



IQ HUB CANADIAN CRUDE-BY-RAIL

CLOVER OIL & GAS

*“Loading, offloading and transloading
developments”*

September 24, 2019



CLOVER OIL & GAS

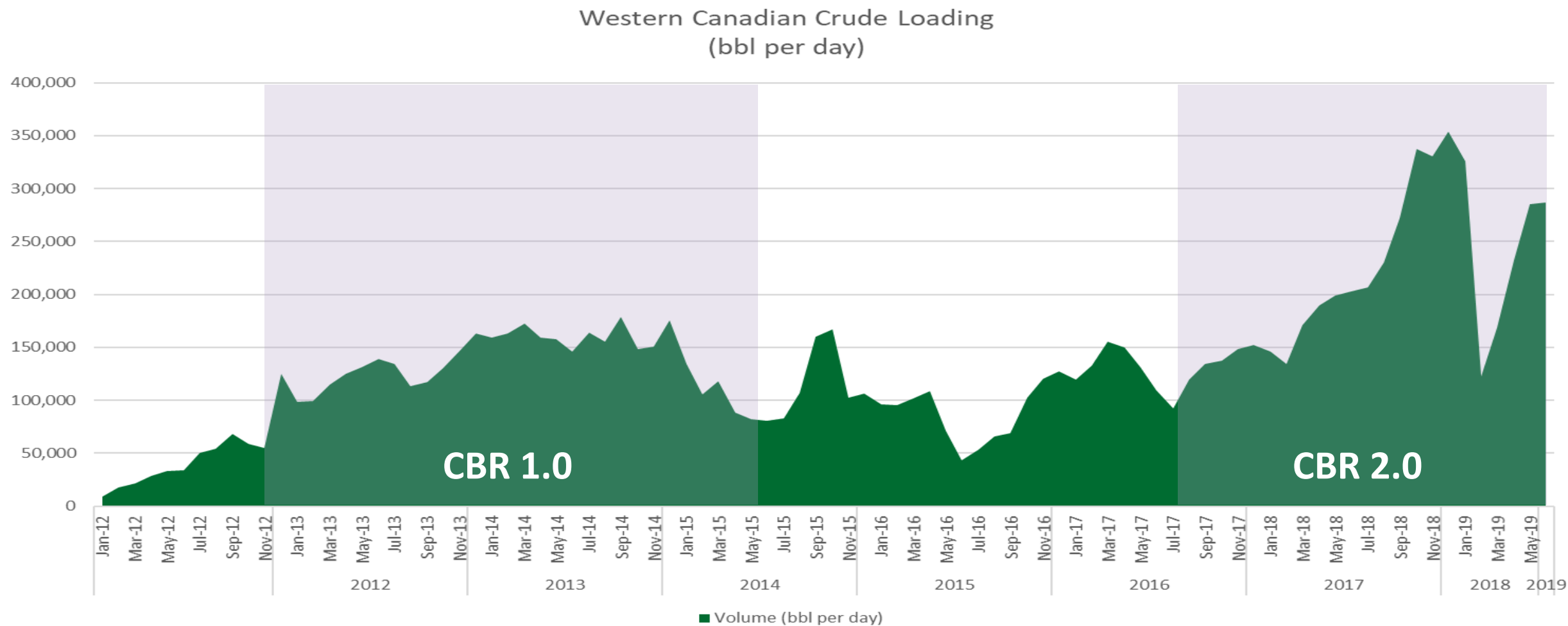
Create value through
full-service North
American marketing
and logistics solutions

