



# Renewable Diesel and Biodiesel: Supply and Regulatory Incentive Considerations

Prepared for City of Portland Bureau of Planning and  
Sustainability RFS Technical Advisory Committee

April 11, 2024



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2. Our clients: government agencies, oil and renewable fuels companies, trade associations, technology developers, private equity firms, and law firms.
3. Leading experts on renewable fuels markets and the regulations that drive them.
4. Stillwater's **LCFS and C&T Newsletters** offers producers, importers, traders, and investors the right information to make smart credit market decisions.
5. **Questions about renewable fuels markets?** Our team of experts is available to provide specific analysis and tailored strategy for your needs.

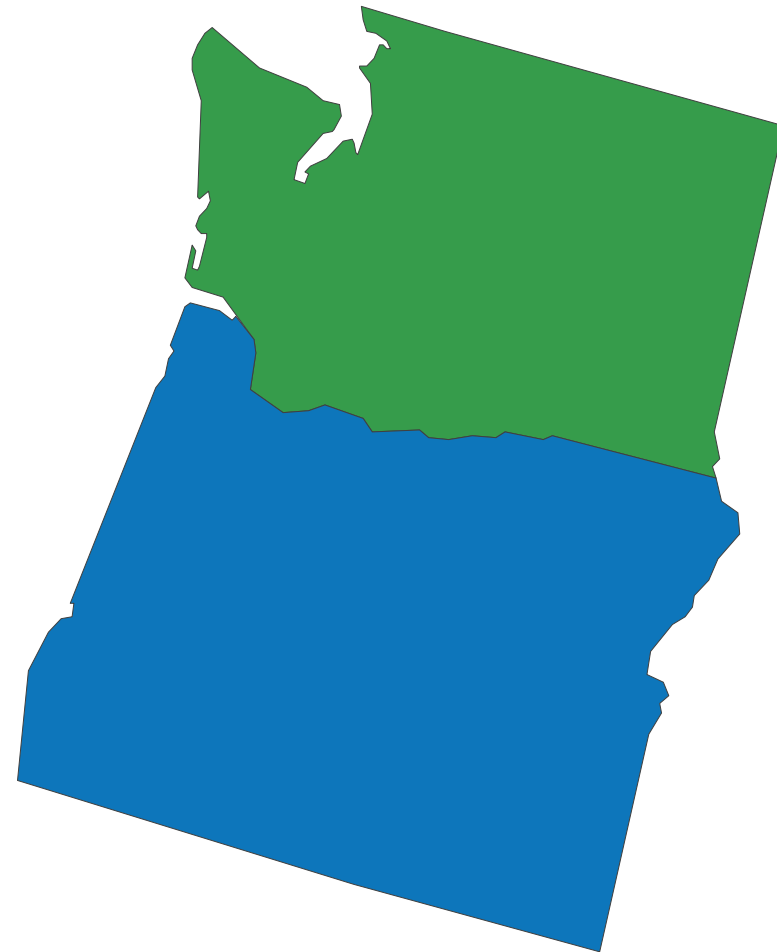
# Agenda

1. PNW Diesel Demand and Renewable Diesel/Biodiesel Supply Outlook
2. The Incentive Stack
3. Trends to keep in mind

# PNW Diesel Demand and Renewable Diesel / Biodiesel Supply Outlook

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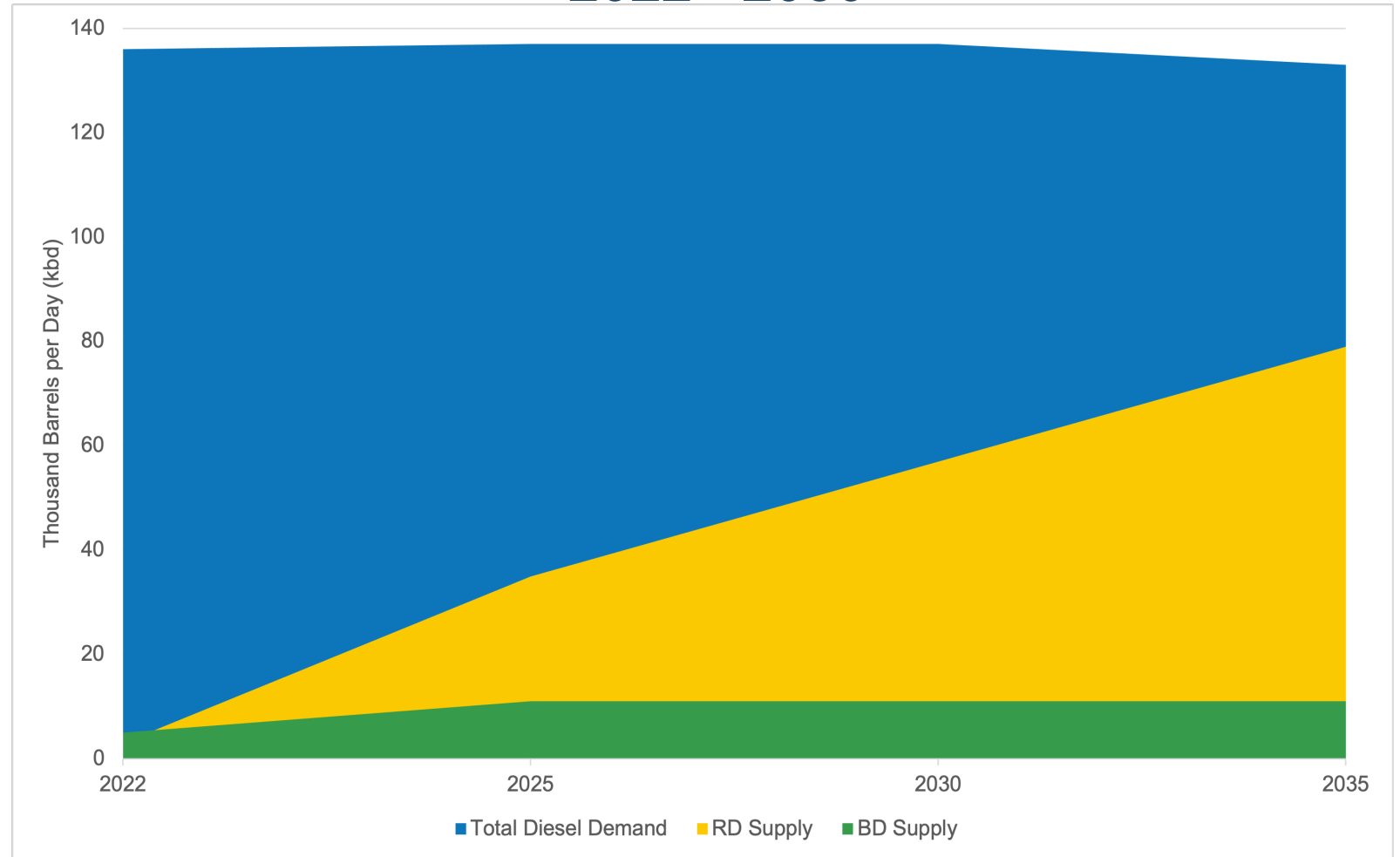
A high-level supply/demand view for  
the region





