

# 2020 North American Feedstock Outlook



The  
**Jacobsen**®

August 5, 2020

# PROCESSING FORECASTS

## Upper Scenario

Process Tech Percentages (High):	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Biodiesel											
Renewable Diesel											
Co-Processing											

## Middle Scenario

Process Tech Percentages (Mid):	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Biodiesel											
Renewable Diesel											
Co-Processing											

## Lower Scenario

Process Tech Percentages (Low):	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Biodiesel											
Renewable Diesel											
Co-Processing											

# POTENTIAL WASHINGTON REFINERY DEMAND

REFINERY  
CAPACITY  
DAILY

5% LIQUID  
BIOMASS DAILY  
FEEDSTOCK  
DEMAND ?

BP Cherry Point

Shell Anacortes

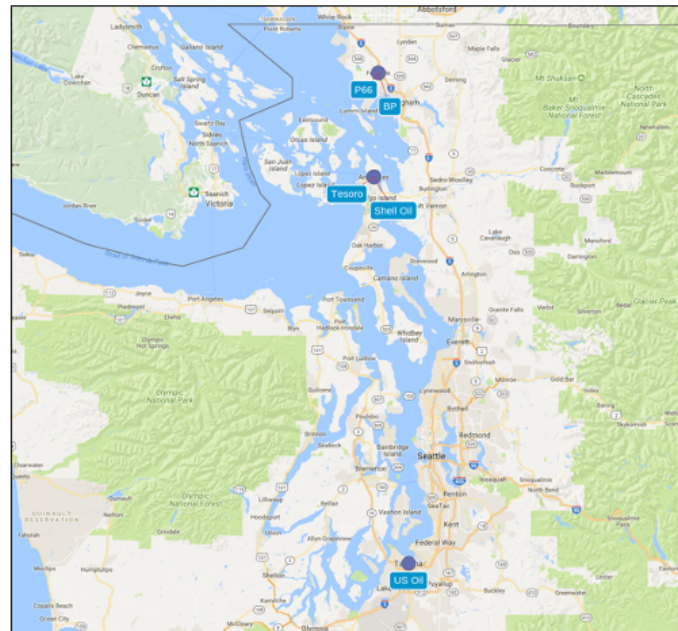
Tesoro Anacortes

P66

Ferndale

US Oil

Tacoma



# FORECASTED 10 YEAR FUEL DEMAND SCENARIOS

In Billions of Gallons													
	Upper:	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
	D4 RIN Generation (gals)	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100
	D5 RIN Generation	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
	D5 In Gallons	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100
	D6 RIN Generation (E15-E30 & E85)	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
	D3 RIN Generation (gals)	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100
	Totals:	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400
	YOY % Change		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Middle:	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
	D4 RIN Generation (gals)	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100
	D5 RIN Generation	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
	D5 In Gallons	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100
	D6 RIN Generation (E10-E15 & E85)	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
	D3 RIN Generation	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100
	Totals:	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400
	YOY % Change		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Lower:	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
	D4 RIN Generation	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100
	D5 RIN Generation	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
	D5 In Gallons	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100
	D6 RIN Generation (E85)	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100
	D3 RIN Generation	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100	3,100
	Totals:	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400
	YOY % Change		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

# US TALLOW PRODUCTION & CONSUMPTION – LOW BIOMASS BASED DIESEL CONSUMPTION

US TALLOW OIL COMPLEX SUPPLY AND DEMAND (Million Pounds)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Beginning Stocks (October 1)											
Production											
Imports											
<b>Total Supply</b>											
<b>Total Fuel Demand</b>											
Biodiesel											
Renewable Diesel											
Co-Processing											
Non-Fuel Usage											
Exports											
<b>Total Use</b>											
Ending Stocks (September 30)											
<b>DLVD LA "RD Spec" (¢/lb)</b>											
Bold numbers are Jacobsen Estimates and Forecasts											

# US UCO/YELLOW GREASE PRODUCTION & CONSUMPTION – HIGH BIOMASS BASED DIESEL CONSUMPTION

US UCO & YG COMPLEX OIL SUPPLY AND DEMAND (Million Pounds)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Beginning Stocks (October 1)											
Production											
Imports											
<b>Total Supply</b>											
<b>Total Fuel Demand</b>											
Biodiesel											
Renewable Diesel											
Co-Processing											
Non-Fuel Usage											
Exports											
<b>Total Use</b>											
Ending Stocks (September 30)											
<b>DLVD LA "RD Spec" (¢/lb)</b>											
<b>Bold numbers are Jacobsen Estimates and Forecasts</b>											

