PLG CONSULTING

U.S. Energy Landscape

And Its Impact on Rail

+ Rail Services Investment Insights

Rail Equipment Finance Conference

March 2, 2026
La Quinta, CA

Available for download now at: https://plgconsulting.com/refc2026/

Supply Chain & Logistics Consulting for the Industrial Economy

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- Private Equity
- Chemicals
- Manufacturing
- Oil & Gas
- Mining & Metals
- Distribution
- Renewables

Transportation Modes

Rail | *Trucking* | *Pipeline* | *Marine*

PLG's ENERGY SUPPLY CHAIN INNOVATION HISTORY

2005–2009

ETHANOL

Launch of ethanol transport for fuel blending

2008–2015

WIND POWER

Turbine transport for wind energy expansion

2010–2016

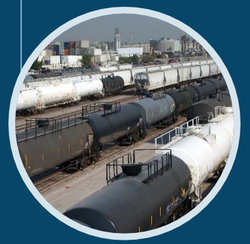
WIND POWER

Optimized logistics for wind components

2011–2014

UNCONVENTIONAL OIL & GAS — Exploration & Production

Rail logistics for frac sand delivery



2012–2014

UNCONVENTIONAL OIL & GAS — Midstream

Expanding tank car fleet for crude-by-rail

2017–2019

UNCONVENTIONAL OIL & GAS — Exploration & Production

Last–mile solutions for increased sand demand

2018–present

LANDFILL GAS (LFG) / RENEWABLE NATURAL GAS (RNG)

Logistics for renewable methane recovery

2019–present

PLASTICS RECYCLING / CIRCULAR SUPPLY CHAIN

Logistics for sustainable plastic processing

2020–present

RENEWABLE DIESEL

Expanding tank car fleet for crude-by-rail

2022–present

GREEN HYDROGEN AND AMMONIA

Logistics for green hydrogen production

2023–present

CARBON CAPTURE, UTILIZATION AND STORAGE (CCUS)

Solutions for CO_2 recovery, storage and delivery

PLG's Energy Innovation History: https://plgconsulting.com/energy-innovation-history/

Today’s Agenda

- I – Energy Overview
- II – Fossil Fuels
- III – New Energy Technologies
- IV – Implications for Rail and Rail Equipment
- V – Rail Services Investment Analysis

I – Energy Overview

Key Energy Themes Today

U.S. oil & gas “energy dominance" continues

- The U.S. is already a global powerhouse in production and exporting of crude, LNG, and NGLs
- “Drill, baby, drill” not happening as decisions are driven by corporate financial objectives
- Natural gas growth due to rising LNG exports and electricity consumption

Data centers will drive power demand growth

- Generative AI’s voracious appetite for power will drive a new wave of electricity demand growth
- Growth curve may lag forecasts due to grid growth challenges
- Downstream impacts – grid reliability concerns, rising power outages, and cost increases for consumers and industry

Trade war impact isolated but long-term implications

- Main impact has been focused on U.S. exports to China being temporarily or long term shifted to other sources
- U.S. exports mostly finding a home in other markets to offset losses in China
- However, China and other countries are developing alternative suppliers to the U.S. when possible

Key Energy Themes Today (continued)

China's "green dominance" continues

- China has invested heavily in EV, solar and critical mineral supply chains, driving global dominance
- Costs, infrastructure and supply chain challenges will be difficult to overcome in the U.S.
- U.S. is surrendering new energy technologies to China

Stormy weather for the U.S. Energy Transition

- OBBBA and Executive Orders have removed most renewables incentives
- Major negative impacts on U.S. markets for:
  - Wind – On- and Off-shore
  - Solar
  - Green Hydrogen
  - Electric Vehicles

**OBBBA – One Big Beautiful Bill Act*

Impact on freight rail volume and railcars mixed

- Plastics, LPG, renewable diesel and grain have modest growth potential
- No significant growth seen in industrial, manufacturing or other energy markets
- Railcar markets remain tight due to railcar orders being down and healthy retirements

Policy Shifts from OBBBA Reshape U.S. Energy Priorities:

Which energy sources lose or gain under OBBBA?

Technology	IRA Incentives (2022-2025) vs OBBBA Policy Changes (2025 onward)	
Solar & Wind		• 48E and 45Y credits available until 2033 • Phased out after 2027[1]; sourcing rules tightened (FEOC)
Green Hydrogen		• 45V credit available until 2033 • Phased out by 2028
Electric Vehicles		• 30D, 25E, and 45W credits for EVs; 30C for charging infrastructure • Phased out by 2026 (30D/25E/45W by Oct 2025, 30C by Jul 2026)
Manufacturing		• 45X and 28C credits support clean tech supply chain • 45X phased out after 2027 (wind) and 2028 (solar/storage); 48C compromised by sourcing rules
Carbon Capture		• 45Q credit available until 2033 • Preserved; EOR provisions enhanced
Energy Storage		• 48E credit available until 2033 • Preserved in full
Biofuels		• 45Z credit available until 2027 • Extended to 2029; feedstock sourcing rules tightened; capped SAF
Geothermal		• 48E and 45Y credits available until 2033 • Preserved in full
Nuclear		• ITC/PTC for new, 45U for existing plants available until 2033 • Preserved in full; fuel sourcing rules apply after 2028
Oil, Gas		• No support • Gains tax breaks, public land access, and regulatory rollbacks

Phased Out

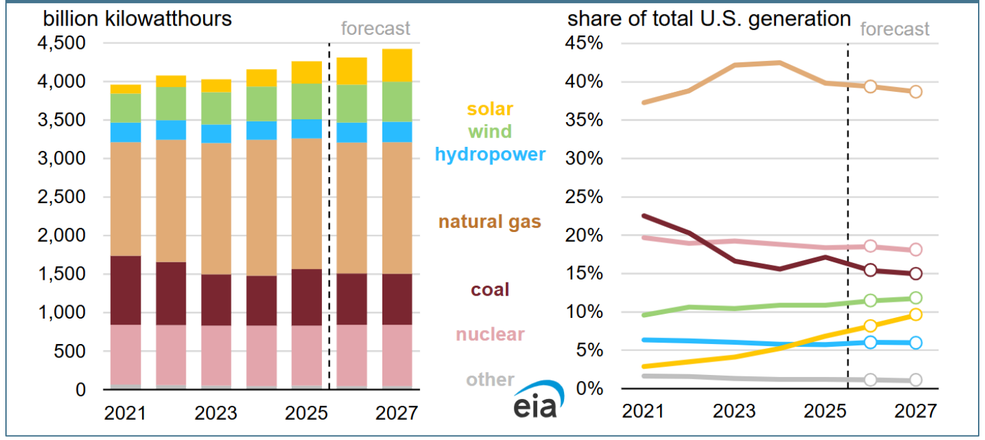
Preserved

Gained

Source: Columbia Business School – July 2025

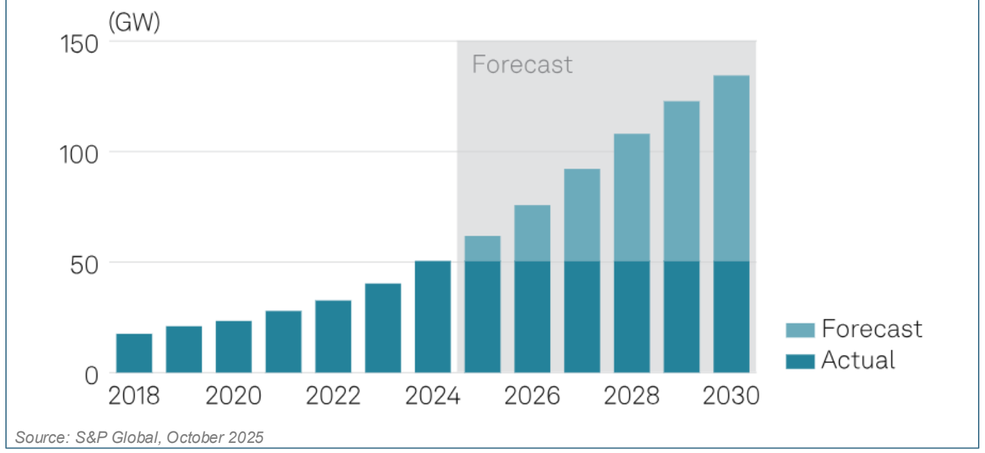
U.S. Electricity Demand Projected to Rise 40% by 2045

US installed power capacity forecast by source



Source: U.S. Energy Information Administration, Short-Term Energy Outlook, January 2026

U.S. data center electricity use from 2018 through 2030



Source: S&P Global, October 2025

Growth Drivers

- Data centers and AI are major demand accelerators (see bottom left) in near term; vehicle electrification long term
  - Biggest future data center growth seen in VA, TX and GA
- Solar expected to add most new capacity in next two years
- Gas generation will grow later in the decade as turbine order backlog comes online

Bottlenecks

- Few new transmission lines built recently
- Permitting and regulatory processes create delays
- Grid expansion not keeping pace with demand

