



RAIL ENERGY TECHNICAL ADVISORY COMMITTEE

THE
GREENBRIER
COMPANIES

 **TRINITYRAIL™**



Macroeconomic Indicators

Economy Improving as GDP Growth Accelerates in Q2

- Q2 2017 GDP Growth at 3.1%
 - Consumption and inventory growth driving accelerated GDP growth
- Unemployment rate at 4.2% indicates U.S. near full employment
 - Hourly wage growth has remained ~2.5-2.9% y/y in recent months
- In September, industrial production, the single most predictive economic indicator of changes in rail traffic, increased to 60.8 according to the ISM Manufacturing Survey, indicating expansion among the manufacturing sector
 - Summer heat has caused utilities to gain output in recent months.
 - Mining output has slowed in recent months.
- A weaker U.S. dollar is leading to export opportunities
 - July 2017 exports were up 4.9% compared to the previous year.
 - Emerging economies may provide outlet for U.S. based products.

U.S. Rail Traffic

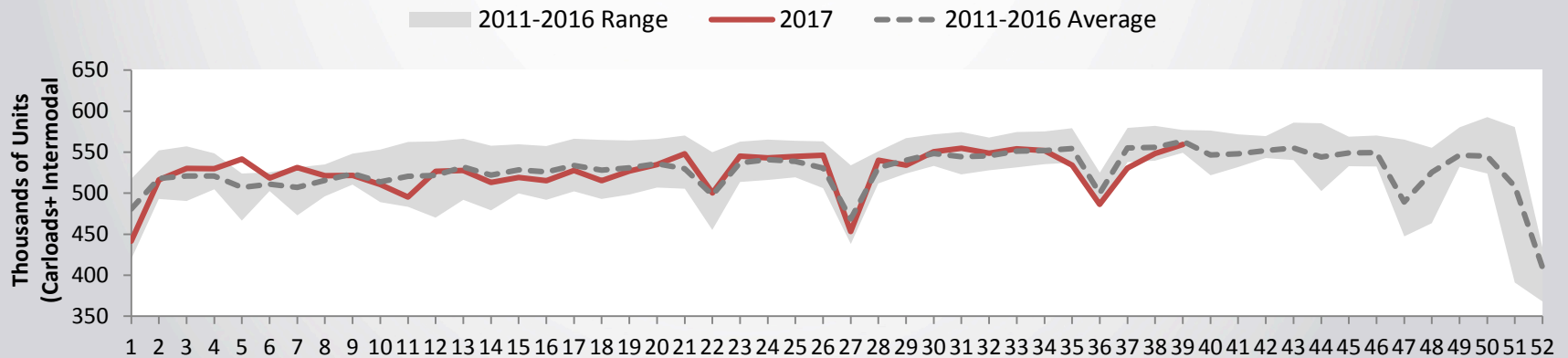
Improvements in Coal, Nonmetallic Minerals, Metals, and Intermodal Driving up Traffic

- Through 39 weeks, total traffic is up 3.6% in the United States compared to 2016
- Though coal has improved 12.3% y/y, it is still on pace for its second fewest carloads in recent history
- Crushed stone, sand, & gravel traffic (which includes frac sand) is up 12.6% y/y
- Petroleum & petroleum products are still showing y/y decreases

Weekly U.S. Total Rail Traffic

(Carloads + Intermodal)

