



## Basics of Renewable Diesel

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# Diamond Green Diesel Joint Venture



- Darling (NYSE: DAR) collects and transforms all aspects of animal by-product streams into useable and specialty ingredients
- Darling processes ~10% of the world's animal by-products
- Operations in over 200 locations on five continents



- Valero (NYSE: VLO) is an international manufacturer and marketer of transportation fuels and petrochemical products
- 15 refineries with a combined throughput capacity of ~3.1 million barrels per day
- 14 ethanol plants with a combined production capacity of 1.73 billion gallons per year

**February 2011**

Approved a  
160 million  
gallons per year  
project

**June 2013**

First renewable  
diesel production

**August 2018**

Expansion  
completed for a  
total of 275  
million gallons  
per year capacity

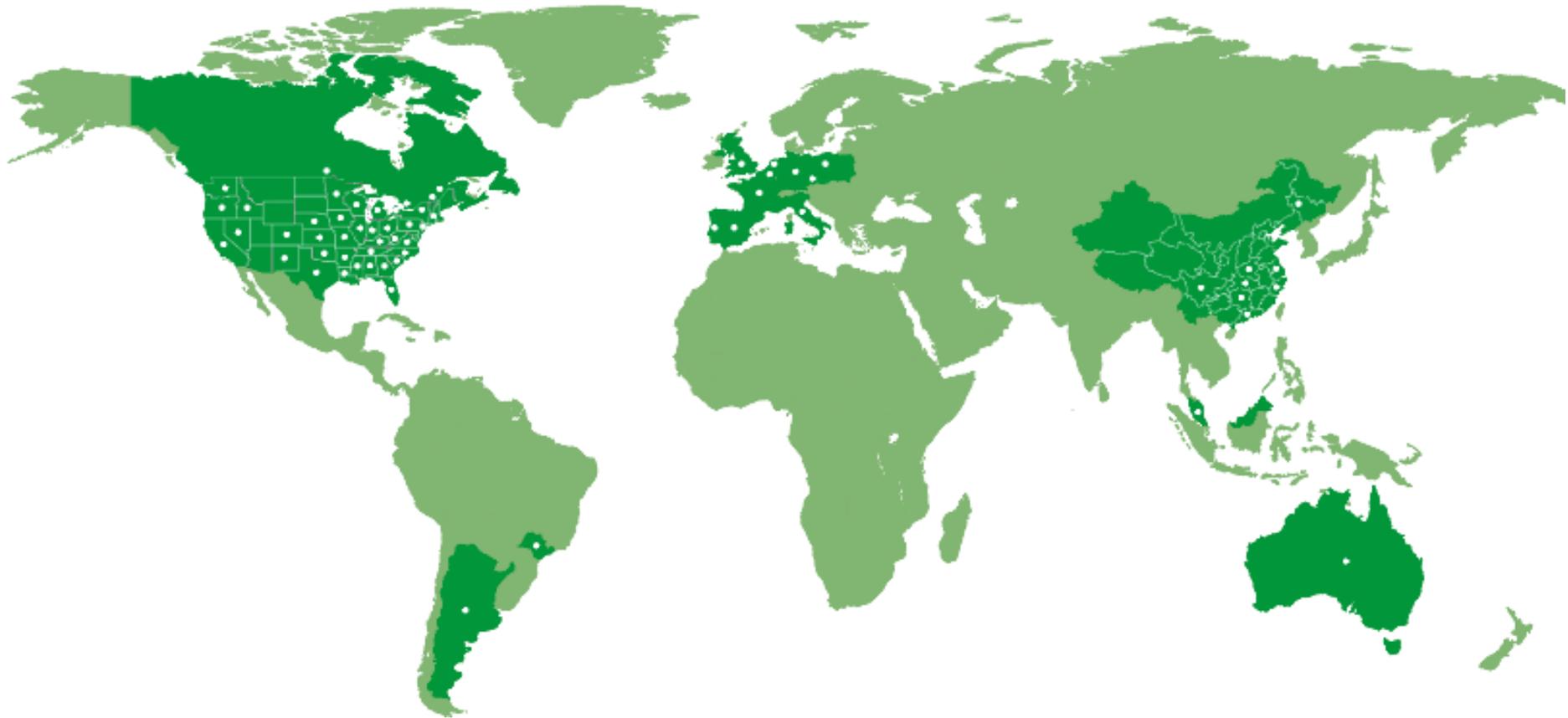
**November 2018**

Approved  
capacity  
expansion to total  
675 million  
gallons per year  
in late 2021

*Diamond Green Diesel is North America's largest renewable diesel plant, located adjacent to Valero's St. Charles, LA refinery*



# Darling Ingredients is the World's Largest Independent Processor of Animal By-Products



*135+ years in the business*  
*200+ locations across 15 countries in 5 continents*