Uncertainties

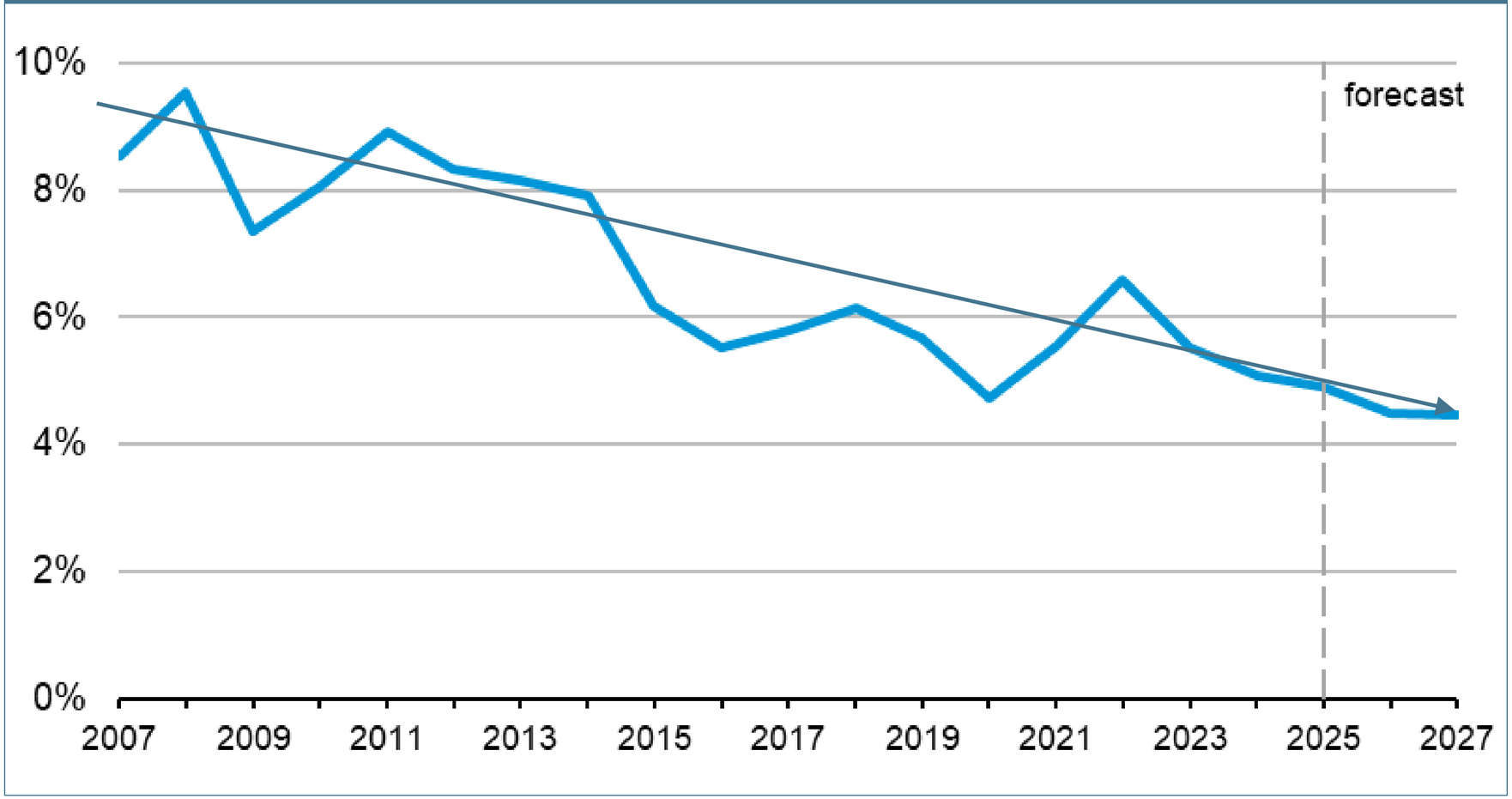
- Gas turbines still required to backstop renewables
- Coal will lose share, but retirements will be delayed by high electricity demand and gas turbine backlog
- Forecasted growth curve could be overstated (some analysts warn of “boom-and-bust” risk)

“All of the above” generation capacity growth needed to meet expected power demand this decade

Shale Revolution Has Lowered Energy Costs

- Shale revolution spurred North American energy independence, lowering costs and improving trade balance
- US has a fundamentally advantaged position in energy that has aided the consumer and industrial economy

U.S. annual energy expenditures (share of gross domestic product)



Source: U.S. Energy Information Administration, Short-Term Energy Outlook, January 2026

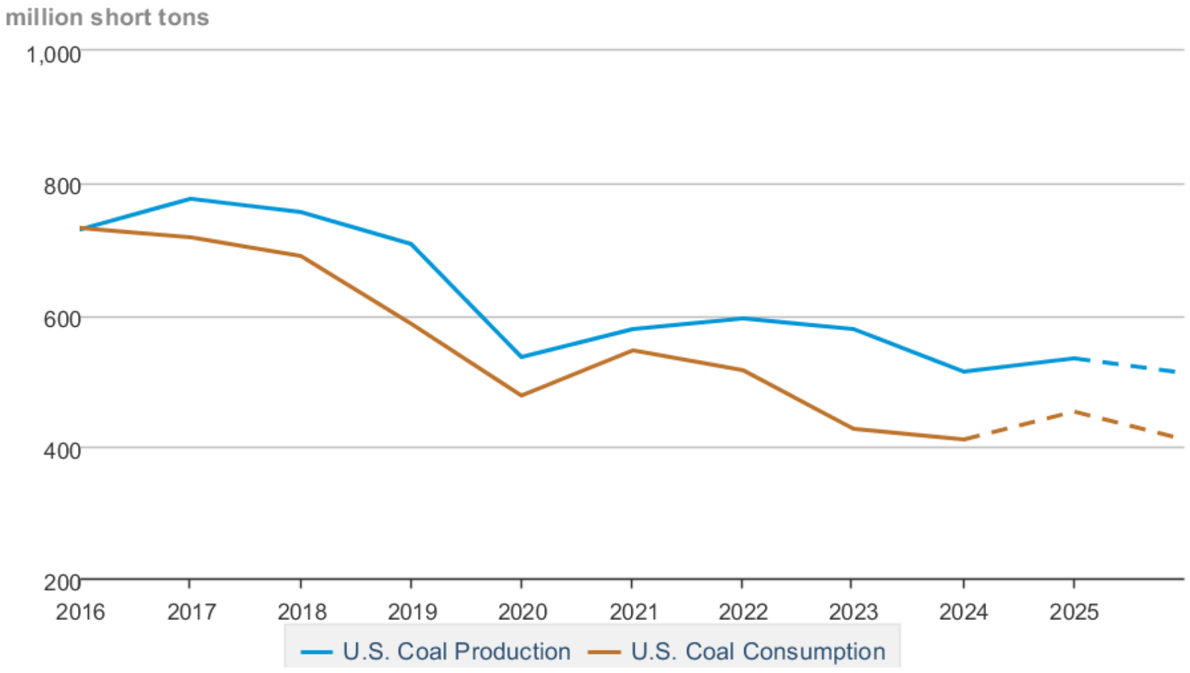
U.S. Energy costs have gone from ~9% to ~4.5% of GDP in 20 years…offsetting some of other inflationary drivers from healthcare and government spending

II – Fossil Fuels and Nuclear

U.S. Coal Consumption Has Been Flat Since 2023

- Coal decline caused by low-cost shale gas and some EPA regulations:
  - US coal-fired generating capacity declined by almost 60% since 2013
  - Coal's share of electricity generation mix has been cut in half, to 17%

US Coal Production & Consumption, 2016-2025



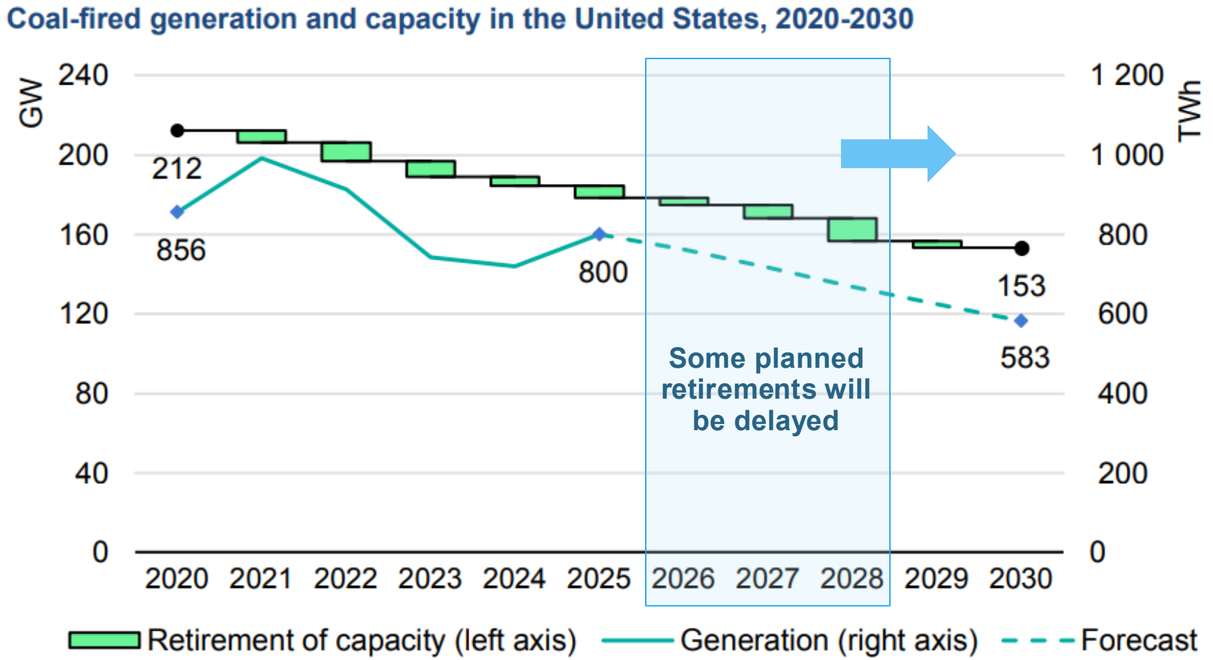
Source: EIA, January 2026

- Global coal demand expected to decline slowly the rest of the decade
- Exports becoming an important market for US thermal coal producers (25% of production in 2024 and a majority early 2030's)
- Although smaller in volume, US metallurgical coal exports remain strong due to high quality and global demand