Sustain value by
developing long-term
commercial
relationships

Deliver value with
consistent and
efficient takeaway
capacity



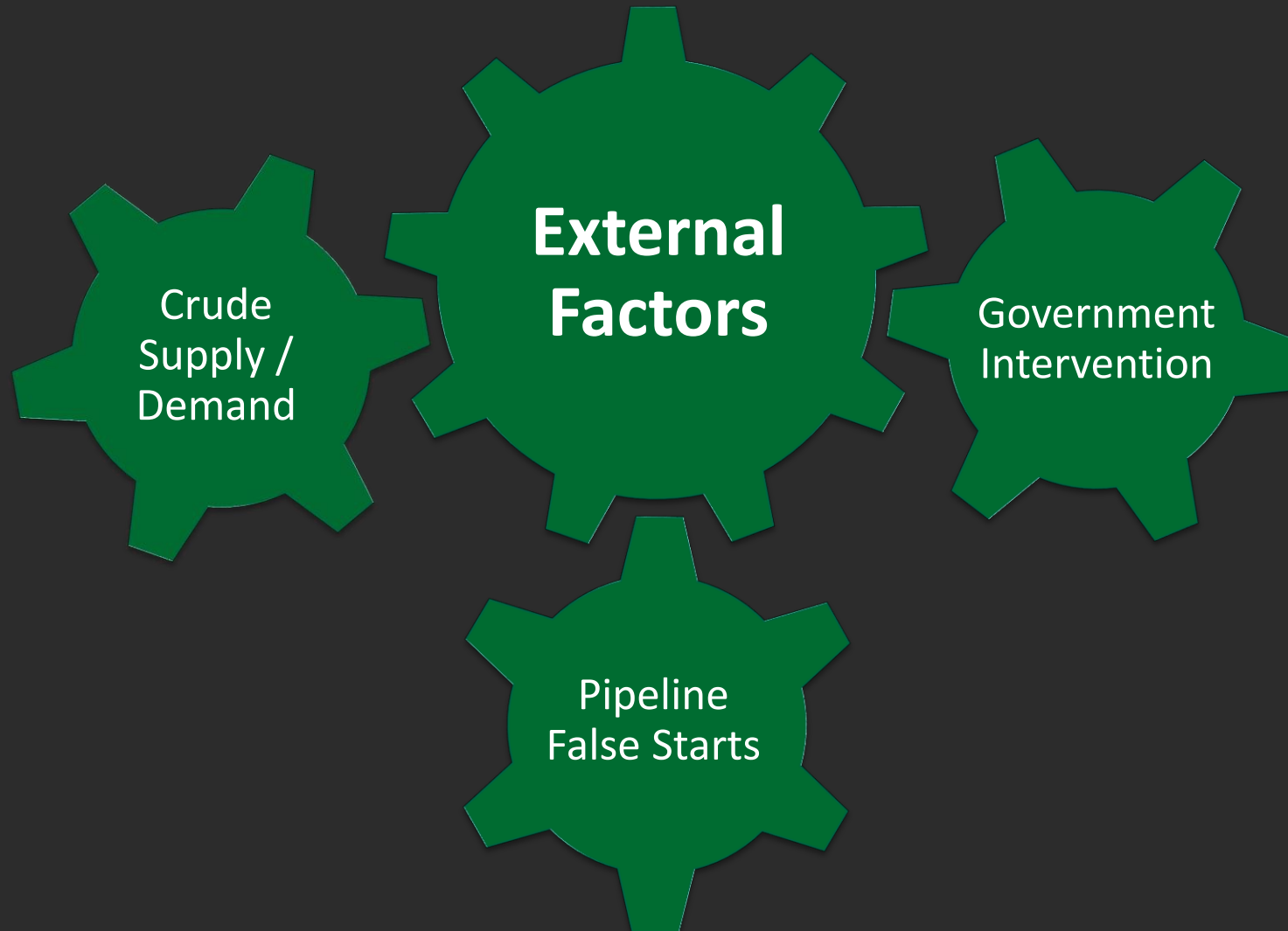
INCREASING IMPORTANCE OF CBR



Canada Energy Regulator, Canadian Crude Exports by Rail – Monthly Data



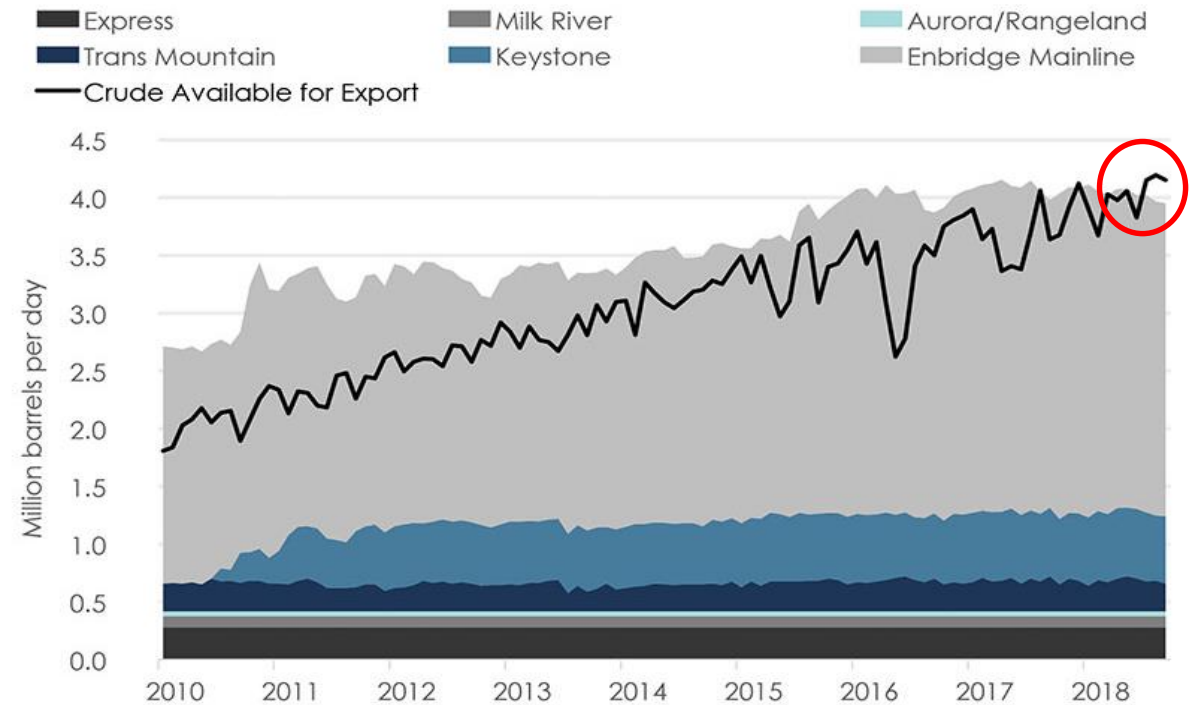
FACTORS IMPACTING CRUDE-BY-RAIL 2.0



IMPACT OF PIPELINE APPROVALS & DELAYS

Constrained Pipeline Capacity

- Western Canadian production outstrips pipeline capacity by 350,000 barrels per day¹
- TMX, KXL and Enbridge Line 3 expansion projects will alleviate that pipeline capacity issue when completed
