

IMO Marpol VI, Market Shifts and Supply Considerations

Nevada Transportation Conference

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illuminating the markets

Market Reporting
Consulting
Events

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Presentation outline

Setting the stage for the paving season

- IMO – Marpol VI review
- Changes in crude diets affecting asphalt production
- How asphalt's value as a fuel blendstock will change as we get closer to January 2020
- Product movement: Europe, the US, Canada and Latin America
- Forward curves market structure
- Asphalt prices

IMO – Marpol VI

Definition

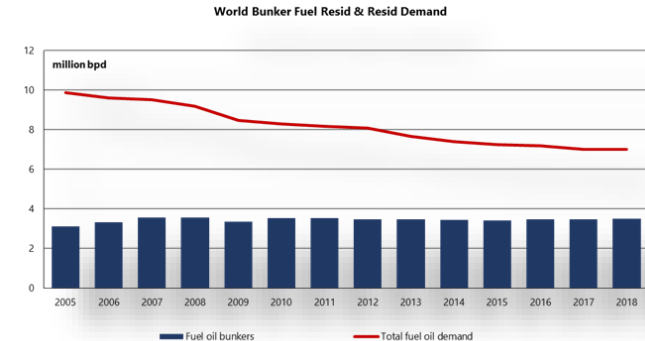
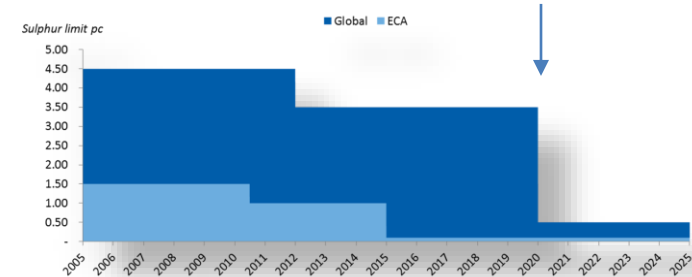
- IMO = International Maritime Organization
- Marpol Annex VI = Marine Pollution

Sulfur limit

- 0.5pc sulfur limit on open waters
- 0.1pc limit on emissions control area (ECA)

Main marine fuels (bunker fuels)

- Intermediate fuel oil (IFO) 180 – Blend of 98pc high sulfur fuel oil (HSFO) and 2pc distillate oil
- IFO 380 – Blend of 88pc HSFO and 12pc distillate oil
- Marine diesel oil (MDO) – Blend of MGO and HSFO
- Marine gasoil (MGO)



IMO – Marpol VI

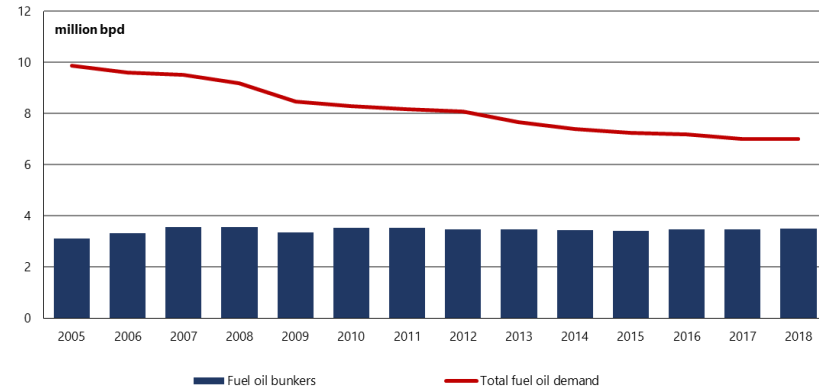
Size of the pie

- Total residual demand ~7.5mn b/d
- Total fuel oil (FO) bunker demand ~3.5mn b/d