Coal volume could remain relatively stable through later 2020s due to slowed retirements, rapid electricity demand growth, higher gas prices and federal directives

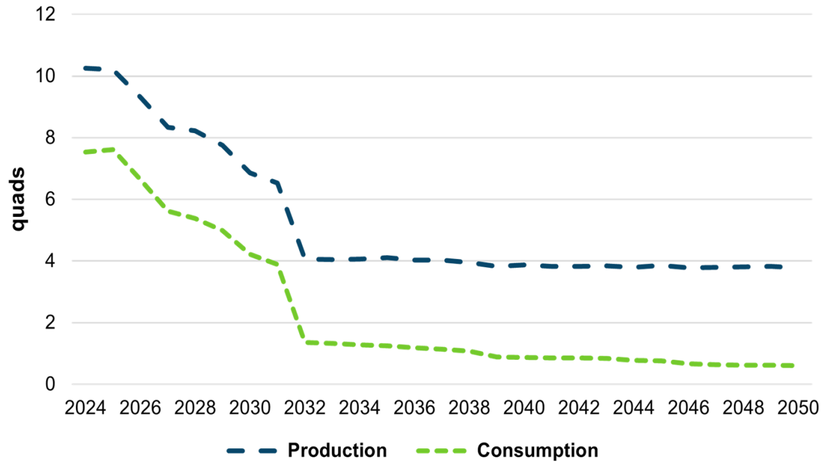
Long Term U.S. Coal Outlook Is Still Negative

Total Energy Outlook for Coal until 2030



Source: IEA Coal 2025 Analysis and forecast to 2030, December 2025

Total Energy Outlook for Coal until 2050



Source: IEA, September 2025

Tailwinds:

- Federal directives/incentives to delay coal plant retirements
- Datacenter electricity demand will delay some retirements in the next several years

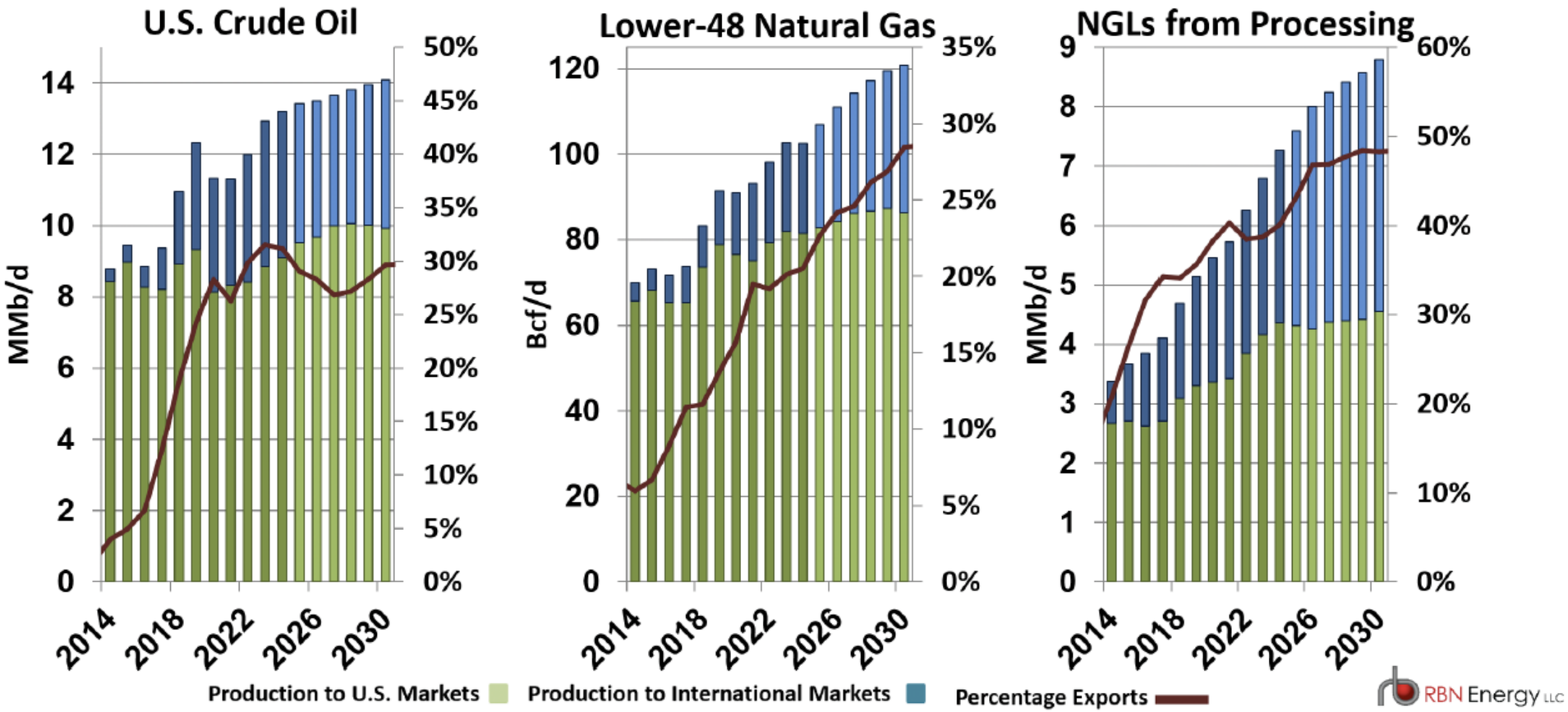
Headwinds:

- Long term coal plant retirement plans
- Low-cost renewables and natural gas

Domestic coal consumption will likely decelerate after 2030 as retirements hit and new renewables/natural gas generation capacity come online

Shale → U.S. Is Energy Independent & Export Power

US Hydrocarbon Exports and Forecasts

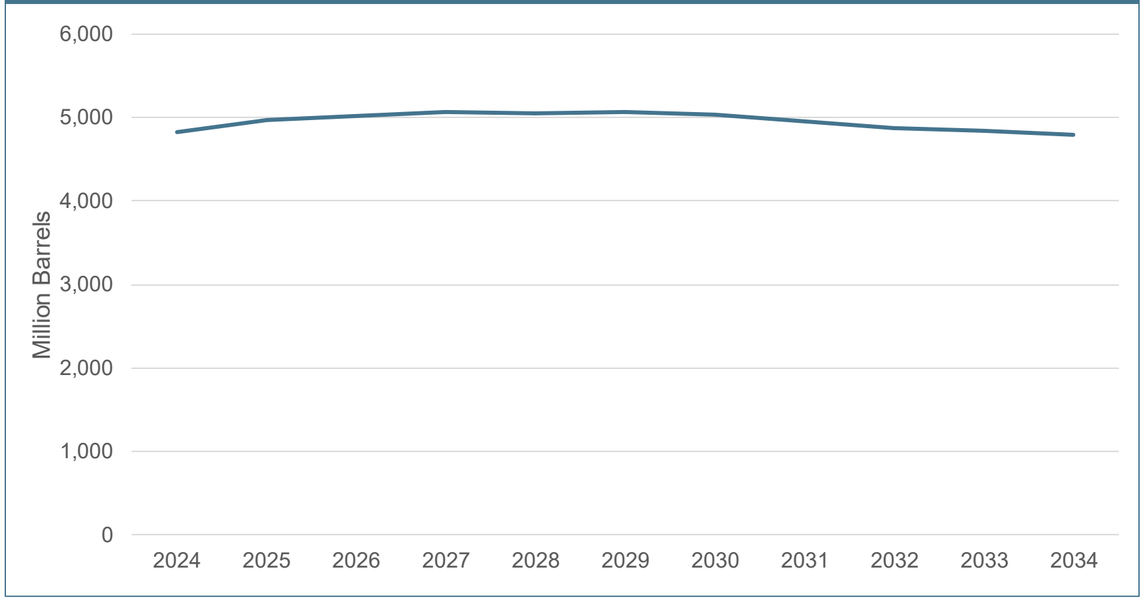


Source: RBN Energy, September 2025

Crude growth slowing…exports driving Nat Gas and NGL growth….NGL will be ~50% export by 2030

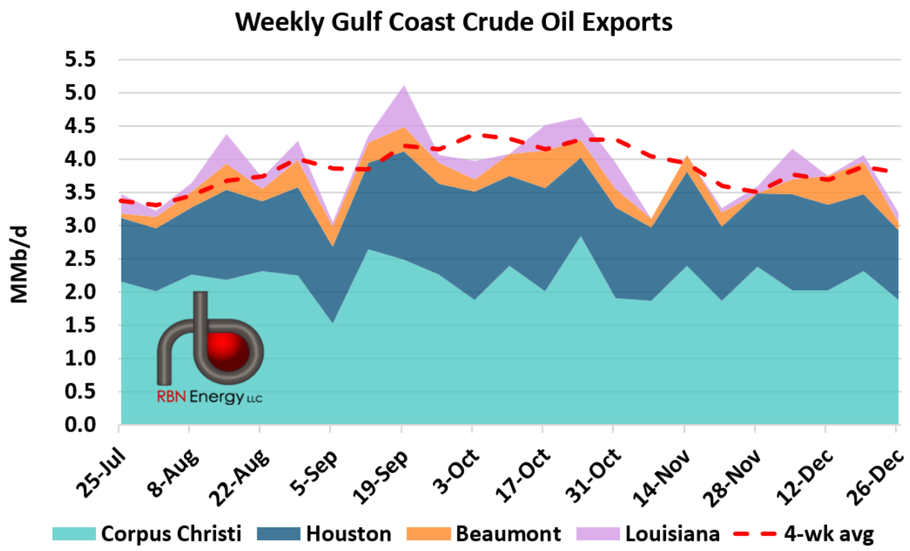
US Crude Production and Exports

US Crude Oil and Lease Condensate Production Outlook



Source: PLG analysis using EIA data, September 2025

Crude Exports Resilient Despite Trade Wars



Source: RBN article, December 2025

U.S. oil production growth curve flattening

- Growth over past 10 years has been driven by increased exports
- Export growth will slow as the globe faces 4M bpd supply surplus in 2026
- Permian basin accounts for almost half of U.S. production

