U.S. Refineries Competitive Positions

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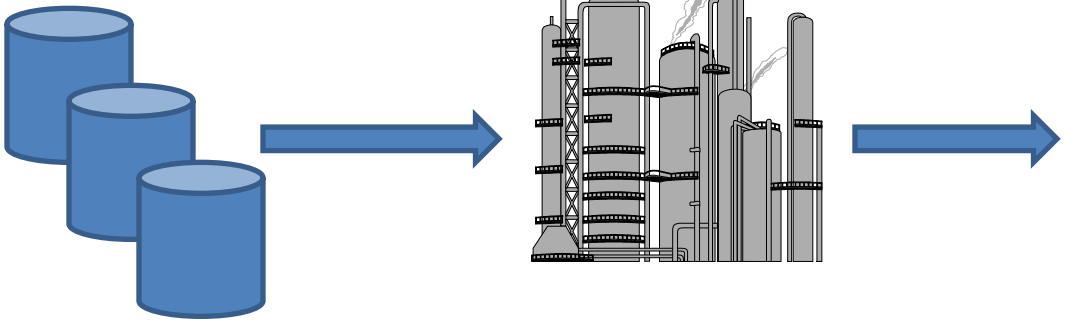
Refiners competitive positions

Function of optimizing feedstock costs, operating costs, and revenues through mix of products sold



FEEDSTOCKS
Qualities:
- Heavy/Light
- Sweet/Sour

Location (Distance)
- Domestic
- International

PROCESSING
Size
Complexity
Treating (sulfur)
Access to feedstocks & markets
Nearby competitors

