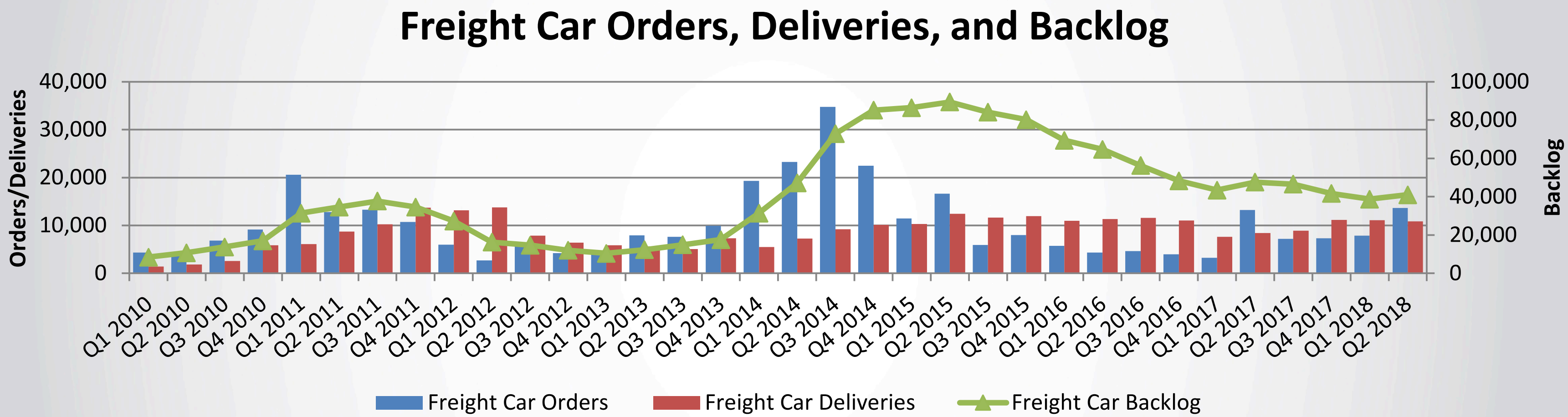
RAIL ENERGY TECHNICAL ADVISORY COMMITTEE

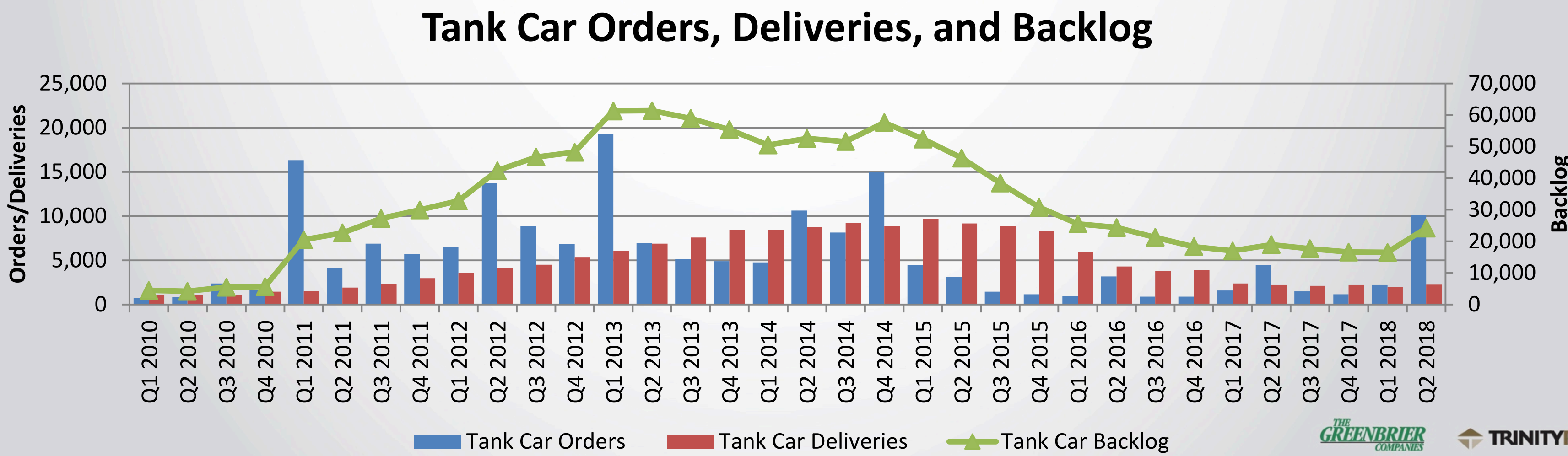
THE GREENBRIER COMPANIES

TRINITYRAIL™

Railcar Orders, Deliveries, and Backlog

Though not Near Levels of 2014/2015 Peaks, Orders and Backlog Increased in Q2 2018





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Railcar Delivery Forecast