Exports shift from China to Europe/Asia

- China exports have decreased significantly
- Volume growth has been spread across the Netherlands, South Korea, Canada, and India
- China has bought more oil from Russia, Middle East and Canada

Natural Gas Production Continues to Grow

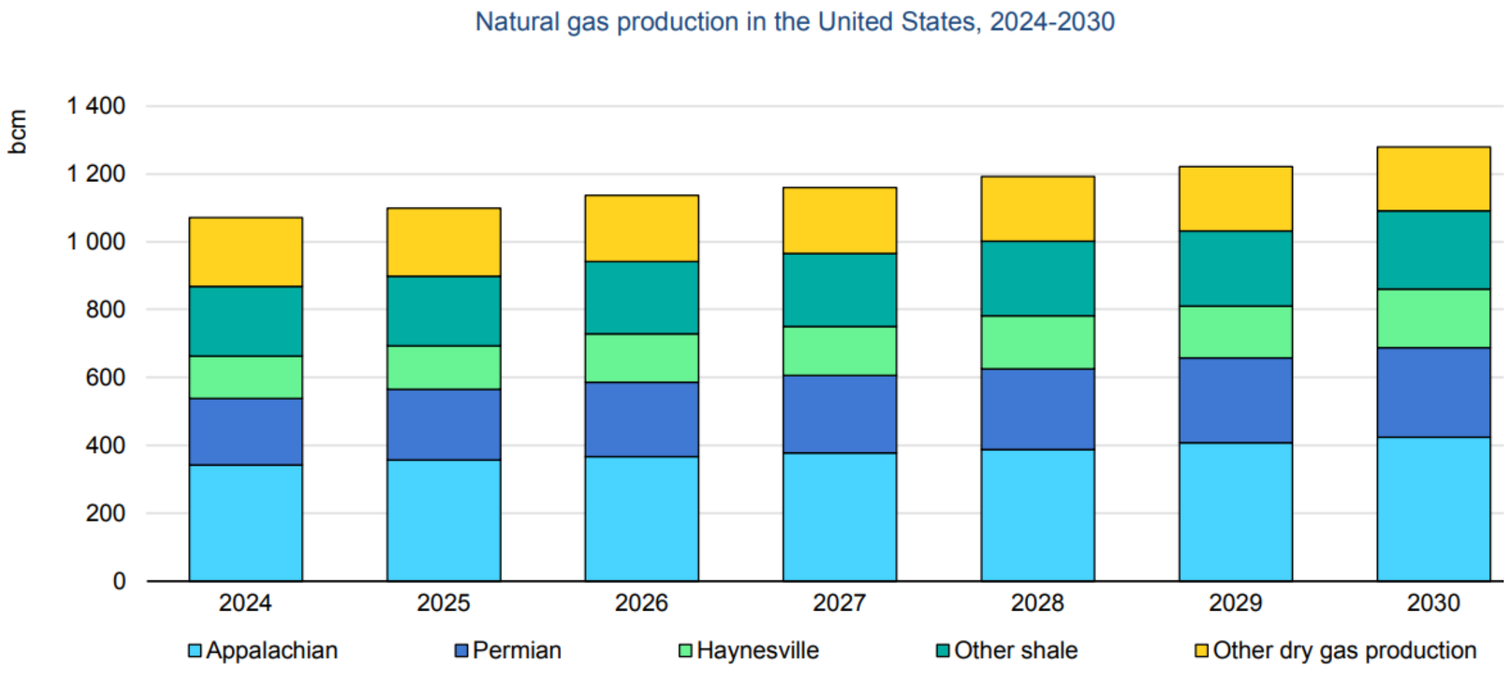
Supply Drivers

- Permian & Haynesville basins grow gas supply to feed new LNG export terminals along the Gulf Coast
- Appalachian output capped by pipelines
  - Production growth limited until new takeaway capacity comes online

Demand Drivers

- U.S. became the #1 global LNG exporting nation in 2025
  - Export capacity will double (2X) by 2030 with terminal buildout in USGC
- AI and data centers boost gas consumption
  - Gas turbine order book is full until 2028 to 2030 range

Lower 48 Natural Gas Supply/Demand Balance



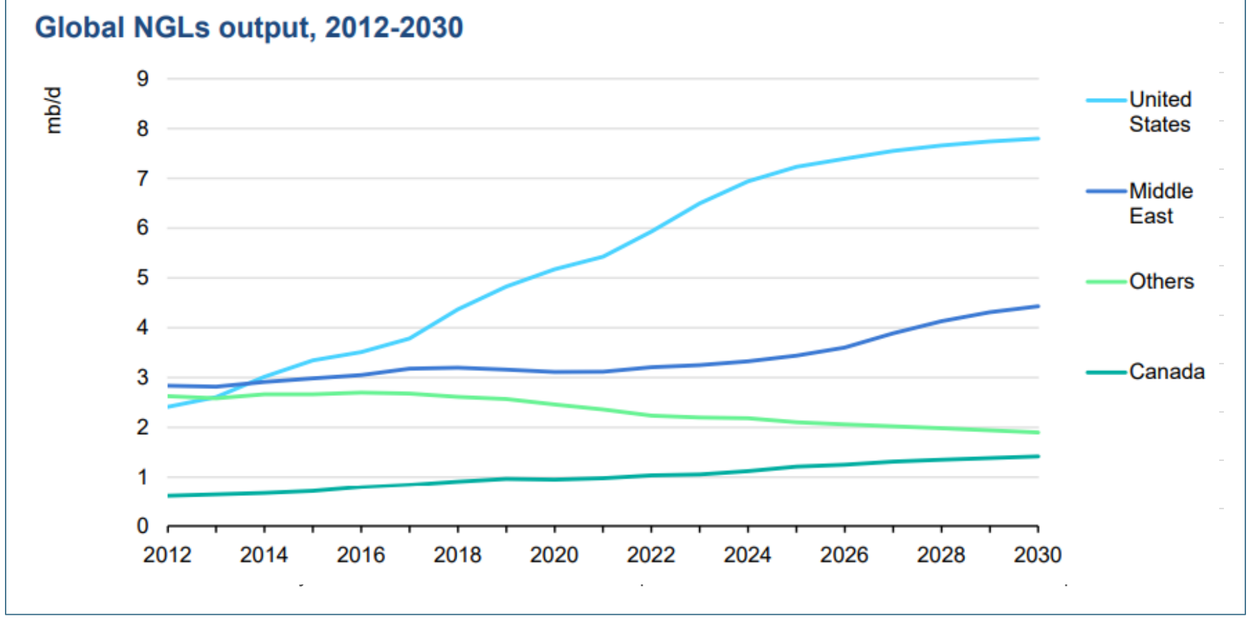
Source: IEA Gas 2025 Analysis and forecast to 2030, December 2025

** Lease and Plant Fuel, Pipeline & Distribution Use, Change in Storage Balance, Balancing Item.*

LNG Export Growth + Electricity Demand from Data Centers = Gas Growth Drivers

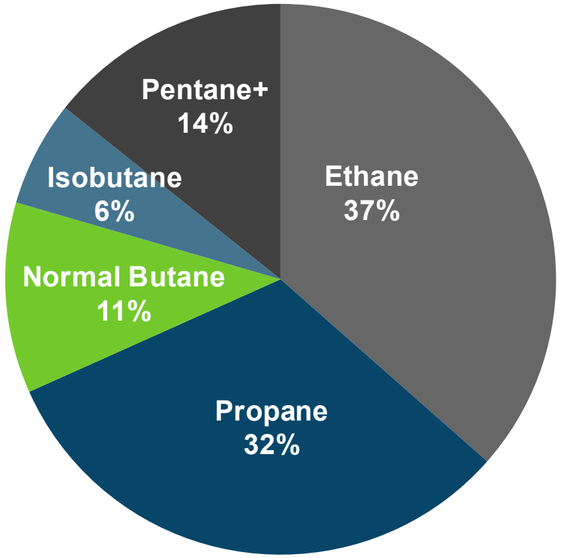
US NGL Production Is Global Leader – By Far