Propane/butane

Chemicals

Gasoline

Jet Fuel

Diesel/heating oil

85% of output

Lubes

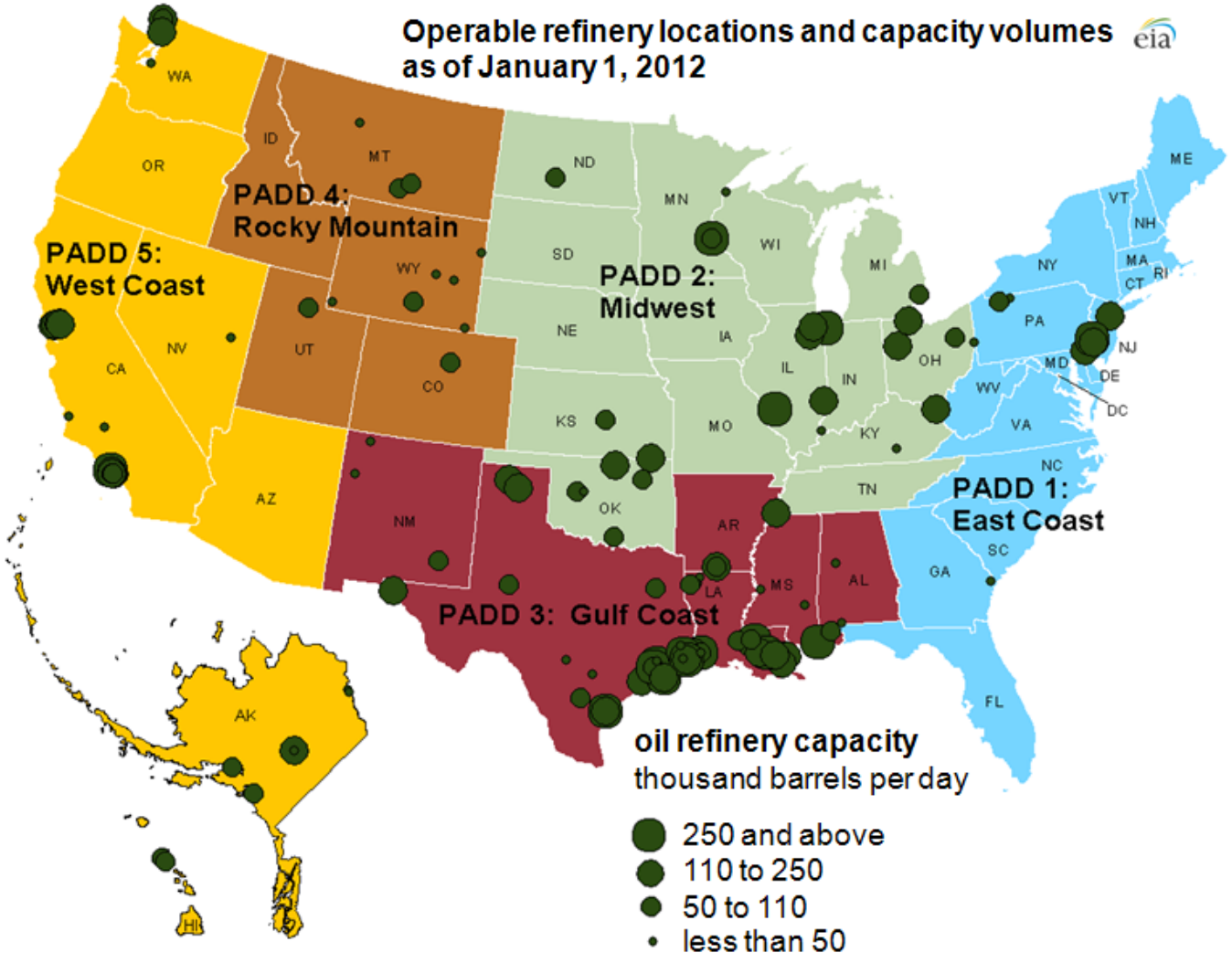
Fuel for ships

Asphalt

Who does well?

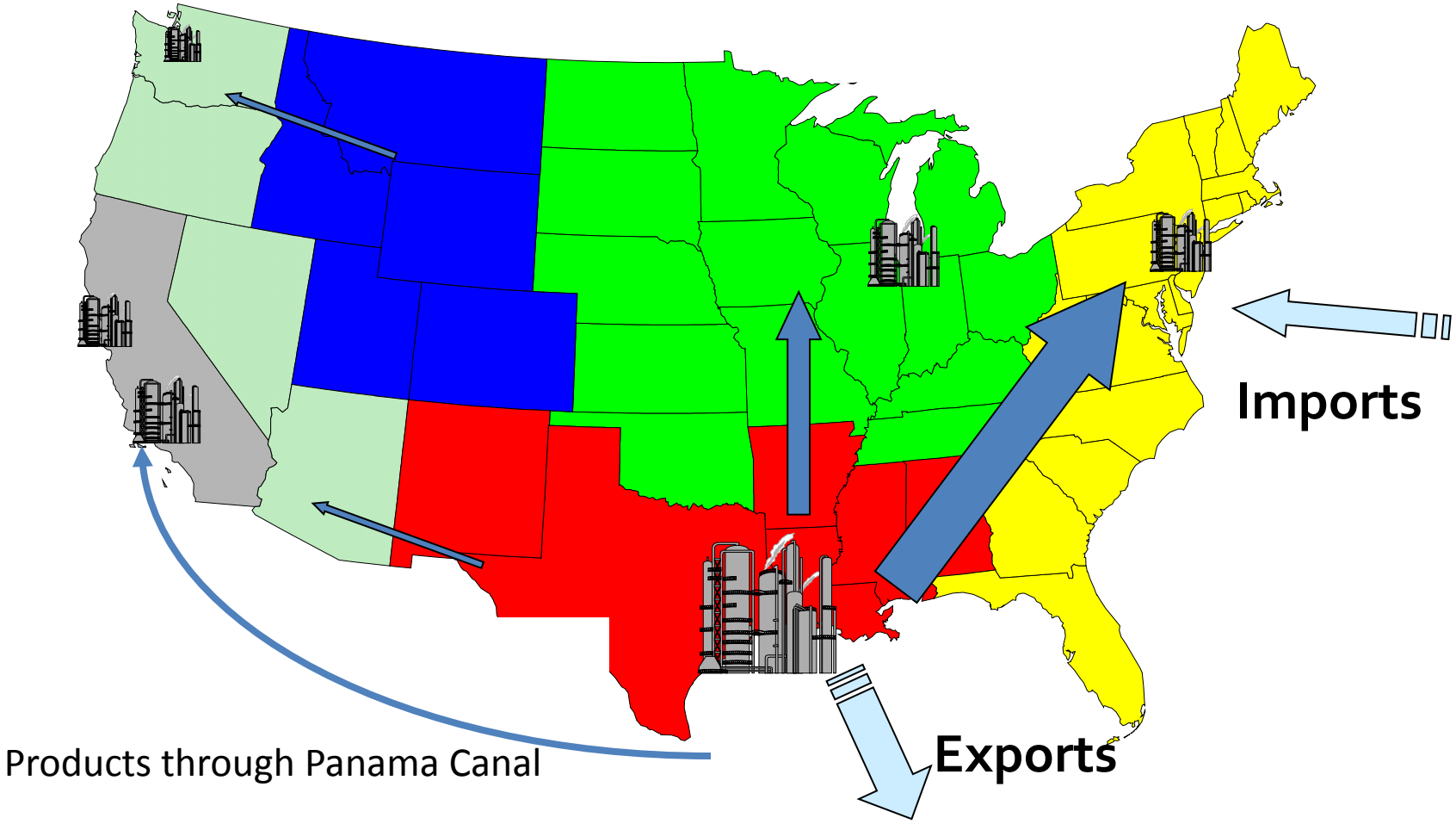
- Being in region and country with good industry margins
- Favorable access to competitive crude oil and natural gas
- Superior cost structure: scale, complexity, efficient operations
- Achieve reliability – avoiding unplanned downtime
- Good operations planning