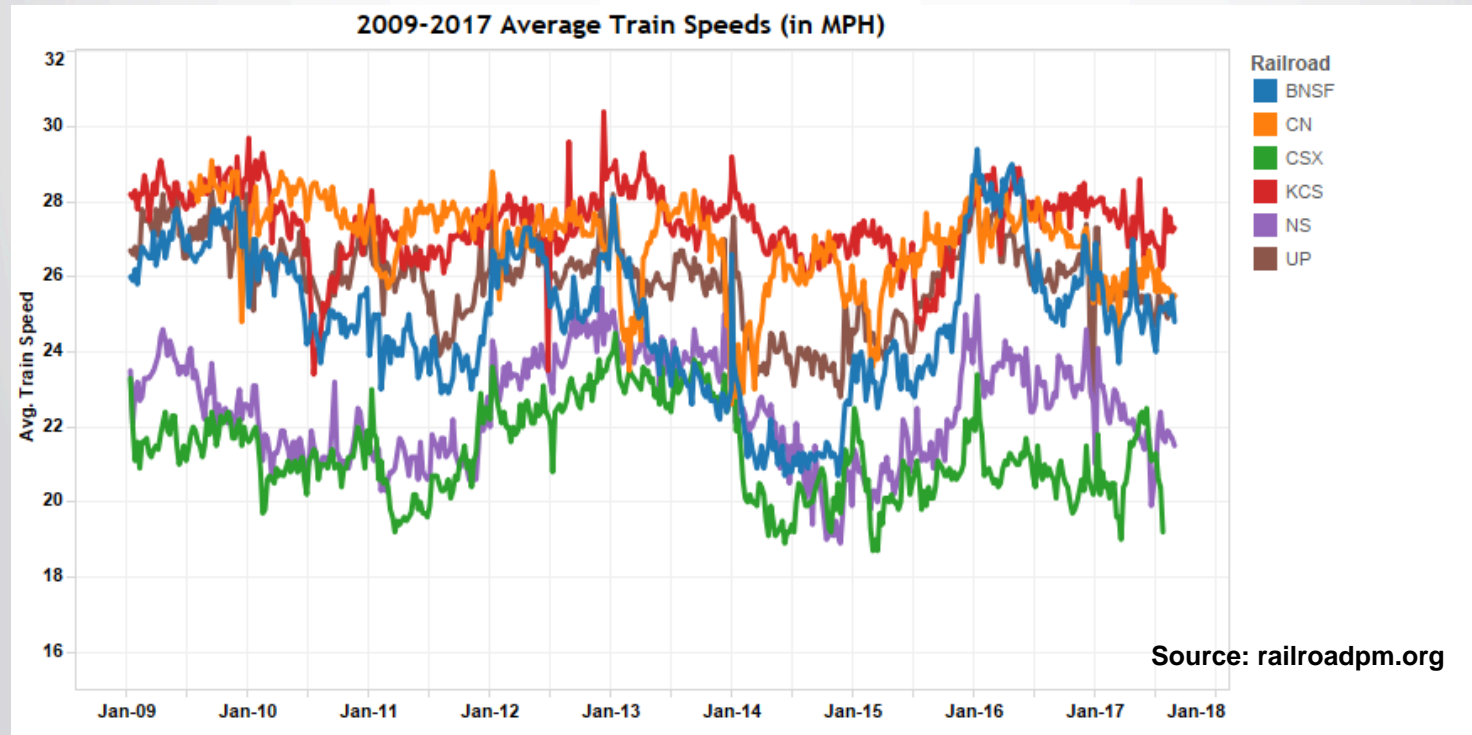
Source: AAR



Train Speeds

Train Speeds Starting to Level Off at Most Class I Railroads

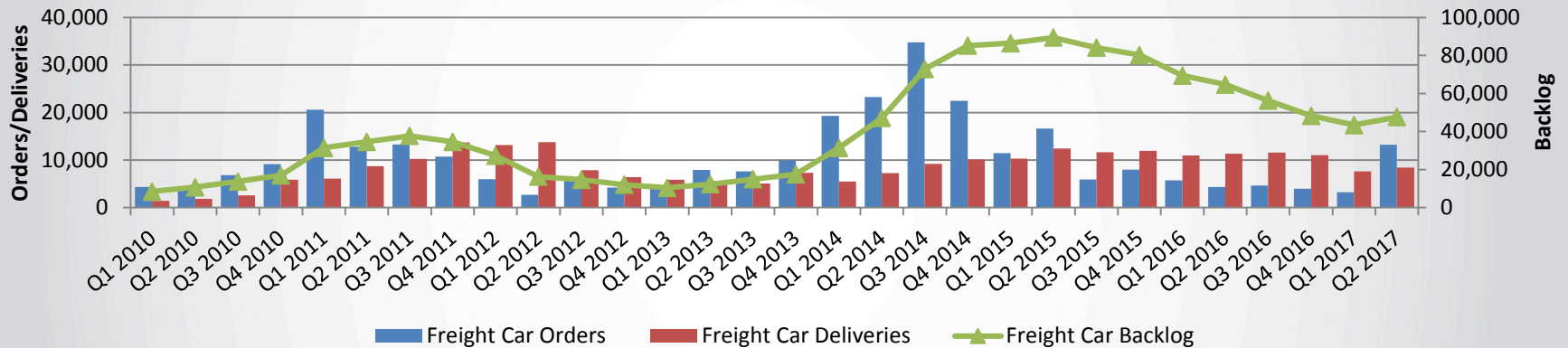
- Class I train speeds have slowed slightly compared to last year. Most railroads are still above the lows seen in 2014.
- As train speeds have slowed down, dwell times have picked up across the railroads.