Global NGLs output, 2012-2030



Source: IEA Oil 2025 Analysis and forecast to 2030, December 2025

The Standard NGL Barrel



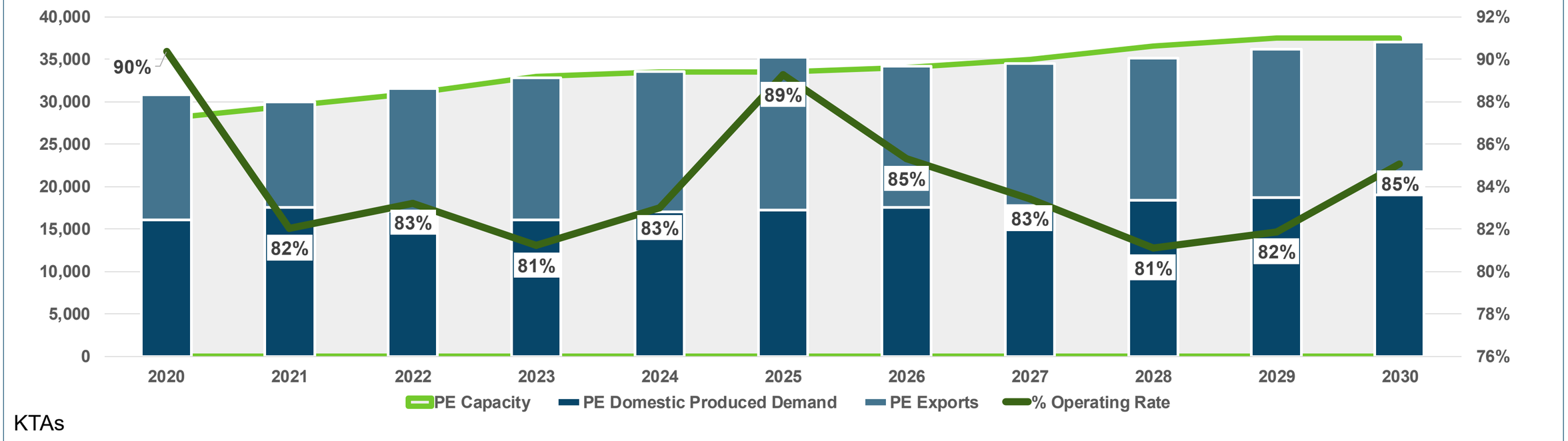
Source: Hart Energy

- Largest US production area is Permian Basin followed by gas-rich Appalachia (Marcellus/Utica shale play)
- Record exports of propane and ethane from the US Gulf Coast and East Coast terminals mainly to Asia and Europe
- Further entrenches North American “ethane advantage” and global petrochemical competitiveness

US NGL production volume will grow through the end of decade driven by exports

NA Polyethylene (PE) Expansion is Export–Oriented

NA Polyethylene Supply and Demand



Source: Asterisk Advisors, February 2025

- Last new PE plant – Golden Triangle in Orange, TX (CPChem/Qatar Energy JV) - may start production late in 2026 and add 2MTPA (~6% of US total volume) capacity

- Trade war impact + slowing global demand – double trouble
  - U.S. demand remains flat
  - China has resumed buying US PE, but moving more to ME/Asia
  - Brazil has provisional anti-dumping duties of $220/MT on U.S. PE

Challenging times ahead for U.S. PE (and chemical) producers – Low 80's % utilization in PE plants forecasted

PLG Energy Market “Weather Forecast” Definitions

Background/Assumptions

- This is a high-level forecast for the U.S. energy markets
- Combining supply and demand and is directional
- Forecast window is roughly the next 2-3 years
- Like a weather forecast, it is subject to change!
- We appreciate your input and opinions…..

Legend

	Sunny – competitive & growing production, federal support
	Partly cloudy – steady state production, challenges exist
	Cloudy – volume challenges, little federal support
	Stormy – uncompetitive U.S. production, little/no federal support

U.S. Fossil Fuel "Weather Forecast”

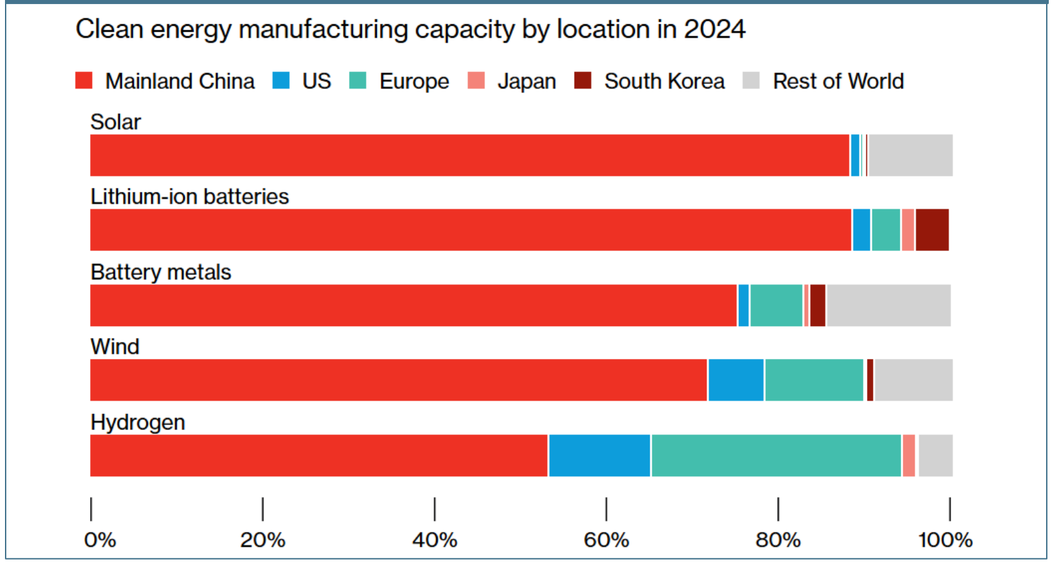
Energy Type	Forecast	Comments
Crude Oil		▪ U.S. has cost-advantaged, premium light oil ▪ Export growth slowing ▪ Federal government supporting U.S. O&G with favorable incentives
Natural Gas / LNG		▪ U.S. LNG exports will double with 8 new export terminals in USGC ▪ Data center energy demand will also increase NG usage
NGLs		▪ Growing Asian demand will be satisfied by U.S. exports which will stimulate U.S. production growth in Permian and Marcellus/Utica
Coal		▪ Production volume flat the next 2-3 years as retirements delayed to power demand, fed support and more expensive natural gas. ▪ Long term forecast is "stormy“ as retirements hit hard post-2030
Chemicals		▪ Shale gas gives U.S. feedstock cost advantage remains strong ▪ Slowing global demand and trade war impact will challenge exports
Nuclear		▪ Despite several shutdown plants being brought back for a few datacenters, 10 year volume forecast remains flat

Steady to growth for all fossil fuel markets over next several years

III – New Energy Technologies

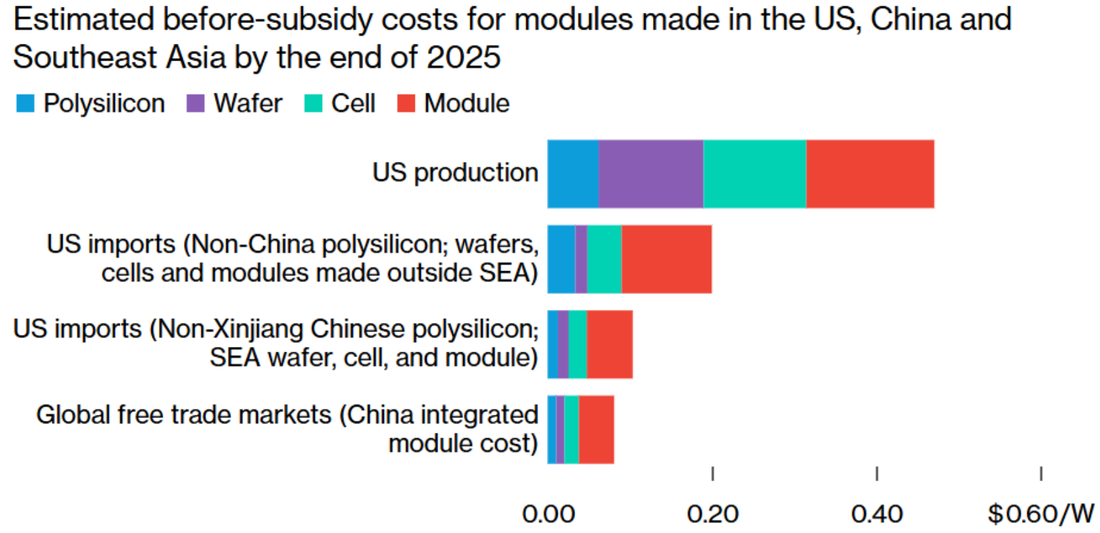
China Dominates Clean Energy Markets with Commanding Market Shares and Cost Advantages