U.S. refinery locations affect facility competitive position



Source: EIA. For more refinery statistics: EIA - http://www.eia.gov/petroleum/refinerycapacity/

U.S. capacity concentrations & product flows reflect regional competition



Competition takes place in a changing environment

- **Demand:** Facing flat demand and changing product mix; growing export opportunities

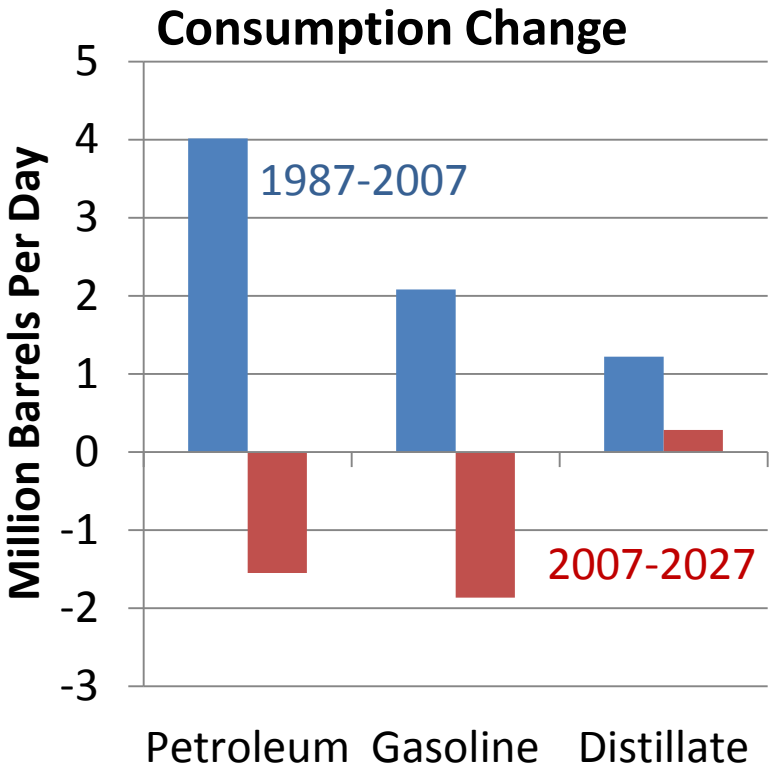
- **Feedstocks**: Seeing inexpensive natural gas fuel/feed, more domestic light crude oil and Canadian heavy crude oil – but not in the "right" places

- **Regulatory Environment:**
  - Dealing with the blend wall
  - Clean air, clean fuel investments
  - Greenhouse Gas (GHG) concerns

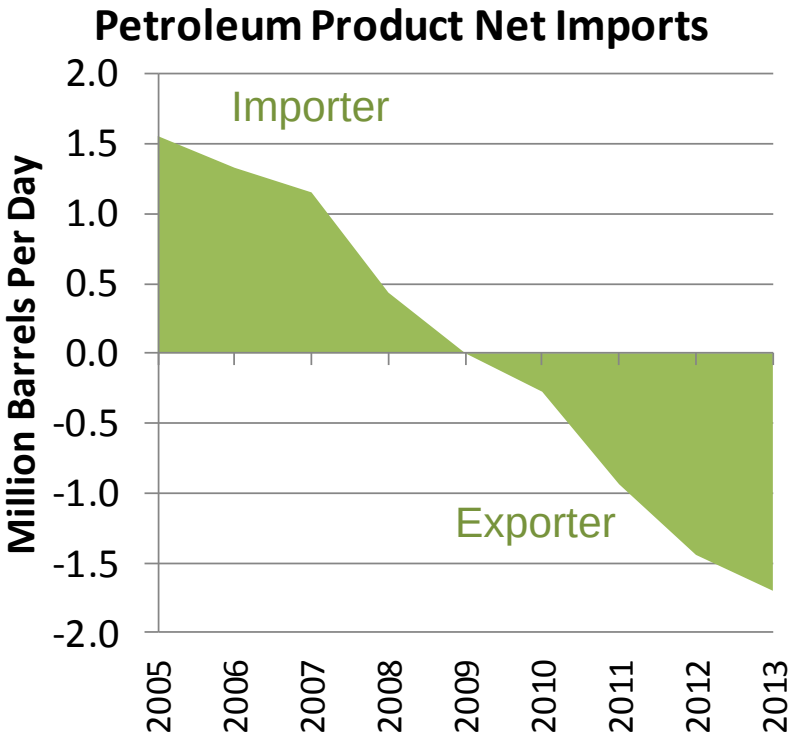
- **Restructuring**: Integrated companies spinning off downstream and midstream (distribution and storage - and sometimes trading)