Returning Railcar Demand in the Energy & Downstream Markets Should Improve Deliveries

	2016A	2017A	2018F	2019F	2020F
Freight Car Deliveries	48,391	36,015	42,642	43,075	43,825
Tank Car Deliveries	17,841	8,948	11,527	19,425	19,750
Total Railcar Deliveries	66,232	44,963	54,169	62,500	63,625

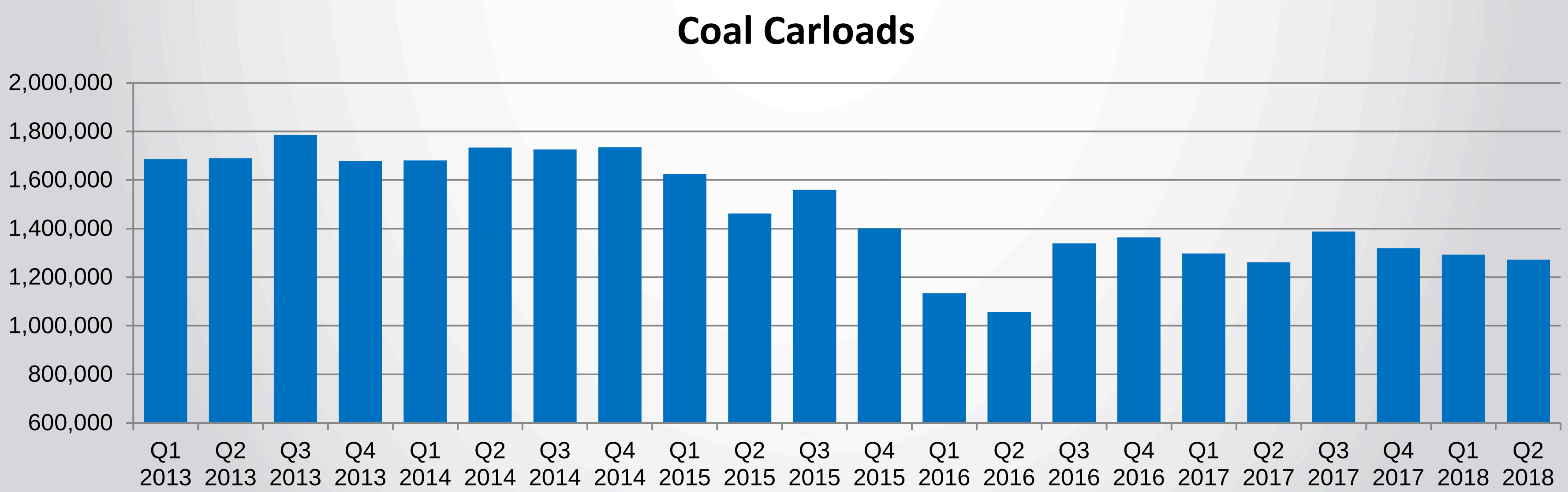
Source: ARCI and FTR (September 2018 Forecast)