# US SOYBEAN OIL PRODUCTION & CONSUMPTION – LOW BIOMASS BASED DIESEL CONSUMPTION

US SOYBEAN OIL SUPPLY AND DEMAND (Million Pounds)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Beginning Stocks (October 1)	100	100	100	100	100	100	100	100	100	100	100
Production	100	100	100	100	100	100	100	100	100	100	100
Imports	100	100	100	100	100	100	100	100	100	100	100
<b>Total Supply</b>	200	200	200	200	200	200	200	200	200	200	200
<b>Total Fuel Demand</b>	100	100	100	100	100	100	100	100	100	100	100
Biodiesel	100	100	100	100	100	100	100	100	100	100	100
Renewable Diesel	100	100	100	100	100	100	100	100	100	100	100
Co-Processing	100	100	100	100	100	100	100	100	100	100	100
Non-Fuel Usage	100	100	100	100	100	100	100	100	100	100	100
Exports	100	100	100	100	100	100	100	100	100	100	100
<b>Total Use</b>	200	200	200	200	200	200	200	200	200	200	200
Ending Stocks (September 30)	100	100	100	100	100	100	100	100	100	100	100
<b>Decatur Crude DeGummed (¢/lb)</b>	100	100	100	100	100	100	100	100	100	100	100
Bold numbers are Jacobsen Estimates and Forecasts											



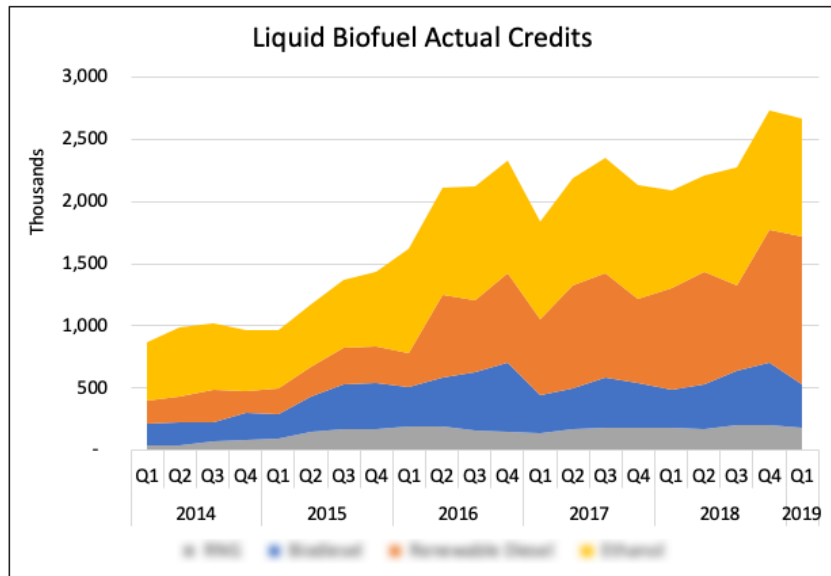
# WASHINGTON FORECAST

**Jacobsen's Forecast of expected inflows of biomass-based diesel as a result of LCFS program adoption by the state.**

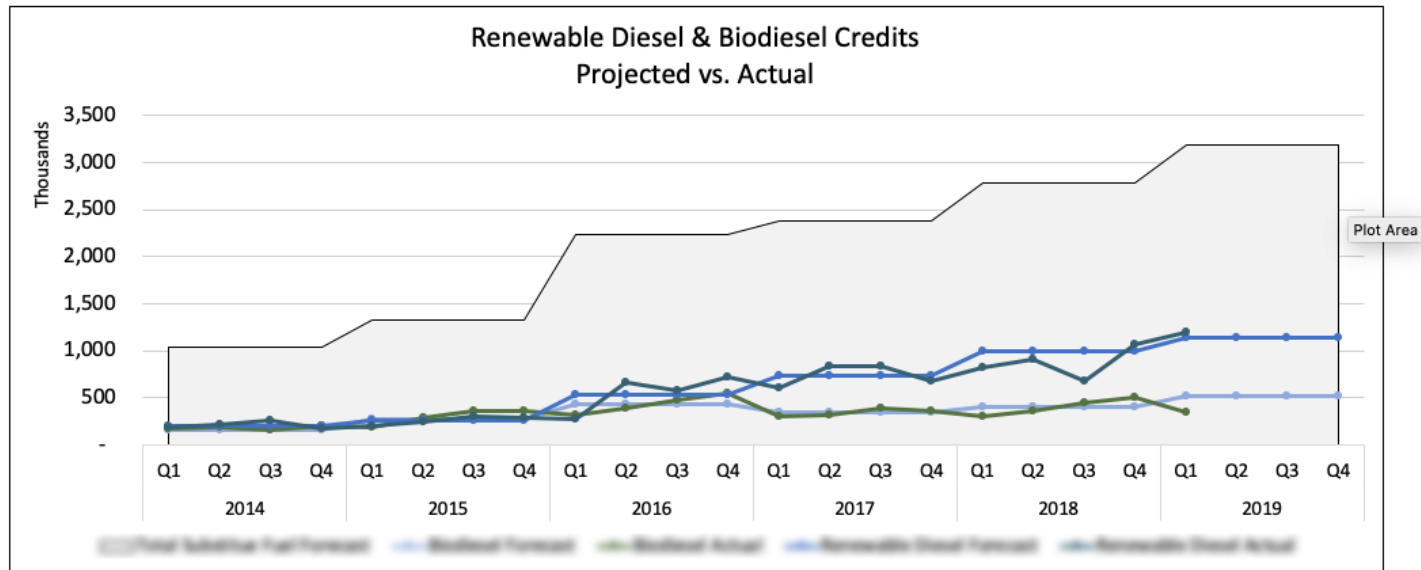
	Year 1	Year 2	Year 3	Year 4	Year 5
Biodiesel	25,000,000	25,000,000	25,000,000	25,000,000	25,000,000
Renewable D	25,000,000	25,000,000	25,000,000	25,000,000	25,000,000
<b>Total Renewable</b>	25,000,000	25,000,000	25,000,000	25,000,000	25,000,000
On-Road Petroleum Diesel Forecast	750,000,000	750,000,000	750,000,000	750,000,000	750,000,000
<b>Biodiesel %</b>	3.33%	3.33%	3.33%	3.33%	3.33%
<b>Renewable D %</b>	3.33%	3.33%	3.33%	3.33%	3.33%



