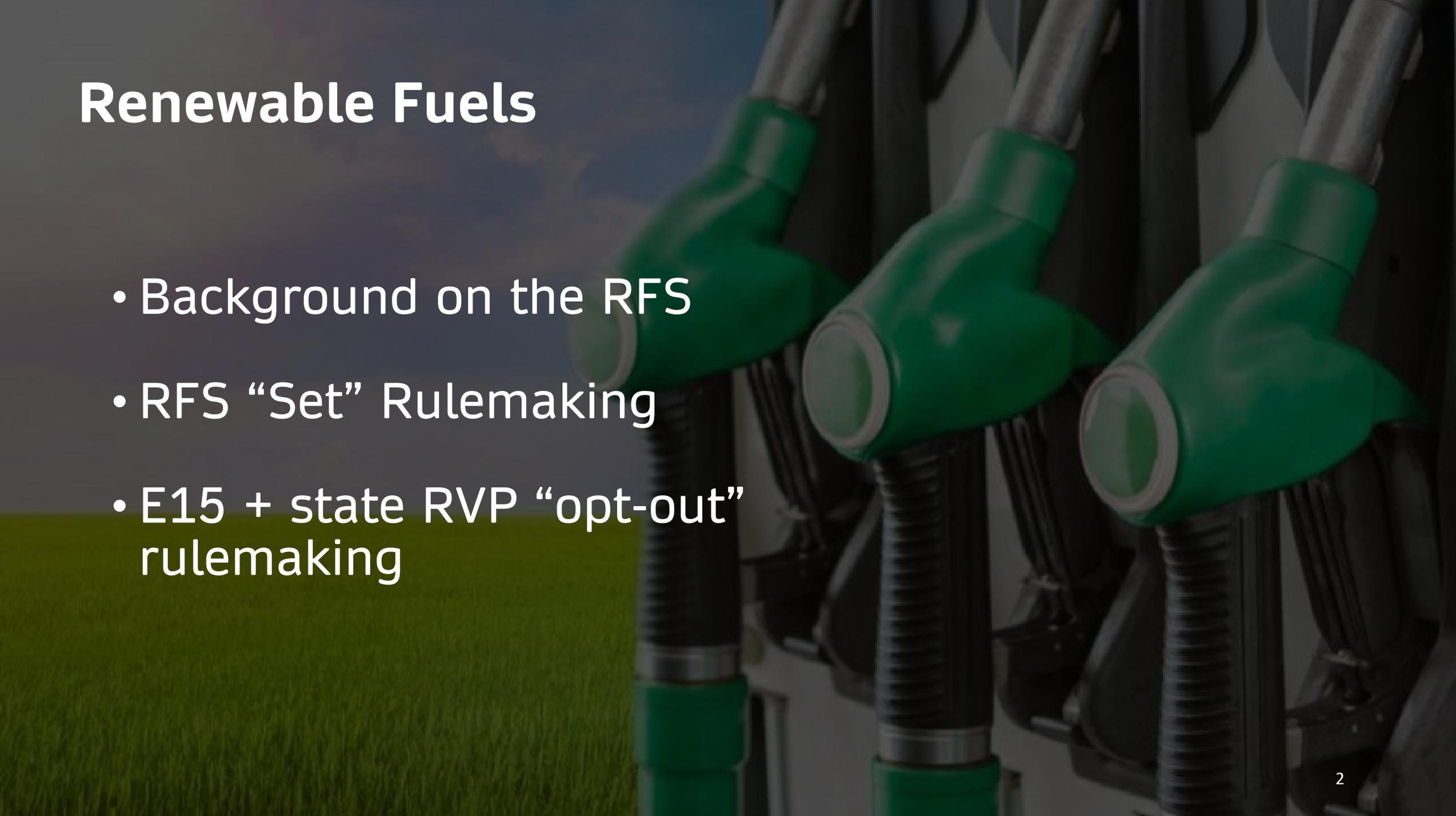


# Renewable Fuels Standard – Background and Update

October 2023



# Renewable Fuels

The background of the slide features a row of green electric vehicle charging cables, likely for hydrogen or other alternative fuels, set against a blurred background of a green field and a blue sky. The cables are arranged in a perspective view, receding into the distance.

- Background on the RFS
- RFS “Set” Rulemaking
- E15 + state RVP “opt-out” rulemaking

# Background – How the RFS Works- What is a Renewable Fuel?

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- Clean Air Act 211 (j)
- The term "renewable fuel" means fuel that is produced from renewable biomass and that is used to replace or reduce the quantity of fossil fuel present in a transportation fuel.

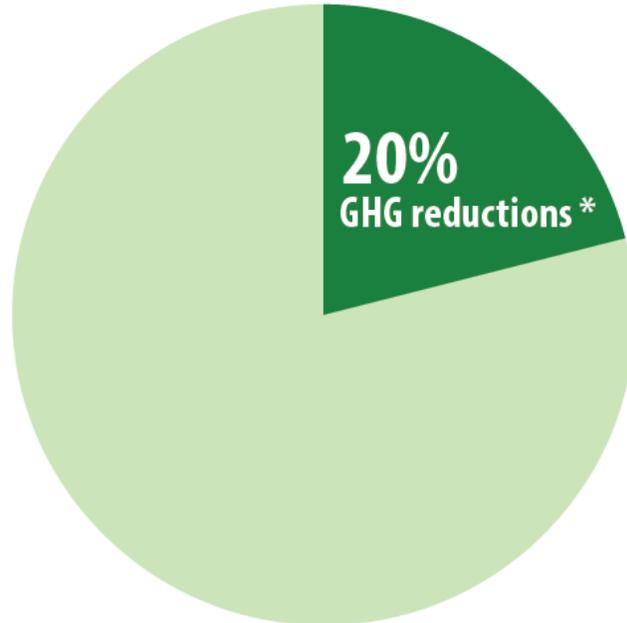
# Background – How the RFS Works- What is a Renewable Fuel?