# PNW Total Diesel Demand and RD/BD Supply Outlook 2022 - 2030

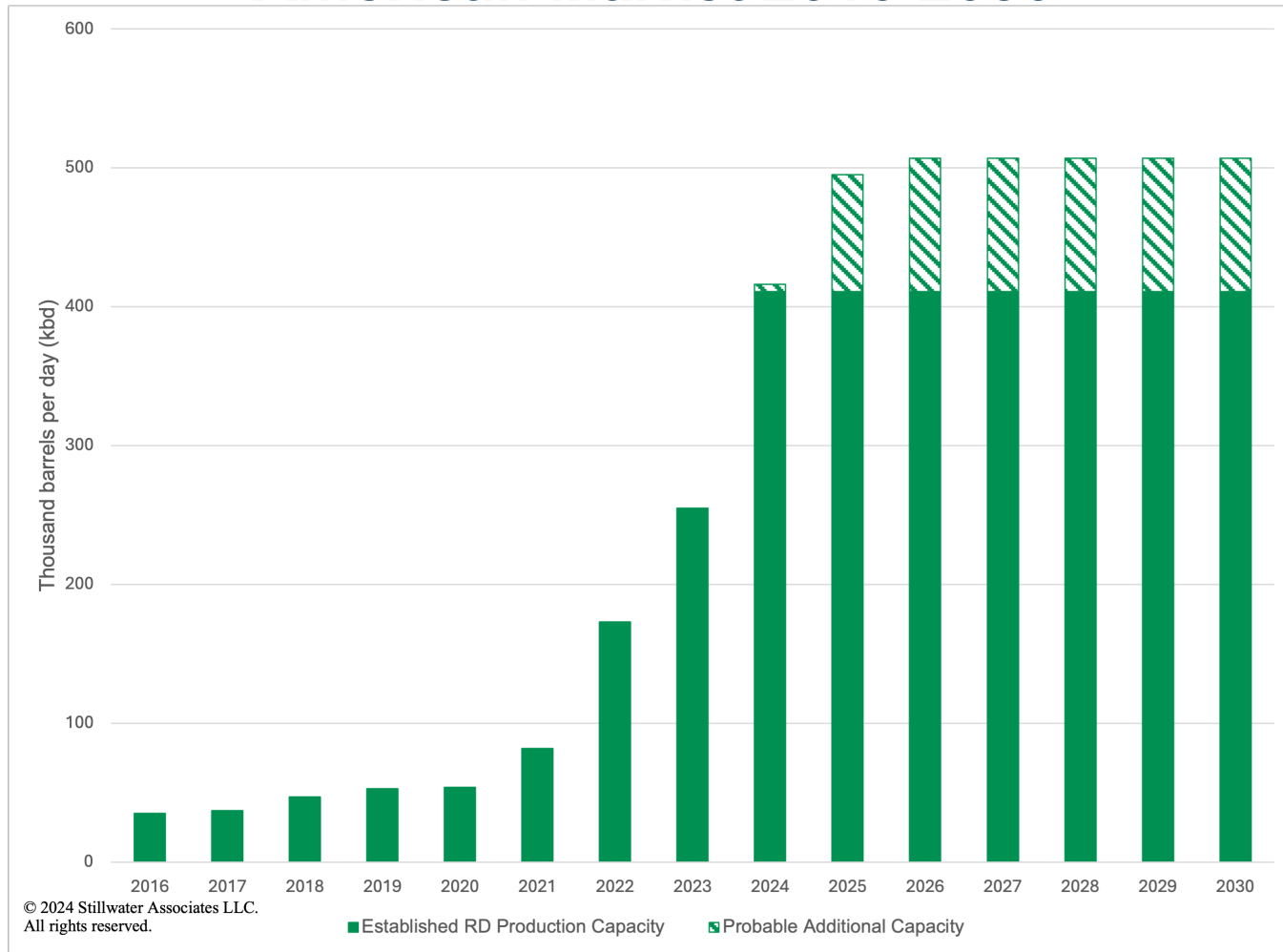
1. Stillwater's refined product supply and demand outlook shows total PNW diesel demand decreasing slightly from 136 thousand barrels per day (kbd), or 2.1 billion gallons per year, in 2022 to 133 kbd (2 bgy) in 2035.
2. Biodiesel (BD) supply will increase slightly from 5 kbd (77 million gallons per year) in 2022 to 11 kbd in 2025 (169 mgy) and remain constant through the outlook period.
3. Renewable diesel (RD) supply will increase from 3 kbd (46 mgy) in 2022 to nearly 80 kbd (1,226 mgy) in 2035.
4. Stillwater's outlook shows PNW RD/BD supply will be 50% of diesel demand in 2030 and 68% of demand in 2035.