- After bottoming out at ~45K deliveries in 2017, improving covered hopper and tank car demand is expected to drive growth over the next few years
- Covered hopper deliveries are expected to grow due to near-term demand for >5,500 c.f. cars and improving demand for 3,500-5,500 c.f. in the longer-term
- Tank car delivery is expected to be strong by historical standards, but well off the production pace during the shale boom
- As of Q2 2018 there were 24,154 tank cars in the industry backlog, likely driven by higher tank car replacement demand and economic improvement

Coal

Coal carloads starting new normal after 2016 lull

- While improved from 2016, coal carloads remained depressed with low natural gas prices, coal plant closures, and environmental regulations all acting as headwinds
- 17.5% of open hoppers and gondolas are currently in storage and empty
- EIA forecasts coal production to decline by 1% to 768 million short tons (MMst) in 2018, despite a 10% increase in coal exports

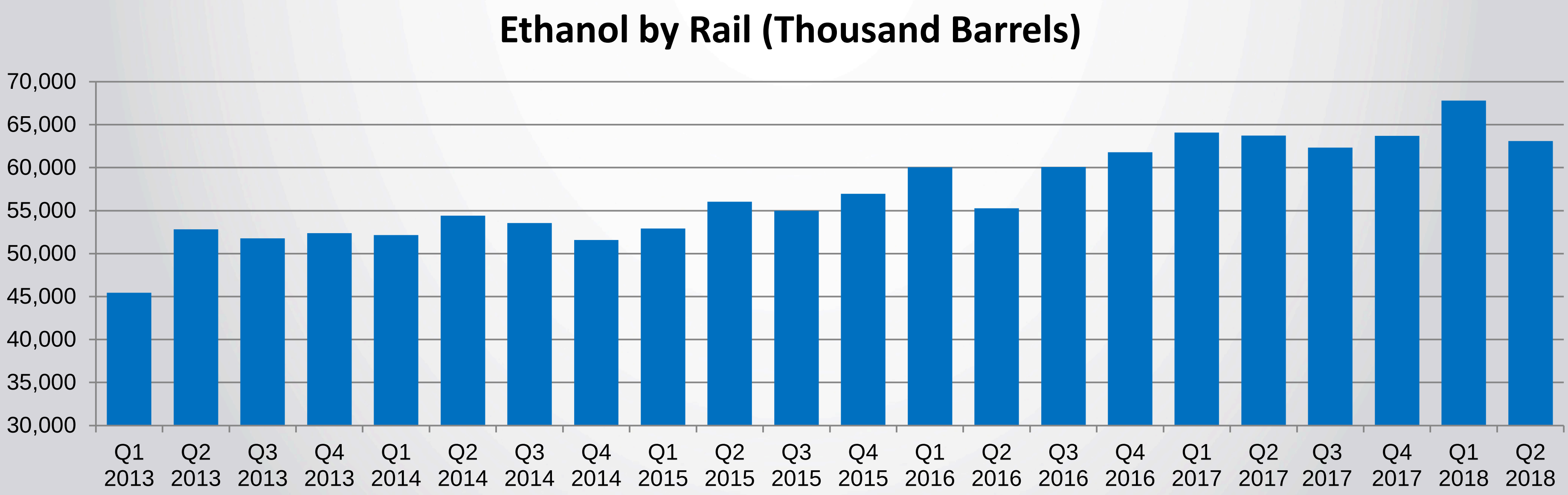


**STCC Codes starting with 11*   Source: AAR

Biofuels

Ethanol by rail has moderated since Q1 2017 peak

- The USDA forecasts a nominal increase in U.S. fuel ethanol production in 2018
- Tariffs and trade restrictions from China and Brazil could also weigh on biofuel demand
- Of the 32,860 railcars that moved ethanol in Q1 2018, 56.9% were DOT 111s, 9.2% were CPC-1232s, and 33.3% were built to the DOT-117 standard
- Other biomass-based diesel products are expected to grow 11% in 2018/2019 season