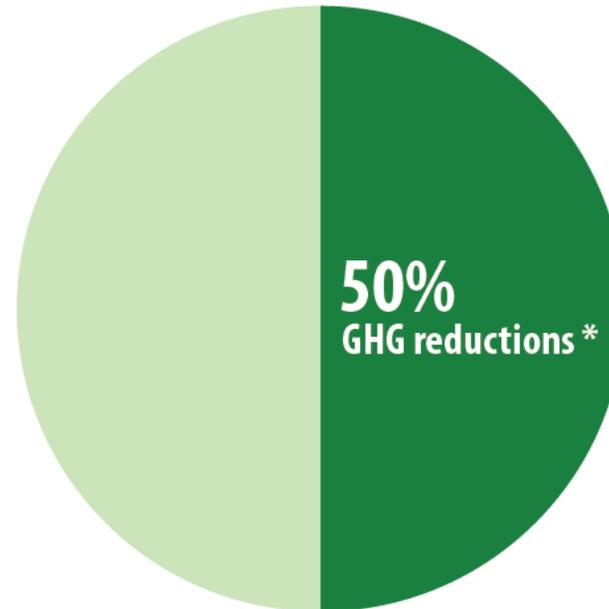
## Lifecycle Greenhouse Gas (GHG) Emissions

GHG emissions must take into account direct and significant indirect emissions, including land use change.

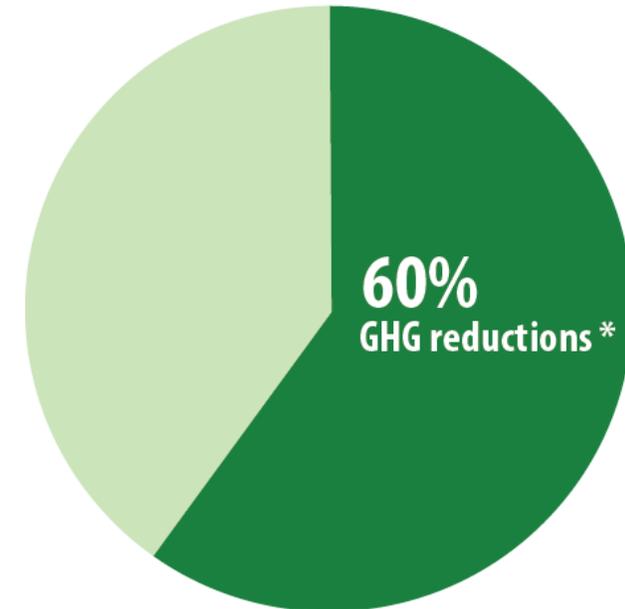
**Renewable Fuels**



**Advanced & Biodiesel Fuels**



**Cellulosic Fuels**



\* compared to a 2005 petroleum baseline

# Background – How the RFS Works- EPA

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- Sets annual blending volumes for the entire petroleum refining sector.
- Divides the total annual blending volumes into specific refinery Renewable Volume Obligations.
- Acts on Generation Pathways.
- Acts on Small Refinery Exemptions.

# Background – How the RFS Works- RINs

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- Renewable identification numbers (RINs) are credits used for compliance, and are the “currency” of the RFS program.
- Renewable fuel producers generate RINs.
- Blenders separate RINs.
- Market participants trade RINs.
- Obligated parties obtain and then ultimately retire RINs for compliance.

# Background – How the RFS Works-Types of RINs



## Conventional renewable fuel (D6)

**Example feedstock:** Corn starch  
**Required lifecycle GHG reduction:** 20% or more

## Advanced biofuel (D5)

**Example feedstocks:** Sugarcane, biobutanol, bionaphta  
**Required lifecycle GHG reduction:** 50% or more

## Cellulosic biofuel (D3)

**Example feedstocks:** Corn stover, wood chips,  
miscanthus, biogas  
**Required lifecycle GHG reduction:** 60% or more

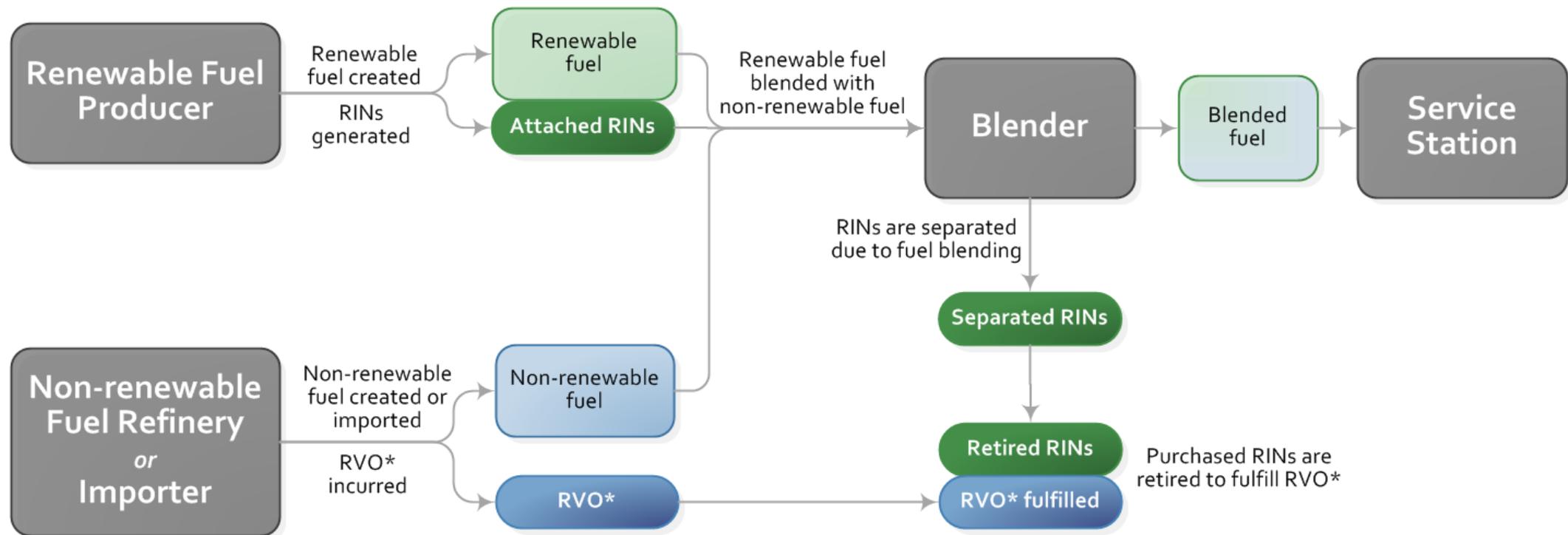
## Biomass-based diesel (D4)