# Securing the Feedstock at Darling Processing Plants

## Used Cooking Oil



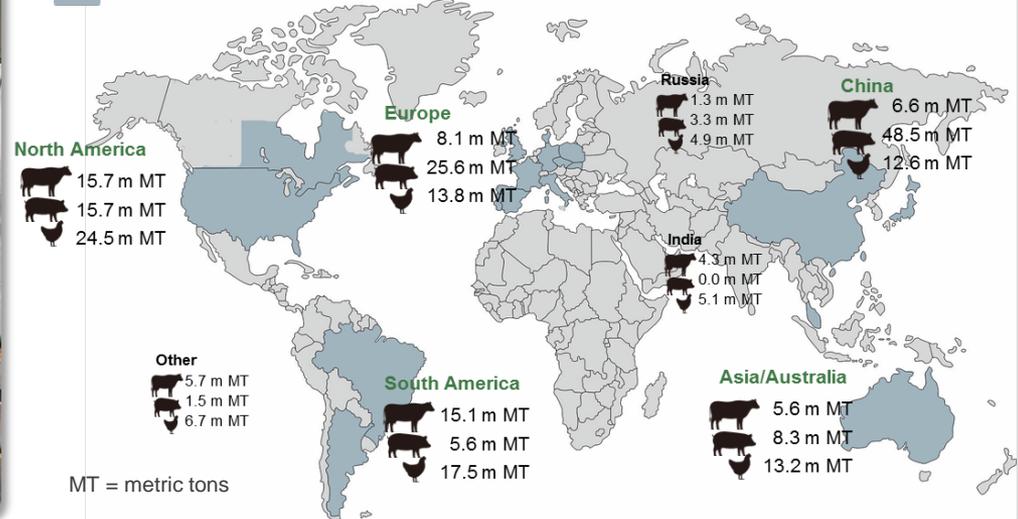
- 2.3 billion pounds of used cooking oil (UCO) is generated in the U.S.

~93% of Darling's UCO goes to biofuel

Sources: LMC International 2019, National Renderers Association and USDA

## Recycled Animal Fats

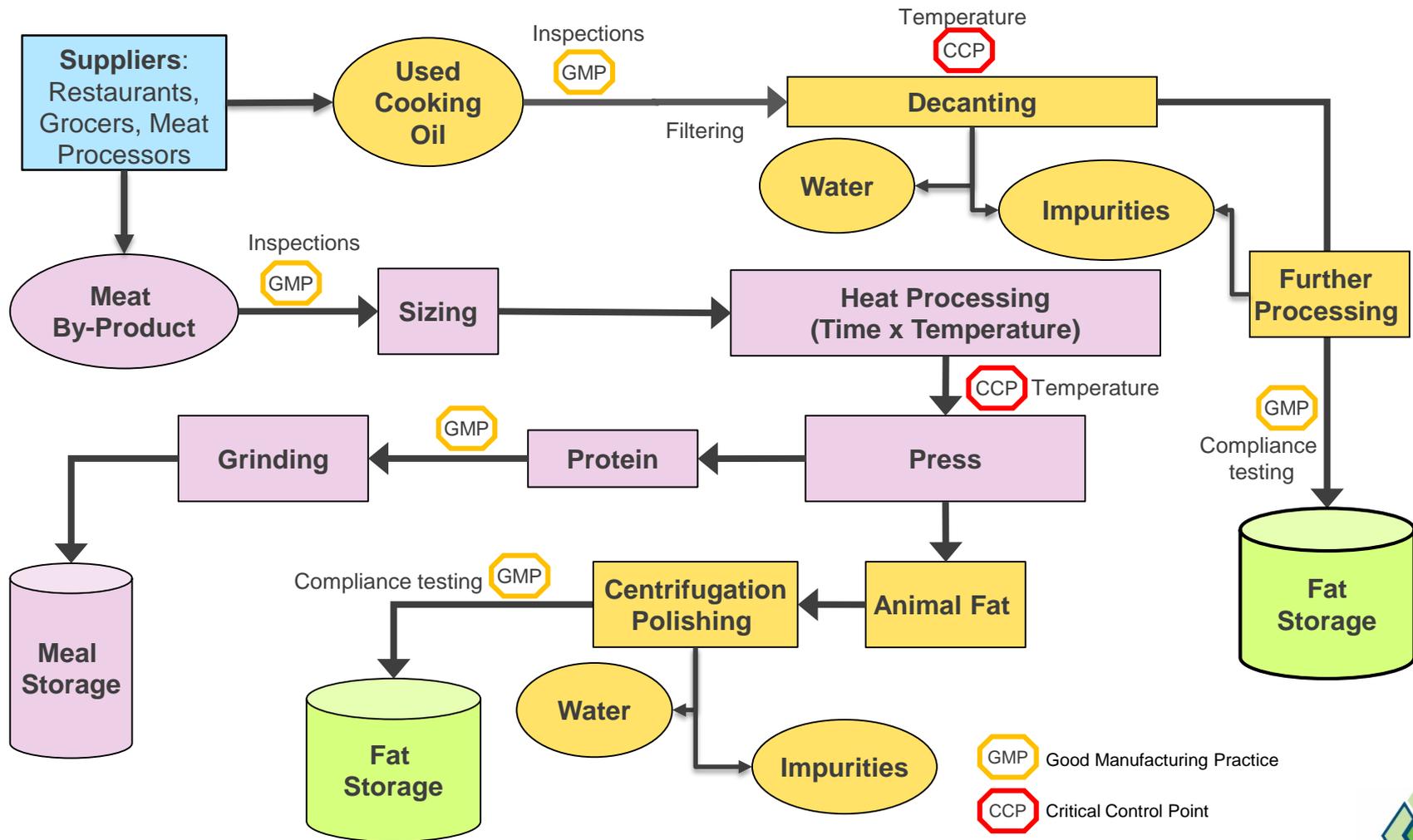
### Countries where Darling has processing facilities