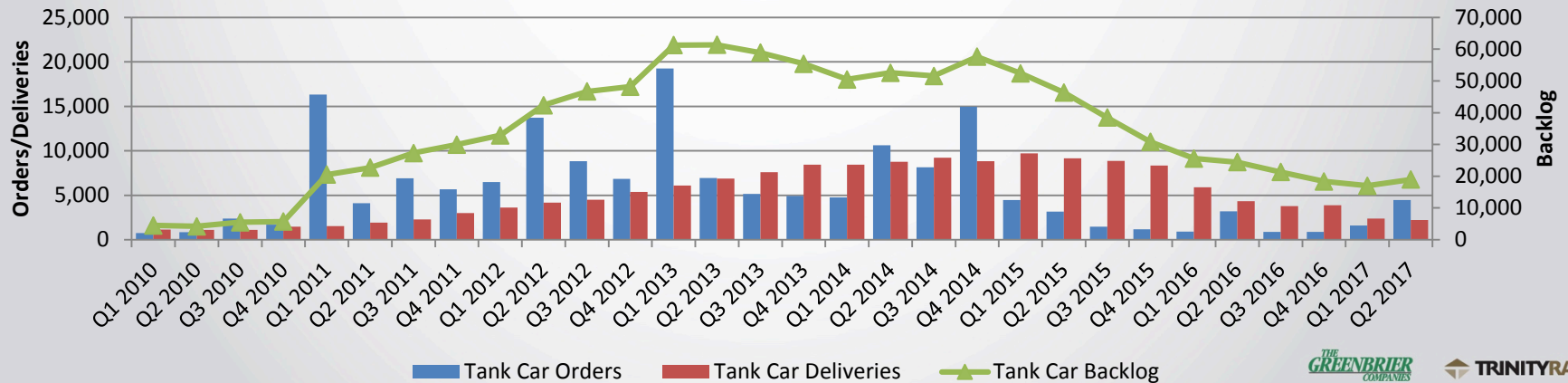
Railcar Orders, Deliveries, and Backlog

Though not Near Levels of 2014/2015 Peaks, Orders and Backlog Increased in Q2 2017

Freight Car Orders, Deliveries, and Backlog



Tank Car Orders, Deliveries, and Backlog



Railcar Delivery Forecast

Reduced Railcar Demand in the Energy End Market Should Moderate Deliveries

	2016A	2017F	2018F	2019F	2020F
Freight Car Deliveries	48,391	28,253	27,560	36,740	36,415
Tank Car Deliveries	17,841	12,739	12,575	15,800	17,825
Total Railcar Deliveries	66,232	40,992	40,135	52,540	54,240

Source: ARCI and FTR (June 2017 Forecast)

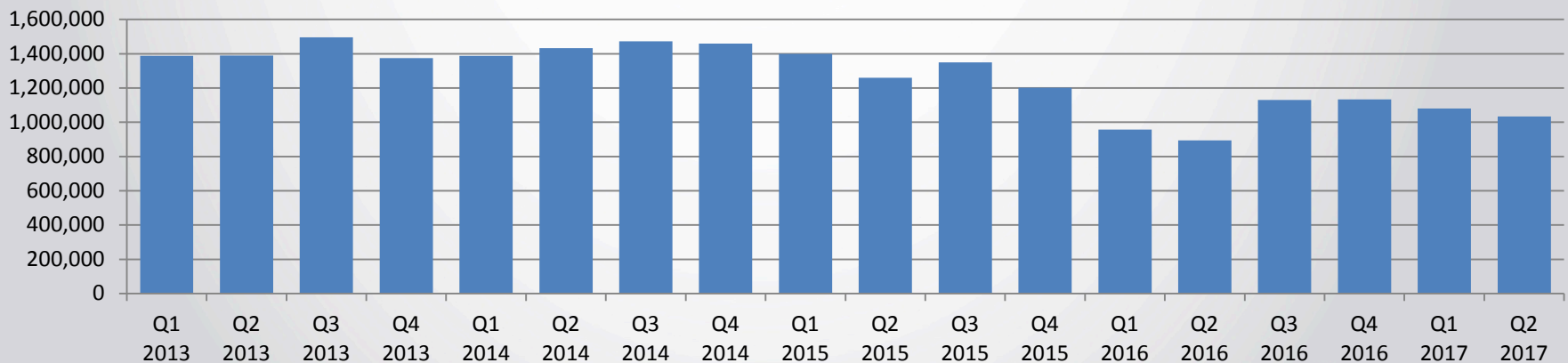
- Railcar deliveries are expected to reach their near-term trough in 2017 and 2018 before slowly climbing back above 50,000 a year in the next 2-3 years
- Covered Hoppers are expected to provide largest demand on the freight side across many different car types and sizes
- Tank car delivery is expected to be strong by historical standards, but well off the production pace during the shale boom

Coal

Coal Market to Rebound from 2016, but Lower than Historically Normal Levels

- Coal carloads in 2016 were the worst in recent history with low natural gas prices, coal plant closures, environmental regulations, and a warm winter all acting as headwinds
- ~20% of open hoppers and gondolas are currently in storage
- The EIA is forecasting coal production to increase to 789 million short tons in 2017 and 807.9 million short tons in 2018, up from 728.2 million in 2016. This would still represent the second and third lowest production outputs in the last two decades.