**Example feedstocks:** Soybean oil, canola oil,  
waste oil, animal fats  
**Required lifecycle GHG reduction:** 50% or more

# Background – How the RFS Works- RIN Cycle

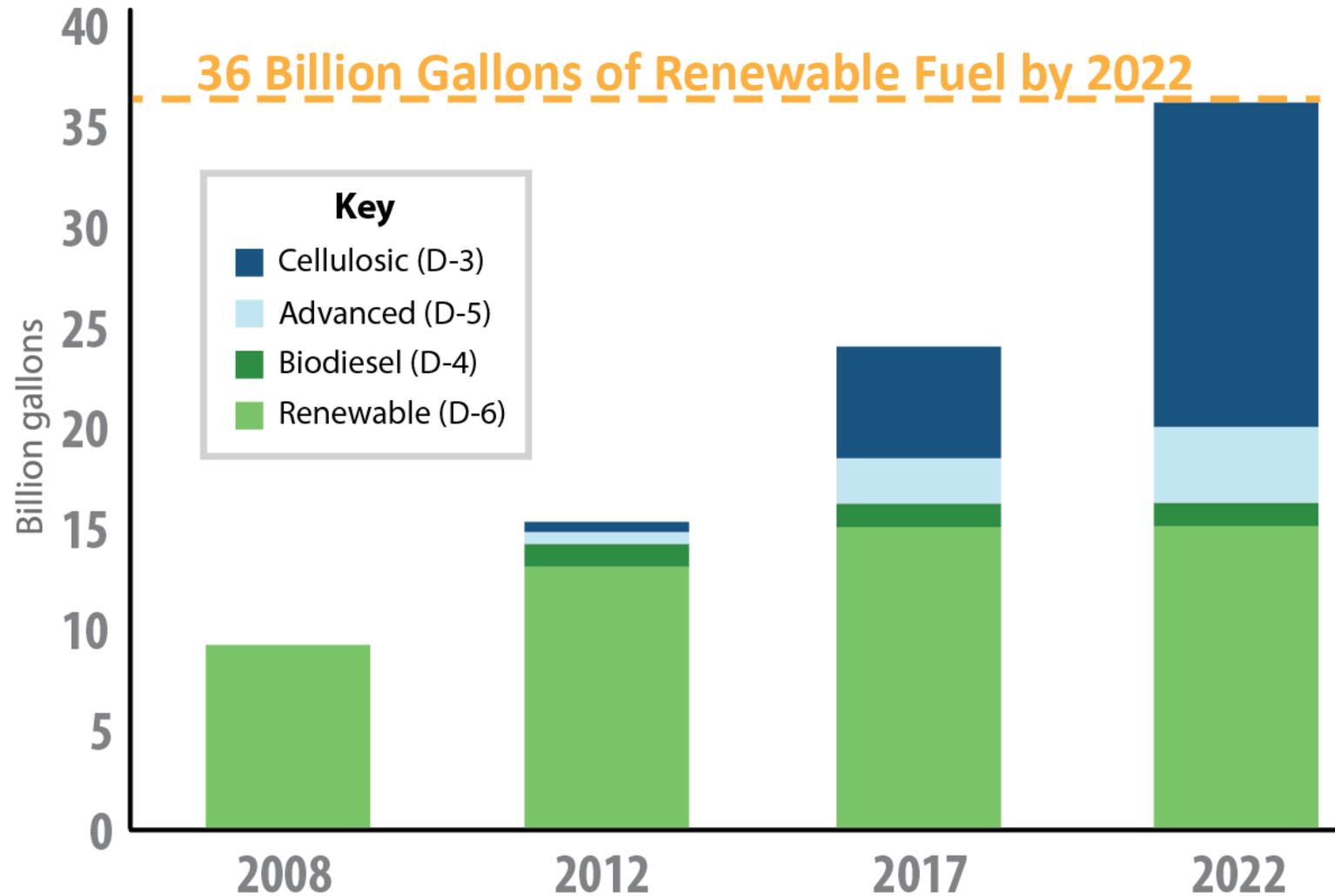


## Example lifecycle of a Renewable Identification Number (RIN)



\* RVO = Renewable Volume Obligation

## Congressional Volume Target for Renewable Fuel



# Contents of the “Set” Rule

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- Sets required volumes for 2023-2025.
  - Proposal took comment on select alternatives.
- Proposed but did not finalize new regulations governing eRIN generation (renewable electricity RINs).
- Other regulatory modifications to strengthen the program.



# Volumes under the “set” authority

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- The Clean Air Act does not list volume targets for years after 2022
  - Instead, the statute requires EPA to set volumes.
- The Statute is silent on question of how many years the set rule can cover
  - The rule includes volume requirements and associated percentage standards for three years, 2023 – 2025.
- The rule includes the second of two “supplemental standards” of 250 million gallons to address the court's remand of the 2016 total renewable fuel standard. Just for 2023.