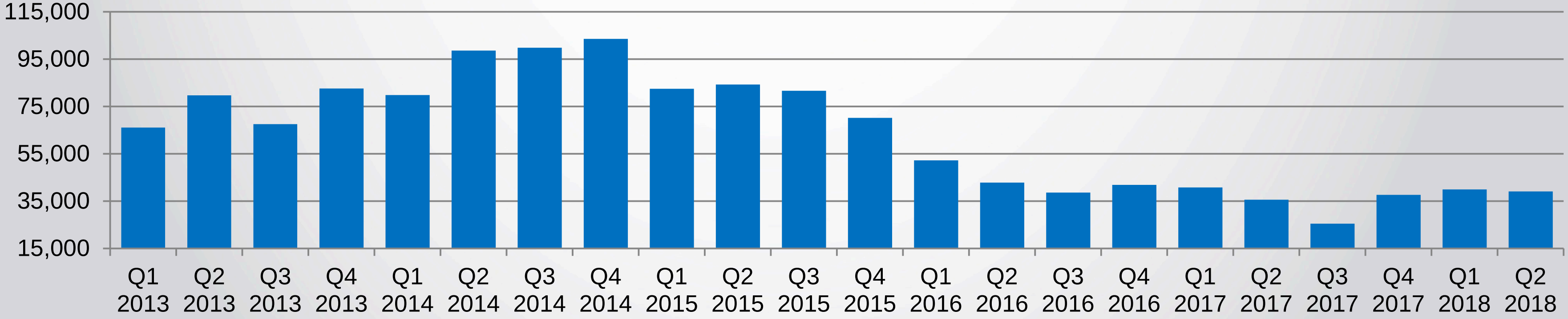
**STCC Codes starting with 28184*   Source: EIA

Crude Oil

U.S. CBR expected to remain down while Canadian CBR expands

- U.S. CBR movements have dropped by over 62% from their peak as of Q4 2017
- Crude oil exports (allowed as of December 2015) created more incentive for pipeline utilization to the Gulf Coast
- Due to lack of new pipeline capacity, Canadian crude oil carloads are expected to improve significantly over the next 2-3 years
- Railcars used to transport crude oil has dropped by over 35K from the 2014 peak
- 62.6% of all railcars used to transport crude oil in Q1 2018 were CPC-1232s while 32% were DOT-117s

Crude Oil by Rail (Thousand Barrels)

