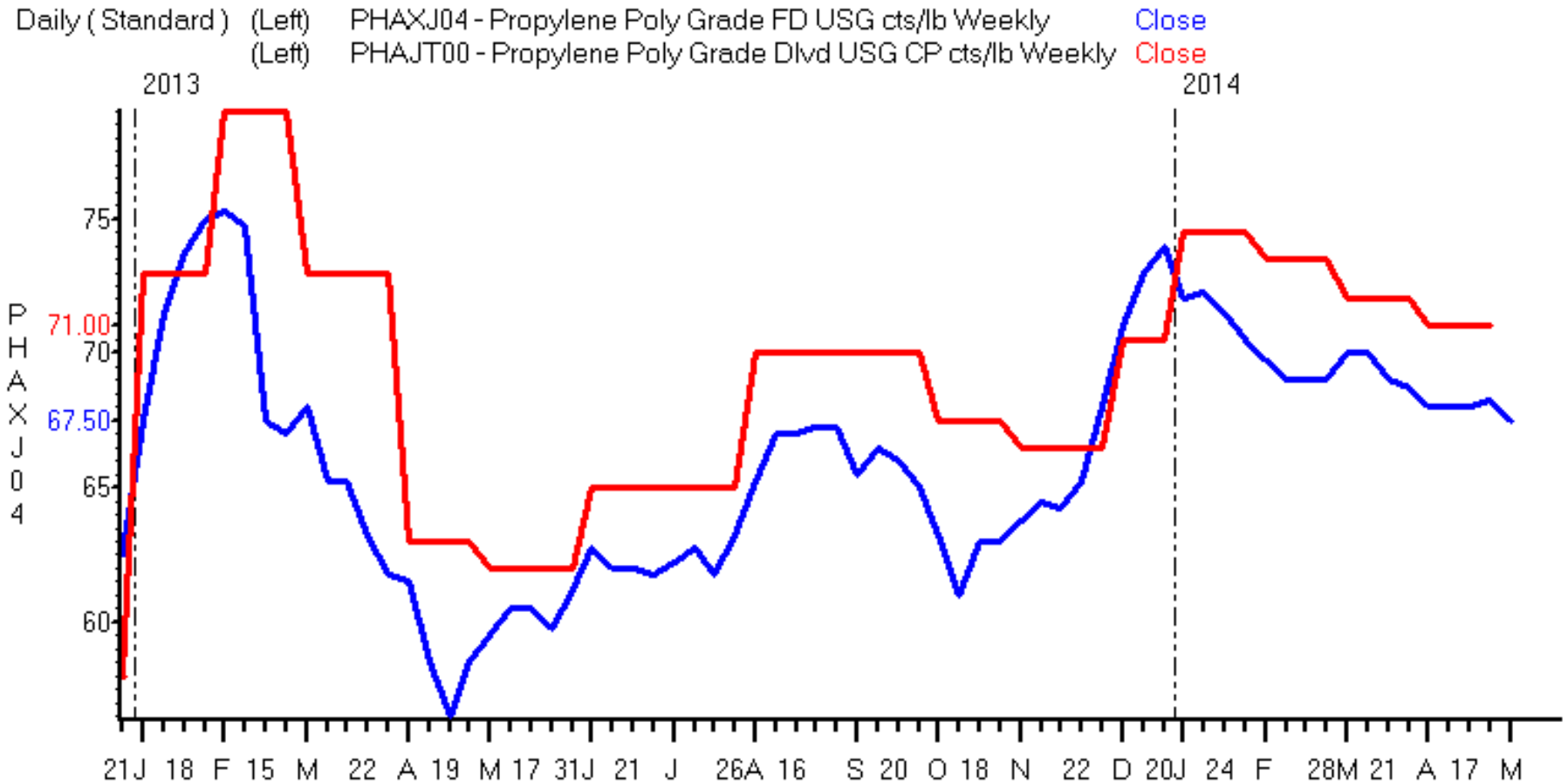


Propane: The propylene lifeline?