- Darling processes ~10% of the world's animal by-products

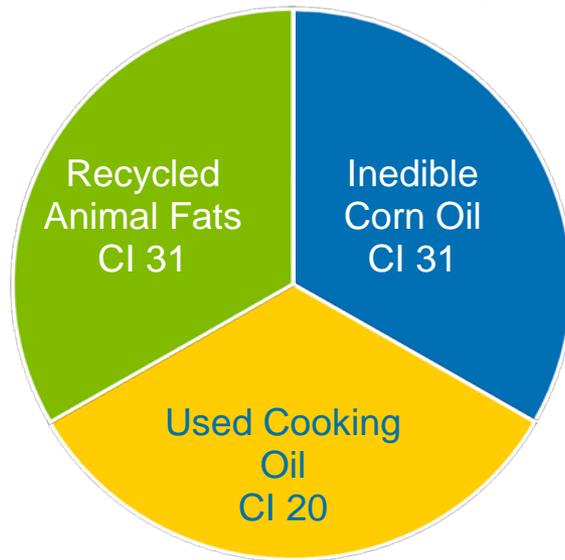
~49% of Darling's animal fats go to biofuel

# Processing of Animal Fats and Used Cooking Oil



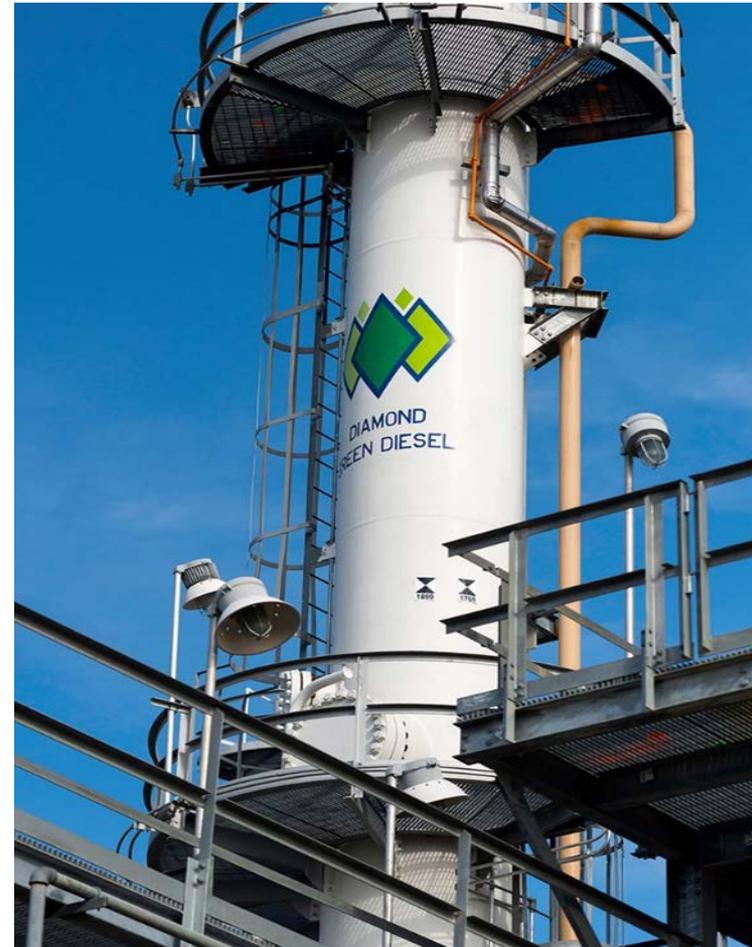
# Diamond Green Diesel Feedstocks

## Feedstock Composition and Carbon Intensity (CI)



Darling Ingredients provides feedstocks for DGD

- Darling is a global leader in by-product processing
- Darling brings expertise of the overall market for the feedstocks and the technical pretreatment of the feedstocks