# Factors that Must Be Analyzed

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- **Economic impacts**

- Food prices
- Cost to consumers of transportation fuel
- Cost to transport goods
- Job creation
- Rural economic development
- Price of agricultural commodities

- **Other Factors**

- Review of implementation of the program in prior years
- Expected annual rate of future commercial production
- Energy security
- Supply of agricultural commodities
- Infrastructure, including :
  - Deliverability of materials, goods, and products other than renewable fuel
  - Sufficiency of infrastructure to deliver and use renewable fuel
- Water supply

- **Environmental impacts**

- Air quality
- Water quality
- Climate change
- Conversion of wetlands
- Ecosystems
- Wildlife habitat

# Set NRPM Volume Summary

(billion RINs)



	2023	2024	2025
<b>Cellulosic biofuel</b>	0.72	1.42	2.13
<b>Biomass-based diesel<sup>a</sup></b>	2.82	2.89	2.95
<b>Advanced biofuel</b>	5.82	6.62	7.43
<b>Total renewable fuel</b>	20.82	21.87	22.68
<b>Supplemental volume requirement</b>	0.25	0	0
<b>Conventional</b>	15.25	15.25	15.25

a: Gallons

# Set Final Volume Summary

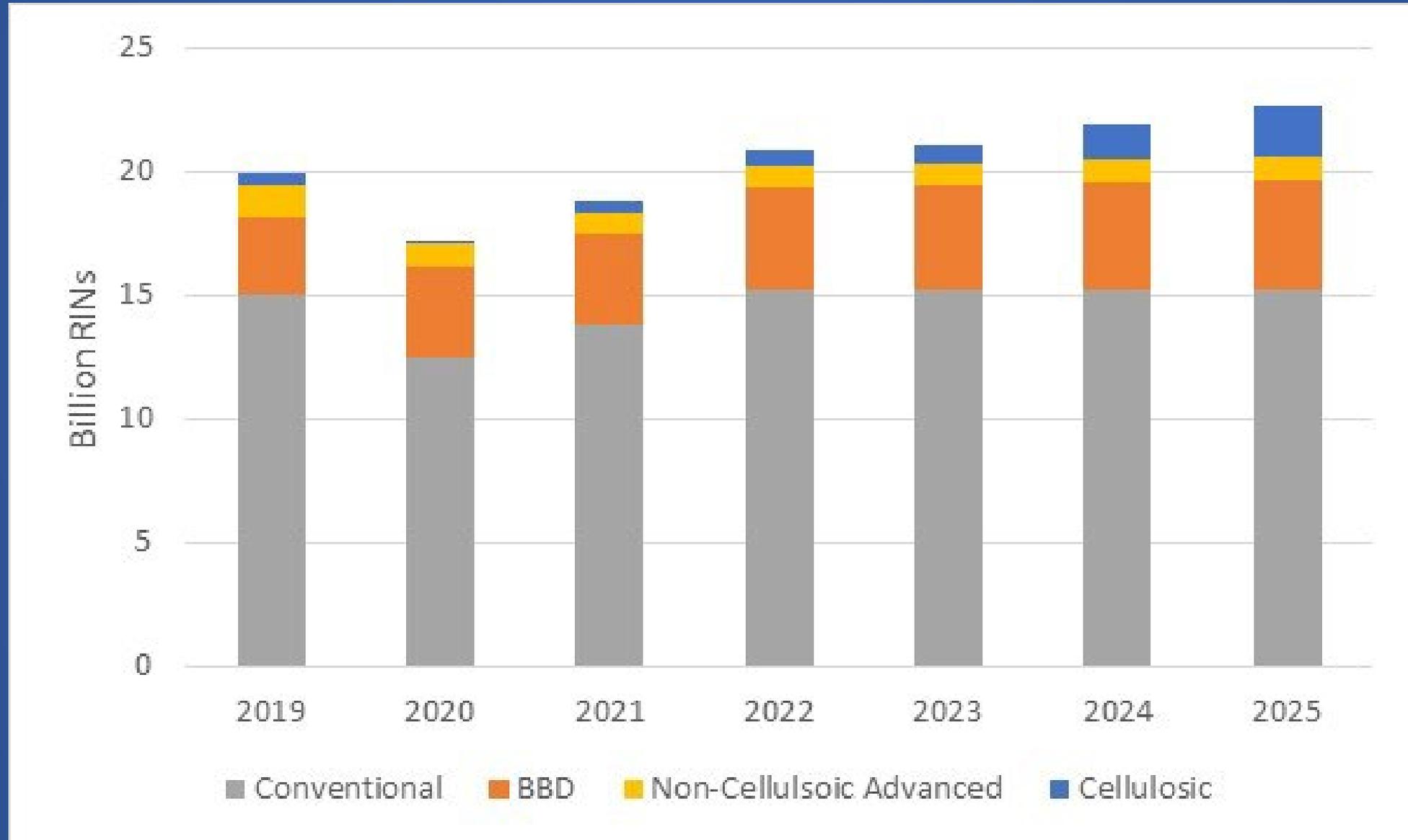
(billion RINs)