Coal Carloads Terminating on U.S. Class I RRs



*STCC Codes starting with 11

Source: STB

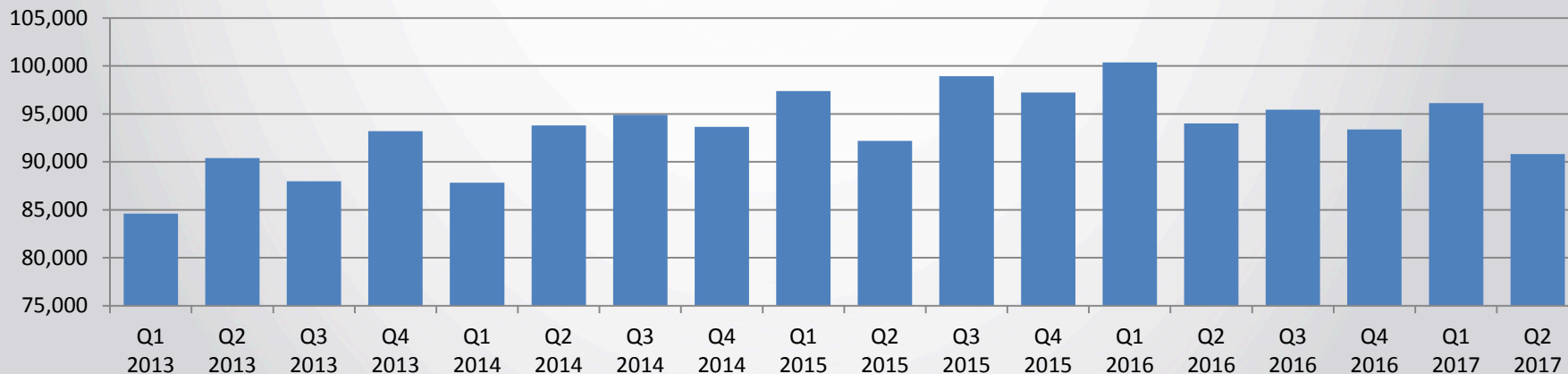


Biofuels

Ethanol Carloads Down to Start 2017, but Could Recover with Second Half Production

- The EIA forecasts a 3% increase in U.S. fuel ethanol production in 2017
- Other biomass-based diesel products are expected to grow by 8 Kbpd between 2016 and 2018 according to the EIA
- Low marine rates and smaller than expected differentials between corn and co-product prices have led to a drop in DDG carloads
- Tariffs and trade restrictions from China and Brazil could also weigh on biofuel demand

