

Boxcar 101



Agenda

- Overview of the Boxcar
- Boxcar Fleet Size and Commodities
- Future Developments in Boxcars
- National Pooling
- The Short Line Dilemma
- Boxcar Improvements



Boxcars – Why Did They Make It So Hard?



History of the Boxcar



1930s



PRESENT DAY

1930s

“Housecars”

- WWII – Troop Transport

Originally built as a 40' general purpose railcar.

1960s

First built as 40', then in the 1960s as a 50'.

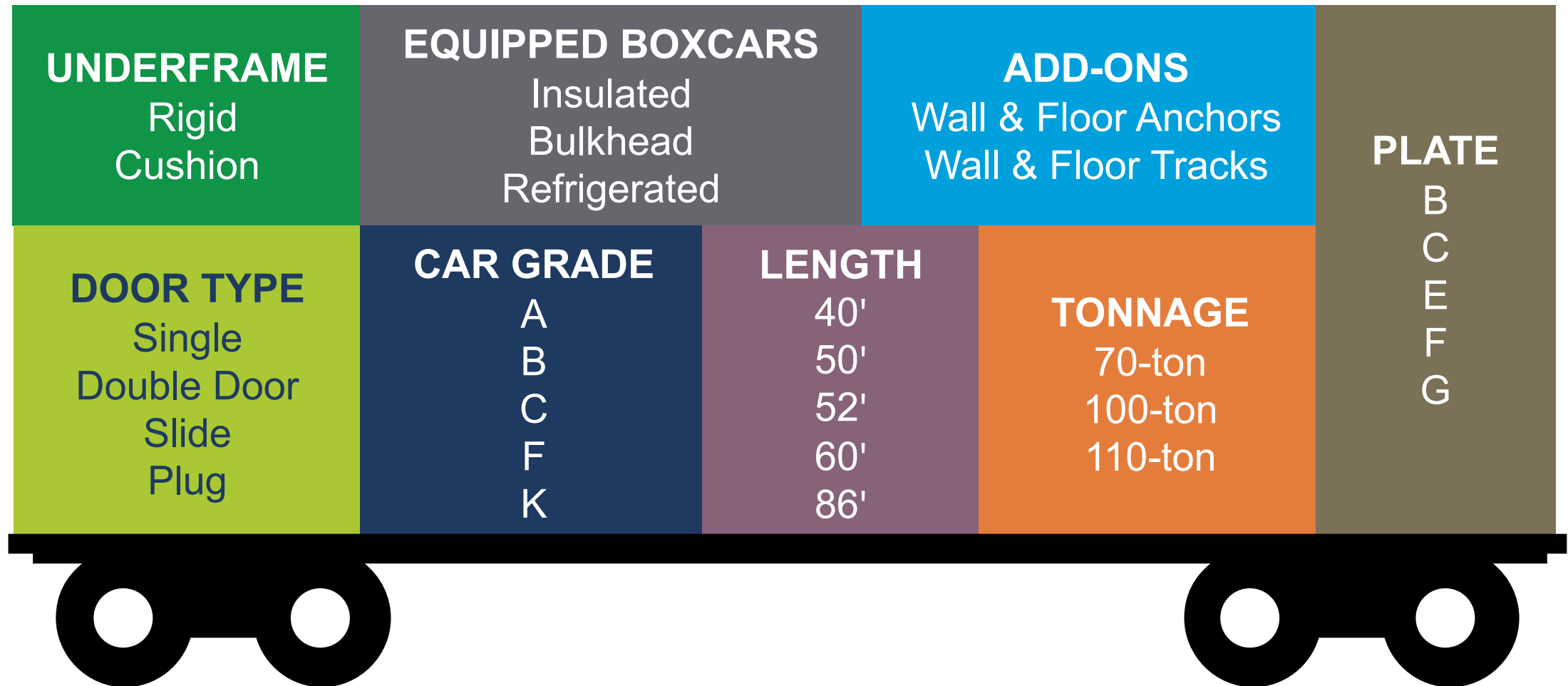
1970s

Severe shortage led to incentive per diem boxcars (grandfathered).

1980s

86' and 60' boxcars were built.

Boxcars Are Very Complex



Grade & Plate Size

Grade and plate size differences affect what can be loaded.

Boxcar Grade



'Cadillac'

Finished paper capable; best shape in the fleet.



'Pontiac'

Brown paper, pulp board, scrap paper, canned goods; in decent shape



'Ford'

Used for bricks, zinc, cement, fertilizer, etc.; in the worst shape of revenue cars



'Datsun'

Used for cotton seed, carcasses, etc.; not considered revenue-worthy

Plate Size

B ~ 14'2"

C ~ 13'9"

E ~ 15'9"

F/G ~ 17'0"

Attributes limit product loading

- Car grade determines the type of product that can be loaded
- Specific roof height and edges are more desirable
- Customers need certain car attributes to ship their products