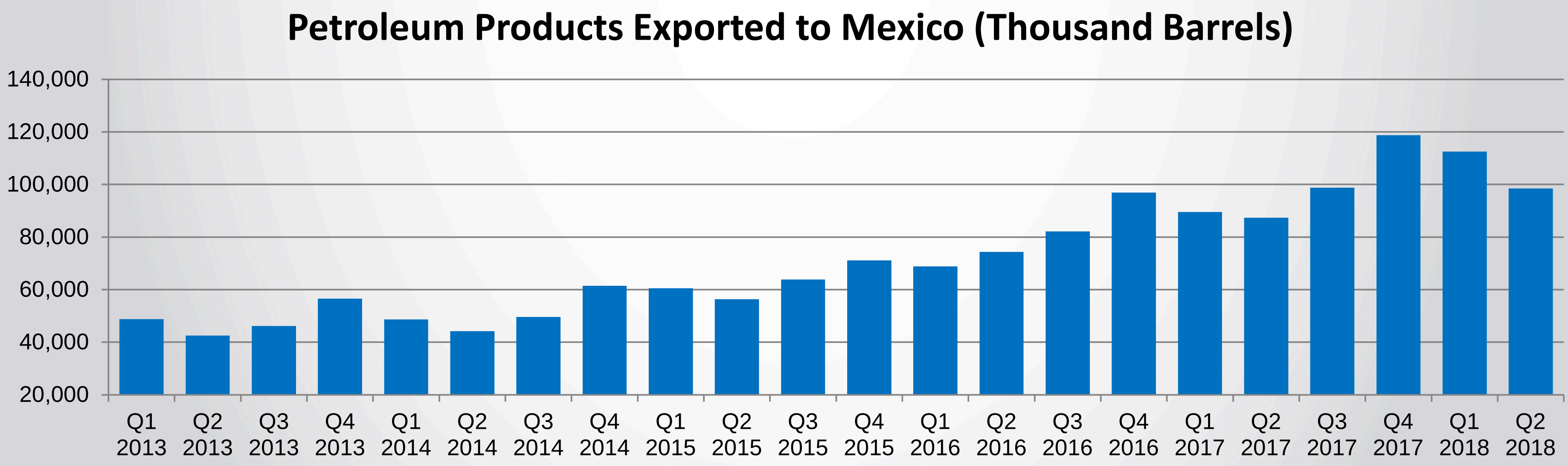


**STCC Codes starting with 131* Source: EIA

Petroleum Products

Mexico's energy liberalization likely to drive carloads of petroleum products in 2018

- U.S. carloads of petroleum products excluding crude have rebounded, but remain 16% below peak levels last seen in Q4 2014
- Domestic fuel consumption is not expected to drive growth in the U.S.
- Energy liberalization in Mexico is expected to provide opportunity for U.S. fuels, but there is some uncertainty due to recent election results in Mexico



**Includes crude oil and petroleum products*

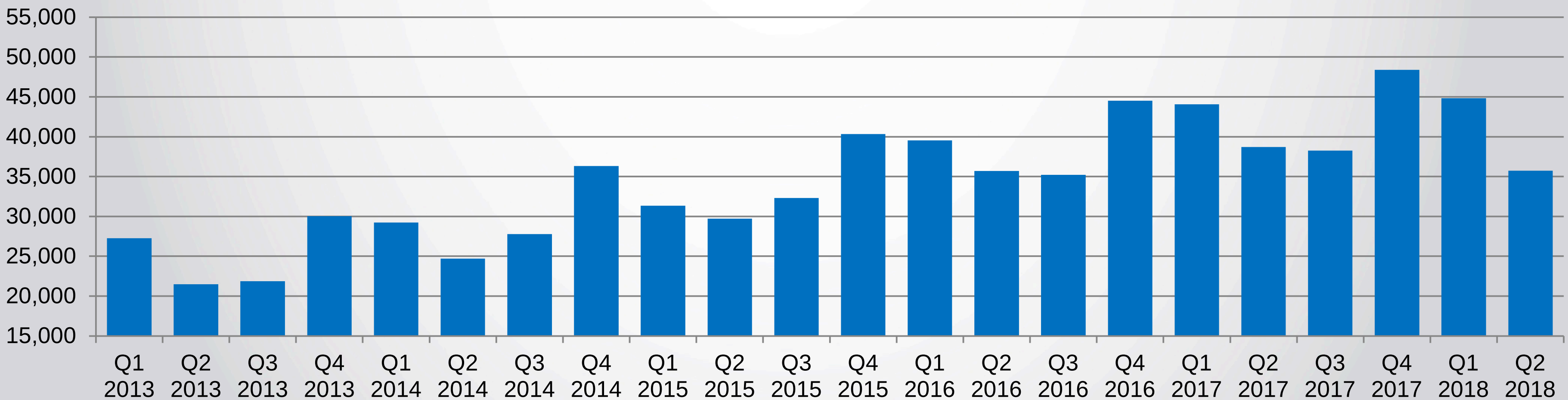
Source: EIA

NGLs

North America remains an advantaged geography for chemical production

- North American polypropylene projects are planned between 2020 and 2022 to exploit the continent's low cost inputs and high margins
- Export opportunities and the petrochemical capacity build out underway will drive up demand for natural gas liquids (i.e. propane and butane)

Total NGLs by Rail (Thousand Barrels)