- Moving undiluted heavy crude improves take away efficiency by as much as 50% by eliminating the transport of diluent



Canada Energy Regulator, Western Canadian Crude Oil Supply, Markets, and Pipeline Capacity, Figure C.5

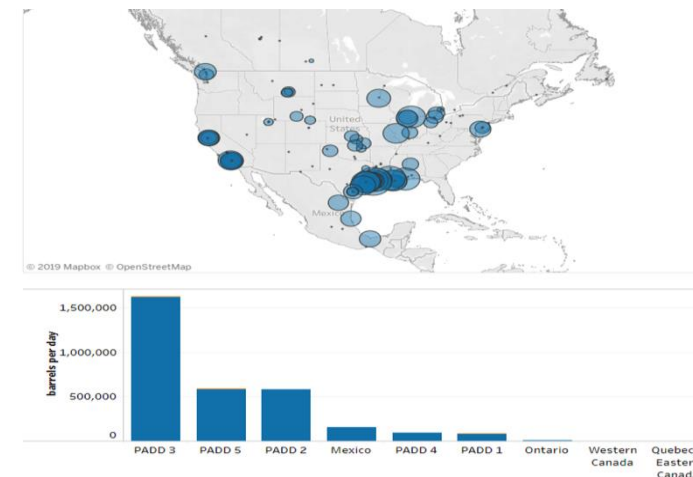


CBR VALUE TO GULF COAST REFINERS

Crude Oil Refinery Coking Capacity

Gulf Feedstock

- High wax content in crude grades lead to unplanned maintenance within refineries
- Substantial light crude feedstock has resulted in excess light product, and not enough middle distillate crack splits
- These factors contribute to demand for heavy crude