Mainland China Dominates Clean–Tech Manufacturing



Blomberg - September 2025

US Solar Production Costs Are Six Times Higher Than China



Bloomberg - September 2025

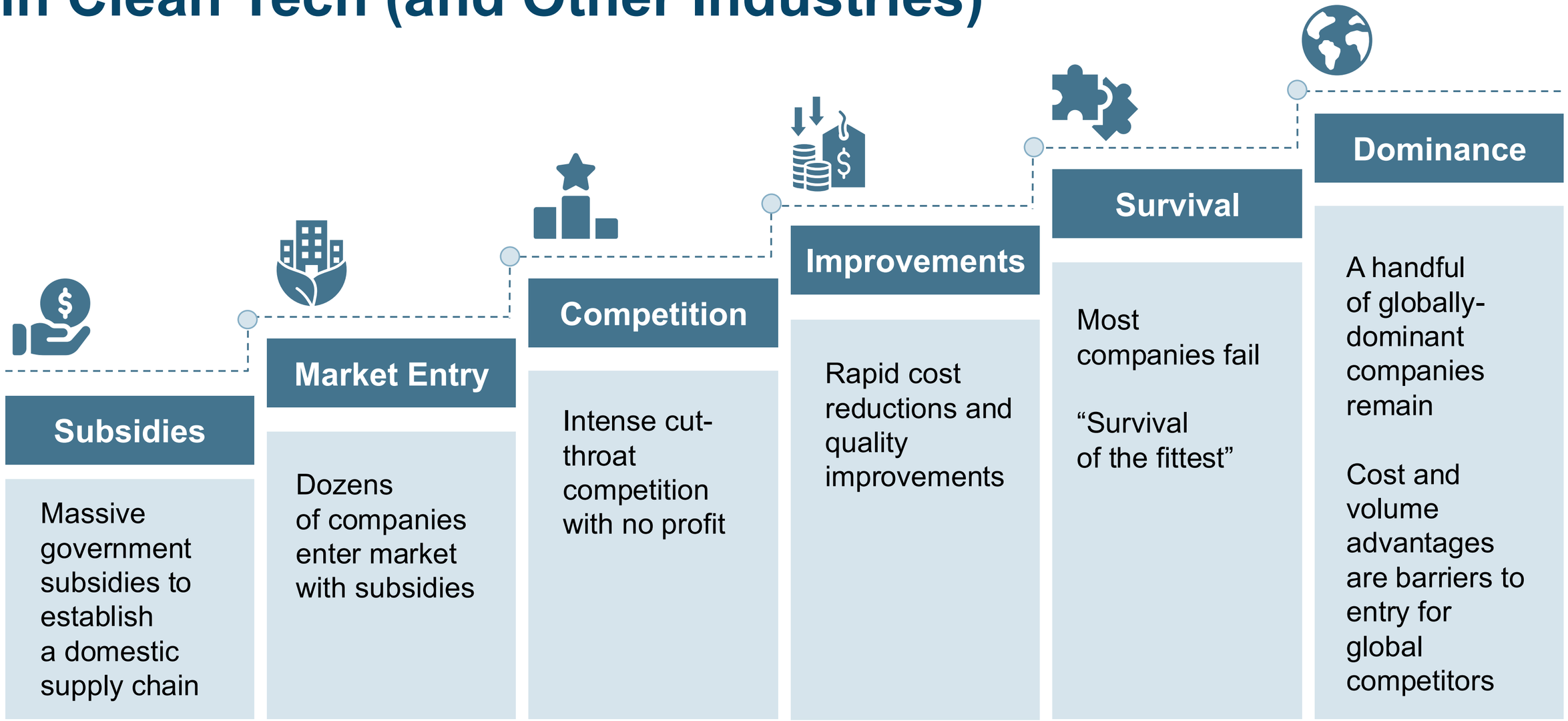
Rare Earth Minerals Example

- China's current market shares:
  - Mining 60-70%
  - Processing 90%+
  - Neodymium Magnets 95%+
- China currently produces 300k tons per year of neodymium magnets
  - U.S. is targeting to someday produce 1k tons per year of these magnets

- U.S. polysilicon is significantly more expensive than Chinese production
- There are currently no wafers made in the U.S. with only two cell makers
- U.S. solar module assembly global share is in the single digits

China's lead in solar, batteries, and critical minerals appears insurmountable

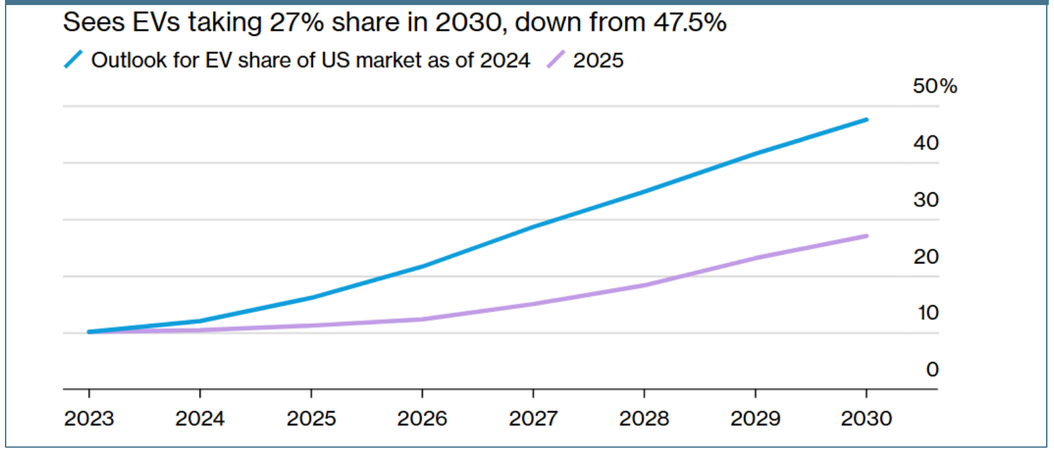
China's Playbook: Subsidies to Dominance in Clean Tech (and Other Industries)



China has used this formula in critical minerals, solar, EVs, and battery supply chains while at the same time commissioning 50 new coal generation plants for data centers in 2025!

U.S. EVs Have Hit the Brakes

BNEF Slashes Outlook for EV Sales in US



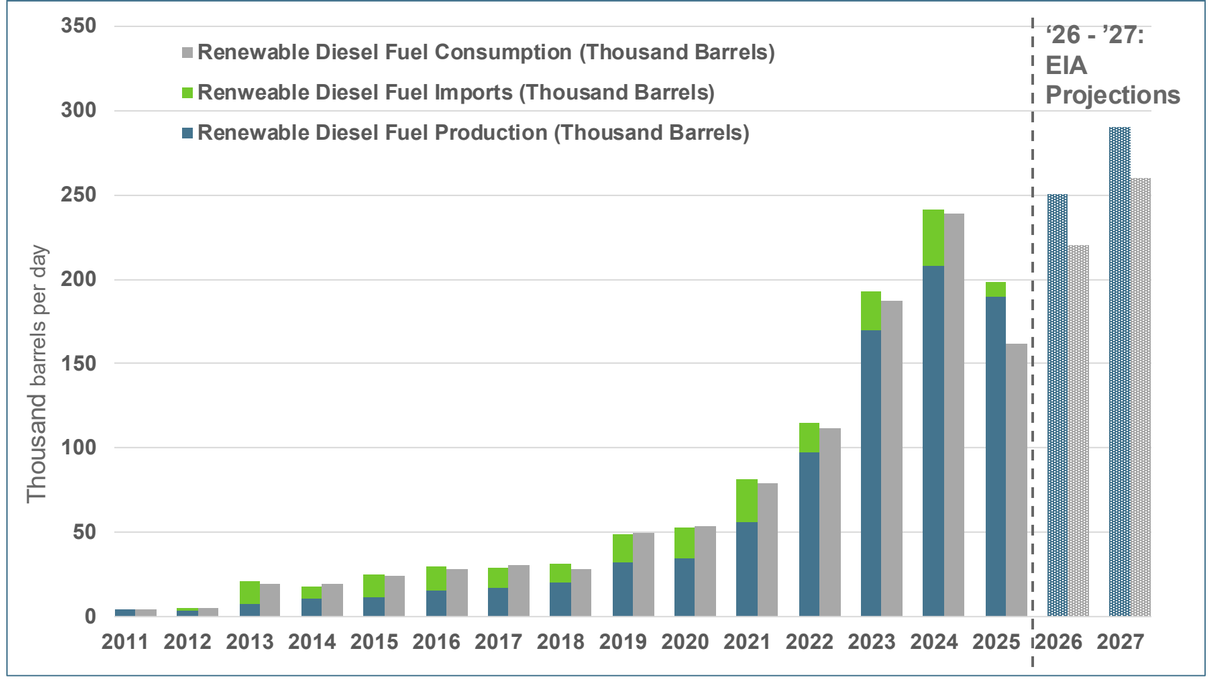
Source: BloombergNEF
Note: Electric vehicles include battery-electric and plug-in hybrid vehicles.

- OBBBA eliminated $7,500 tax credit in September 2025
- EV share will continue to rise, but the forecasted growth curve has dropped dramatically in the past year.
  The 2030 forecast EV share:
  - 2024 forecast -- 47.5%
  - 2025 forecast -- 27%
- BNEF's updated forecast implies slower electrification through 2030, with incremental share absorbed by hybrids and ICE due to:
  - Federal tax credit ended in Sept 2025
  - Charging constraints and range anxiety
  - Upfront cost and affordability pressure
  - Slower policy-driven acceleration and consumer adoption
- Hybrid share could reach 27% by 2030 according to Automotive News

Detroit Three have written off $50B of EV investments this year

Renewable Diesel Has Created New Rail Opportunities

US RD Production and Consumption



Source: PLG analysis using data from EIA, January 2026

- **Temporary 2025 headwinds:**
  - Changes and implementation delays with federal and state incentive programs
  - Feedstock and finished fuel sourcing has shifted from imports toward USMCA sources causing a realignment of supply chains
- **Future growth drivers:**
  - Policies at the federal and state levels continue to favor "drop-in" liquid fuels
  - Tightening of federal and state-level renewable fuels programs

- Renewable Diesel feedstocks include:
  - Vegetable oils – mainly soybean oil
  - Animal fats and used cooking oils
  - Recycled waste products
- Feedstock locations: Most feedstocks are produced in the Midwest and USGC, while demand is concentrated on the West Coast.
- No direct pipelines: With no pipelines linking Midwest/USGC supply to California, Oregon, and Washington.
- Rail provides the most practical link to move feedstocks and finished RD to West Coast markets

Net effect: Incentives ensure near-term RD growth, but feedstock capacity will limit growth potential

U.S. New Energy Technology “Weather Forecast"

Energy Type	Forecast	Comments
Solar		▪ OBBB reduces or removes incentives for new installations ▪ Utility volume installations will decline for next two years+ ▪ Supply chain remains highly dependent on China – tariff impact
Onshore Wind		▪ Low-cost renewable energy source, developed supply chain ▪ OBBB reduces or removes incentives for new installations
Offshore Wind		▪ Undeveloped U.S. supply chain, high cost, permitting challenges ▪ OBBB and US EPA policy will significantly slow adoption in the US
Battery Electric Storage Systems		▪ Key enabler for renewable energy – supplied mainly from China ▪ Growth will slow as solar and wind slows
Lithium / Critical Minerals		▪ Mines and processing plants are years away if they happen ▪ Federal government considering stake in Lithium Americas
Green Hydrogen		▪ Uncompetitive cost structure, most projects cancelled/delayed ▪ 45V rules (after 2 years) are too restrictive to enable ramp up
Blue Hydrogen/Ammonia		▪ Will utilize carbon capture to mitigate carbon ▪ Demand currently driven by Asian and European customers
Carbon Capture Utilization & Storage		▪ Technology is capable but major project challenges persist ▪ CO2 by rail may only be used for unique projects