# Renewable Diesel has a Low Carbon Intensity (CI)

## Carbon Intensity of Common Fuels

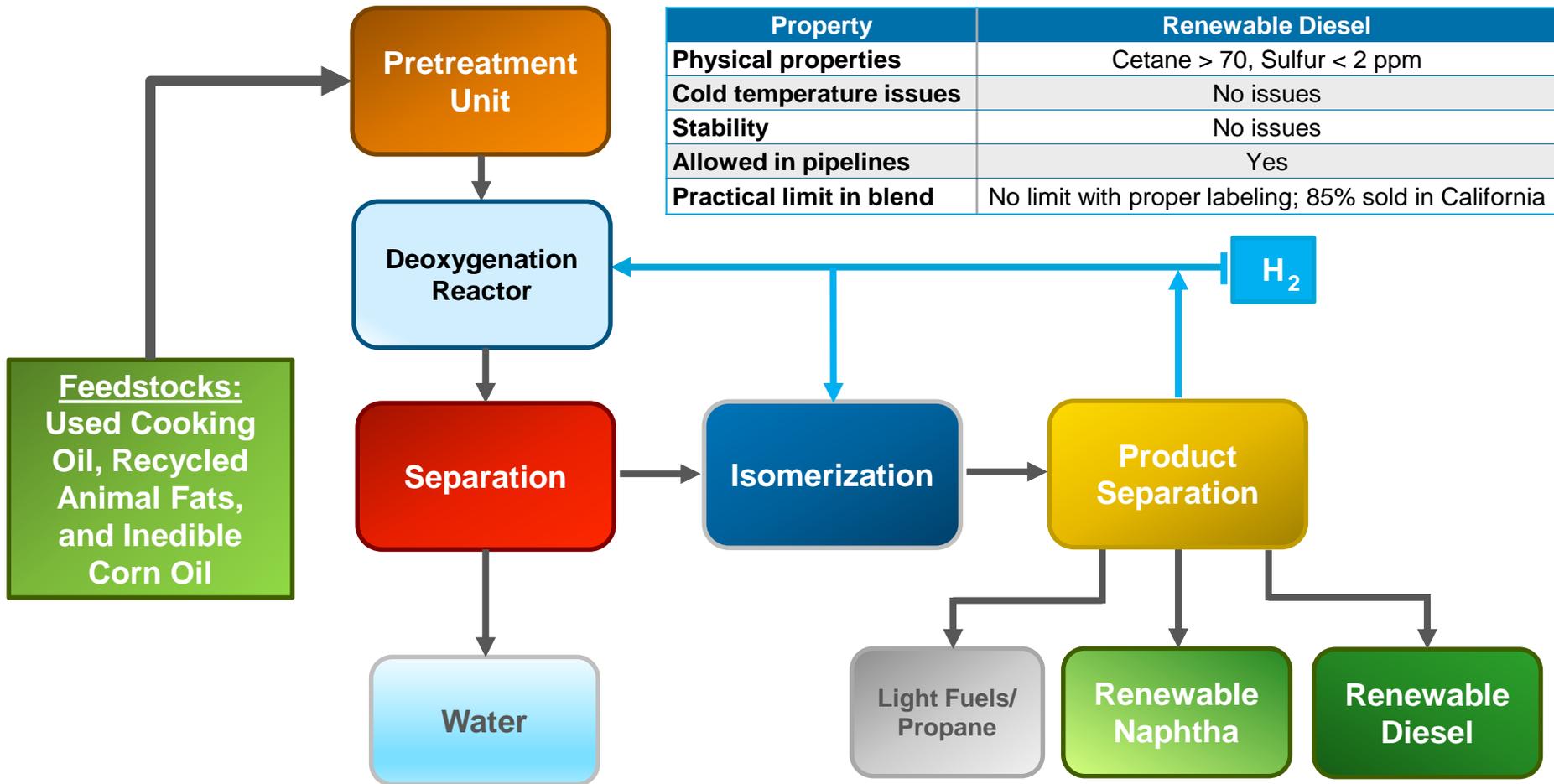
Product	Carbon Intensity
Gasoline	101
Diesel	100
California grid electricity	105
<b>Vegetable oils for biomass-based diesel</b>	<b>55</b>
<b>Waste oils for biomass-based diesel</b>	<b>10-30</b>



- California and Canadian programs are based on CI, which is measured in CO<sub>2</sub> equivalent emissions per unit of energy over the life-cycle of the fuel
- EU's program has life-cycle analysis, but sets up single credits, double credits, etc. to value feedstocks versus a formulaic value that is dependent on CI
- At \$200 per ton carbon price, the carbon value of a 25 CI renewable diesel fuel in California is \$1.79 per gallon

