

Options for Overcoming  
Regulatory Barriers for E15 Under  
Section 211 of the Clean Air Act

# Overview

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- The RVP Problem for E15
  - Section 211(h) RVP 1.0 psi “waiver”
  - Section 211(f)(4) RVP condition for E15
- Reasons to Address the Problem
  - Environmental Benefits of E15 relative to E10
  - Advancing Congressional objectives
- Potential Solutions and Interpretations
  - Sec. 211(h) RVP reinterpretation
  - Sec. 211(f)(1) sub-sim determinations
  - Sec. 211(f)(4) waiver

## The RVP Problem for E15: Section 211(h) (Volatility Requirements)

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- Section 211(h)(1) limits RVP for gasoline to 9.0 psi in summer ozone season.
  - Section 211(h)(4):
    - Provides a 1.0 psi allowance for “fuel blends containing gasoline and 10 percent denatured anhydrous ethanol. . . .”
    - Deems blenders, etc. in compliance if, among other things, the ethanol portion “does not exceed its waiver condition under Section 211(f)(4).”
  - E15 and E10 both increase gasoline RVP by +1.0 psi; the Section 211(h)(4) allowance avoids the need for 8.0 psi base gasoline for blending.
  - Problem: In 1991, EPA interpreted 211(h)(4) to limit the allowance to gasoline with “at least 9% and no more than 10% (by volume) of the gasoline.” 56 Fed. Reg. 64,704, 64,710 (Dec. 12, 1991), codified at 40 CFR § 80.27(d)(2).
  - In 1990-91, the maximum ethanol allowed in gasoline was 10% (volume). That is no longer the case.
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## The RVP Problem for E15: Section 211(f) (New Fuels and Fuel Additives)

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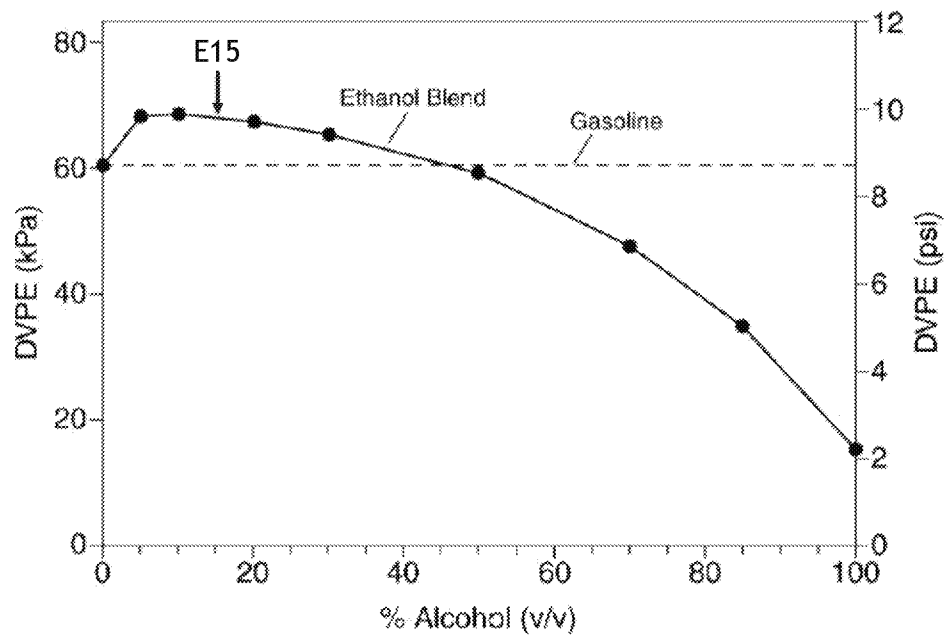
- Section 211(f)(1)
    - Prohibits introducing new fuels and increasing the concentration of fuel additives not “substantially similar to any fuel or fuel additive utilized in the certification of any [MY 1975 or later motor vehicle or engine].”
    - Problem: EPA’s interpretive rule regarding “substantially similar” limits oxygen content to 2.7% by weight, but the rule is now out of date; ethanol is now in fuel used in certification and the oxygen content is 3.5% for E10 and 5.2% for E15. 56 Fed. Reg. 5,352, 5,355-56 (Feb. 11, 1991).
  - Section 211(f)(4)
    - Allows EPA to waive (f)(1) prohibition if fuel or fuel additive and its emissions products will not cause “failure of any emission control device or system [over the vehicle’s useful life] to achieve compliance by the vehicle with the emissions standards to which it has been certified.”
    - Problem: EPA’s 2010-11 partial waiver applies to E15, but only with summertime RVP of no more than 9.0 psi. 75 Fed. Reg. 68,094 (Nov. 4, 2010); 76 Fed. Reg. 4,662 (Jan. 26, 2011).
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# The RVP Problem for E15: Market Consequences