| Company | Location | ,000 mt/yr | ETA |
|-----------------------------|-------------------|------------|------|
| Dow Chemical (PDH) | Freeport, TX | 750 | 2015 |
| Enterprise Products (PDH) | Mt. Belvieu, TX | 750 | 2015 |
| C3 Petrochemicals (PDH) | Alvin, TX | 1,200 | 2015 |
| Formosa Plastics CUSA (PDH) | Point Comfort, TX | 600 | 2016 |
| Williams (PDH) | Alberta, Canada | 500 | 2016 |
| REXTac (PDH) | Odessa, TX | 300 | 2016 |
| Dow Chemical (PDH) * | TBD/USG | TBD | 2018 |
| Enterprise Products (PDH) * | TBD/USG | TBD | TBD |
| PetroLogistics (PDH) | Houston, TX | Expansion | --- |
| LyondellBasell (metathesis) | Texas | Expansion | --- |

Source: Company announcements, Platts

2014: Moderate stability – at a price



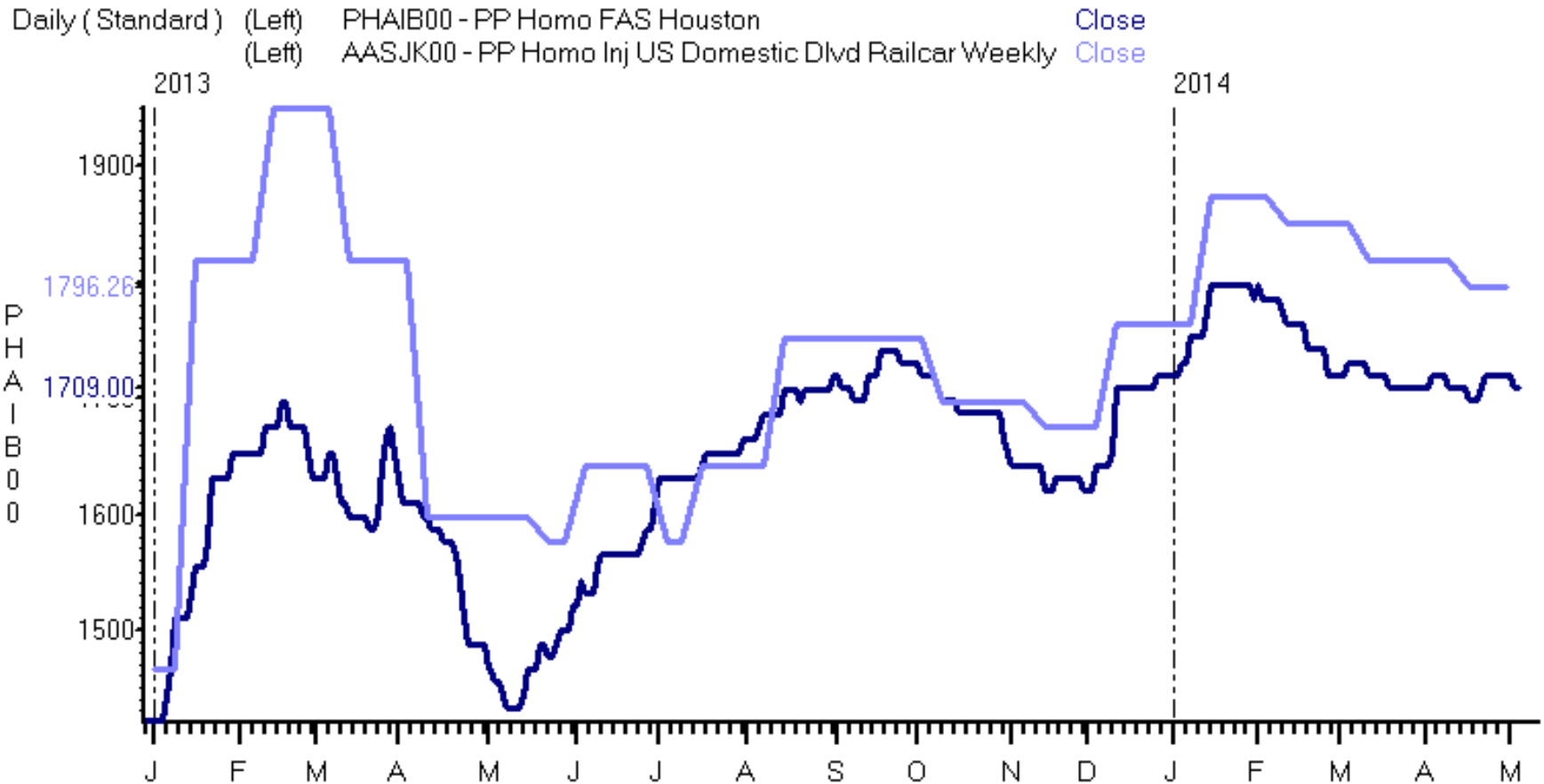
Polypropylene at a glance

Higher feedstock prices and limited production against steady demand hinders exports beyond Mexico; Asia pricing influences Latin America

| Company | Location | ,000 mt/yr | ETA |
|---------|------------|------------|---------|
| RexTac | Odessa, TX | 270 | H2 2016 |