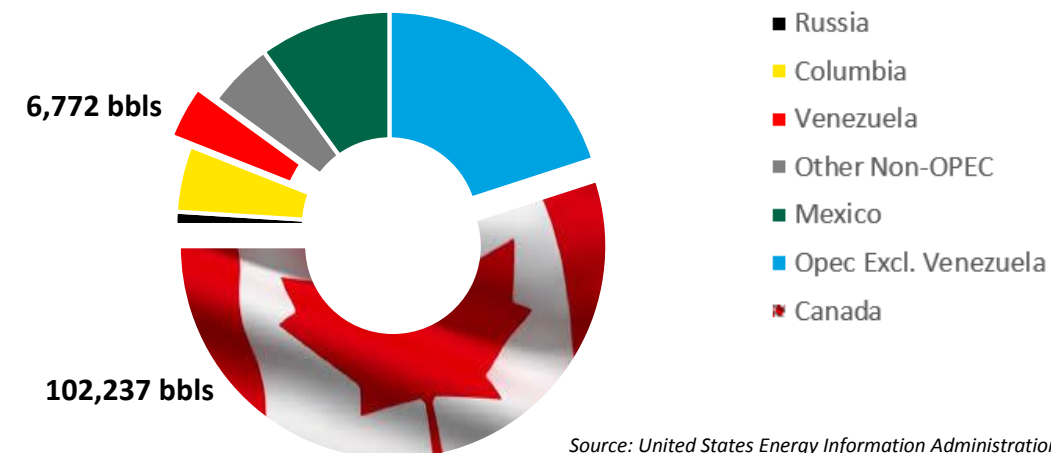


Canada Energy Regulator, North American Crude Oil Refinery and Upgrader Capacity

Geopolitical Impact

- Shortage of heavy crude due to Iranian sanctions, Venezuela upheaval, declining Mexican production, etc
- Re-emergence of security risk with recent attacks on Saudi production

February 2019 - 186.2 Million bbls



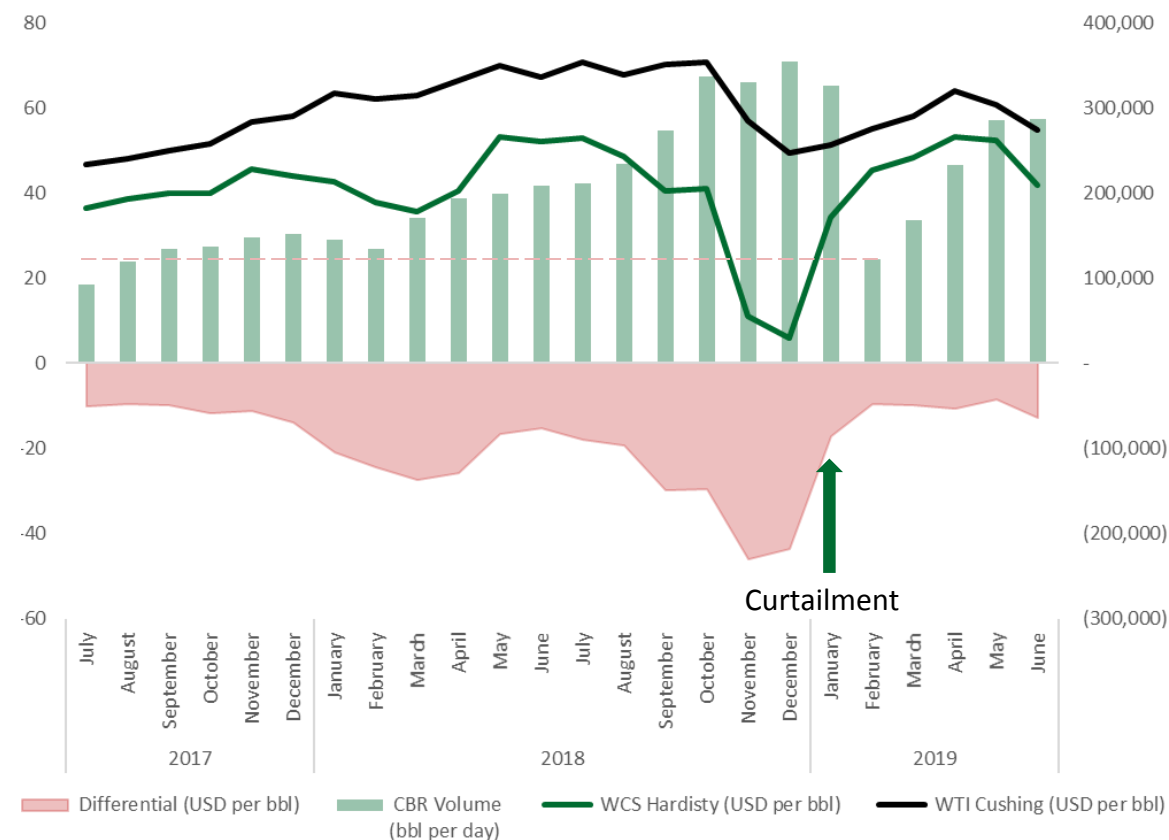
Source: United States Energy Information Administration