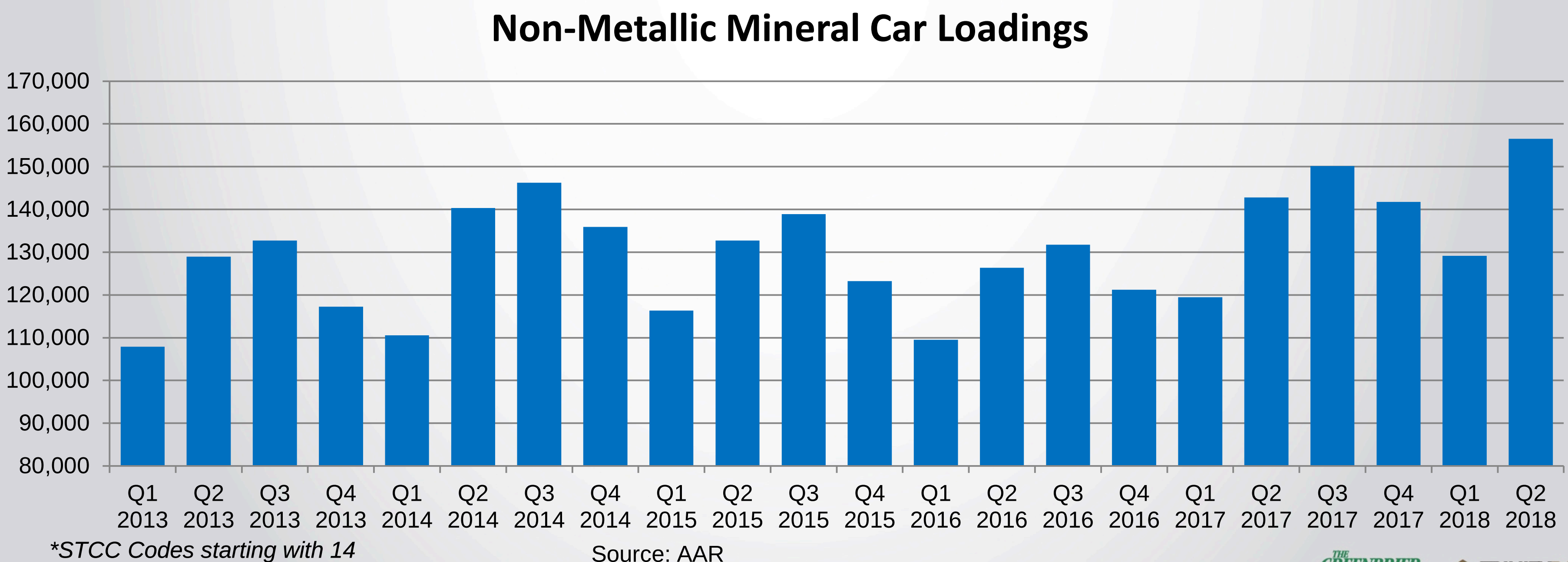
**STCC Codes starting with 2912*

Source: EIA

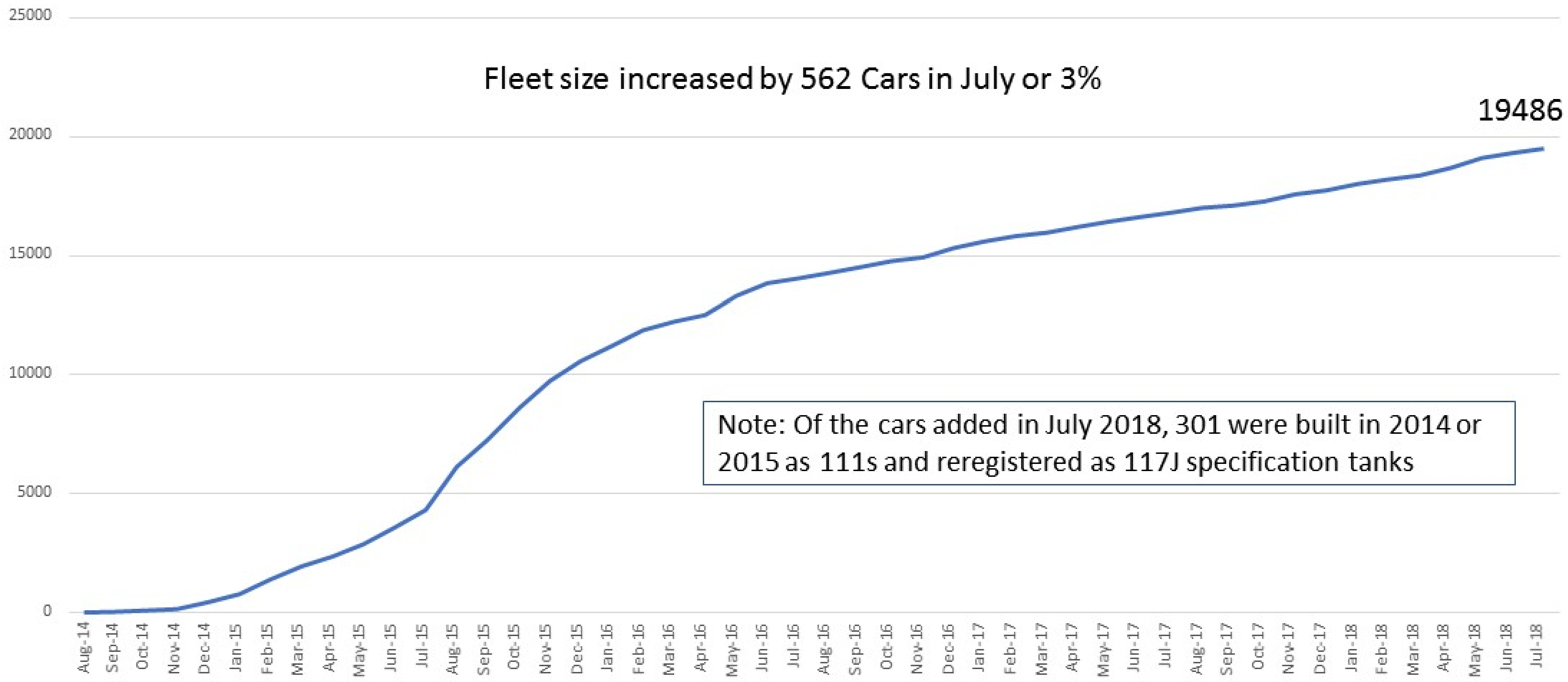
Frac Sand

Frac sand by rail continues to grow but faces challenges from in-basin brown sand

- Industrial sand deliveries hit the bottom in Q1 2016, but are up 43% since then
- In-basin Permian sand is expected to impact sand car loadings in 2H 2018, some suppliers are opening mines in West Texas this year
- As of Q2 2018 there were 11,912 small cube covered hoppers in the industry backlog