Demand flip and extra refining capacity

From rising consumption to falling outlook

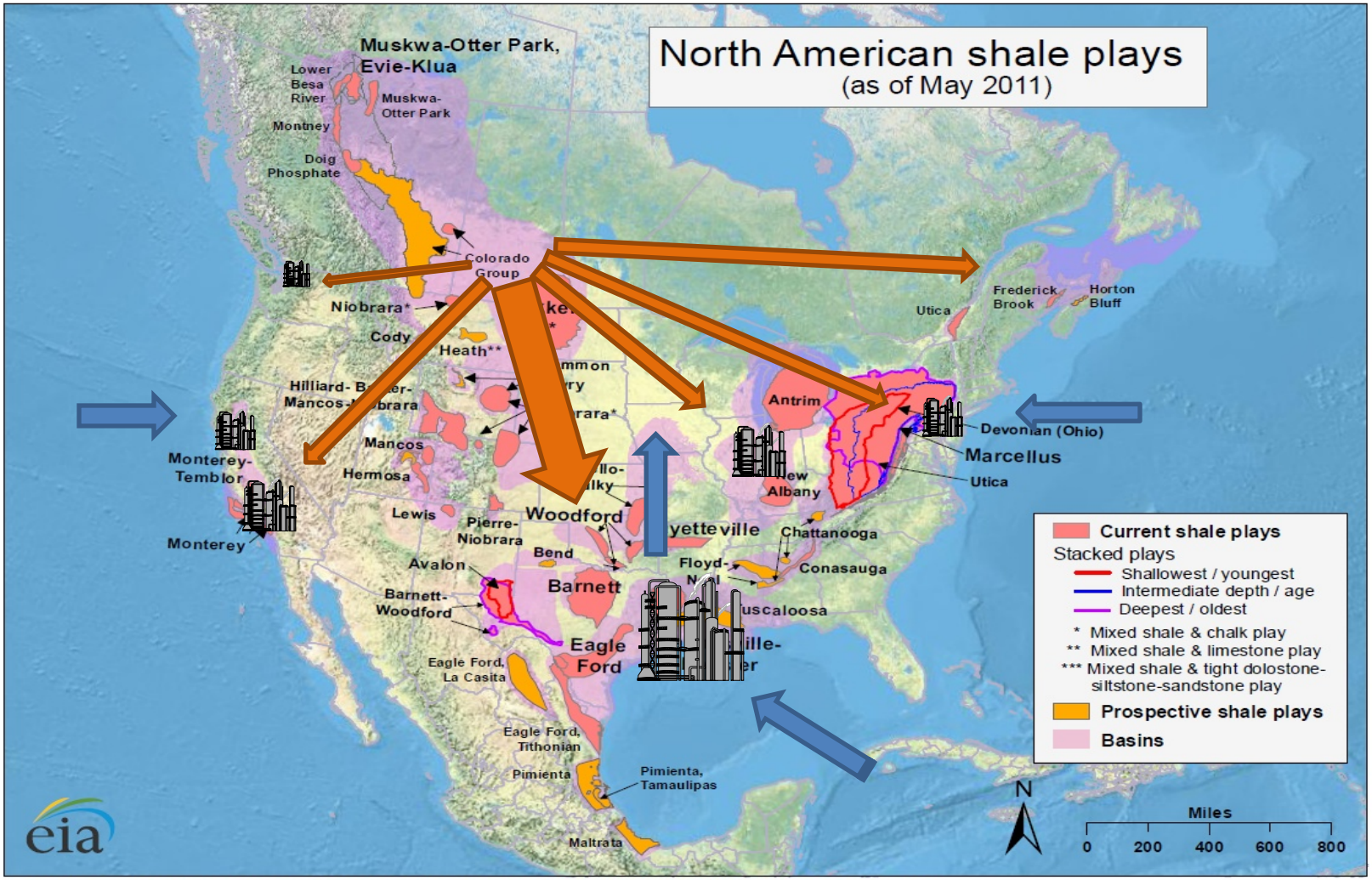


From fears of too little refining capacity to surplus for exporting



Sources: EIA Petroleum Supply and AEO 2014 Reference Case