	2023	2024	2025
<b>Cellulosic biofuel</b>	0.84	1.09	1.38
<b>Biomass-based diesel<sup>a</sup></b>	2.82	3.04	3.35
<b>Advanced biofuel</b>	5.94	6.54	7.33
<b>Total renewable fuel</b>	20.94	21.54	22.33
<b>Supplemental volume requirement</b>	0.25	0	0
<b>Conventional</b>	15.25	15.00	15.00

a: Gallons

# RFS Volumes: 2019 – 2025 (per the Proposal)



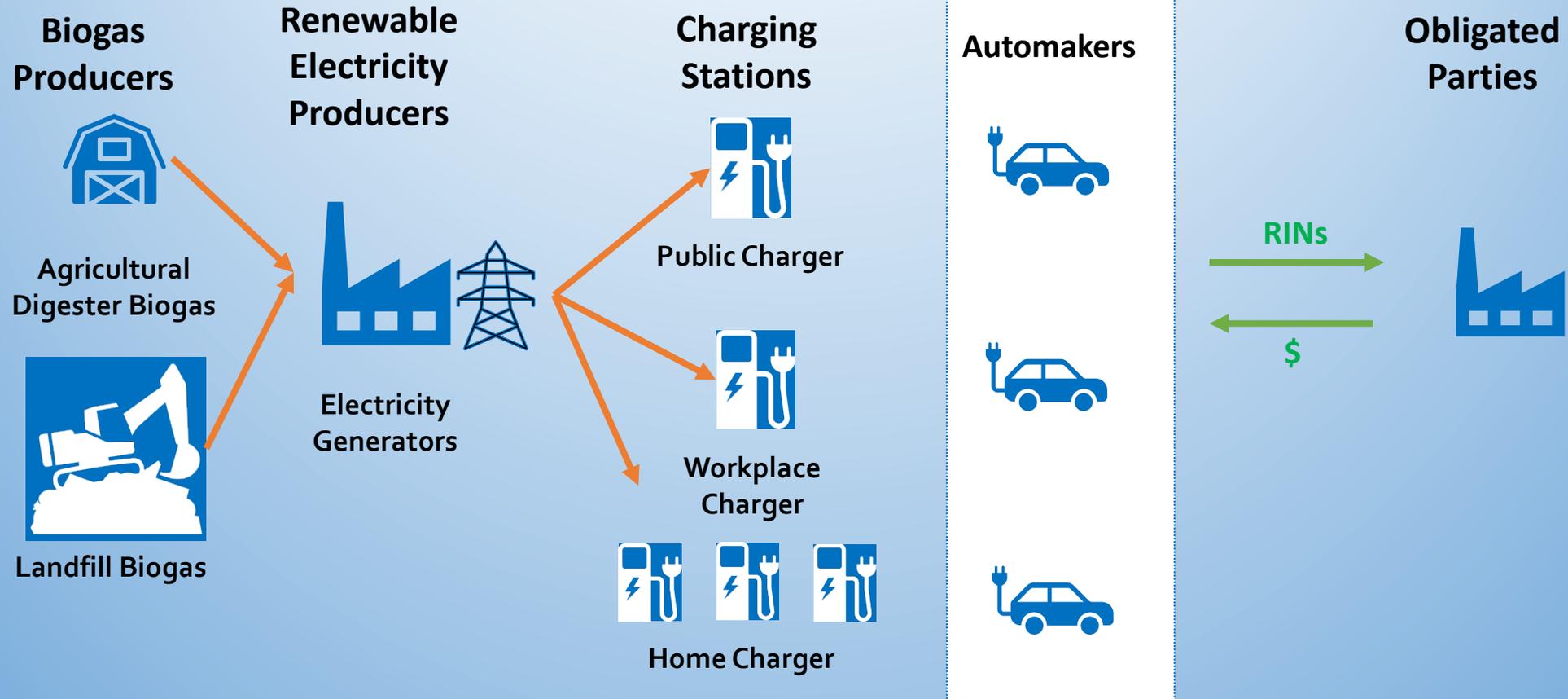
# Other topics

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- Endangered Species Act
- Lifecycle GHG emissions of renewable fuels

# eRINs: Renewable Electricity as Transportation Fuel





# eRIN program design: policy and regulatory goals

## Policy goals

- Reduce GHG emissions, improve energy security
- Increase use of renewable fuels: renewable electricity as transportation fuel

## Regulatory goals

- Ensure electricity is produced from renewable biomass
- Ensure that electricity is used as transportation fuel
- Prevent double counting and fraud
- Minimize complexity and implementation burden

# Cellulosic (D3) Volumes in the Set Proposal

(Million RINs)



	2023	2024	2025
<b>Liquid Cellulosic Biofuel</b>	0	3	5
<b>CNG/LNG Derived from Biogas</b>	719	814	921
<b>eRINs</b>	0	600	1,200
<b>Total Cellulosic Biofuel</b>	719	1,417	2,126

# More Information

- The EPA RFS webpage: <https://www.epa.gov/renewable-fuel-standard-program>
- The 2023-2025 Final Set Rule: <https://www.govinfo.gov/content/pkg/FR-2023-07-12/pdf/2023-13462.pdf>
- The 2023-2025 NPRM Set Rule: <https://www.govinfo.gov/content/pkg/FR-2021-12-21/pdf/2021-26839.pdf>
- The Docket: <https://www.regulations.gov/docket/EPA-HQ-OAR-2021-0427>