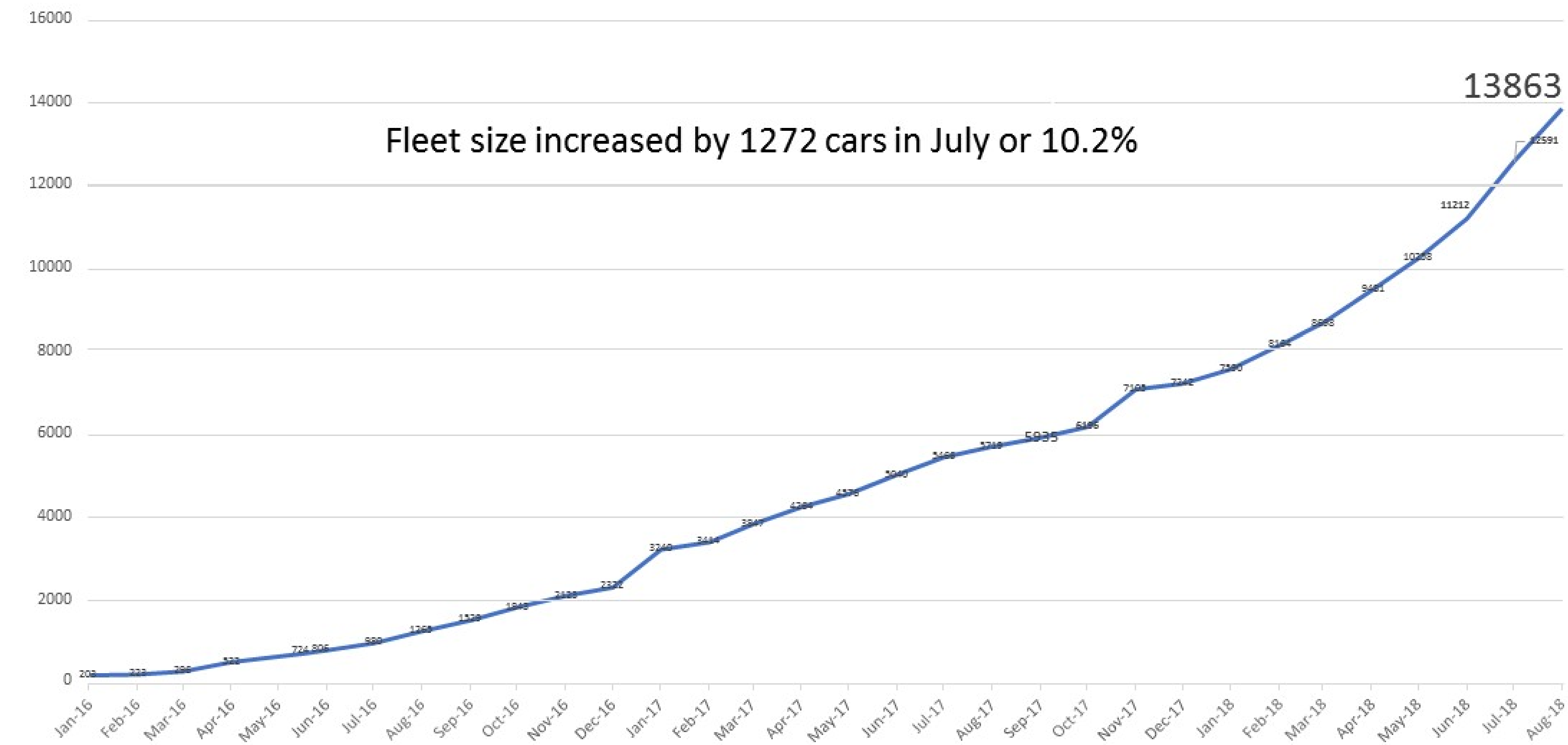
DOT 117J & 120J200 Fleet Growth



Based on 8/1/2018 UMLER

DOT 117R Fleet Growth

DOT 117R Fleet Growth



Based on 8/1/2018 UMLER

Based on Q1 2018 Numbers the Number of Cars that Need to be Replaced/Retrofit to DOT-111J or DOT-117R by Service/Date

Commodity Category	Compliance Date	Number of Cars	Cars per Month	4th Qtr 2017 Cars per Month
Crude Oil				
Non-Jacketed DOT-111's	1/1/2018	3	N/A	N/A
Jacketed DOT-111's	3/1/2018	45	NA	61
Non-Jacketed CPC-1232's	4/1/2020	1,066	44	167
Jacketed CPC-1232's	5/1/2025	8,662	102	130
Total Crude Oil		9,776		
Ethanol				
JKT & Non-JKT DOT-111's	5/1/2023	18,701	307	400
Non-Jacketed CPC-1232's	7/1/2023	2,021	32	43
Jacketed CPC-1232's	5/1/2025	1,006	12	10
Total Ethanol		21,728		
Other Flammable Liquids				
Packing Group I	5/1/2025			
Packing Group II & III	5/1/2029			
Total Other Flammable Liquids		25,892	195 - 305	235 - 364
Total All		57,396		

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