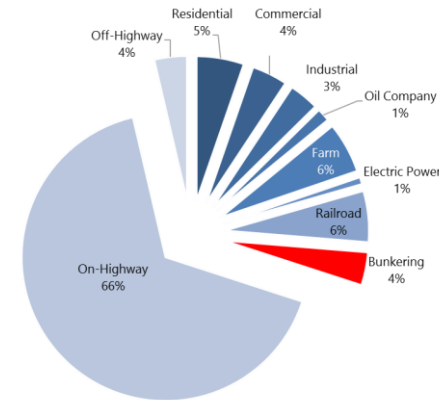
How to blend to 0.5pc

- Ultra low sulfur diesel (ULSD) blend with 3.5pc HSFO (6:1 ratio)
- Low sulfur (LS) vacuum gasoil (VGO) blend with 3.5pc HSFO (7.5:1 ratio)
- International Energy Agency (IEA) estimates up to 2mn b/d of low sulfur diesel (LSD) will be pulled into the bunker market in 2020

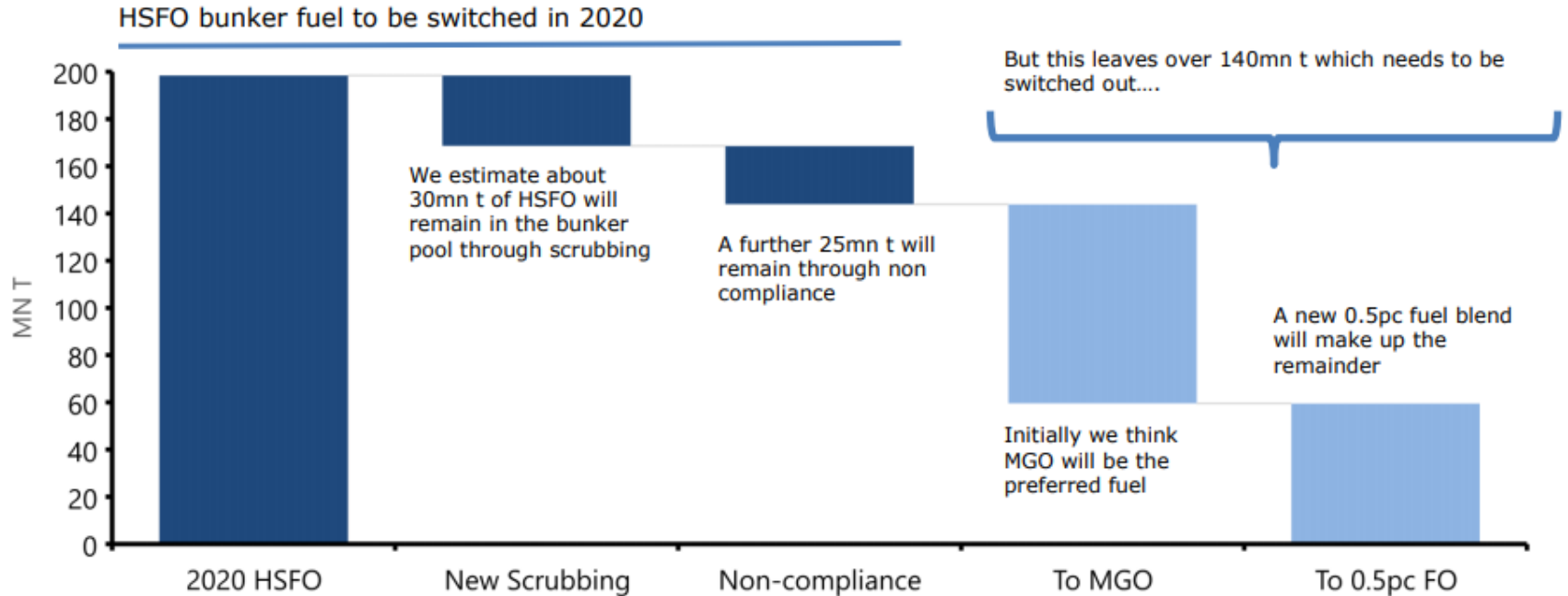
World Bunker Fuel Resid & Resid Demand



Distillates sales by use



IMO – Marpol VI shipowner options

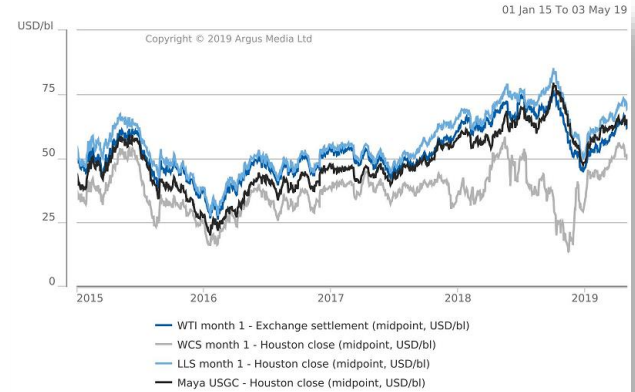




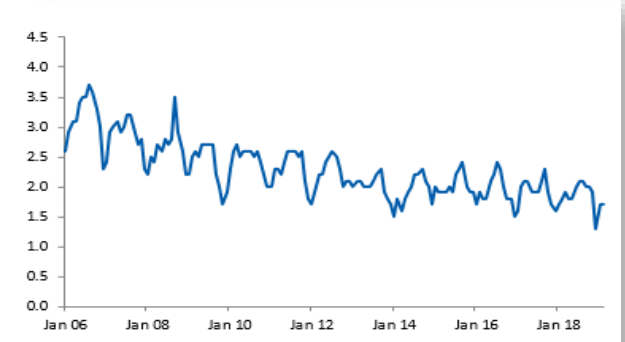
Crude diets becoming lighter, and heavy crude price up

Crude performance

- Western Canadian Select (WCS) Alberts cuts
- Maya pricing FO – K factor
- Venezuelan sanctions
- Iran sanctions
- Some US Gulf coast complex refining running 50:50 diets
- Impact on product yield
- Impact on asphalt quality
- Straight run versus vacuum tower bottom (VTB) blending



US refinery asphalt yield



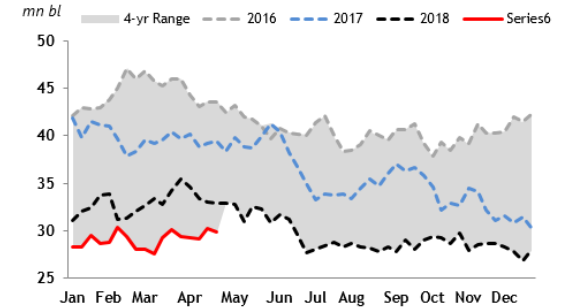
Crude diets impact on HSFO

Low inventory levels in the US Gulf coast

- Significant drop in production in 1Q
- Padd 3 strong downward trend ahead of IMO, but will it still be enough to absorb the surplus of resids?
- Additional price pressure impacting asphalt and FO blendstock values