Dissimilar Boxcars Carried Similar Commodities

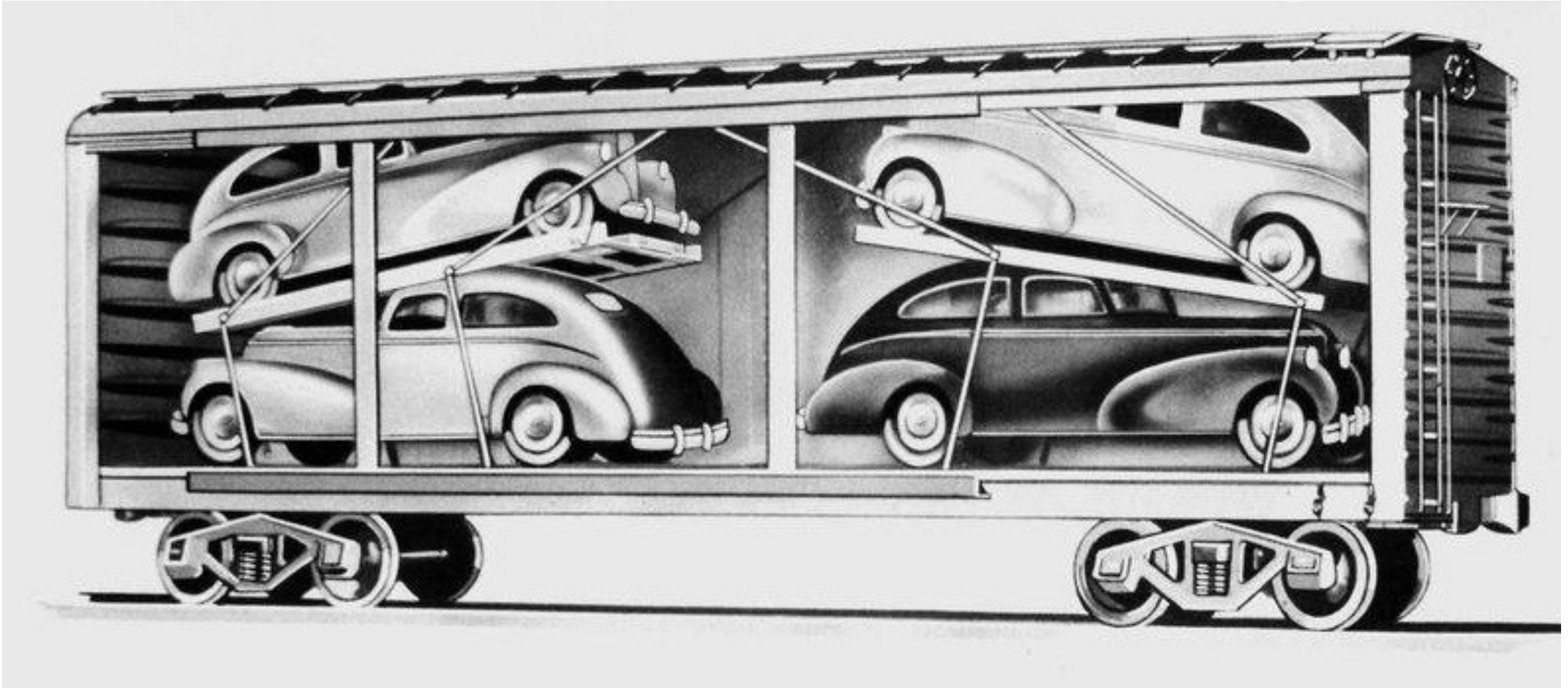
1. **50' RBL Box (102):** Canned goods, alcohol, flour
2. **60' RBL Box (103):** Alcohol, canned goods, refrigerated product
3. **50' RUF Box (104):** Pulp board & wood pulp, scrap paper, alcohol
4. **50' CUF Box (105):** Pulp board, printing paper, wood pulp, alcohol
5. **60' Merch Box (107):** Appliances, panel products, newsprint
6. **60' Auto Box (106):** Auto parts
7. **86' Auto Box (108):** Auto parts
8. **Refrigerated boxcar (109):** Tropicana

The complexity of boxcars poses challenges for shippers.

Length (FT.)	Door Type	Door Length (FT.)	Grade	Under Frame
50	Single	8	A	RUF
60	Double	10	B	CUF
80	Slider	12	C	
	Plug	16		