*Energy sources with a low CI have significant value in programs like California's Low Carbon Fuel Standard (LCFS)*

# Renewable Diesel Process and Properties



*No compatibility issues with existing infrastructure and engines*

# Diamond Green Diesel Plant Layout



# Investing to Increase Premium Renewable Fuels Production



Diamond Green Diesel Train 1

## Diamond Green Diesel Train II

- \$1.1 billion project cost expected to be funded from cash generated by DGD's operations
- Independent parallel renewable diesel plant and renewable naphtha finishing facility adjacent to existing plant expected to be completed in late 2021
  - Increases annual renewable diesel production capacity by 400 million gallons per year and enables recovery of renewable naphtha
  - Combined total production capacity will be 675 million gallons per year after successful completion
- Margins expected to be supported by increasing renewable fuel mandates and carbon pricing
- Estimated annual EBITDA contribution is approximately \$500 million at \$1.26 per gallon historical average EBITDA<sup>(1)</sup>

<sup>(1)</sup> Historical average EBITDA includes the Blenders Tax Credit. Projected pro forma EBITDA estimate of \$1.26 per gallon excludes the Blenders Tax Credit.

# Demand Driven by Renewable Fuel Mandates

## State

### Low Carbon Fuel Standard (LCFS)

- Low Carbon Fuel Standard mandate was enacted in 2007 by the California Air Resources Board (CARB)
- CARB has adopted regulations to extend LCFS from 2020 to 2030 with a Carbon Intensity (CI) reduction goal of 7.5% in 2020, increasing to 20% in 2030 versus 2010 benchmark

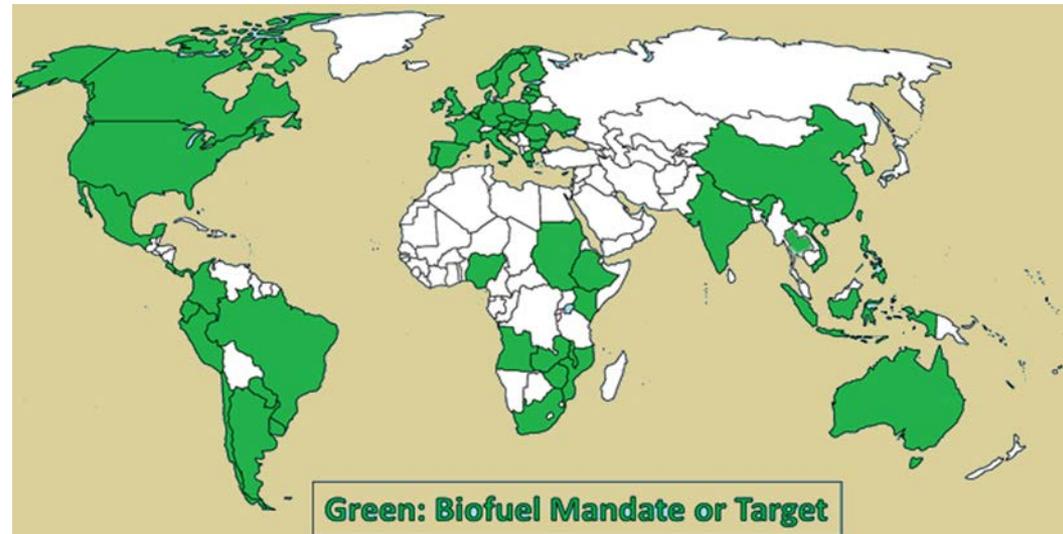
## National

### Renewable Fuel Standard (RFS)

- RFS is a federal mandate aimed towards reducing the nation's use of traditional petroleum-based fuels by increasing the use of renewable fuels
- The 2019 renewable fuel volume requirement is 19.9 billion gallons