IMPACT OF GOVERNMENT INTERVENTION

Tightened Differentials

- Curtailment announced December 2, 2018 resulting in immediate tightening of WCS-WTI differentials
- January rail loading dipped to August 2017 levels in response to WCS-WTI differentials
- CBR recovery through Q2-2019 a result of increased pipeline apportionment overflow
- Current pricing relative to delivery, rather than the index differential.



Canada Energy Regulator, Canadian Crude Exports by Rail – Monthly Data
Pricing data: Net Energy



CBR EFFICIENCIES & ADVANTAGES

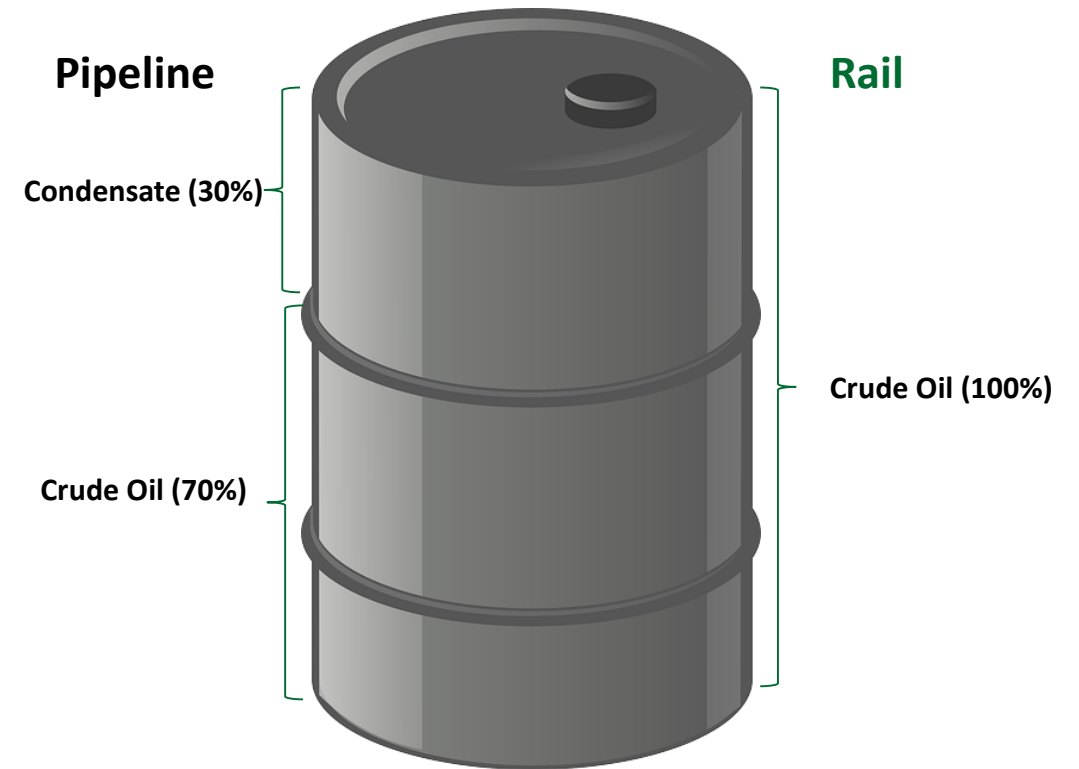
Pure product, grade integrity

- Pipeline batches pass through tankage in Patoka and Cushing pipeline hubs, resulting in unwanted blending of crude
- Crude by rail ensures that what is loaded into the car, is what is paid for, and delivered per the original specification

Timely delivery

- 110 cars can be filled with heavy crude in <24 hrs.
- Six to ten days between departure and delivery versus 12-30 days by pipe

What's in a barrel?