New supply sources not connected to old refinery delivery infrastructure

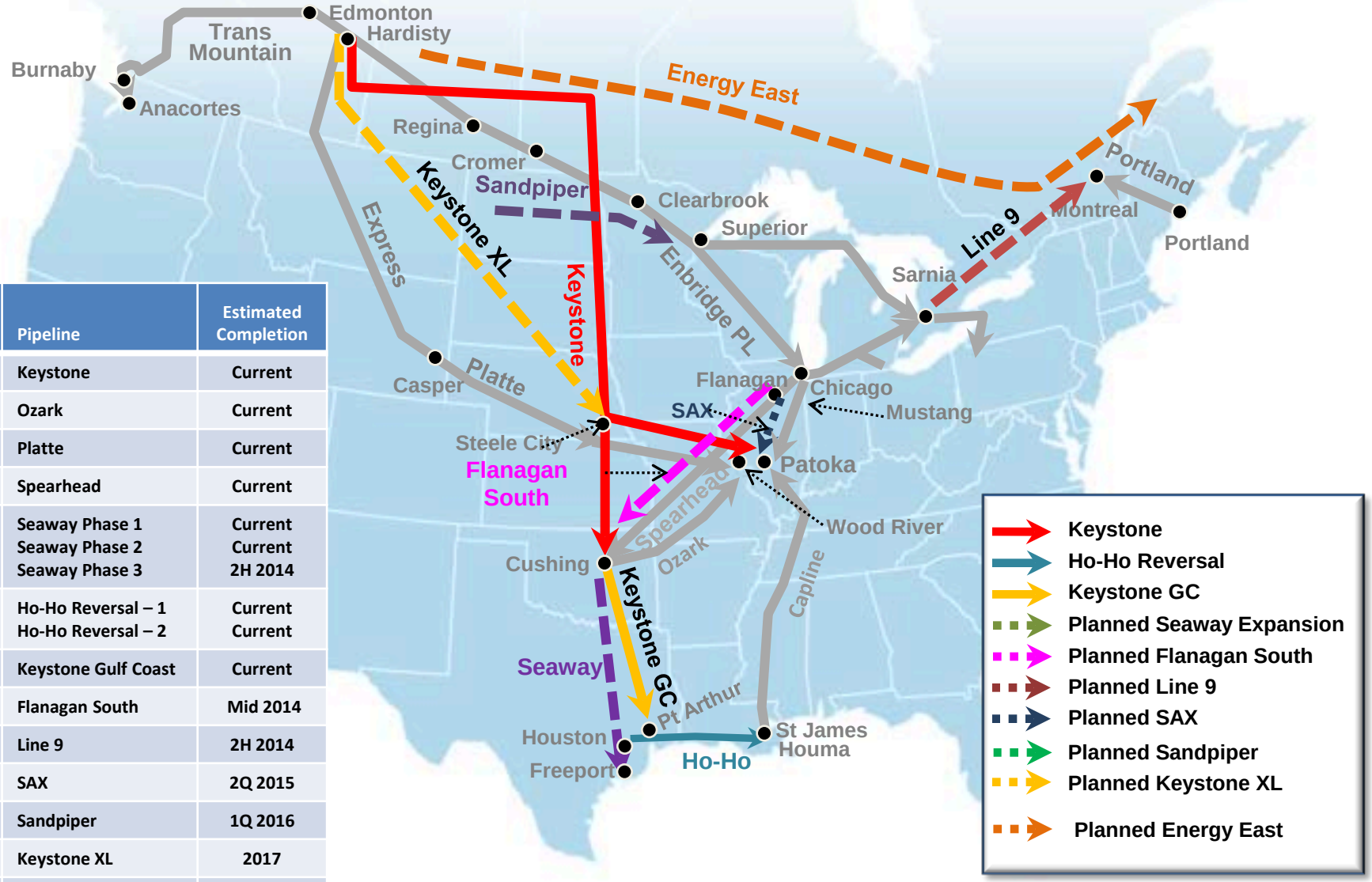


Source: U.S. Energy Information Administration based on data from various published studies. Canada and Mexico plays from ARI.
Updated: May 9, 2011