RUF: Rigid Under Frame | **CUF:** Cushioned Under Frame

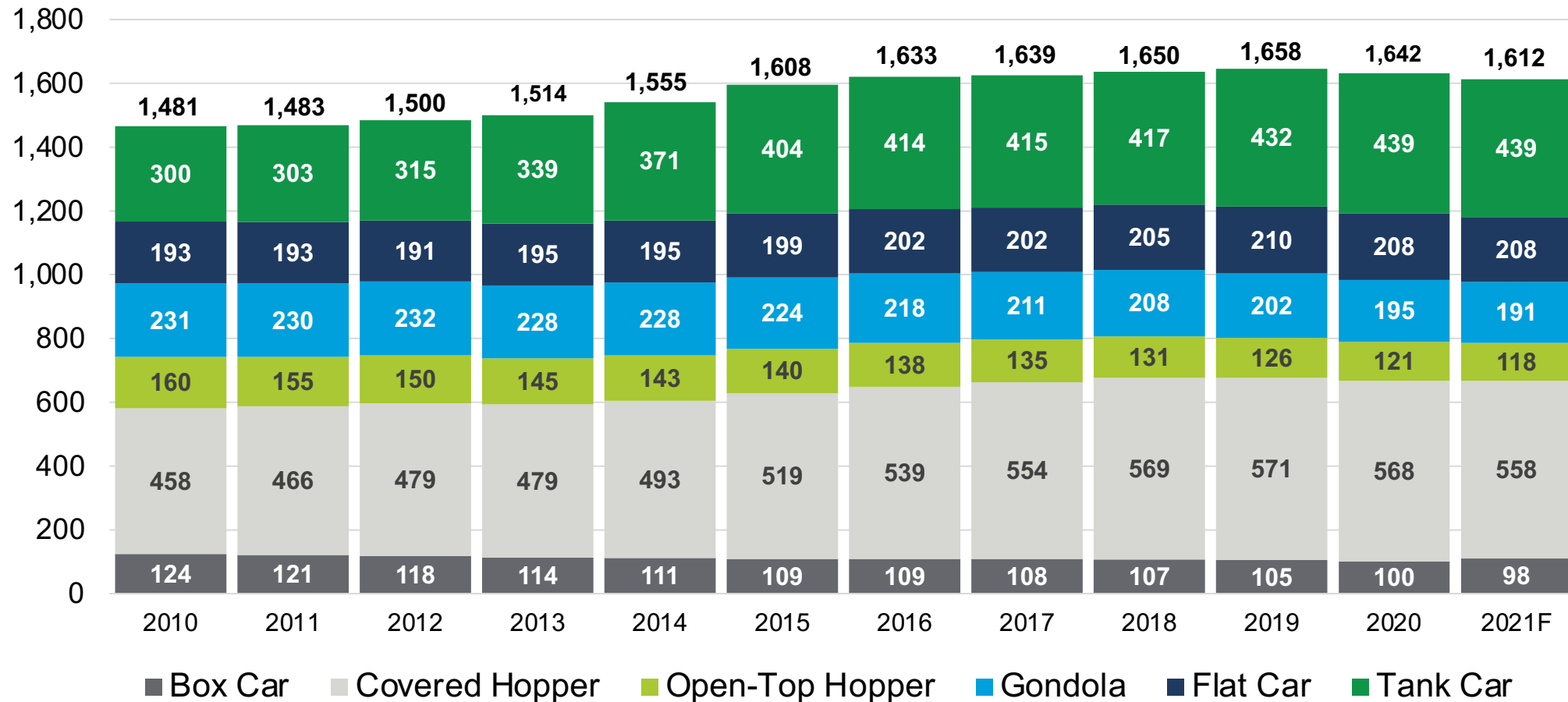
Fleet Size and Commodities Handled



North American Railcar Fleet*

(Counts at Year End/YTD, shown in thousands)

Total Railcar Fleet



*Active Equipment Registered in UMLER

^Double-Stack counts shown in Platforms

Railcar Fleet* Average Age

- Relatively steady since 2009 (implementation of the new UMLER).
- 2020 average age: 19.6 year.
 - Average boxcar age: 28.6 years.
- Stability indicates that new railcars are added to the fleet at roughly the same rate that others exit.
- Increased Life Service (ILS): extending the life of a railcar from 50–65 years; always an option for railcars and has been used in many other fleets.