Actual Credit Generation Has Not Been As Smooth As Forecast. Biodiesel & RNG Are A Current Market Concern.



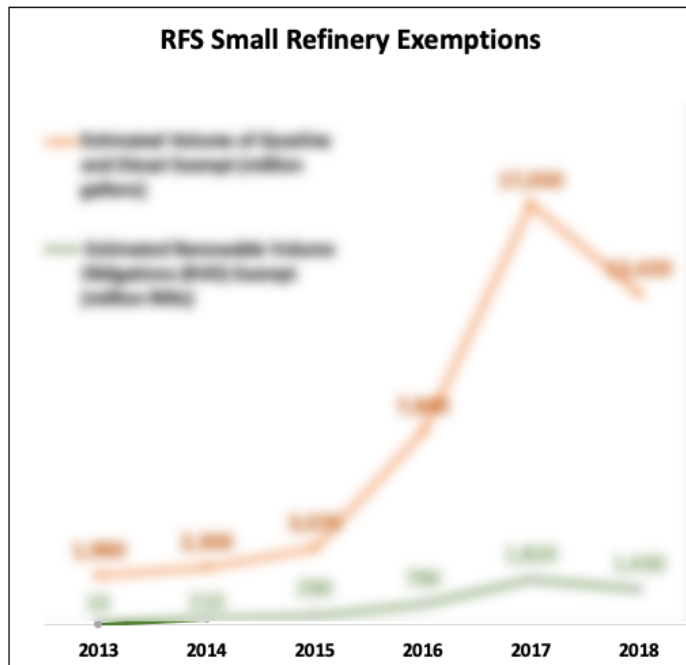
# LCFS BIODIESEL & RD VOLUMES



# THE JACOBSEN RFS2 WAIVER OUTLOOK

The Jacobsen has identified the following 3 scenarios as most potential paths forward:

- Scenario #1 – what the EPA has done to date prevails forward. Waivers continue forward = BEARISH Biofuels
- Scenario # 2 – Recently modified statement of “50% waivers” – we apply at some level of granularity - NEUTRAL
- Scenario # 3 - Waivers effectively are legally removed or sidelined - BULLISH



UPDATE the above graph to tie into our forecasts.

## RFS2 DEMAND PROFILE

EPA HAS SUGGESTED 100M GALLONS FOR THE ANNUAL D4 OBLIGATION INCREASE, POINTING TO THE ADDITIONAL DEMAND AFFORDED BIOMASS BASED DIESEL VIA THE D5 CATEGORY

EPA regulates RFS compliance using tradable credits called renewable identification numbers (RINs)

- RINs are valid for the year they are generated and the following year
- Obligated parties can carry a deficit from one year to the next but must meet full compliance in the carry-over year.

YEAR	CELLULOSIC FUELS D3/D7	BIOMASS-BASED DIESEL D4	ADVANCED BIOFUELS D5	RENEWABLE FUEL D6	TOTAL RENEWABLE FUEL
2014	0.000	1.00	0.07	15.00	16.07
2015	0.000	1.00	0.08	15.00	16.08
2016	0.000	1.00	0.09	15.00	16.09
2017	0.011	0.99	0.08	15.00	16.08
2018	0.000	0.99	0.09	15.00	16.08
2019	0.010	0.99	0.09	15.00	16.09
2020	0.010	0.99	0.09	15.00	16.09
2021	0.010	0.99	0.09	15.00	16.09
2022	0.010	0.99	0.09	15.00	16.09

The EPA has authority to re-set annual obligations