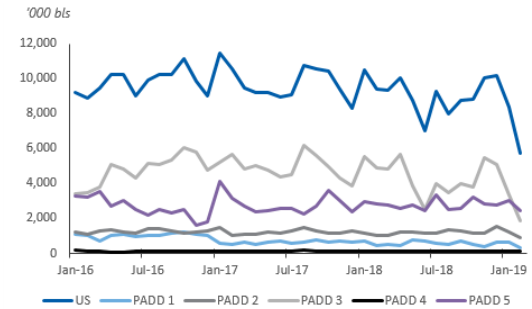
US residual fuel oil stocks

mn bl



US HSFO production

'000 bls

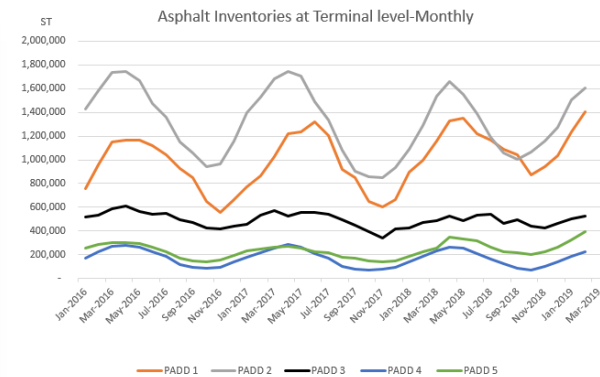
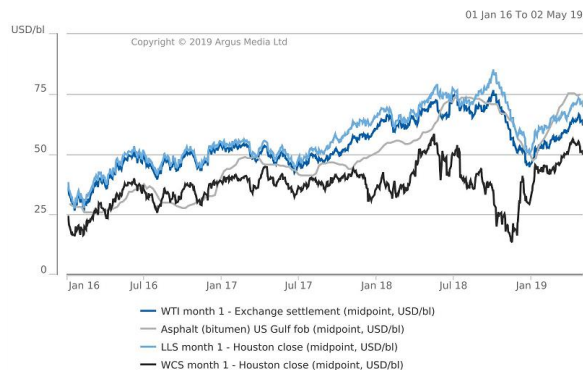
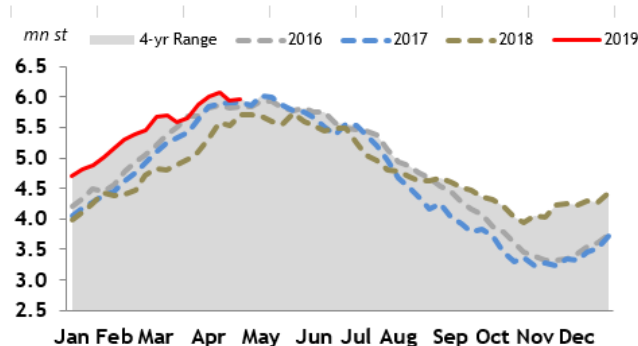


Crude diets impact on asphalt

Total inventories do not show the real picture

- Padd 2 high at terminal level price resistance (higher production as well)
- Padd 2 inventories:
 - 2mln st higher Sept 18- Feb 19 vs same period last year
- Padd 3 low inventory levels supporting prices
- High waters and Houston Ship Channel problems preventing arb moves between Padd 2 and Padd 3

US asphalt stocks mn st



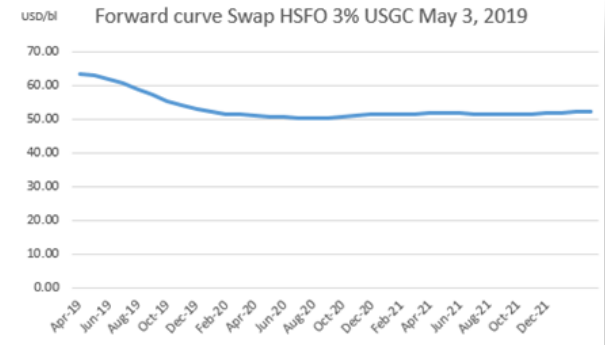
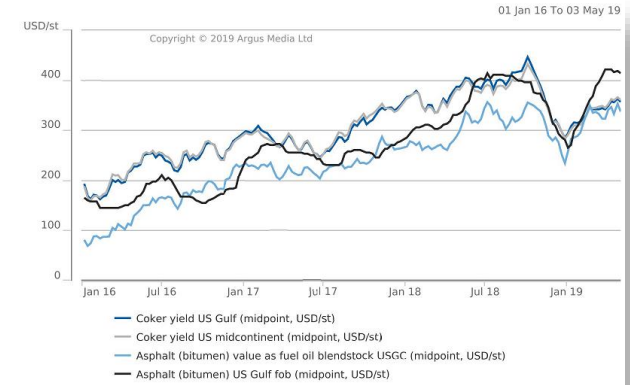
HSFO disconnect

Asphalt economics

- Changes in FO – asphalt correlation
- Disconnect of FO blendstock values
- Indicators for asphalt floor pricing
- Asphalt alternate market disposition