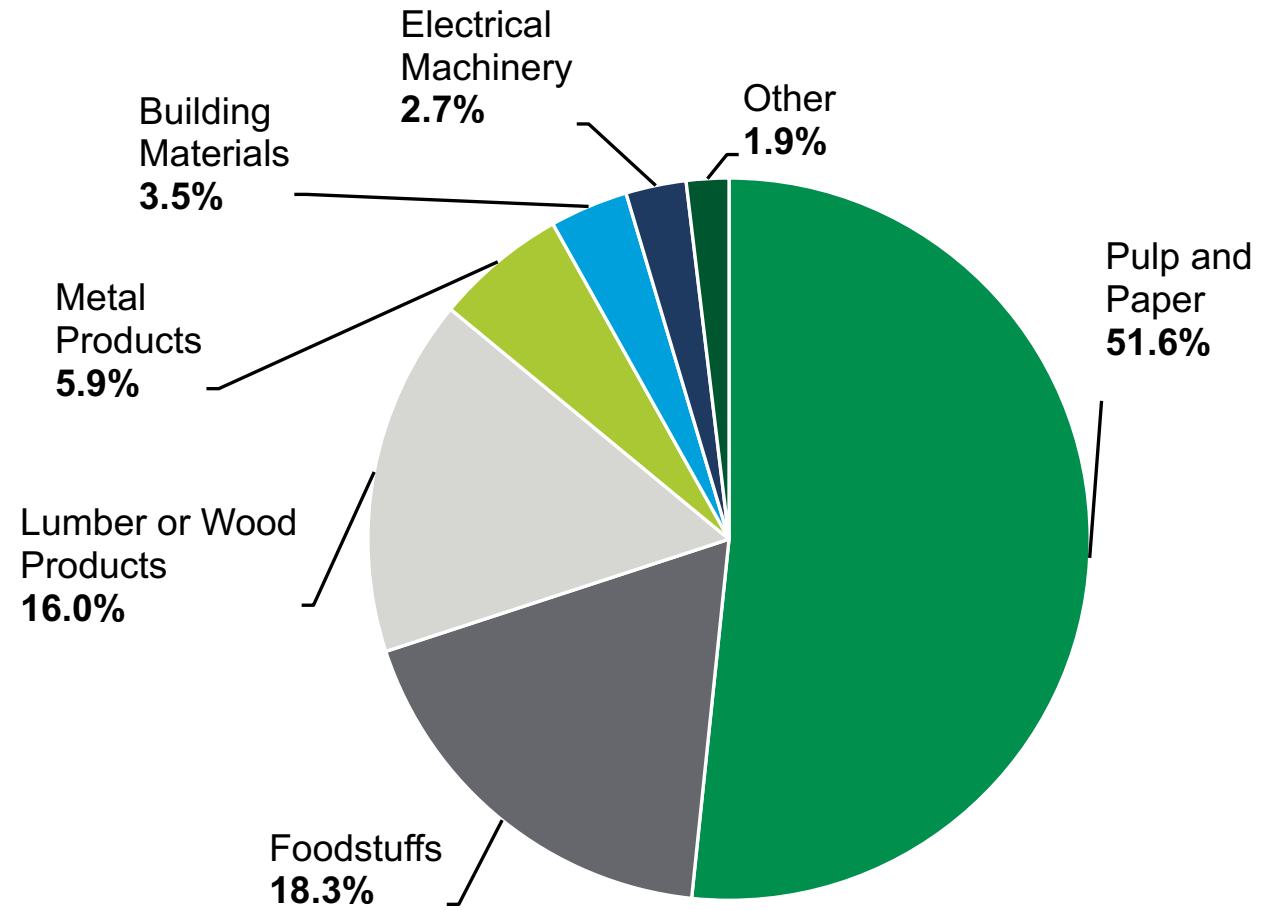
*Revenue-earning fleet

Boxcar Fleet Size

Boxcars handle a wide variety of products (e.g., paper, tissue, container board) and excel in pooling due to their versatility.

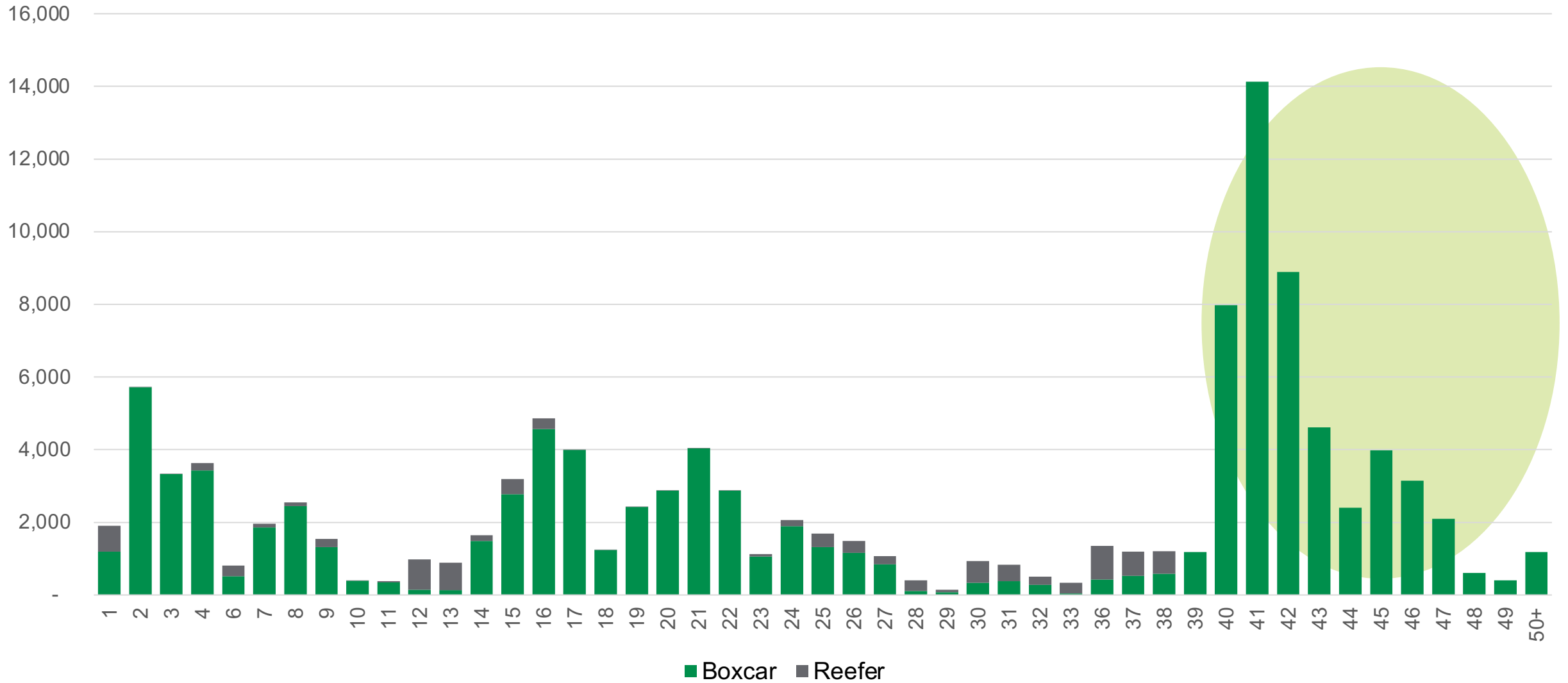
- **108,881 Active Boxcars**
 - **High-cube (Plate F, 286k GRL*)**: 42,486 on 91% utilization
 - **Standard-cube (Plate C, <286k GRL*)**: 56,770 on 89% utilization
 - **Refrigerated boxcar**: 9,625 on 74% utilization
- **North American Boxcar Pools:**
 - 50' 70-ton
 - 50' 100-ton Plate F
 - 60' 100-ton Plate F
- **ABOX/RBOX Pool**
 - 50' 70-ton pool only available to TTX Member Roads

Boxcar Loads by Commodity*



*As of 2018

Fleet Age Demographics – The Cliff



Boxcar Fleet Age Demographics – The Cliff

Where are the largest concentrations of boxcars that will fallout?