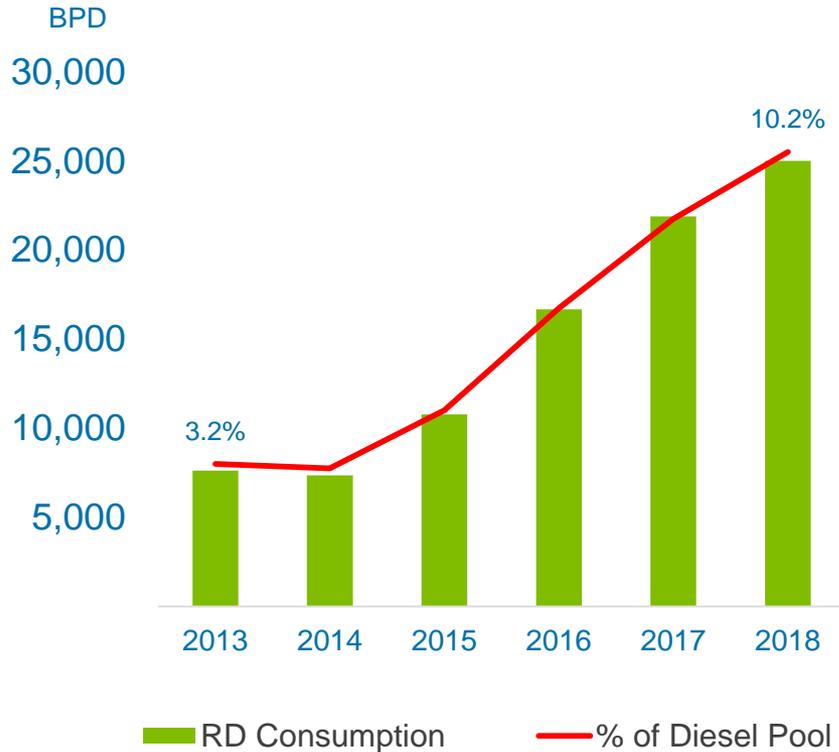
## Global

- 66 countries have adopted mandates or target goals to reduce emissions
- British Columbia, the European Union and the United Kingdom have adopted similar programs
- Sweden implemented a 19.3% GHG reduction mandate for diesel fuel in 2018, with the target increasing to 21% by 2020