UNDILUTED CRUDE EFFICIENCY

Benefits

- High-value middle distillate crack splits - naphtha, kerosene, jet fuel, distillates
- Improved refining margins
- Non-hazardous material for transport – higher flashpoint, lower environmental liability
- Reduced cost to deliver leads to greater realized pricing per produced barrel

Sources

- Trucked from wellhead
- Pipeline from production origin to hub, to utilize a Diluent Recovery Unit

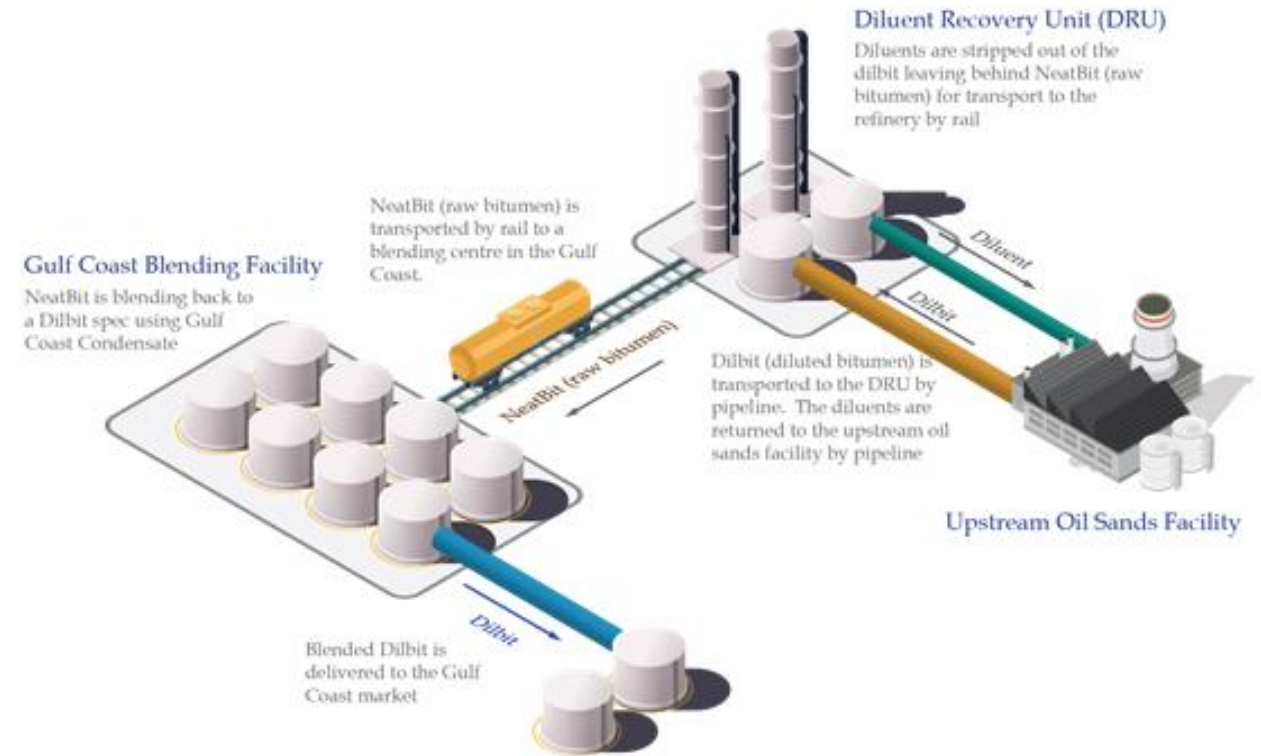


Image: Neatbit Shipping Corp.