- **RBOX/ABOX:** Owned by TTX for use by their member roads; most are in storage.
- **North American Boxcar Pool:** Used by the Class Is and scheduled to be replaced by higher capacity boxcars.
- **Short lines:** The mainstay boxcar is the 50' 70-ton boxcar.
 - This is the biggest area of concern.



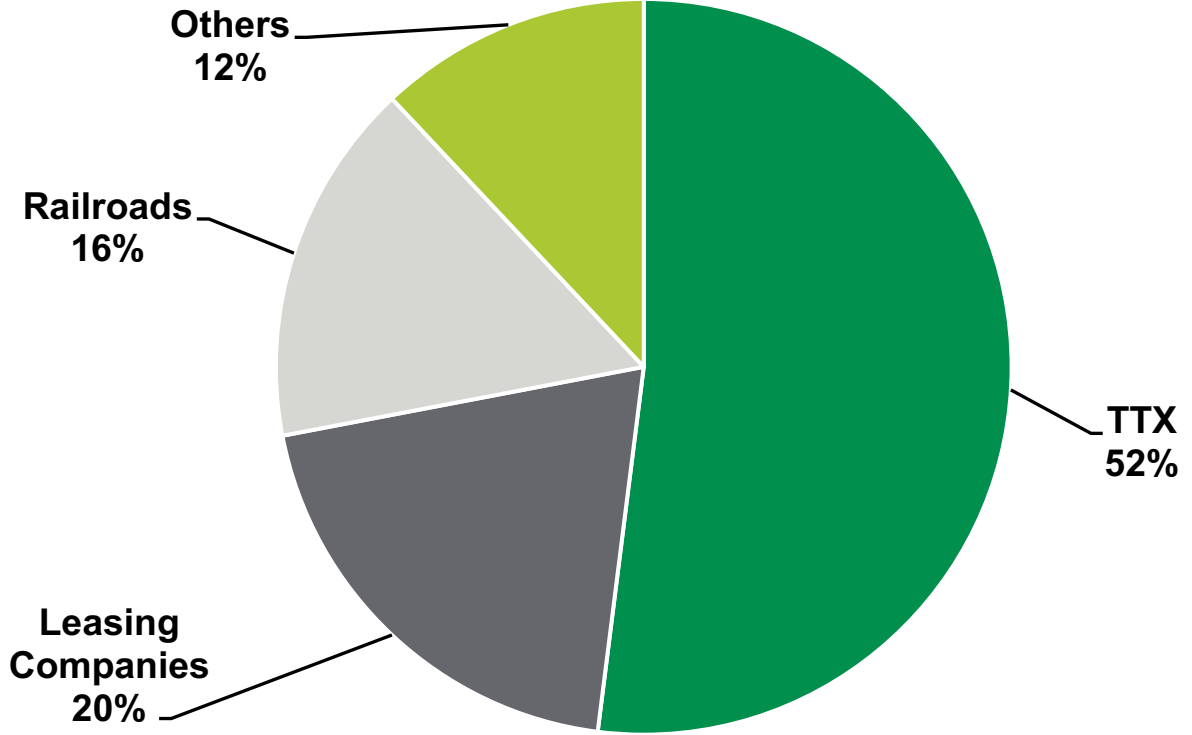
Boxcar Fleet Age Demographics

- **Fallout will be high over the next decade.**
 - Average age: 28.6 years.
 - Assuming all make it to their statutory retirement age, fallout will peak in 2029.
 - 2030 and 2028 will have the next highest fallouts, respectively.
 - No Anticipated ILS (Increased Life Service) on existing boxcars.
- **Boxcar additions have been significant.**
 - 16,939 added to the N.A. fleet in the last 5 years.
 - All new-build boxcars are high-capacity, with a GRL of 286k.
- **Additional capacity will be needed to offset the anticipated fallout.**