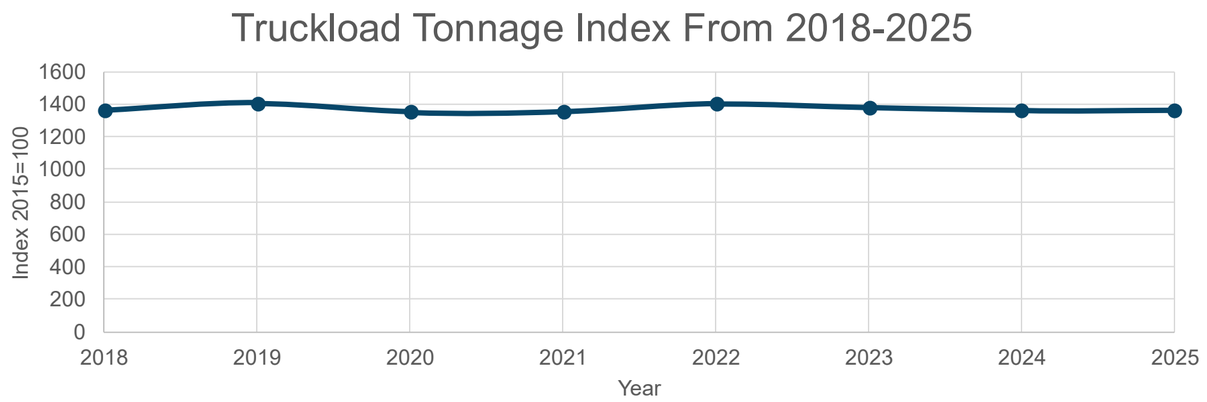
IV – Implications for Rail and Railcar Markets

“Freight Recession” Continues

Railcar Volume Since 2018 Down ~15%

Source: PLG analysis using data from US Bureau of Transportation Statistics via FRED®, February 2026

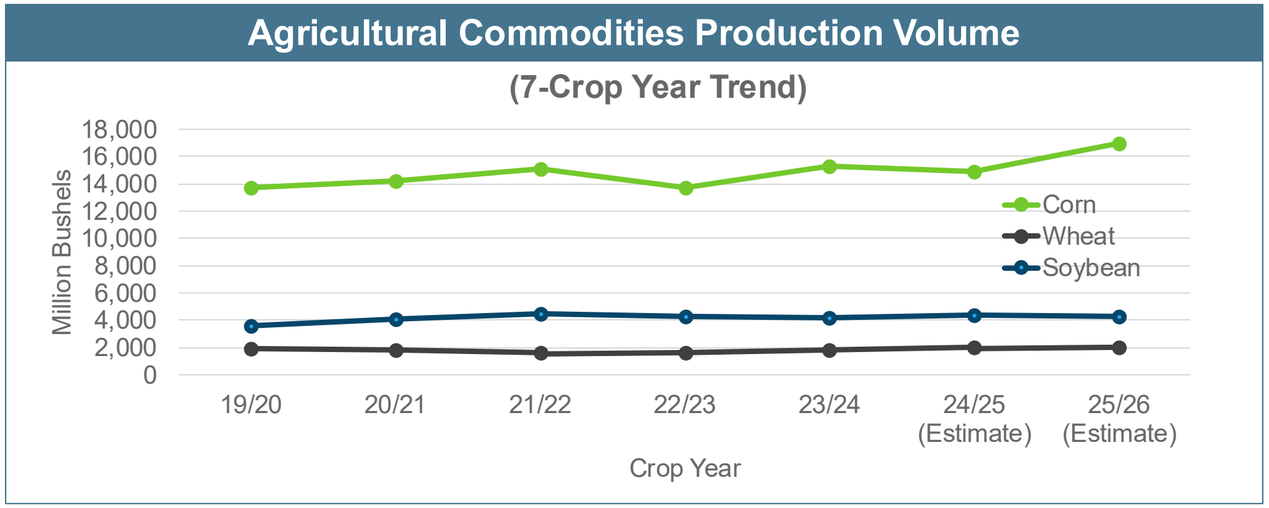
Meanwhile, Truck Volume Has Been Relatively Flat



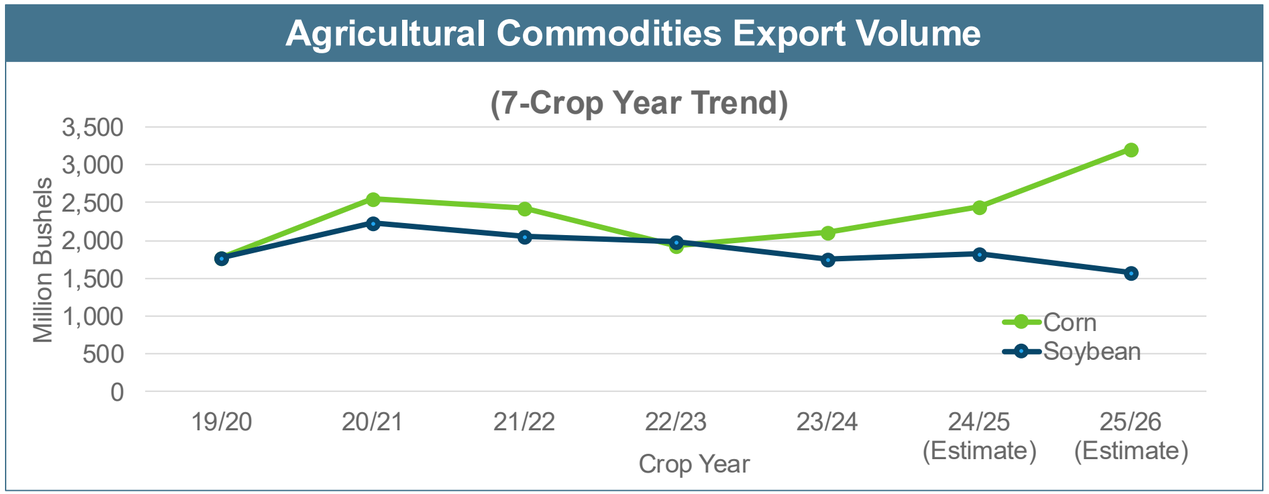
Source: PLG analysis using data from US Bureau of Transportation Statistics via FRED®, February 2026

- Railcar volume has not returned to 2018 levels after COVID impact
  - Likewise, trucking volume is flat
  - Intermodal units still hasn’t returned to 2018 volume (14.36M units) in 2025 (14.05M units)
- Coal carloads have dropped from 4.4M in 2018 to 3.0M in 2025
  - ~70% of total carload volume drop
- **According to AAR data, the largest commodity volume growth for 2025 were:**
  - Coal +92k carloads +3.1% vs. 2024
  - Grain +56k carloads +5.2% vs. 2024
- Grain remains hot with 18.5% carload growth YTD 2026

Grain Volume Analysis and Forecast



Source: PLG analysis using data from WASDE Reports, February 2026



Source: PLG analysis using data from WASDE Reports, February 2026

Corn is by far the largest ag commodity with soybeans and wheat far behind

- Corn was the main driver behind the 5.2% grain growth in 2025 carloads
  - Corn had a larger than normal U.S. crop
  - Excess volume pushed down prices which enabled more exports
- Exports are expected to reach record levels during 2025/2026 crop year with limited trade war impact
- However, farmers shifting from corn to soybeans due to profitability and oversupply from last season

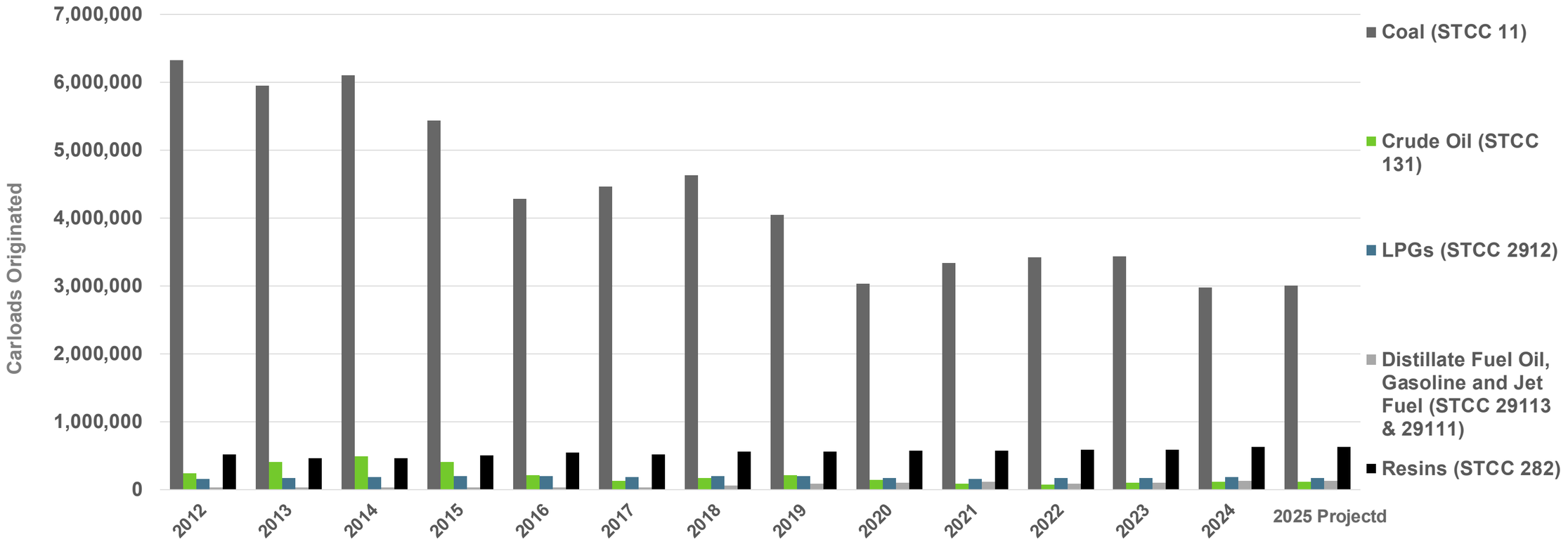
Soybeans will grow this year:

- Farmers shifting from corn this season
- Soybean oil as a feedstock for RD will return to growth in the next few years
- However, exports may drop because of trade war with China
  - U.S. exports to China down 26% in 2026 YTD
  - Brazil is a dominant global player and has taken U.S. export share

Grain rail volume expected to remain strong with near record crops this year for corn and soybeans and leftover stock from last year's crops

Lost Coal Rail Volumes Not Being Offset by Shale–related Commodity Growth

U.S. Class I Carloads Originated for Selected Energy–Related Commodities

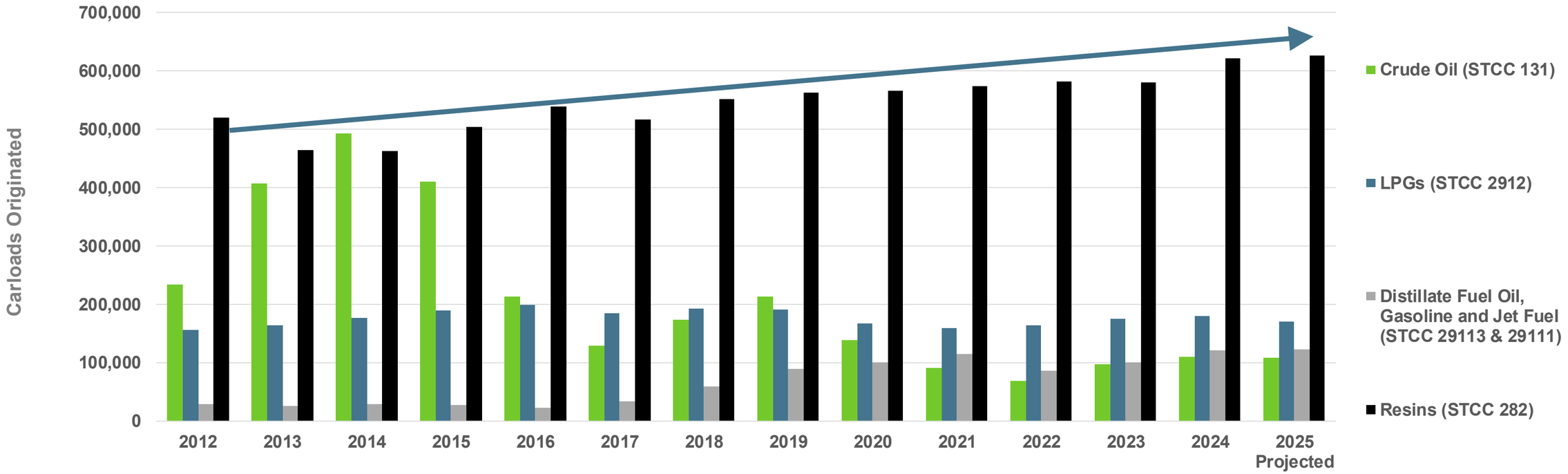


Source: Surface Transportation Board, January 2026

Coal volume may stabilize at ~3M carload level for next few years

Shale Development Helped to Spur Growth in Several Commodities

U.S. Class I Carloads Originated for Selected Energy–Related Commodities



Source: Surface Transportation Board, January 2026

Some resin and LPG volume growth over next several years

Scorecard: Future Rail Opportunities

Rail Commodity	Outlook	Key Factors	Railcar Types
Coal		▪ On life extension – volume could stay stable over next several years	Hopper (open top)
Crude oil		▪ No significant changes foreseen with crude by rail – limited growth opportunities	Tank (GP)
Propane/ Butane		▪ Growing production of NGLs, particularly in the Bakken, Appalachia, and Western Canada need rail ▪ Potential pipeline takeaway constraints at times in other basins	Tank (pressure)
Chemicals		▪ North American ethane feedstock advantage is stable and expected to sustain chemical production for decades ▪ Golden Triangle project in TX will add 6% to US volume – likely all export that needs rail	Tank (multiple types), covered hopper (resins)
Renewable Diesel /SAF		▪ RFS and state LCFS programs expected to expand use of RD, SAF ▪ RD involves rail in both feedstocks and finished product ▪ However, California LCFS seed oil limitations and federal rulings on imported feedstocks will limit finished fuel product growth potential	Hopper (grain), tank (GP)
Ethanol		• Minimal domestic growth foreseen as demand is inline with gasoline • E15 has not taken off • Exports (16% of total US production) will continue to grow which may need some rail	Tank (GP)
Ammonia		▪ Ammonia production growth will be focused on exports from Gulf Coast	Tank (pressure)
Energy Transition Minerals	 ?	▪ Lithium mining projects are still under development – not sure they will make it ▪ Elimination of federal EV incentives in the U.S. will result in headwinds	Box, gondola, hopper (open top and covered)

V – Rail Services Investment Insights

Rail Services Investment Overview

Shortline railroads M&A activity has slowed this decade as fewer targets are available; multiples in the range of 12-20x.

However, PE and institutional capital interest in the rail sector remains strong and has been very active within services, including:

- Railcar maintenance and repair (M&R)
- Railcar cleaning
- Transloading
- Railcar storage / SIT yards
- Industrial rail parks with multiple services
- Rail construction, inspection and maintenance

These markets can be complex with many service providers involved in multiple verticals

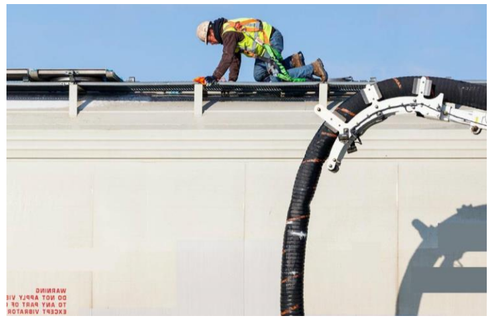
- Includes both asset and labor intensity
- Barriers to entry range from minimal to high
- Some have already experienced significant consolidation

Consolidation opportunities vary by service area with mostly fragmented markets – additional M&A runway for astute buyers

Competition among buyers is robust and sophisticated, which is supporting strong multiples

Recent Cando acquisition of Savage Rail is an example of major consolidation of two players operating in multiple verticals

Rail Services Investment Overview

Vertical	Brief Description	Market Structure	Growth Potential	M&A Potential
 **Railcar Repair & Maintenance (Shops and Mobile)**	Restores mechanical/ structural integrity and ensures regulatory compliance	Market composed of large integrated providers and regional specialists	Mobile repair/ maintenance avoids empty freight moves and faster return-to-service	Largely mature due to M&A activity over past 5-7 years
 **Railcar Cleaning (Shops and Mobile)**	Removes residues/ contaminants to prepare cars for reloading, service change, or maintenance	Cleaning & repair frequently bundled within broader rail services offerings	Fleet growth and automated mobile cleaning solutions are driving mobile growth	Smaller mom/pops comprise most of the remaining market – also mature

Rail Services Investment Overview (continued)

Vertical	Brief Description	Market Structure	Growth Potential	M&A Potential
 **In Plant Logistics**	Switching plus potentially railcar loading/unloading, on site railcar cleaning/repair, dock operations, infrastructure maintenance	Market participants include short lines and dedicated in-plant/switching "specialists"	• Growth outlook is modest, slightly above GDP • Many companies have already outsourced services	Few small in plant logistics providers remain; investors interested in this service if part of multi-service rail companies
 **Switching**	Manages the outsourced movement of railcars within rail yards and industrial facilities	Market participants include short lines and dedicated in-plant/switching "specialists"	• Growth outlook is modest, slightly above GDP • Many companies have already outsourced services	Few small providers remain; investors interested in this service if part of multi-service rail companies

Rail Services Investment Overview (continued)

Vertical	Brief Description	Market Structure	Growth Potential	M&A Potential
 **Railcar Storage**	Provides temporary or medium-term parking of idle railcars on dedicated storage tracks	Fragmented market incl. track owners, short lines, and storage brokers	Growing fleets & shippers seeking flexible asset management., solutions are drivers	Attractive area for investors especially for multi-site and multi-service facilities; better suited to infrastructure-oriented capital
 **Storage In Transit (SIT)**	Temporary holding of loaded or empty railcars between origin and final destination	Includes railroads, storage yard operators, and transload terminals	Increased utilization in energy markets, agricultural flows, and petrochemical chains	Attractive area for investors especially for multi-site and multi-service facilities; better suited to infrastructure-oriented capital

Rail Services Investment Overview (continued)

Vertical	Brief Description	Market Structure	Growth Potential	M&A Potential
 **Transloading**	Transfers products between rail and truck to serve origins or destinations without direct rail access	Highly fragmented with 1,200+ sites with 500+ companies in North America	• Growth tied to truck-to-rail conversion • Seen as growth driver by railroads	• Long tail provides roll up potential • High interest from investors
 **Rail Logistics Parks**	Rail-served industrial platforms designed to host multiple co-located rail services within a single footprint	Rail operators with development platforms, port/ terminal operators, real estate/industrial developers	Growth is driven by industrial development and Class I support for first mile/last mile solutions	Attractive financial profile at scale with multiple revenue streams and Infrastructure-like asset durability

Available for download now at:
https://plgconsulting.com/refc2026/

Questions?

Thank You!

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