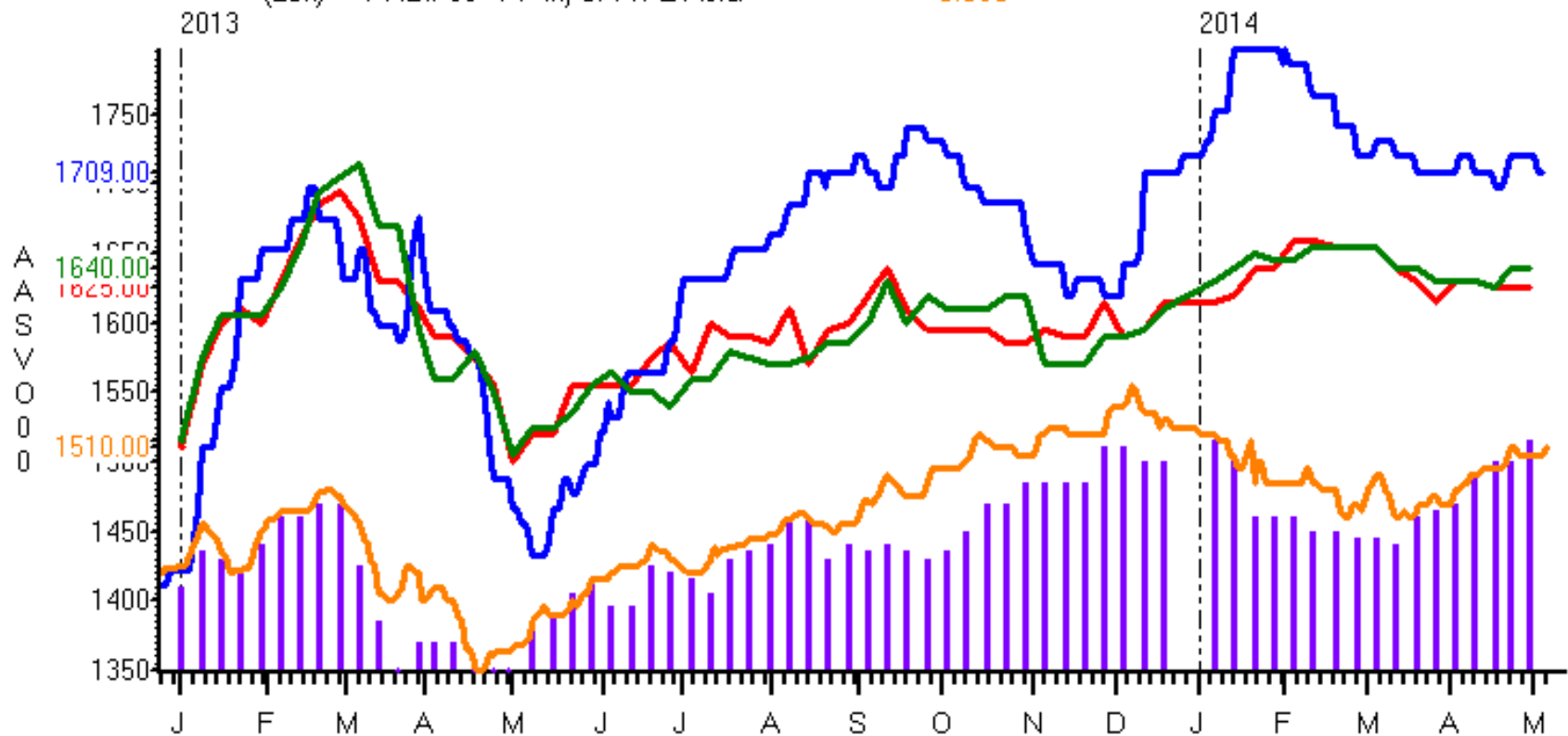
- Only one expansion announced (though another is coming)
- For the past few years, the business has looked unattractive, with the likes of Dow and Sunoco exiting it all together
- In 2012, Chevron Phillips and Sumika ended a JV in Pasadena, Texas, taking 320,000 mt/year out of the market
- “Polypropylene is going the way of polystyrene” – PP seller