Key pipelines: Distribution lags production

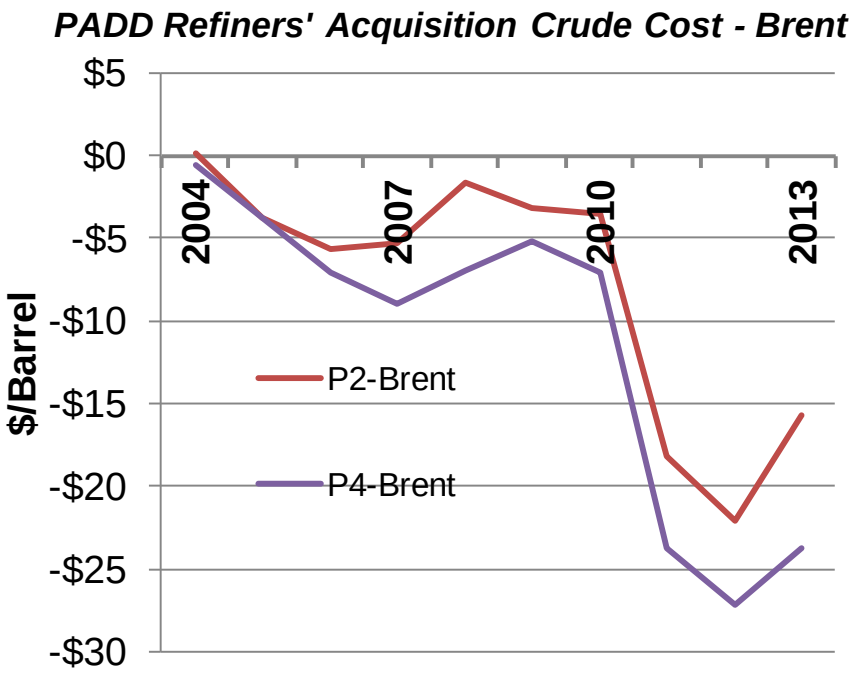
MBPD	Pipeline	Estimated Completion
540	Keystone	Current
215	Ozark	Current
170	Platte	Current
190	Spearhead	Current
150 400 850	Seaway Phase 1 Seaway Phase 2 Seaway Phase 3	Current Current 2H 2014
250 360	Ho-Ho Reversal – 1 Ho-Ho Reversal – 2	Current Current
700	Keystone Gulf Coast	Current
600	Flanagan South	Mid 2014
300	Line 9	2H 2014
300	SAX	2Q 2015
225-375	Sandpiper	1Q 2016
830	Keystone XL	2017
1,100	Energy East	2017

Sources: Publicly available Information

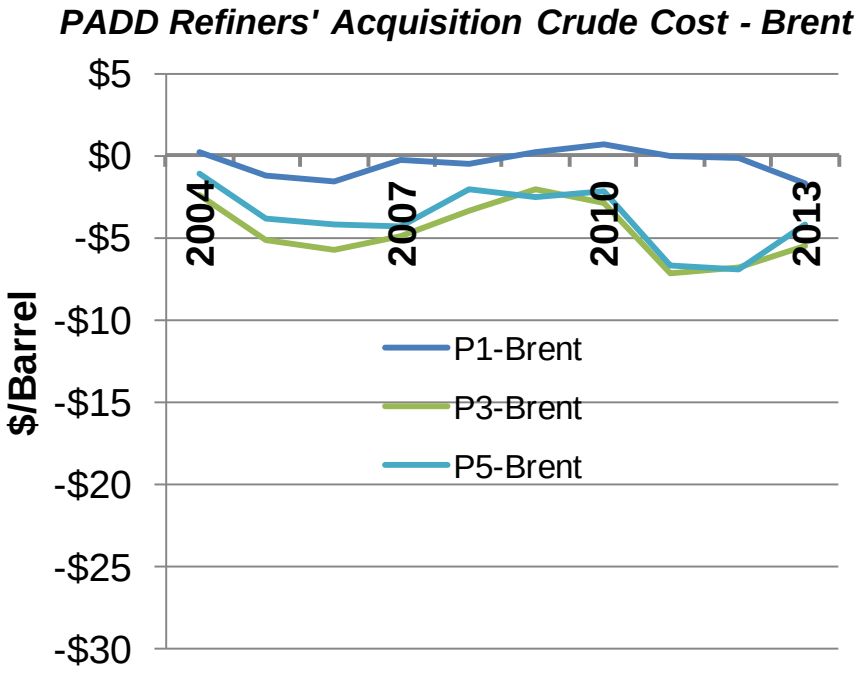


Feedstock access not equal shown by refiners' crude oil acquisition costs

PADDs 2 & 4 expanded crude discounts to Brent



Little change in crude discount to Brent in PADDs 1,3, & 5



Source: EIA, Brent – Brent spot price
Note: P1 – PADD 1 etc.