Forward curve

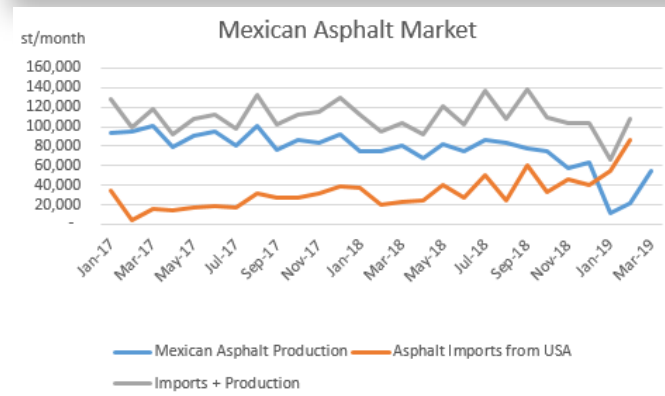
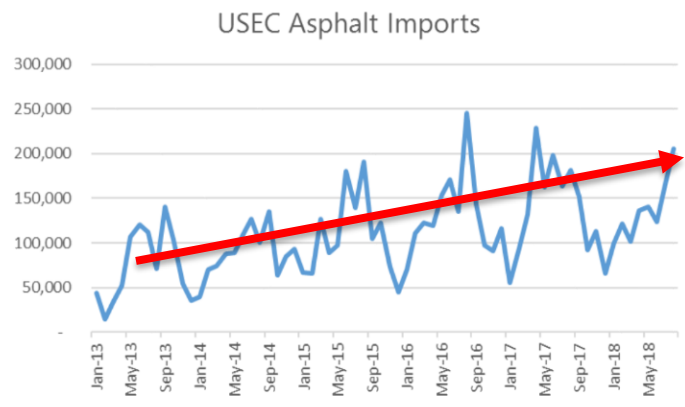
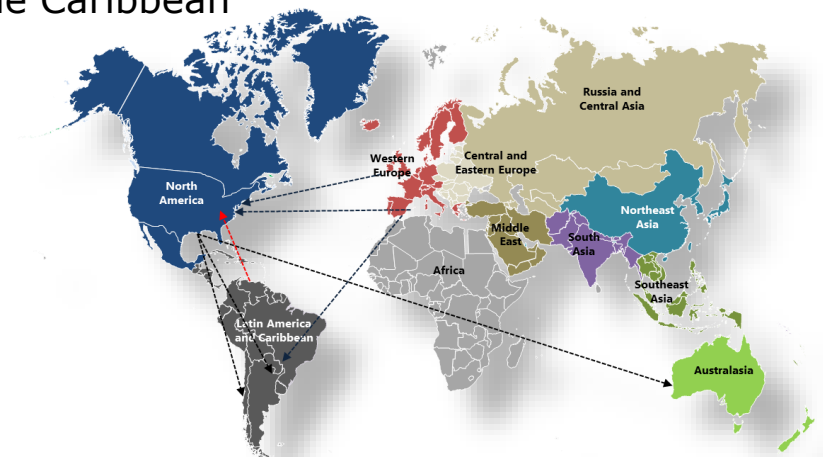
- Market starting to price in the effects of IMO
- Market in backwardation (front to back \$13.30/bl August 2020)



Product movement

Intercontinental

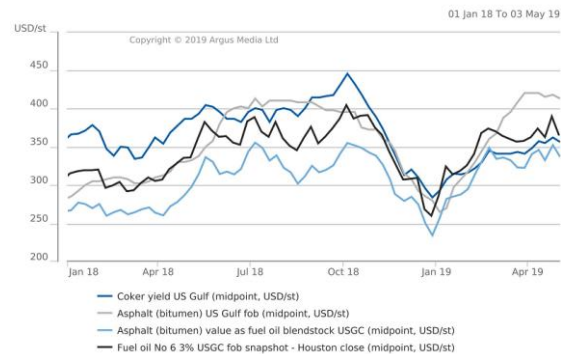
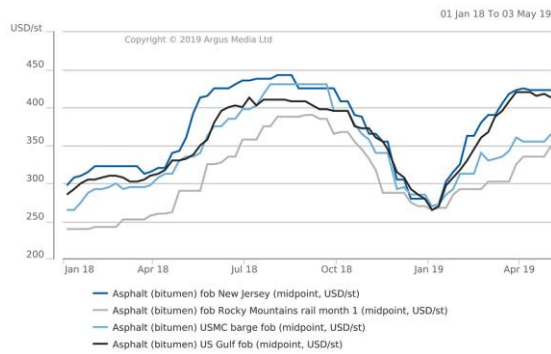
- Increased flow from Europe to US east coast (891,000st in 2013 to 1.6mn st in 2018)
- Mediterranean refineries better positioned (Spain, Italy, Greece)
- Increased flow from US Gulf coast to Latin America and the Caribbean