US PP contracts follow PGP

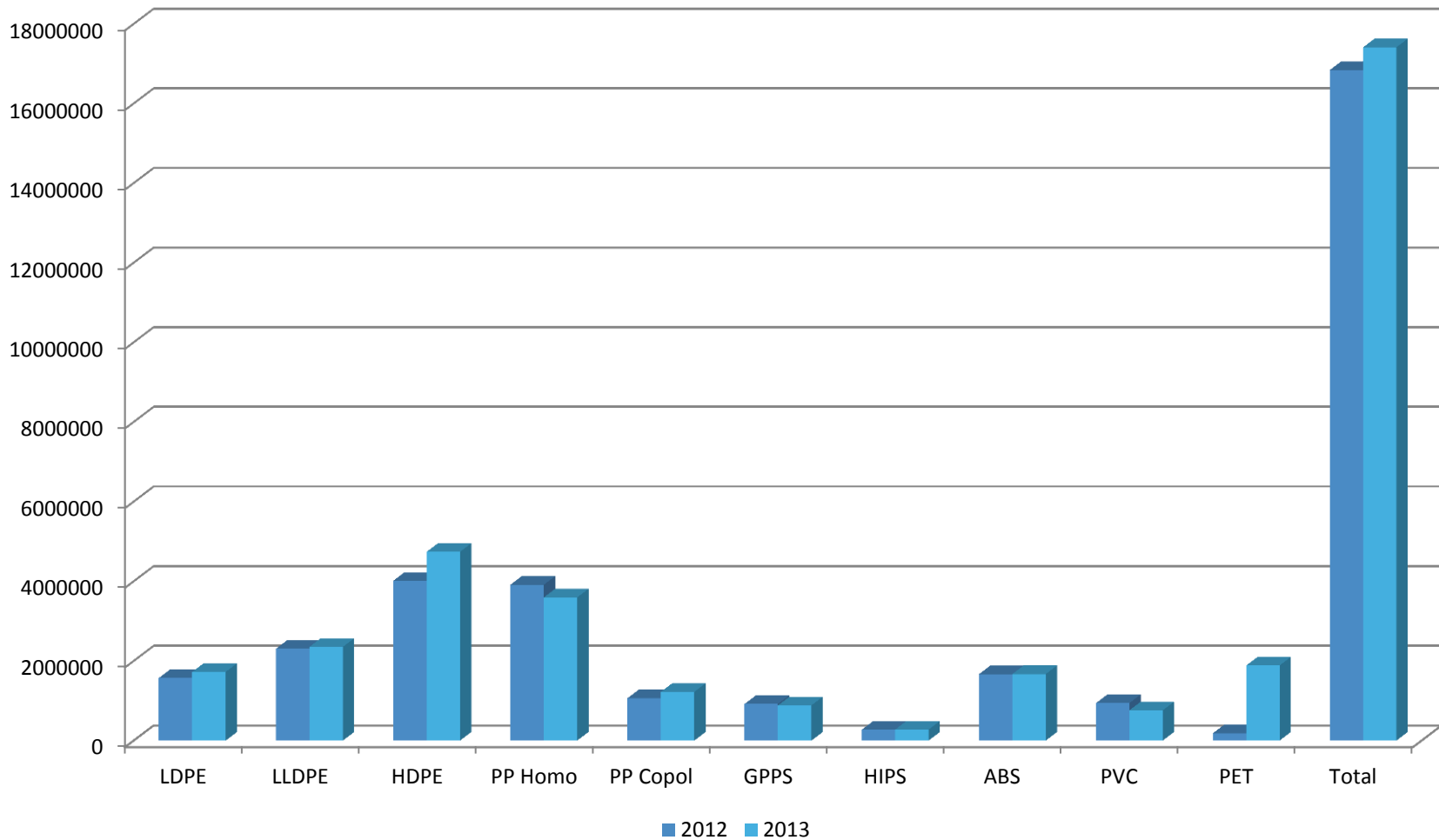


US PP uncompetitive globally

Daily (Standard) (Left) AASVO00 - PP Homo CFR Peru Weekly Close
 (Left) PHAIB00 - PP Homo FAS Houston Close
 (Left) AAVRA04 - PP Homo Inj CFR Brazil Weekly Close
 (Left) PHAHN00 - HDPE Inj CFR FE Asia Weekly Close
 (Left) PHBIF00 - PP Inj CFR FE Asia Close