Ways refiners shift to use more light sweet crude oil

- Back out light sweet imports
- Use any “unused” light sweet capacity
- Back down intermediate crudes (especially sweet) to use more light sweet
- If light-heavy price differentials are small enough, back down heavier crude oils, reducing use of coking unit to use more light
- Invest in changes to use more

Financial incentives are large enough to encourage change

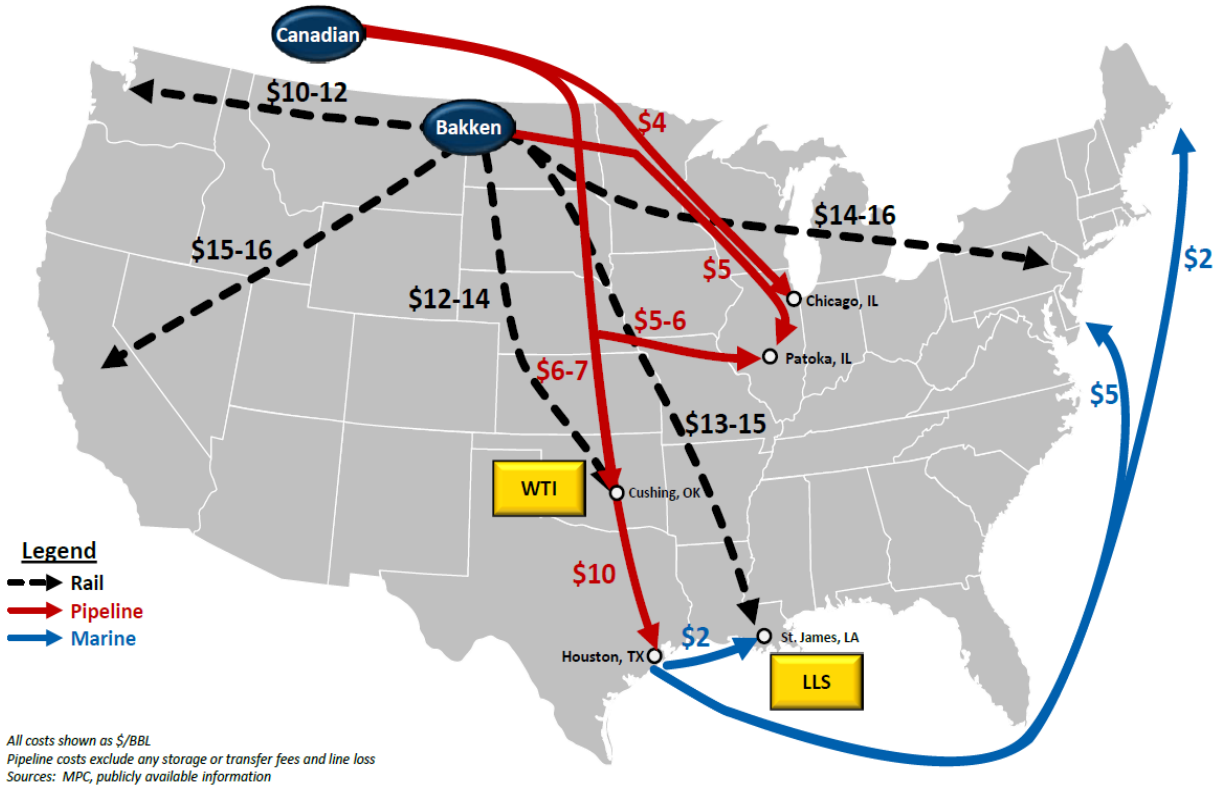
Refiners have at least 1 MMB/D of capability to process more light crude in the short term

Competitive positions will shift again if crude exports expand

Delivery of light crude from the Gulf Coast via Jones Act vessel recently ran $5 per barrel (illustrating competition between basins).

While delivering crude from Gulf Coast to Canada (or even to Europe) via foreign-flagged tanker was $2 per barrel.

