

CME Group and the Implementation of the WTI Specifications

Daniel Brusstar

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COQA Meeting



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Agenda

- Update on the Recent Cushing Deliveries
- WTI Quality is meeting the new specs
- The benefits of adopting the COQA WTI specs
 - Refiners benefit from stable and certain quality
 - Stable WTI Quality will **transform** the global market
 - New supply sources will increase competition globally

Brief History of the WTI Spec Change

2016

- As concerns increase about WTI quality, COQA creates a Domestic Sweet Monitoring Program Subcommittee to analyze and publish data on the current quality of WTI
- CME Group becomes a funding member of the Domestic Sweet Monitoring Program, and actively supports testing efforts in collaboration with its oil industry customers

2017

- Over 100 random samples of Domestic Sweet were analyzed and reviewed
- Terminal operators Enterprise and Enbridge approve the new tests
- **On December 11, 2017 CME Group announced the revision of the WTI rulebook to adopt the new tests effective starting on January 2019 (12 months notice)**

2019

- **The revised WTI specifications came into effect starting with January 2019 contract month**
- **WTI deliveries are complying with the new specifications in 2019**

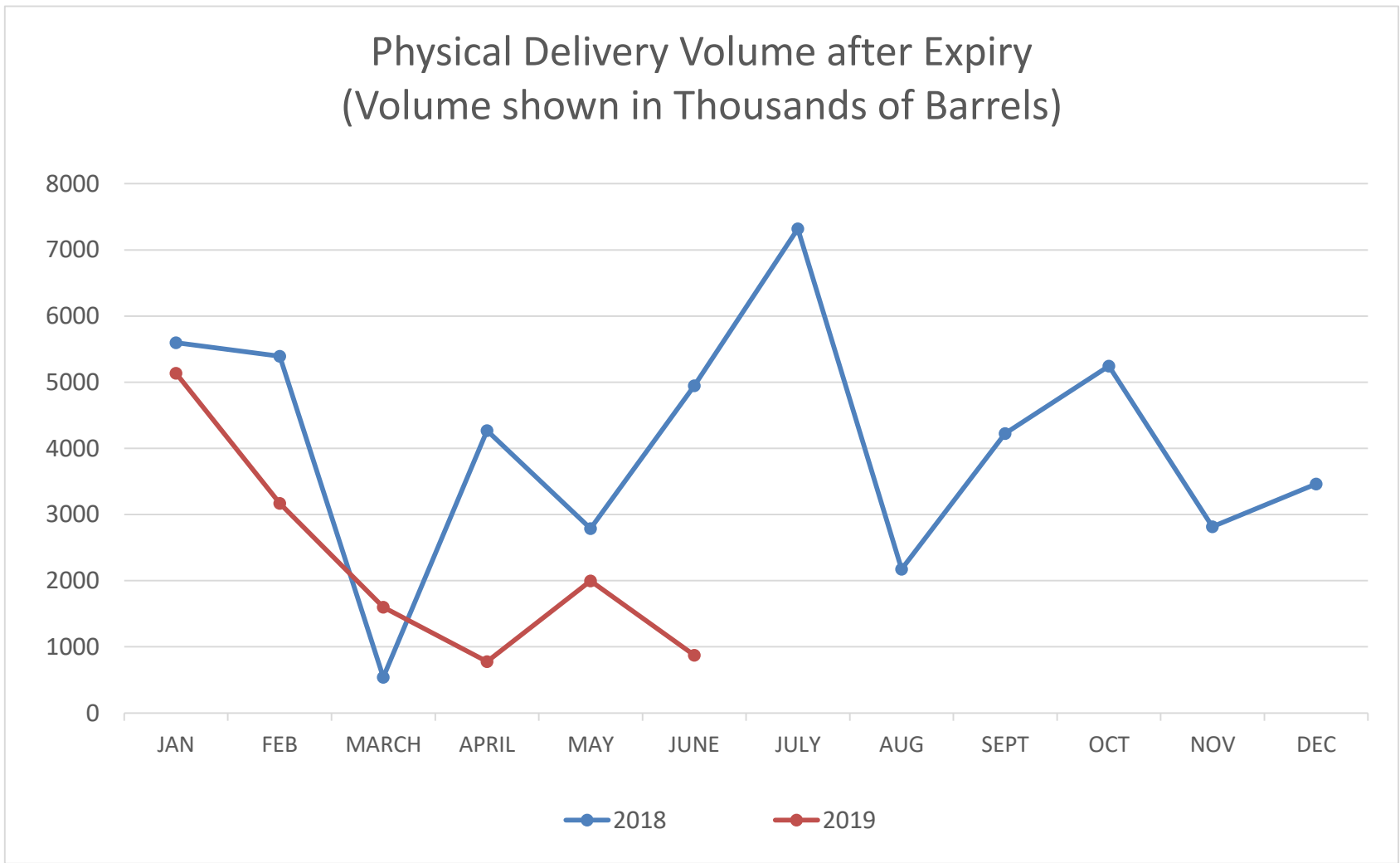
Five New Additional Tests

- Micro Method Carbon Residue: 2.40% or less by mass; as determined by ASTM Standard D4530-15, or its latest revision;
- Total Acid Number (TAN): 0.28 mg KOH/g or less as determined by the first inflection point; using ASTM Standard D664-11a (2017), or its latest revision;
- Nickel: 8 parts per million (ppm) or less by mass; as determined by ASTM Standard D5708-15, Test Method B, or its latest revision;
- Vanadium: 15 ppm or less by mass; as determined by ASTM Standard D5708-15, Test Method B, or its latest revision;
- High-Temperature Simulated Distillation (HTSD) as determined by ASTM Standard D7169-16, or its latest revision, as follows:
 - (a) Light Ends <220°F by HTSD: Not more than 19% by mass;
 - (b) 50% Point by HTSD: 470°F- 570°F;
 - (c) Vacuum Residuum >1020°F by HTSD: Not more than 16% by mass.

Update on the Phase-in of WTI tests

- Cushing WTI-type crude oil complying with the additional WTI tests
- Cushing Terminals conducting additional testing
- Delivery Volumes in 2019 on Par with 2018 so far
- Cushing Terminals performed well during Phase-in period