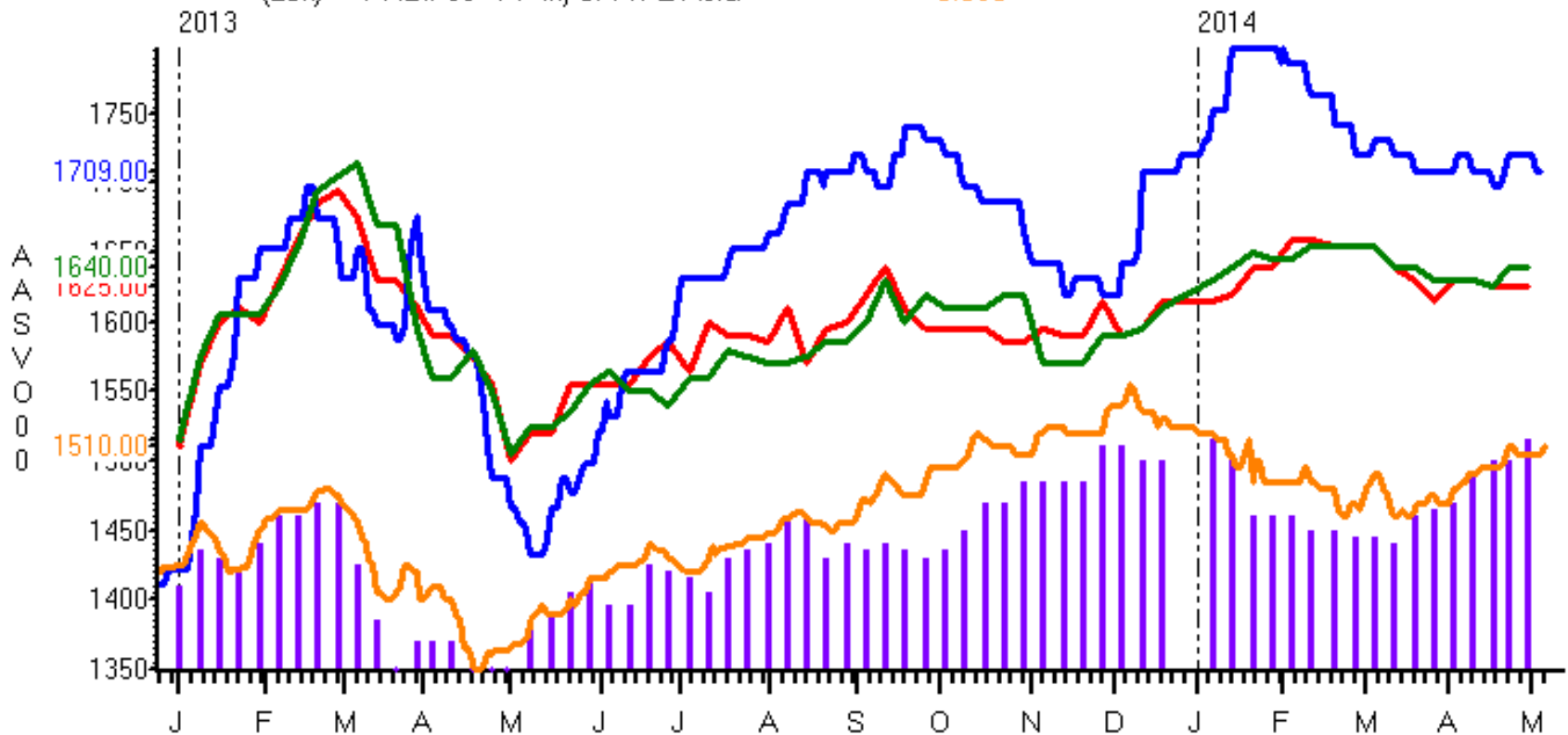
China demand drives olefins in Asia



Source: China Customs

Asian PP influences South America

Daily (Standard) (Left) AASVO00 - PP Homo CFR Peru Weekly Close
(Left) PHAIB00 - PP Homo FAS Houston Close
(Left) AAVRA04 - PP Homo Inj CFR Brazil Weekly Close
(Left) PHAHN00 - HDPE Inj CFR FE Asia Weekly Close
(Left) PHBIF00 - PP Inj CFR FE Asia Close



Muchas gracias!

Please stay in touch in the markets: bernardo.fallas@platts.com
(713) 655-2214