Illustrative crude oil transportation costs: Rail is most expensive, but flexible



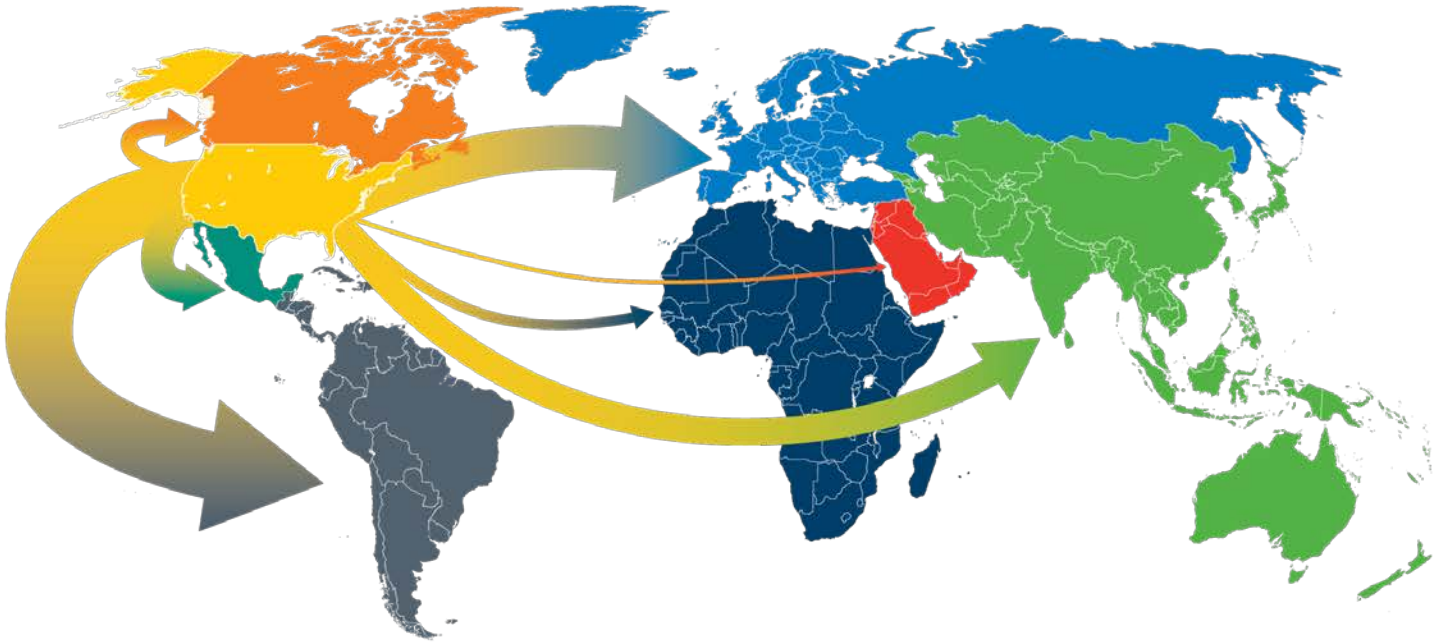
Source: MPC 2/27/2014 Presentation at Simmons Energy Conference)
Note: WTI – West Texas Intermediate crude oil, LLS – Louisiana Light Sweet crude oil.

Petroleum product exports: U.S. location and cost advantages in international markets

U.S. PRODUCT EXPORTS HELP ADDRESS GLOBAL DEMAND
DISTRIBUTION OF U.S. EXPORTS

34%	CENTRAL/ SOUTH AMERICA
22%	EUROPE
16%	MEXICO
14%	ASIA PACIFIC
8%	CANADA
4%	AFRICA
2%	MIDDLE EAST
100%	TOTAL

Source: Energy Information Administration (Includes finished petroleum products and gasoline blending components.)



Note: Represents finished products plus blending components. Most exported product leaves from the Gulf Coast. Arrows do not represent export origination ports.

Refining competitive positions are shifting

As a result of tremendous changes that will continue for years:

- Changing access to discounted crude
- Inexpensive natural gas
- Flat/declining U.S. demand, but growing international markets
- Industry restructuring

And in face of large future uncertainties:

- How much U.S. crude, where, when, and quality
- Infrastructure's changing ability to move that crude and impact on discounts
- Refiners' investments to use more light crude oils
- U.S. and international demand
- Regulatory/statutory changes, e.g.,
  - Crude exports
  - Pipeline changes
  - Rail
  - GHG

Questions?

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