NYMEX Light Sweet Crude Oil Futures



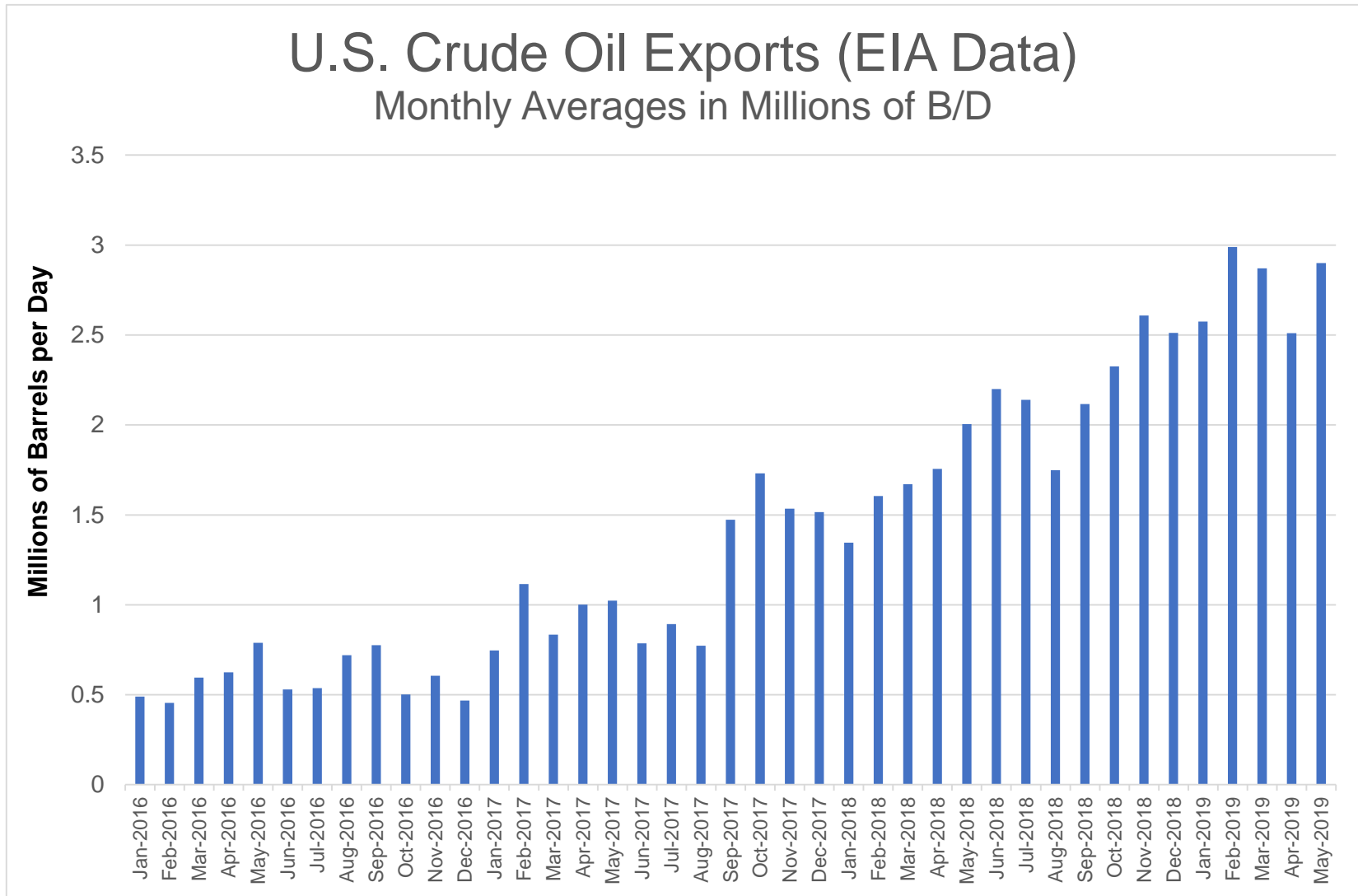
Benefits of adopting the additional WTI tests

- Refiners benefit from stable quality and certainty
- Stable WTI quality will **benefit** the global marketplace
 - Uniform WTI quality will drive the Export market
 - Why? Global refiners have new supply source
 - Uniform and Fungible WTI pool will promote efficiency and transparency in the market
 - Better Transparency with crudemonitor.us