Source: CARB, DEQ, Ecology, Stillwater Analysis

Sufficient RD supply is vital to meeting the Portland RFS goals.

# Established and Probable RD Production Capacity Aimed at the North American Market 2016-2030



1. Stillwater tracks new RD project announcements and assesses each project for viability to create a probability weighted analysis of upcoming production capacity.
2. Based on current announcements and our analysis, Stillwater's outlook shows RD production capacity growth, aimed at the North American market, peaks in 2026 at 507 kbd (7.7 bgy).
3. Not all production capacity is aimed at the U.S. West Coast. For 2024, about 235 kbd (3.6 bgy) in production volume is California or U.S. West Coast-advantaged.

## The Incentive Stack

The full value of RD/BD carbon credits & tax incentives on the West Coast

**Cap-at-the-Rack**  
**LCF Credits**

**D4 RINs**

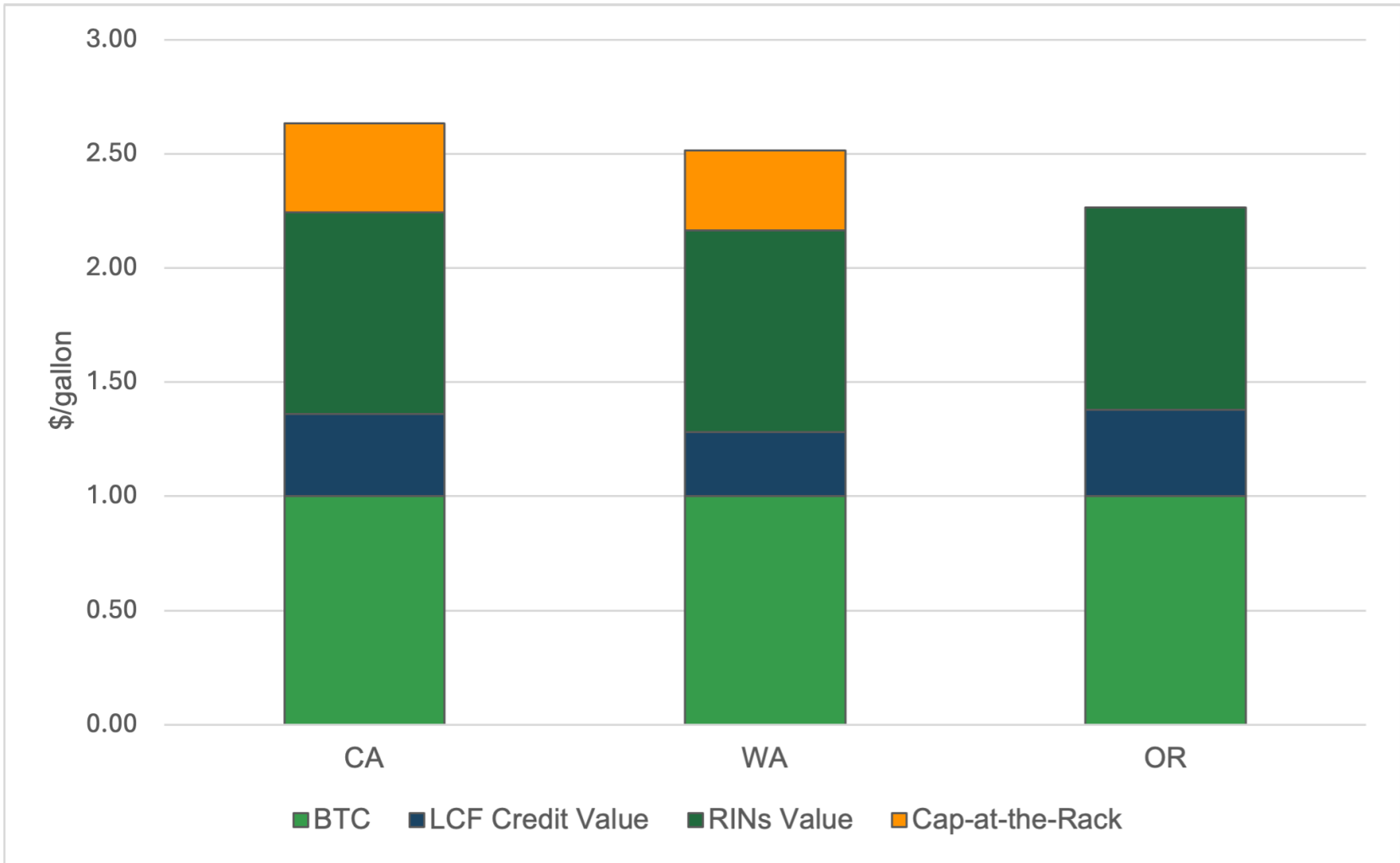
**BTC (until 2025)**

**45Z (2025-2027)**



# Stacked Incentive Value of 40 CI RD California, Oregon, and Washington (\$/gallon) April 9, 2024

1. BTC = \$1