Ethanol Carloads Terminating on U.S. Class I RRs



*STCC Codes starting with 28184 Source: STB

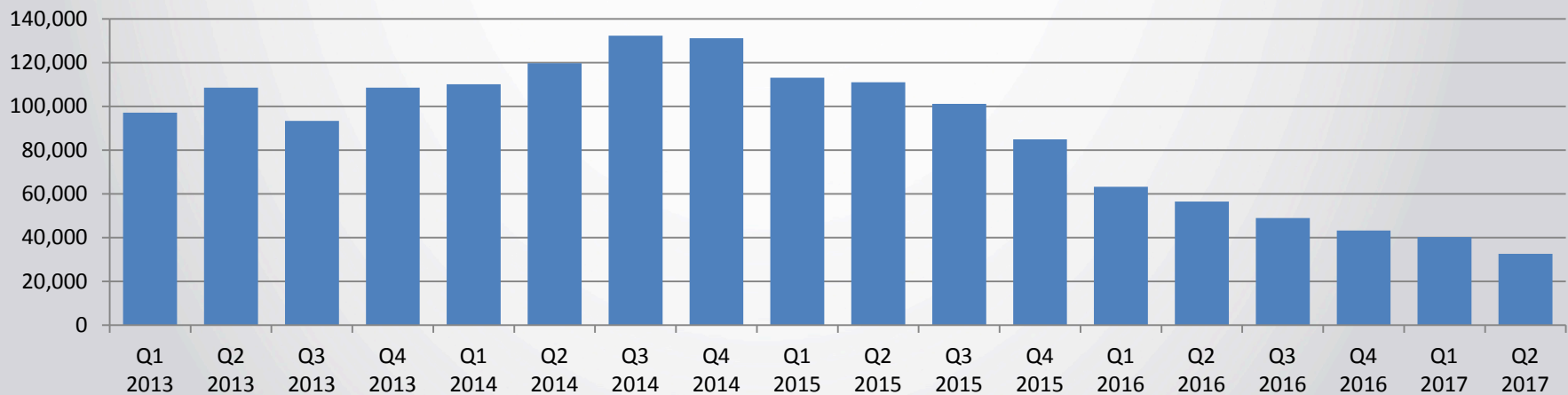


Crude Oil, Petroleum Products, and NGLs

CBR Outlook Grim – Downstream Products and NGLs Have Upside

- U.S. CBR movements have dropped by over 75% from their peak as of Q4 2016
- Reduced crude oil prices, a narrowed WTI/Brent margin, and additional pipeline capacity have driven the downturn in crude by rail
- Export opportunities and the petrochemical capacity buildout underway will drive up demand for natural gas liquids (i.e. propane and butane).
- Energy liberalization in Mexico presents some opportunities for U.S. fuels.

Crude Oil Originations on US Class I RRs



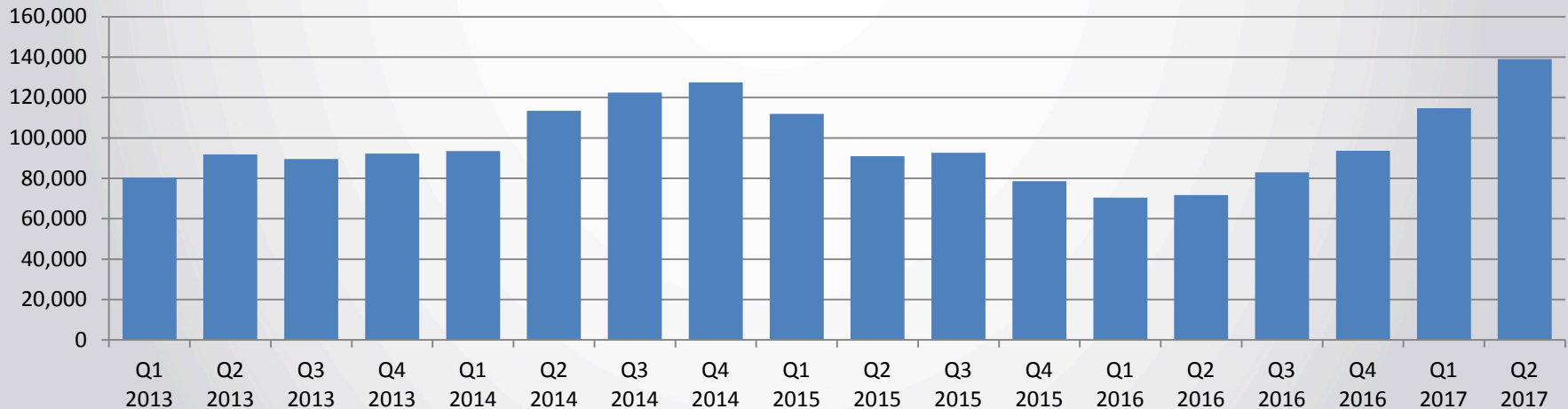
Source: AAR

Frac Sand

Frac Sand Market Reaching New Peaks Amid Advanced Drilling Trends

- Industrial sand deliveries hit the bottom in Q1 2016, but have almost doubled since
- More frac sand is being used in horizontal wells, likely increasing the rate of carload increases into 2017
- The Permian Basin in West Texas/New Mexico is expected to provide the greatest additional demand

Industrial Sand Deliveries on U.S. Class I RRs



*STCC Codes starting with 14413

Source: STB

There Has Been a Over a 99% Reduction in the Number of DOT-111 Tank Cars Making at Least One Shipment Of *Petroleum Crude Oil* from 2013 - 2016