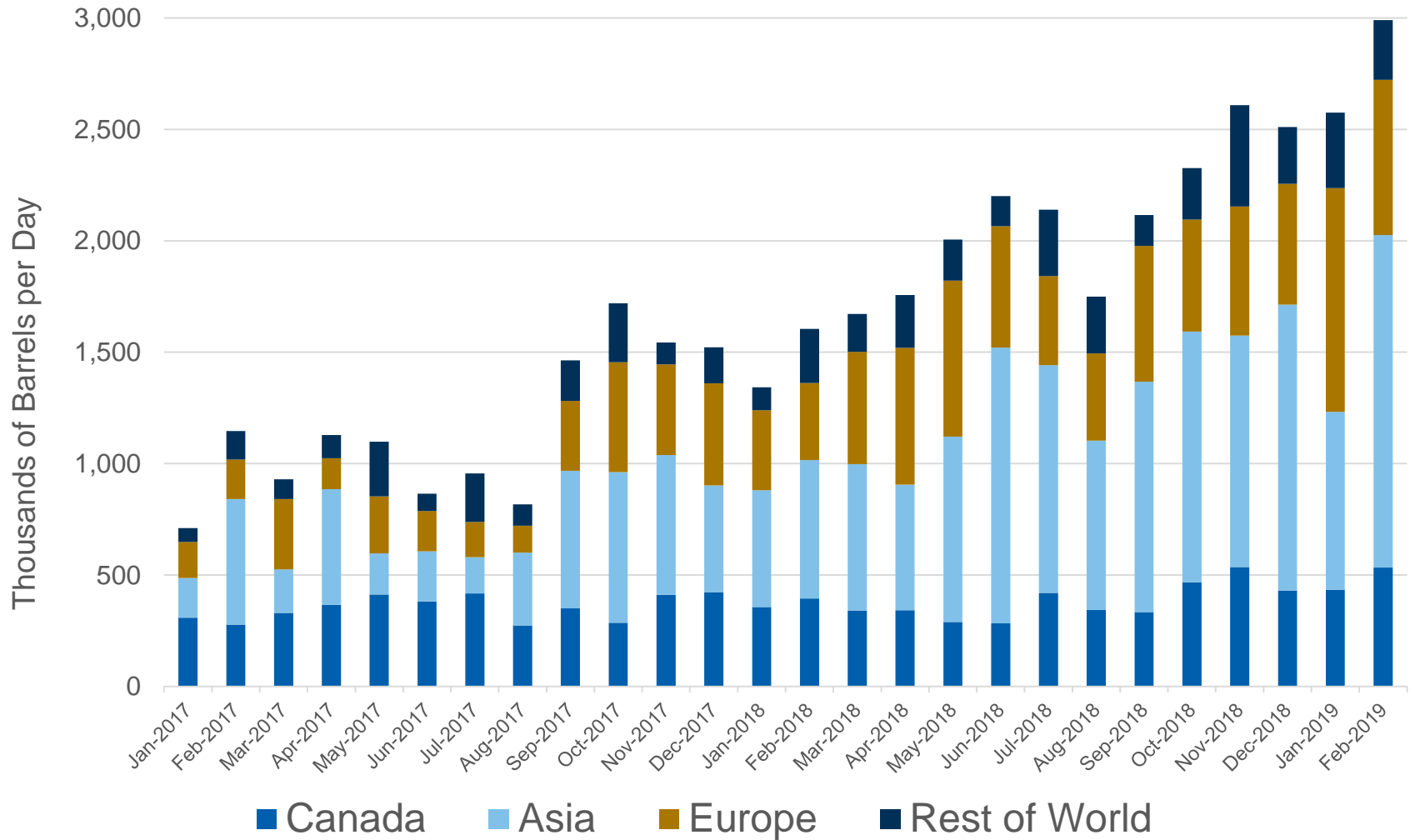
Stable WTI quality will transform the global market

- A fungible pool of stable WTI will energize the Asian and European refiners who are thirsty for new supply sources
- **Nearly 7 million barrels per day** of WTI-type crude oil produced in Permian, Eagle Ford, Bakken, DJ Niobrara, and Oklahoma
- **4.5 million barrels per day** produced in the Permian and Eagle Ford
- Stable and certain WTI quality will create a powerhouse in the global marketplace with a **massive** fungible pool of crude oil
- Uniformity in WTI quality will drive efficiency in the Export market with more competition and transparency like never before

U.S crude oil exports surge



U.S. Crude Exports by Country



NYMEX WTI Houston Futures

- Features waterborne or terminal delivery FOB Houston for WTI export cargoes.
- Export Quality Specifications:
 - API Gravity of 40 to 44 Degrees
 - Sulfur 0.275% maximum
 - Vanadium metal content of 4 parts per million (ppm) maximum
- Delivery at three Houston terminals operated by Enterprise