2. Based on LCF credit prices reported by OPIS, LCF credit value for 40 CI RD in CA = \$0.36/gal, in WA = \$0.28/gal, in OR \$0.38/gal
3. RD gets 1.7 RINs, D4 RINs = \$0.52/gal nationally, \$0.88 per gallon for RD on 4/9/24
4. Under Cap & Trade or Cap & Invest programs, Cap-at-the-Rack is the obligation for allowances levied on the petroleum fuel position holder at the terminal when the fuel is loaded. Cap-at-the-Rack increases the full margin of renewable fuels in CA and WA because they don't incur the C&T or C&I costs incurred by the petroleum alternatives.
5. OR petroleum diesel does not incur cap-at-the-rack due to the absence of this type of program.



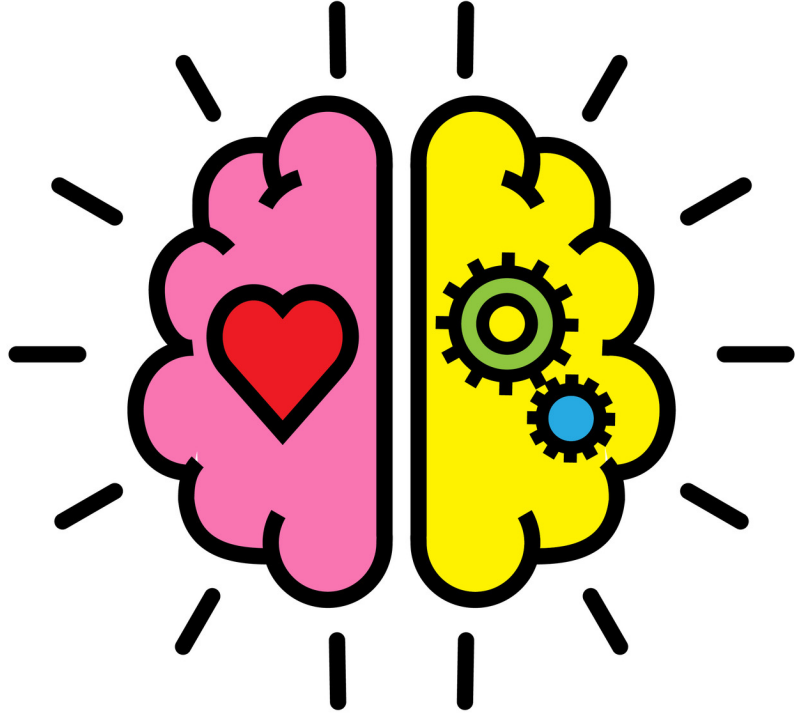
\*OPIS mean credit values on 4/9/24. CA LCFS= \$65/MT, OR CFP = \$65/MT, WA CFS = \$41/MT  
Based on 2024 LCFS, CFP, and CFS benchmark values for diesel fuel and market prices reported on 4/9/24  
Sources: OPIS, CARB, DEQ, Ecology