Number of Unique Tank Cars Making at Least One Shipment in the Year

Type of Tank Car	2013	2014	2015	2016	2017Q1-Q2
DOT 111	21,340	16,349	6,998	791	156
<i>Non-Jacketed</i>	18,212	13,711	6,188	543	60
<i>Jacketed</i>	3,128	2,638	810	248	96
CPC1232	18,480	34,283	39,909	20,086	12,622
<i>Non-Jacketed</i>	11,966	17,163	17,962	8,498	4,404
<i>Jacketed</i>	6,514	17,120	21,947	11,588	8,218
DOT 117	0	0	1,950	3,383	2,884
117J	0	0	1,818	2,731	1,923
117R	0	0	132	652	961
DOT 115	0	10	6	0	0
AAR 211	513	171	59	7	0
Total Non-Pressure	40,333	50,813	48,922	24,267	15,662
DOT 105	5	0	0	0	0
DOT 112	3	78	53	47	0
DOT 114	0	0	0	0	0
DOT 120	0	0	4	598	733
Total Pressure Cars	8	78	57	645	733
GRAND TOTAL	40,341	50,891	48,979	24,912	16,395

The baseline fleet only include tank cars that shipped FL during 2013-2015. In past reports (prior to 1st 4 2017) it including tank cars that "potentially shipped flammable liquids." This report corrects the numbers for the current and previous years.

FAST Act deadlines
for unrefined
petroleum products

1/1/18 non-jacketed DOT-111's (11/1/16 in Canada)
3/1/18 jacketed DOT-111's (11/1/16 in Canada)
4/1/20 non-jacketed CPC-1232's
5/1/25 jacketed CPC-1232's

Number of Unique Tank Cars Making at Least One Shipment Of *Ethanol* by Year 2013 – 2nd Quarter of 2017

Number of Unique Tank Cars Making at Least One Shipment in the Year

Type of Tank Car	2013	2014	2015	2016	2017Q1-Q2
DOT 111	26,628	28,609	30,688	29,045	24,520
<i>Non-Jacketed</i>	26,423	28,484	30,529	28,870	24,382
<i>Jacketed</i>	205	125	159	175	138
CPC1232	456	2,077	3,763	3,485	3,200
<i>Non-Jacketed</i>	456	1,709	2,598	2,638	2,543
<i>Jacketed</i>	0	368	1,165	847	657
DOT 117	0	0	348	3,385	6,493
117J	0	0	341	2,133	4,191
117R	0	0	7	1,252	2,302
DOT 115	0	0	3	3	3
AAR 211	25	48	111	23	18
Total Non-Pressure	27,109	30,734	34,913	35,941	34,234
DOT 105	0	0	0	0	1
DOT 112	0	0	1	0	0
DOT 114	0	0	0	0	0
DOT 120	0	0	0	131	176
Total Pressure Cars	0	0	1	131	177
GRAND TOTAL	27,109	30,734	34,914	36,072	34,411

The baseline fleet only include tank cars that shipped FL during 2013-2015. In past reports (prior to 1st 4 2017) it including tank cars that "potentially shipped flammable liquids." This report corrects the numbers for the current and previous years.

FAST Act deadlines: 5/1/23 non-jacketed & jacketed DOT-111's
 for ethanol 5/1/23 non-jacketed CPC-1232's
 5/1/25 jacketed CPC-1232's

Number of Unique Tank Cars Making at Least One Shipment Of Other Flammable Liquids by Year 2013 –2nd Quarter of 2017