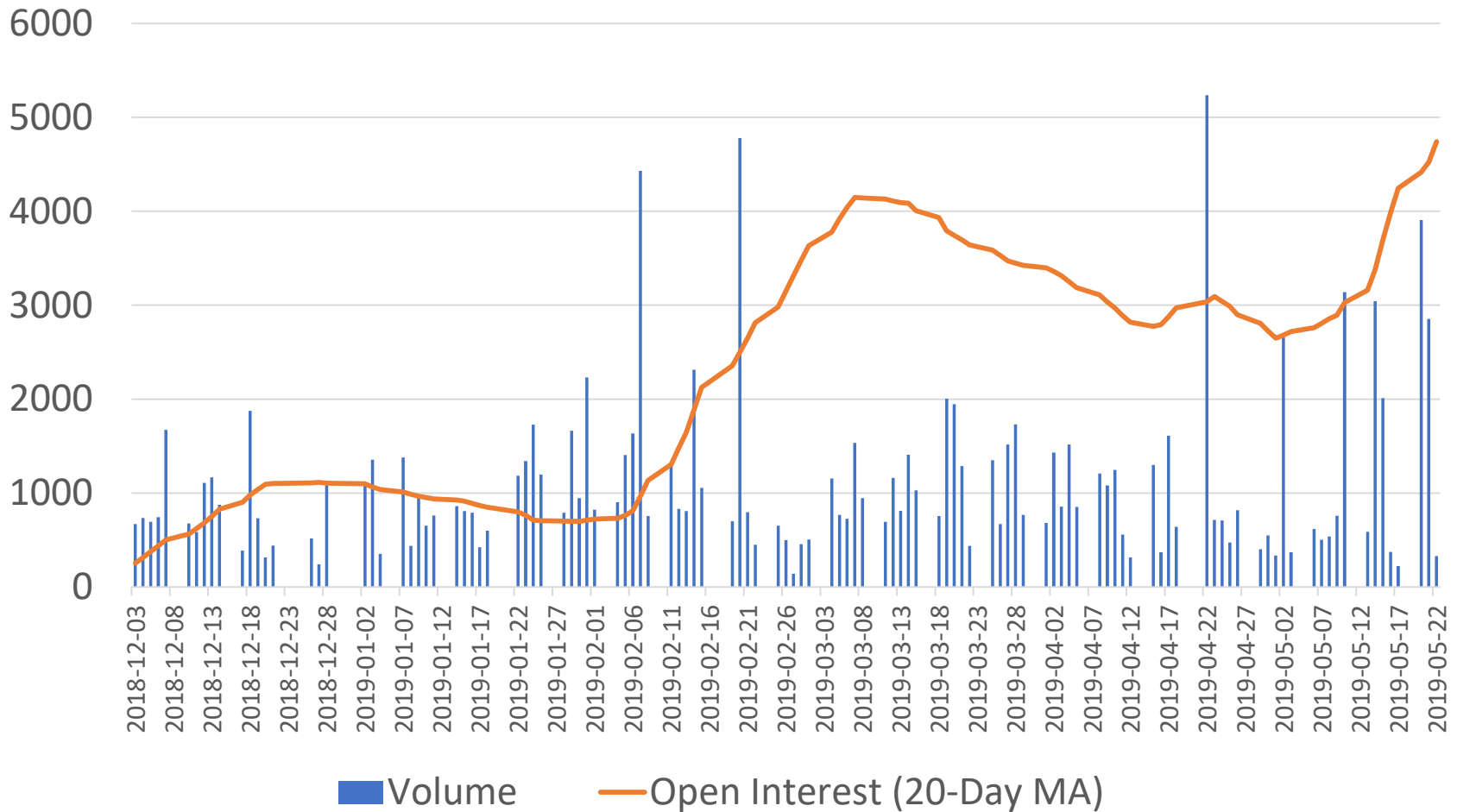
Products LP:

- Enterprise's Echo terminal
- Enterprise Houston Ship Channel terminal
- Enterprise's Genoa Junction

NYMEX WTI Houston Futures Contract

Daily Trading Volume and Open Interest

(One Futures Contract = 1000 Barrels)



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