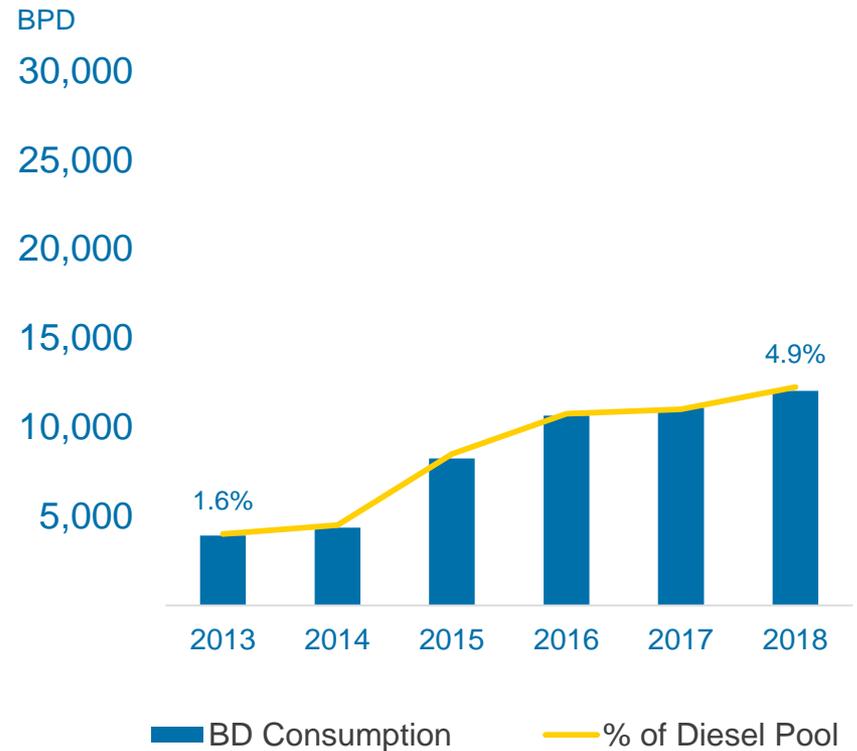


# Renewable Diesel Blending is Outpacing Biodiesel Blending

## LCFS Renewable Diesel (RD) Consumption



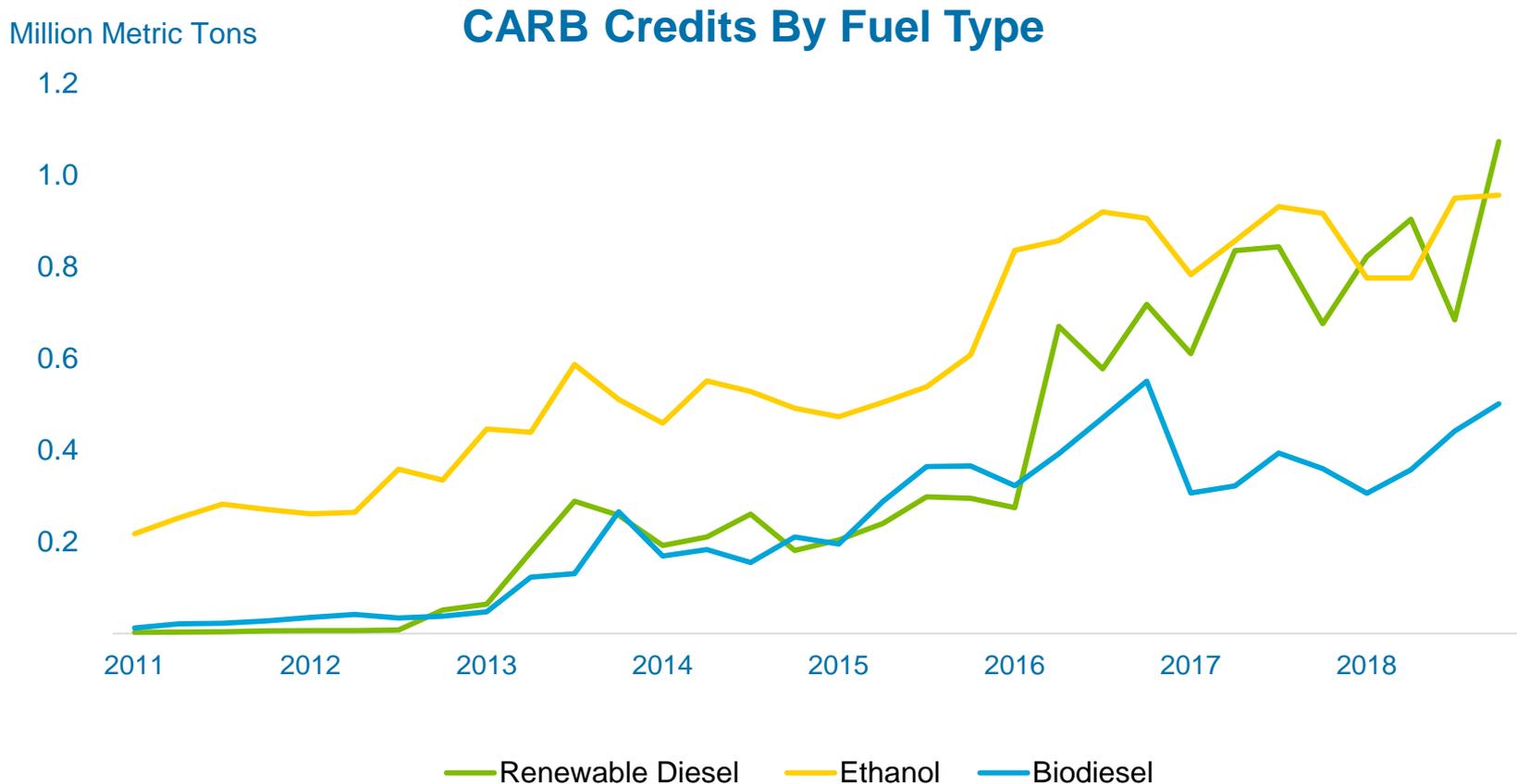
## LCFS Biodiesel (BD) Consumption



*Renewable diesel blending is growing rapidly in the United States, Canada and Europe*

Source: California Air Resources Board

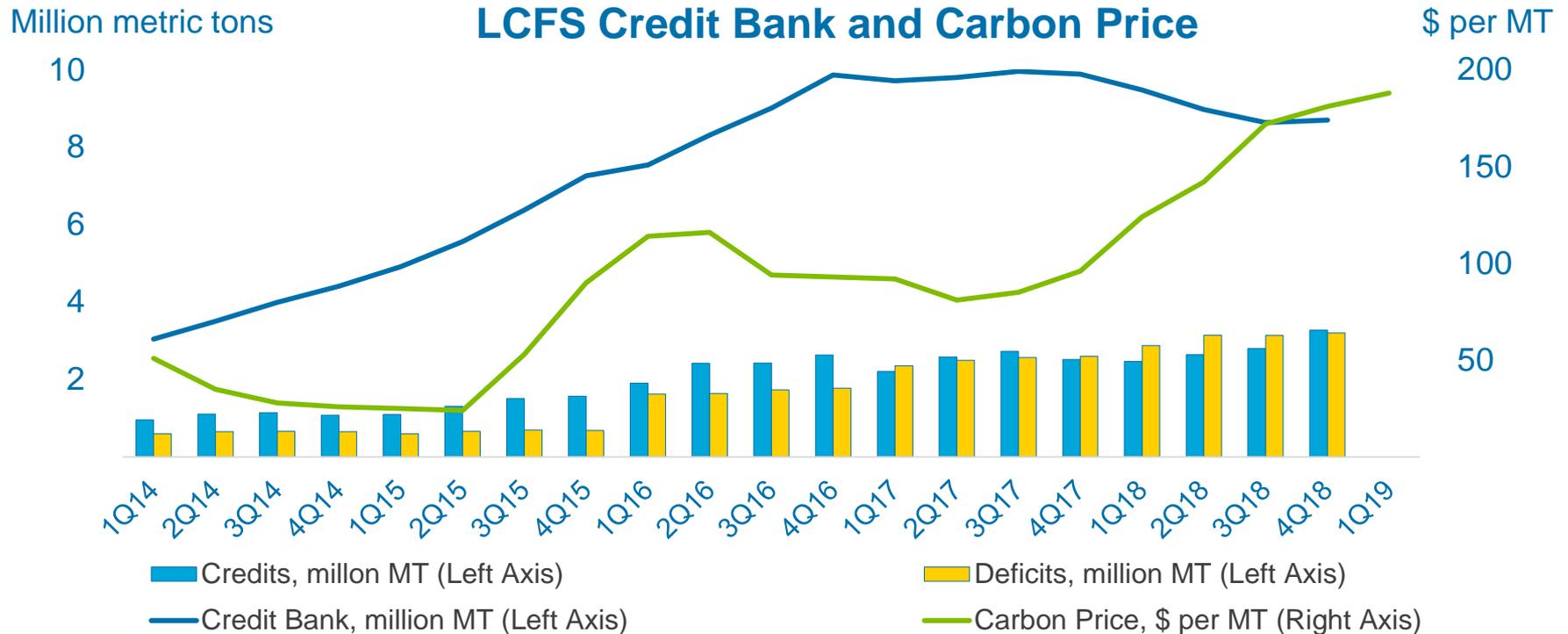
# Renewable Diesel is the Largest Carbon Credit Generator