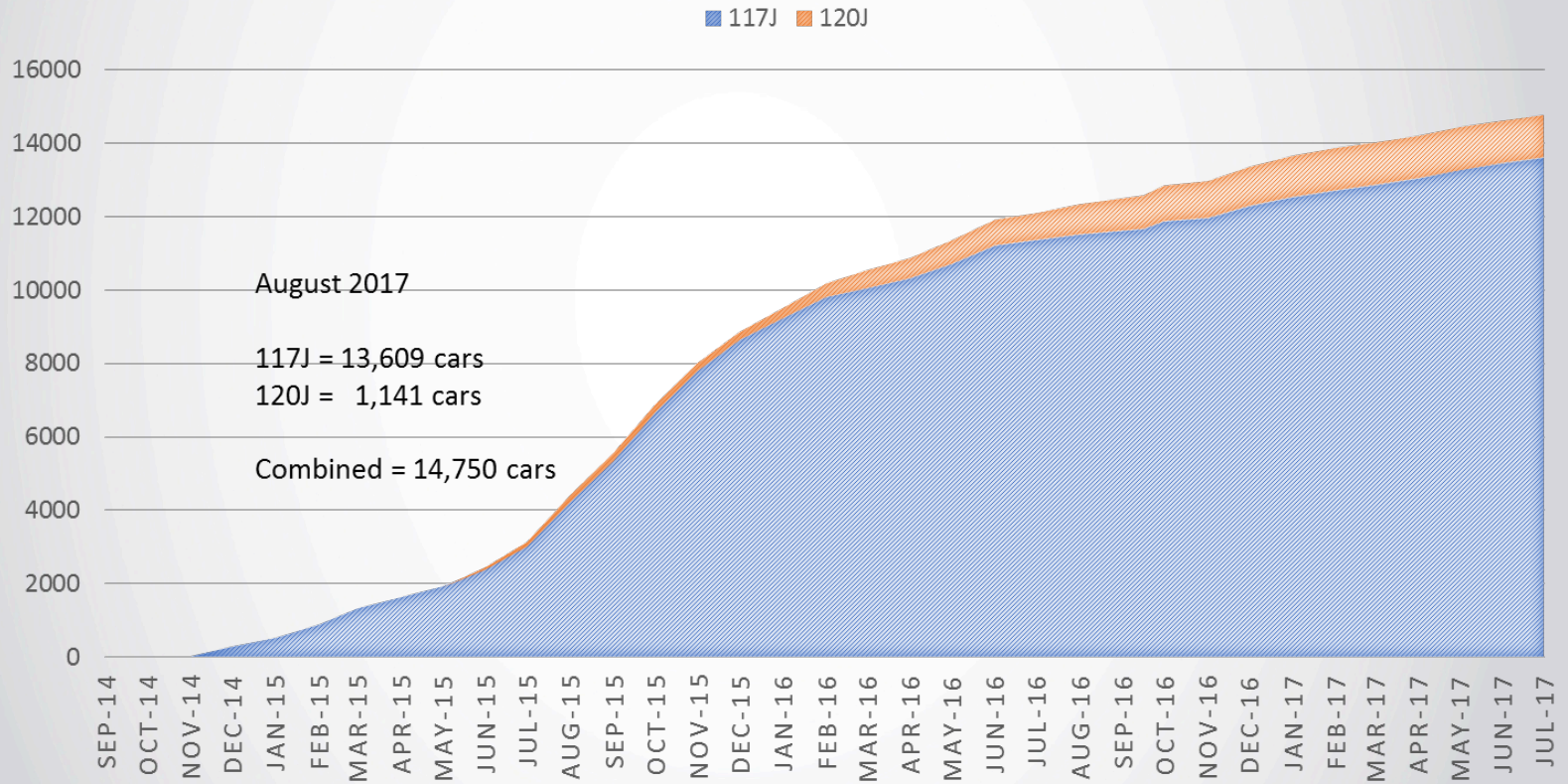
Number of Unique Tank Cars Making at Least One Shipment in the Year

Type of Tank Car	2013	2014	2015	2016	2017Q1-Q2
DOT 111	27,392	26,404	26,643	25,321	20,183
<i>Non-Jacketed</i>	20,864	20,389	21,030	19,695	15,617
<i>Jacketed</i>	6,528	6,015	5,613	5,626	4,566
CPC1232	3,245	5,118	6,185	7,600	7,304
<i>Non-Jacketed</i>	1,956	3,302	3,405	3,745	3,310
<i>Jacketed</i>	1,289	1,816	2,780	3,855	3,994
DOT 117	0	0	131	1,448	2,468
117J	0	0	125	1,060	1,671
117R	0	0	6	388	797
DOT 115	18	19	12	12	10
AAR 211	1,233	773	1,030	816	690
Total Non-Pressure	31,888	32,314	34,001	35,197	30,655
DOT 105	2,900	3,000	2,943	2,913	2,614
DOT 112	5,411	5,613	4,935	4,383	2,905
DOT 114	1	3	3	2	1
DOT 120	23	23	23	66	38
Total Pressure Cars	8,335	8,639	7,904	7,364	5,558
GRAND TOTAL	40,223	40,953	41,905	42,561	36,213

The baseline fleet only include tank cars that shipped FL during 2013-2015. In past reports (prior to 1st 4 2017) it including tank cars that "potentially shipped flammable liquids." This report corrects the numbers for the current and previous years.