# Renewable Fuels

- E15 + state RVP “opt-out” rulemaking

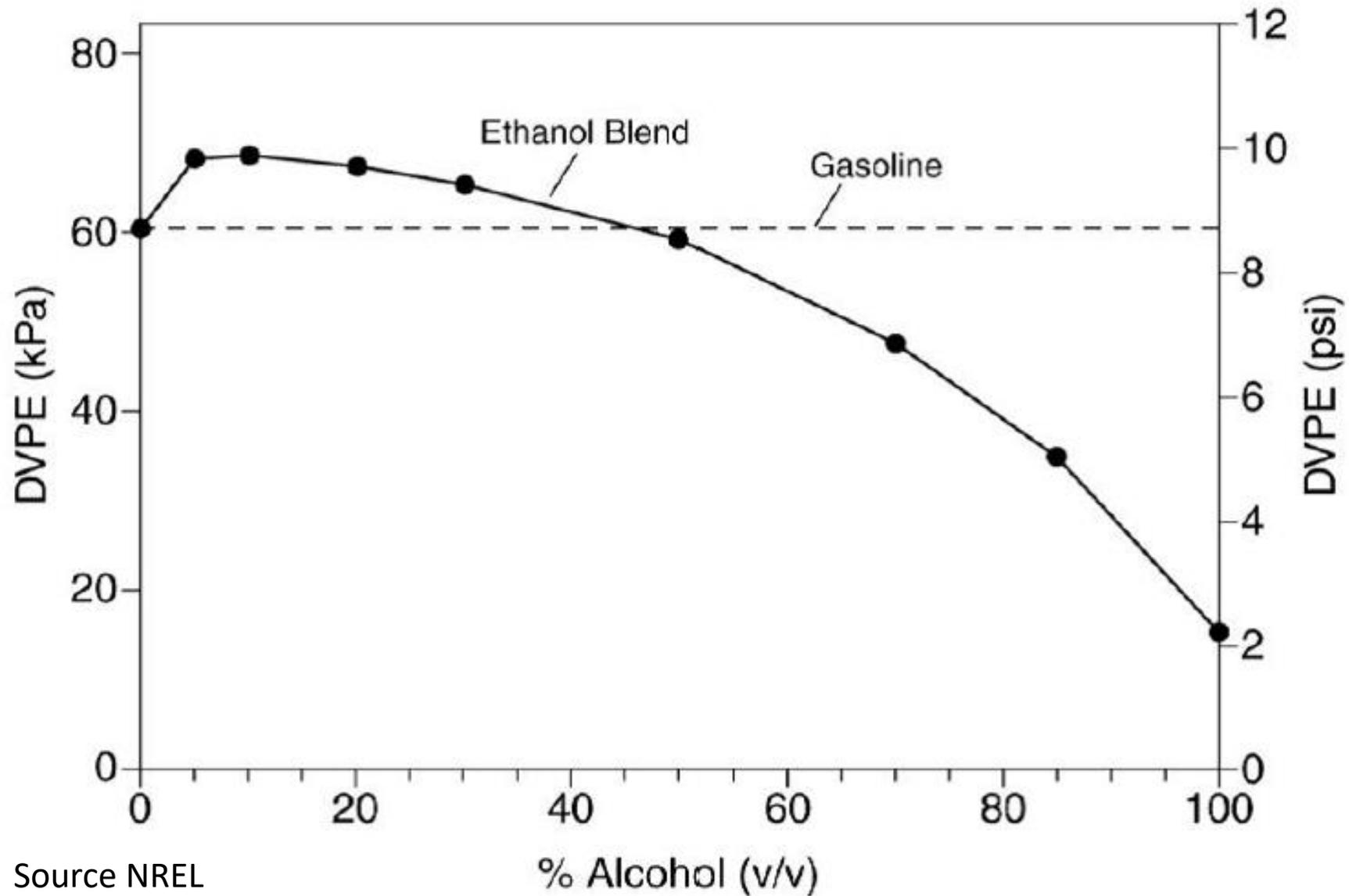


# State petitions on RVP- Background

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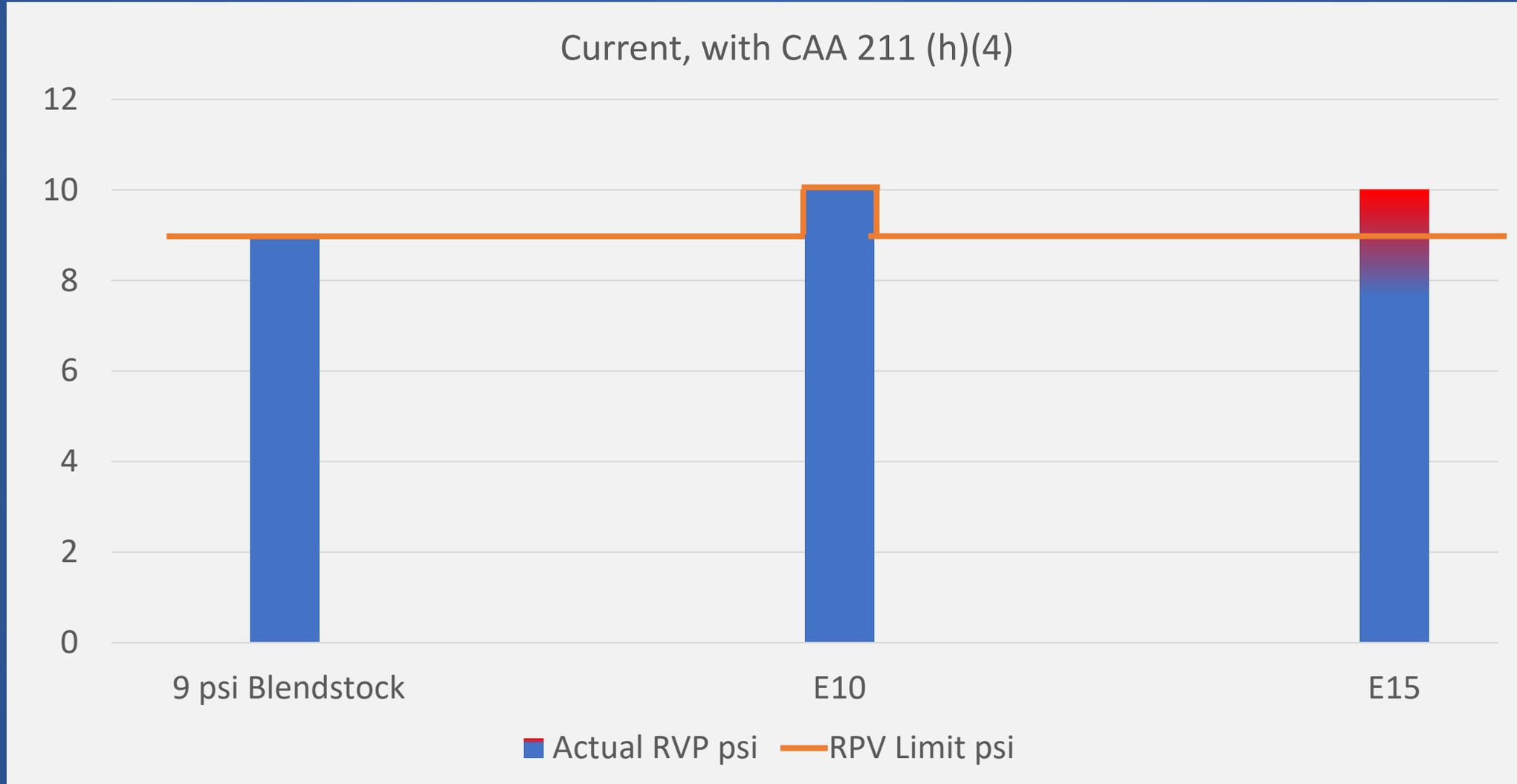
- Clean Air Act (CAA) 211 (h)(1) and (2):
  - Sets a maximum Reid Vapor Pressure (RVP) during the summertime at 9 pounds per square inch (psi).
  - This is a minimum if nothing else applies.
- CAA 211 (h)(4):
  - Grants the E10, and only E10, a 1 psi waiver of the 9 psi limit.
    - Meaning E10 can have a RVP of 10 psi.
- CAA 211 (h)(5):
  - Allows Governors to petition the EPA for an exemption from the CAA 211 (h)(4) waiver.
    - Meaning All gasoline, including E10 has to meet the 9 psi RVP limit.
    - Requires “supporting documentation”.