*Renewable diesel is the largest credit generator, surpassing ethanol and is projected to be the largest carbon credit generator for the foreseeable future*

Source: California Air Resources Board as of April 30, 2019.

# Renewable Fuel Mandate is Driving LCFS Pricing



## LCFS credit bank and carbon price

- Compliance standard was frozen at 1% carbon intensity reduction from 2013 – 2015 due to legal challenges
- This resulted in building credits in the credit bank
- Reduction goal for 2018 was 5% with a 10% goal for 2022
- The credit bank is now being drawn down and driving an increase in the carbon price

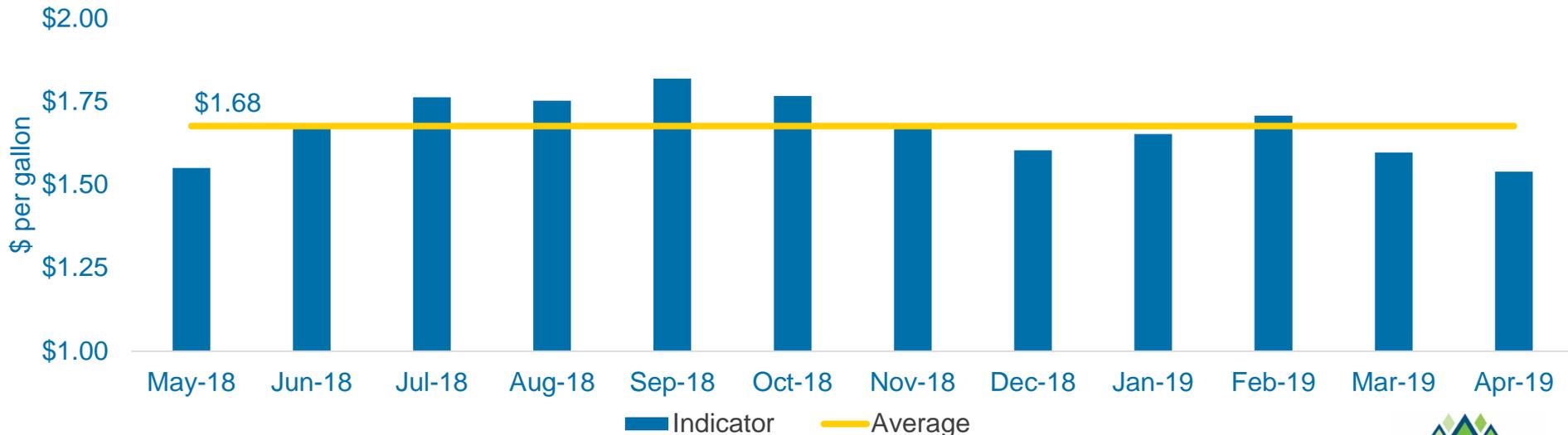
Source: California Air Resources Board as of April 30, 2019.

# Renewable Diesel Margin Indicator

DGD Indicator (\$ per gallon)

$$\text{NYMEX ULSD} + (1.7 * \text{Biodiesel RIN}) + (0.007 * \text{LCFS Credit}) - (8.5 * \text{CBOT Soybean Oil})$$

- New York Ultra Low Sulfur Diesel (ULSD) price, \$ per gallon
- Renewable Identification Number (RIN), \$ per RIN
- Low Carbon Fuel Standard (LCFS) credit, \$ per metric ton
- Chicago soybean oil price, \$ per pound



# Questions and Answers



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