21,000 Boxcars Built*

SHARE OF BOXCAR BUILDS

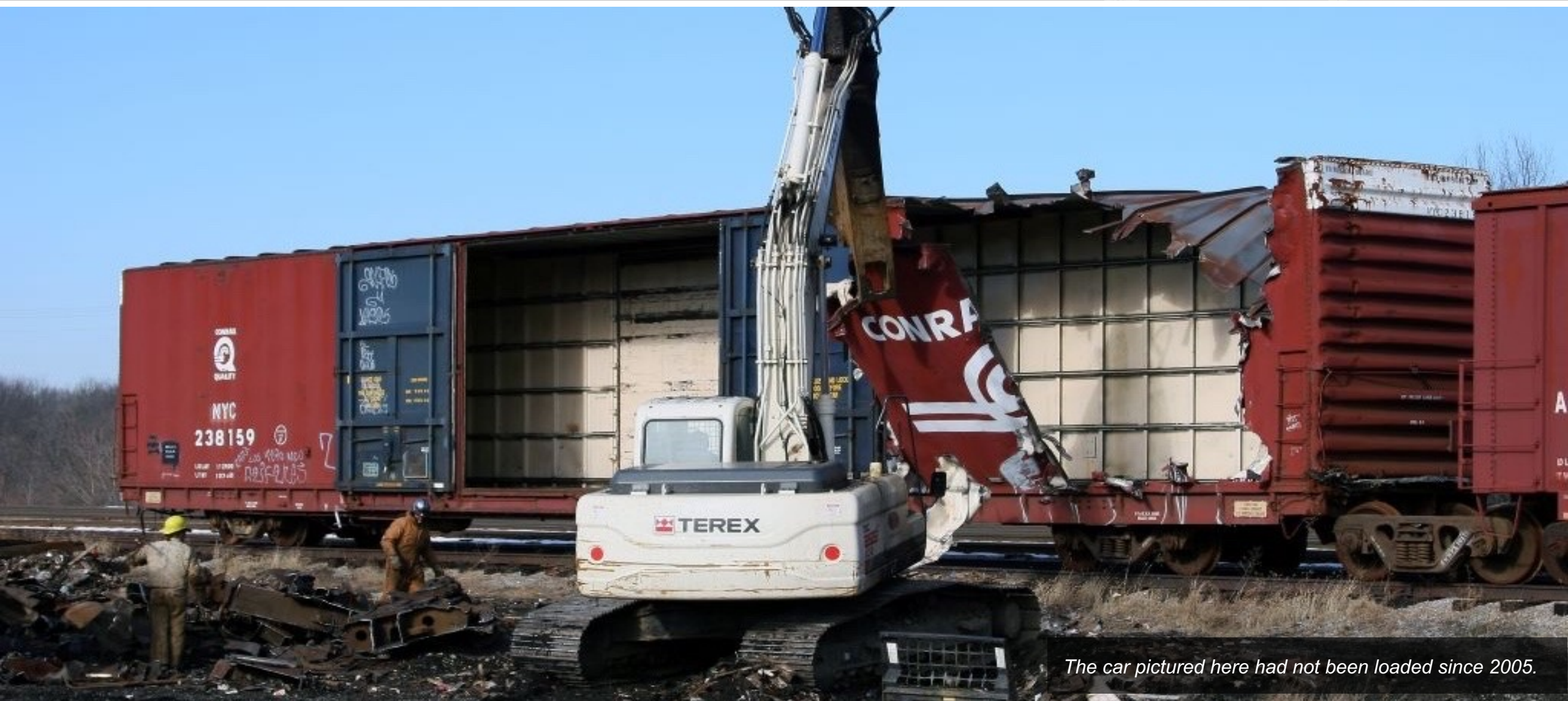


100% = 21,124 per UMLER "Weighing Date"

*Since 2014



Future Boxcars Types



The car pictured here had not been loaded since 2005.

Future Fleet: 50' Plate F Boxcar



FBOX

50'-6" 100-Ton Single Plug Door Boxcar

- **Application:** Commodity
- **Description:** 17'-0" high single-door boxcar with a capacity of 6.264 cubic feet and a load limit of 215,000 lbs.
- **Details:** Plate F, XM, 100-ton trucks available with either 10' or 12' single plug doors.

Future Fleet: 60' Plate F Boxcar



TBOX

60'-9" 100-Ton Double Plug Door Boxcar

- **Application:** Commodity
- **Description:** 17'-0" high double-door boxcar with a capacity of 7,550 cubic feet and a load limit of 206,000 lbs.
- **Details:** Plate F, XM, 100-ton trucks double 8' plug doors.