FAST Act Deadlines: 5/1/25 for Packing Group I
 For other FL's 5/1/29 Packing Groups II & III

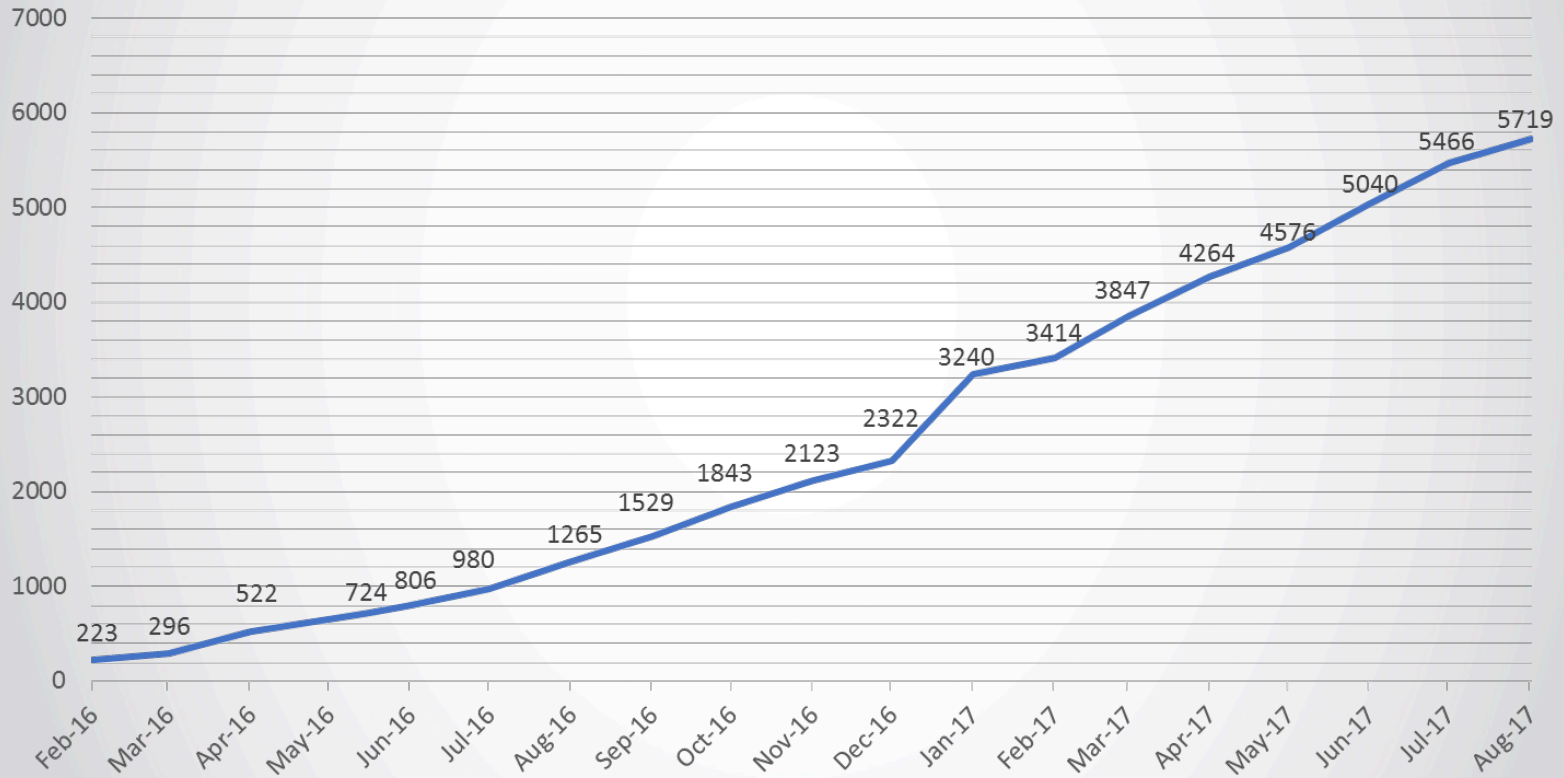
DOT 117J and 120J200 Fleet Growth



Based on 8/1/2017 UMLER

Source: Railway Supply Institute 9/12/17

DOT 117R Fleet Growth



Source: Railway Supply Institute 9/12/17

Based on Year End 2016 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
Crude Oil			
Non-Jacketed DOT-111's	1/1/2018	60	10
Jacketed DOT-111's	3/1/2018	96	12
Non-Jacketed CPC-1232's	4/1/2020	4,404	133
Jacketed CPC-1232's	5/1/2025	8,218	87
Total Crude Oil		12,778	242
Ethanol			
JKT & Non-JKT DOT-111's	5/1/2023	24,520	350
Non-Jacketed CPC-1232's	7/1/2023	2,543	35
Jacketed CPC-1232's	5/1/2025	657	6
Total Ethanol		26,795	391
Other Flammable Liquids			
Packing Group I	5/1/2025		
Packing Groups II & III	5/1/2029		255-385
Total Other Flammable Liquids		36,213	
Total All		76,711	
Average of between 888 - 1,018 cars per month to 5/1/29			