The Oregon incentive stack competes with neighboring states to attract low CI renewable fuels.



# Things to keep in mind

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# Some items to consider as the RFS is implemented

1. Stillwater expects the average RD carbon intensity (CI) to go up as production capacity and competition for low carbon feedstocks increases.
2. High volumes of low CI fuel will generate large volumes of credits, growing the Oregon Clean Fuels Program (CFP) credit bank and lowering the CFP credit price. This may require action by DEQ to tighten the carbon reduction goals to support CFP credit prices.
3. Storage and distribution assets are important parts of the liquid transportation fuels supply chain. Portland should ensure that adequate terminal storage and distribution assets are available to support the goals of the RFS.



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Thank you.  
Questions?

# LCFS

- Administered by CARB
- Reduces the CI (gCO<sub>2</sub>e/MJ or g/MJ) of the transportation fuel pool by setting an annual carbon reduction standard
- Current reduction target is 20% by 2030. \*That will probably change.
- Fuels with a CI above the standard (currently gasoline & diesel) generate deficits. Fuels with a CI below the standard (renewable fuels, electricity) generate credits.
- Deficit generators must purchase or generate credits to be in annual compliance with the standard
- Compliance mechanism = LCFS credit

# CFP CFS

- Administered by DEQ
- Modeled after the CA LCFS program with slight adjustments
- Current reduction target is 37% by 2035
- Compliance mechanism = CFP credit
- Administered by Ecology
- Modeled after the CA & OR LCFS and CFP programs with some slight differences
- Current reduction target is 20% by 2034
- Compliance mechanism = CFS credit

*\*State low carbon fuel standards are referred to collectively as LCF programs.*

# C&I CPP

- **Currently on hold.** OR CPP provides compliance instruments to covered entities for free. They are not sold by the state but can be traded between entities. Covered entities may also purchase Community Climate Investment (CCI) credits to offset emissions.

# C&T

- West Coast state carbon Cap & Trade Programs
- Administered by CARB, Ecology, and DEQ
- Places a declining cap on major sources of emissions
- CA & WA programs establish an auction for carbon allowances which covered entities may purchase to offset emissions. Proceeds from auctions are used for in-state climate investment.
- CA & WA programs result in Cap-at-the-Rack fee for petroleum fuels at the wholesale level.
- CA & WA compliance mechanisms = allowances & offsets

# RFS

- Administered by the U.S. EPA
- Mandates specific volumes of renewable fuel, identified by separate categories, be blended into petroleum fuel
- Compliance mechanism = RIN
- \*Can be political

# BTC

- Administered by the IRS
- Provides \$1 per gallon tax credit for RD/BD blended with petroleum fuel
- Expires at the end of 2024 (replaced by 45Z)
- \*easy peasy

# 45Z

- Part of the IRA and also known as the Clean Fuel Production Credit (CFPC)
- Starts in 2025
- Available to any transportation fuel produced in the U.S. (not just RD/BD/SAF)
- Per-gallon credit is calculated from the emissions rate of the fuel. IRS will publish an annual table of emission rates for each applicable fuel.
- Base rate for non-aviation fuels is \$1 per gallon for fuels with an emissions rate less than 50 kgCO<sub>2</sub>e/mmBTU.
- Value of CFPC will probably be lower than the BTC for most producers.
- \*will be more complicated than the BTC