Boxcar Pooling Exercise

7000 Tons Per Day



10 70-ton | Plate C Boxcars



**Moving to
Plate F Boxcar**

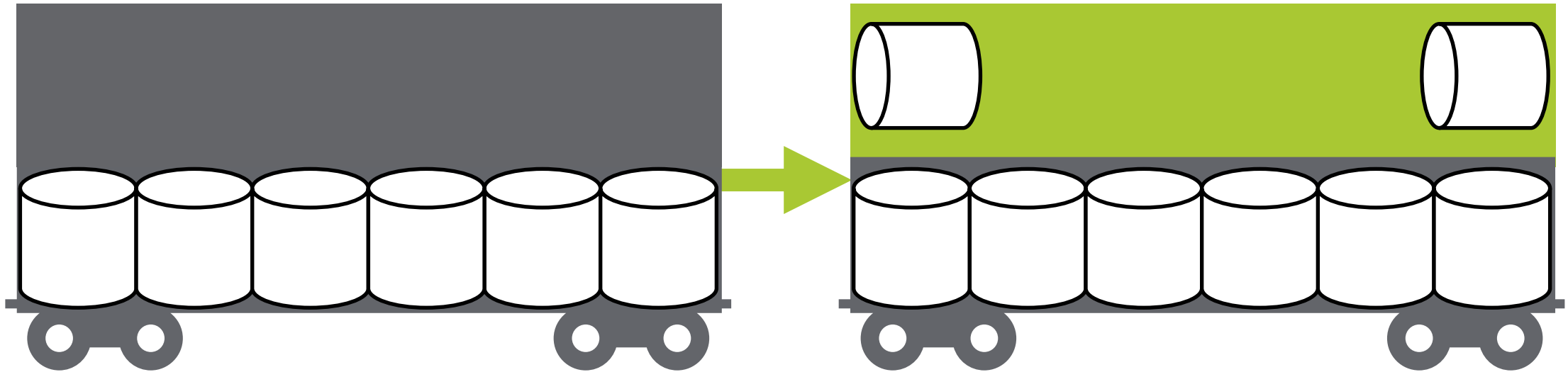


7 100-ton | Plate F Boxcars



30% MORE PRODUCTIVE













Maximizing the Additional Capacity



50' 70-ton
Plate C

50' 100-ton
Plate F

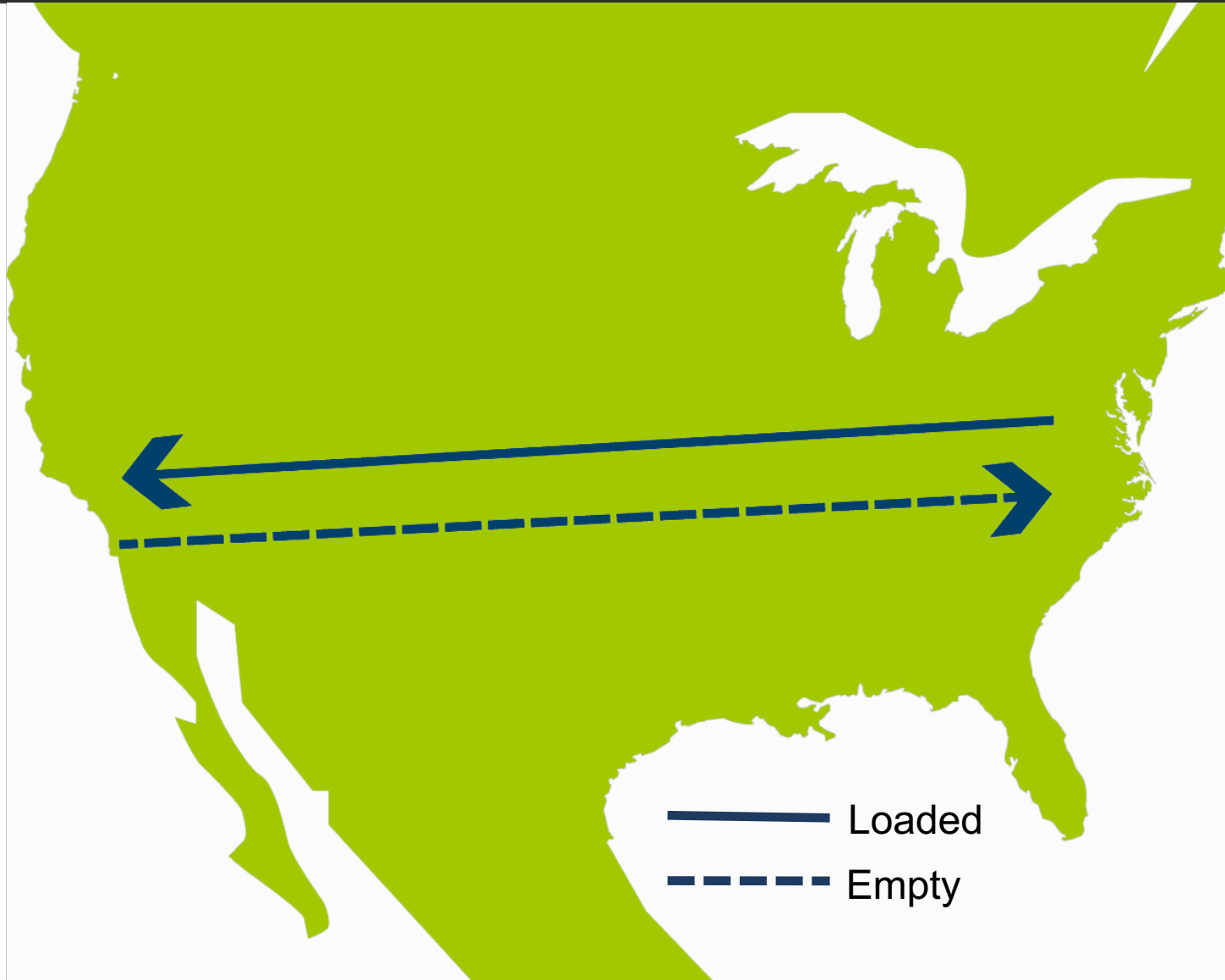
Future Fleet: The Dilemma

Boxcars				
70-ton	3 to 1	22.75 tons		
100-ton	4 to 1			
Jumbo				
100-ton	3.5 to 1	28.5 tons		
110-ton	4 to 1			
Coal				
100-ton	3.5 to 1	25 tons		
WV 100-ton	3 to 1	30 tons		
110-ton	4 to 1	25 tons		
WV 110-ton	3.6 to 1	30 tons		