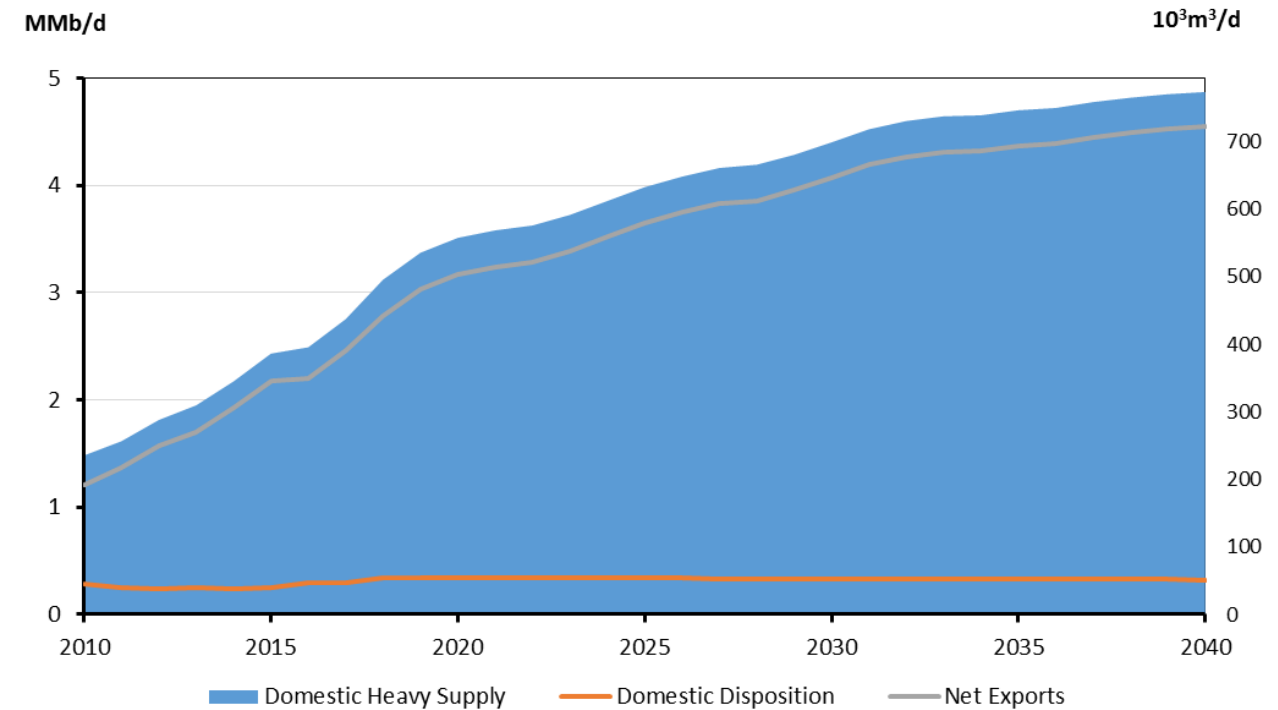
DRU NETWORK EFFICIENCY

Availability

- Steady growth in heavy oil production
- Existing crude by rail terminals
- Pipeline hubs deliver ample diluted heavy feedstock

Infrastructure Expansion

- DRU of requisite scale requires significant investment
- ROI achieved through reduced cost per barrel delivered to market, increasing realized netbacks



Canada Energy Regulator, Western Canadian Crude Oil Supply, Markets, and Pipeline Capacity



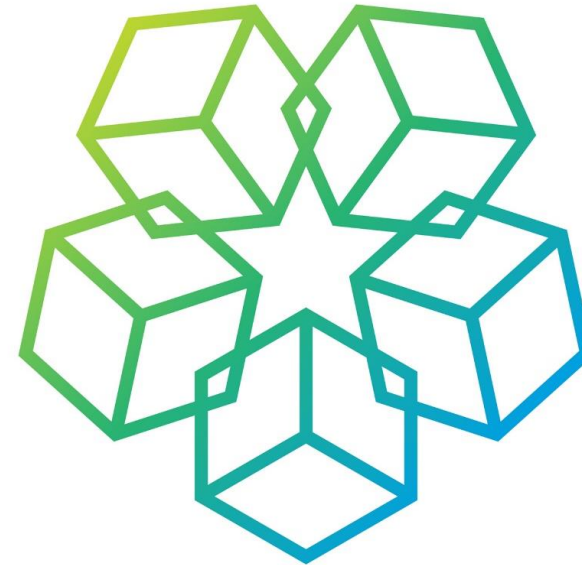
EVOLUTION OF CBR MANAGEMENT

Electronic Delivery Management

- Crude quality specifications and loaded volume recorded and added to a private blockchain.

Real-Time Train Car Management

- Crude tank car lid and location monitored by GPS for the duration of the move.
- Geo-fencing triggers create notifications to related parties when trains leave and arrive.
- Value creation comes from scheduling efficiencies, verifiable product integrity, and an auditable transaction log.





THANK YOU

Brent Osmond, President

bosmond@cloveroilgas.com
(936) 263-2254

September 24, 2019