# Why?

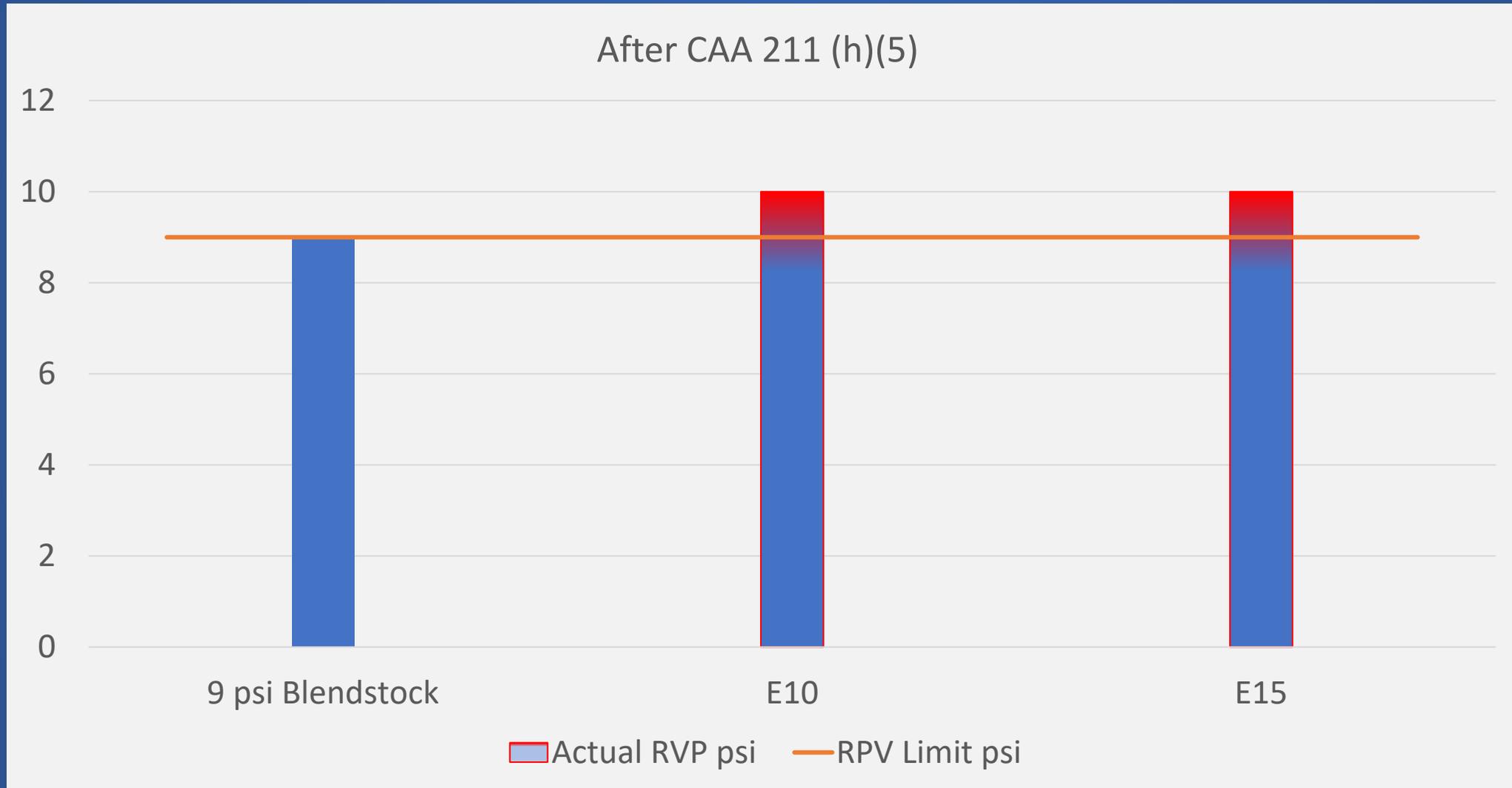


Source NREL

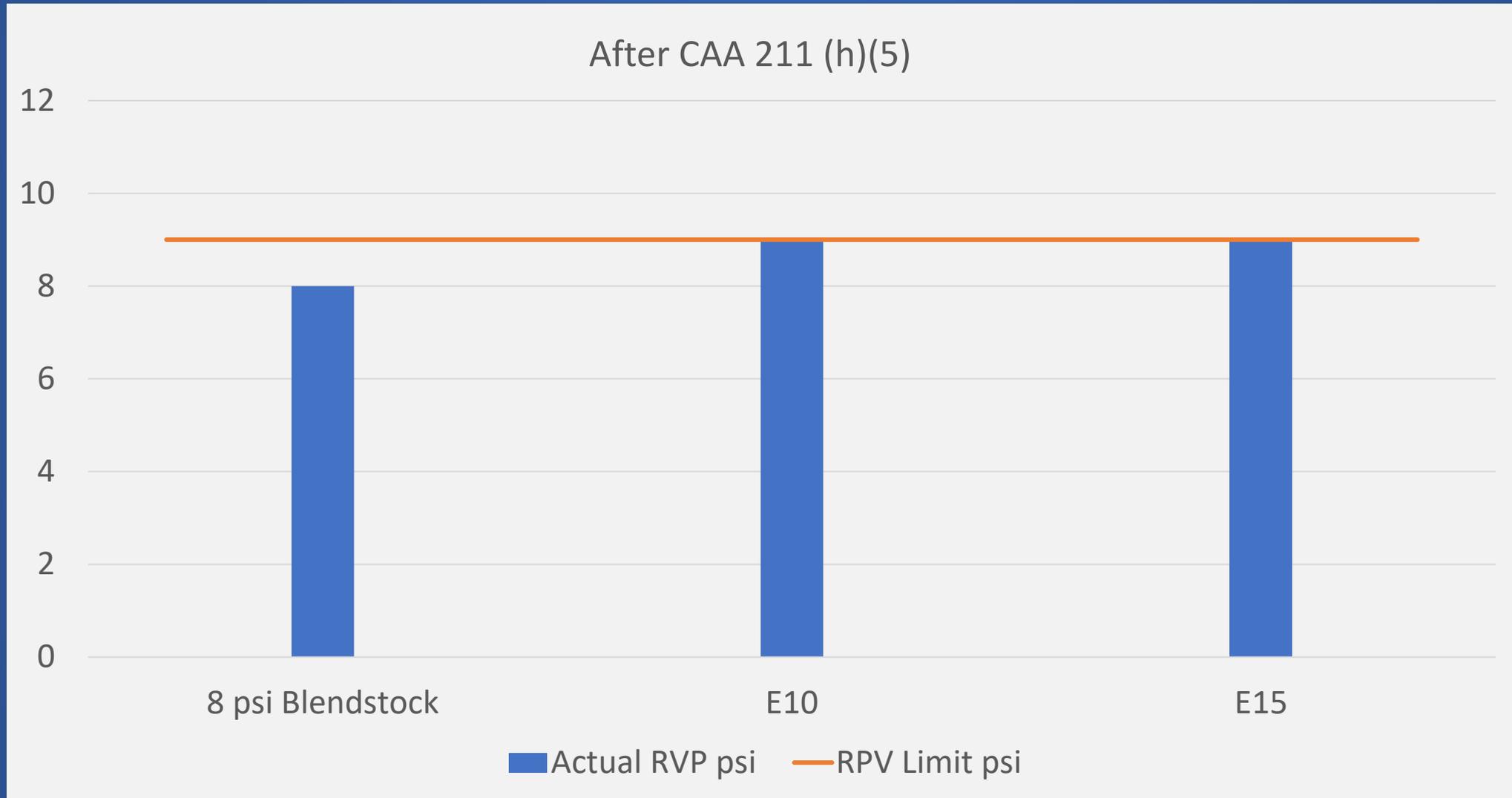
# How Ethanol Blends are Made



# How Ethanol Blends are Made



# How Ethanol Blends are Made





# State petitions on RVP- Background

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- April 2022, eight Governors submitted petitions.
  - Illinois, Iowa, Kansas, Minnesota, Nebraska, North Dakota, South Dakota, and Wisconsin.
- June 2022, Governor of Ohio submits a petition.
- July 2022, Governor of Kansas rescinds their petition.
- October 2022, Governor of North Dakota rescinds their petition.
- December 2022, Governor of Missouri submits a petition.
  
- March 2023, the EPA proposes approval.
  - Holds a hearing.
- April 2023, the comment period ends.
- August 2023, Iowa and Nebraska AGs sue the EPA for Failure to Act.



# State petitions on RVP

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- EPA has proposed a rulemaking approving multiple states petitions for removal of the 1-psi fuel volatility waiver for E10 gasoline per 211(h)(5) of the CAA.
  - Illinois, Iowa, Minnesota, Nebraska, Ohio, South Dakota, Wisconsin, Missouri.
  - Also created an off ramp.
- Approving the petitions will also require changes to the fuel distribution system
- The earliest the rule could take effect would be Summer 2024
  - We have also received several petitions that the EPA delay the rulemaking implementation date by a year or more.
- The EPA is currently working on responses to comments.

# More Information on E15

- The EPA Federal Gasoline Regulations webpage: <https://www.epa.gov/gasoline-standards/federal-gasoline-regulations>
- The Proposed Approval of Multi State Request for exemption from the CAA 211 (h)(4) waiver: <https://www.govinfo.gov/content/pkg/FR-2023-03-06/pdf/2023-04375.pdf>
- The Docket: <https://www.regulations.gov/docket/EPA-HQ-OAR-2022-0513/document>
- EIA energy map: <https://atlas.eia.gov/apps/5039a1a01ec34b6bbf0ab4fd57da5eb4/explore>

Thank you

UNITED STATES  
ENVIRONMENTAL  
PROTECTION AGENCY