National Pooling



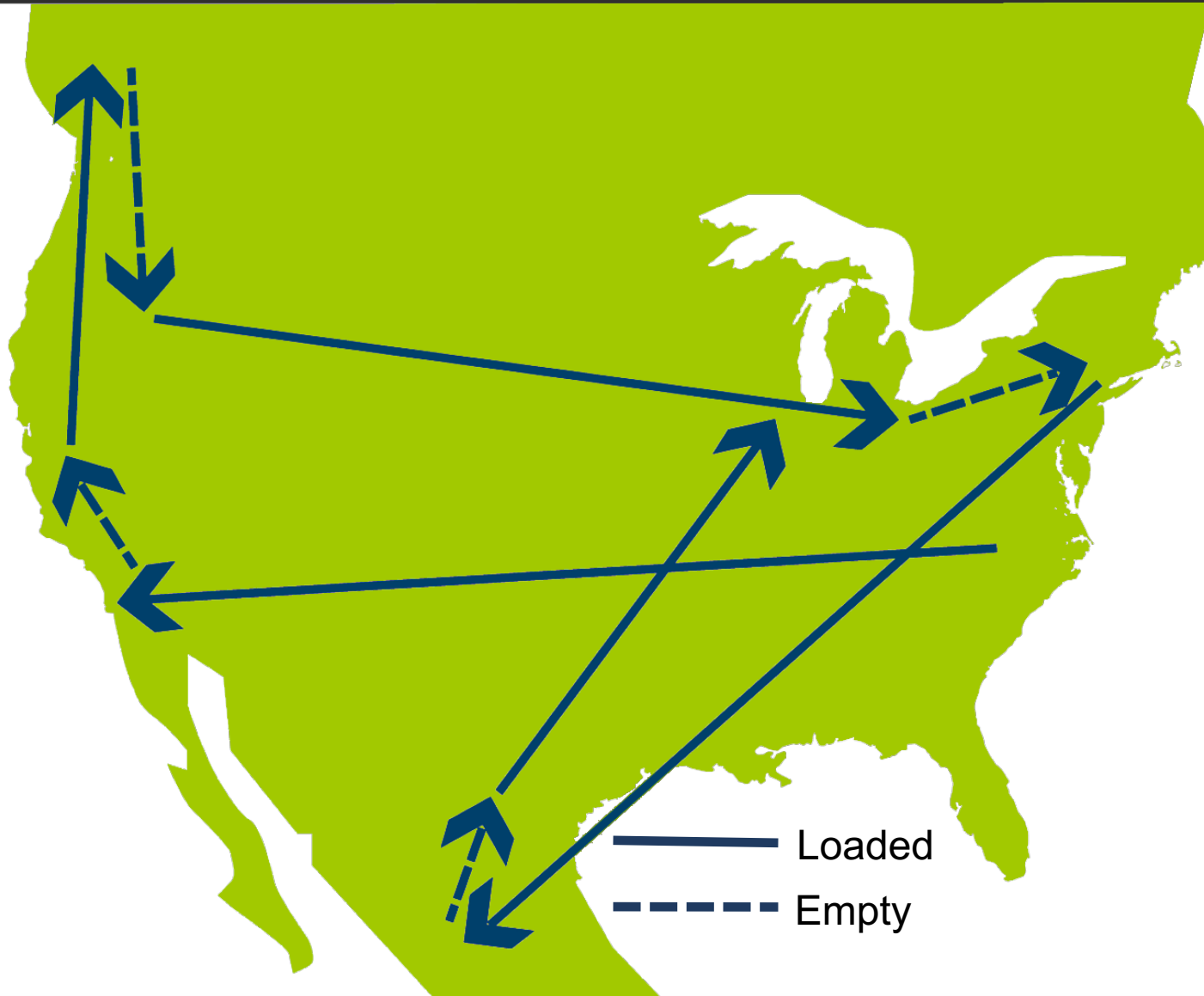
How Boxcar Pooling Works



Standard Railcar Flow

- Newsprint to Los Angeles
- Empty return

How Boxcar Pooling Works



Potential National Boxcar Flow

- Newsprint to Los Angeles
- Canned tomatoes to Vancouver
- Plywood to Ohio
- Scrap paper to Mexico
- Beer to Chicago

How Boxcar Pooling Works

How It Works

- Allocation is based on the number of boxcars each RR puts in the pool.
- Maximum limit of boxcars is equal to the number of originated loads per month.
- Boxcars online determines if RR is above or below allocation.
- Goal: Decrease DPL and reduce empty miles.

Benefits

- Reduces empty car time and miles.
- Decreases empty car costs.
- Reduces combined industry car need.
- Decreases car capital outlay.



Three North American Boxcar Pools (NABP)

- Plate C pool was initiated by the railroads in 2003
 - Boxcars had high DPLs driven by long distance moves.
- Two new pools incorporated in June 2010
 - 50' Plate F
 - 60' Plate F
- 9 participating railroads
 - UP, BNSF, CN, CP, CSX, NS, KCS, KCSM, Ferromex.
- All Grade A boxcars and commodities.

50', Plate C (70–100-ton)

8,227 boxcars total
Rigid or Cushion
Slide or Plug Door

50', Plate F (100-ton)

3,005 boxcars total
Cushion
Single Plug Door

60', Plate F (100-ton)

5,720 boxcars total
Cushion
Double Plug Door

The Boxcar Pooling Model (NABP)



Moving to a National Pool is
40% MORE PRODUCTIVE

- Increased asset utilization
- Less empty miles
- Smaller fleet size

The Short Line Model for Boxcars: It's a Problem!



- All boxcars are assigned to specific short lines (i.e., FCRD, SMW).
- Free to the Short Line or Load Incentive.
- Customers experience high order fulfillment rates and minimal or no demurrage charges.

Summary

- All Class I railroads have started their boxcar replacement.
- Two boxcar types instead of many (standardization):
 - 50' Plate F 100-ton single door
 - 60' Plate F 100-ton double door
- Fleet efficiencies will be gained through:
 - Moving to a higher cubic capacity/tonnage railcar
 - Moving to national pooling
- Fleet replacement will be 50–70% of current numbers.



Replacement needs
to start soon!