Asphalt prices – US Gulf coast

Competing demand for residual supply

- Lighter crude diets reducing resid production with increasing demand
- Winter fill is over
- Mexican demand maintained
- Reduced barge and vessel movements because of river conditions and partial closure of Houston Ship Channel following chemical fires and storms
- As racks reopen in the northeast, they will need supply from US Gulf coast and the Mediterranean



IMO – Marpol VI impact

Light products

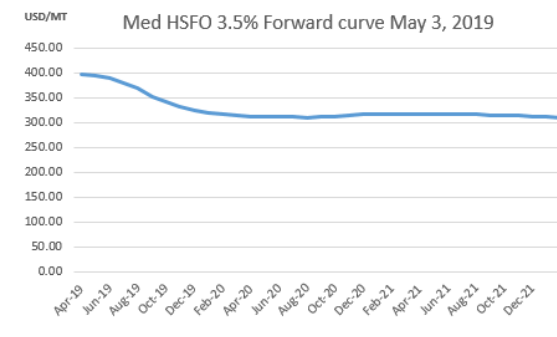
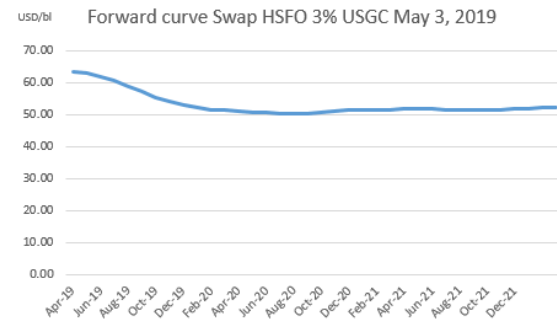
- New demand for low sulfur distillates (MGO or by blend 0.5pc VLSFO)
- Low sulfur to high sulfur spreads will increase
- Crude diets becoming lighter
- Light-heavy crude and light-heavy products spreads will increase
- The influx of large amounts of US light sweet crude into the markets will likely attenuate the L/H crude oil spread increase.

Asphalt quality

- Change in crude diets, VTB blending will affect quality
- Roofing sector particularly sensitive to this

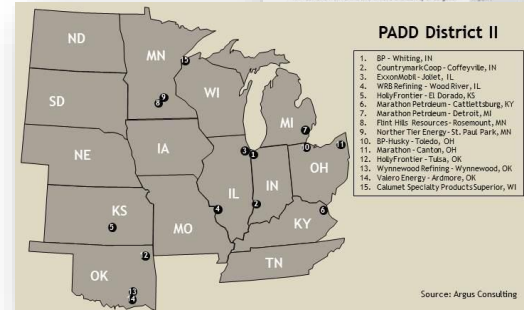
Price

- Residual prices, including asphalt, will be under pressure
- Surplus HSFO/VTBs will need to find a home
- Power generation first option but will compete against coal and gas
- Some will be offered into asphalt pool
- Asphalt disposition market was HSFO, after IMO? How to set floor price and what will be the asphalt alternate market
- Coker feedstock will continue to set upper limit
- Bitumen pricing in Europe



- Weekly price and market analysis
 - Argus Americas Asphalt
 - Argus Bitumen (rest of the world)
- Argus Asphalt Annual
- Argus US Asphalt Terminal Study

- Asphalt consulting projects
- Asphalt outlooks
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