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- EPA's requirements under Sections 211(h) *and* 211(f) require E15 (but not E10) to comply with a 9.0 psi RVP limit in the summer ozone season in non-RFG areas. In the summer:
    - Blenders can blend only 15% ethanol with 8.0 psi RVP base gasoline;
    - Blenders cannot blend 15% ethanol with standard 9.0 psi RVP base gasoline.
  - E10 is not subject to these constraints, and therefore can be blended with 9.0 psi RVP base gasoline in the summer, even though its volatility is slightly greater than E15.
  - E15 faces same regulatory obstacle to market access that EPA removed for E10 in 1980s.
  - Problem: The need for E15 to use special gasoline blendstock in the summer is a key impediment that limits widespread market availability.
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# RVP Relative to Ethanol Concentration



## Reasons Why E15 Should not be Regulated More Stringently than E10

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- E15 is actually slightly less volatile than E10.
- E15 has lower tailpipe exhaust emissions of CO, HC, and other pollutants that form ozone.
- Evaporative emissions of ethanol have relatively low reactivity in the formation of ozone.
- E15 enhances Congress's goals in promoting renewable fuel use and energy independence.
- Higher ethanol blends provide additional octane, promoting energy efficiency in higher compression engines.
- Increasing ethanol blending lowers RIN prices, which in turn lowers the cost of RFS program compliance.
- Removing E15 regulatory barriers promotes a more competitive fuel market.

# Reinterpreting Sec. 211(h) RVP Waiver

(applicable to all solutions)

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- EPA Can and Should Interpret the 1.0 psi Waiver to Apply to E15
    - The 1.0 psi allowance applies to fuel blends containing “gasoline and 10 percent denatured anhydrous ethanol” E15 and all blends higher than E10 contain 10 percent ethanol. The statute does not specify exactly 10 percent and EPA has never interpreted it to mean exactly 10 percent.
    - The “deemed to comply” provision does not reference E10 or any other ethanol percentage. It applies equally to E15 if “the ethanol portion of the blend does not exceed its waiver condition under subsection (f)(4).” EPA has already issued an (f)(4) waiver for E15.
    - Consistent with this, Section 211(h)(5), just like Section 211(h)(4), specifically refers to all “*fuel blends* containing gasoline and 10 percent denatured anhydrous ethanol.”
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# Reinterpreting Sec. 211(h) RVP Waiver

(applicable to all solutions) - Continued

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- EPA May Reasonably Revisit and Update Its Prior Interpretation
    - Under the *FedEx Home Delivery v. NLRB* decision, EPA can justify changing its interpretation of ambiguous statutory language based on policy considerations and a reasoned explanation.
    - Some relevant facts have also changed -- 10% was the maximum ethanol concentration in 1991 when EPA adopted its earlier interpretation and in 1990 when Congress enacted Section 211(h). Also, ethanol is now a fuel additive used in certification.
    - Fundamentally, Section 211(h) is about evaporative emissions, and E15 has slightly *lower* evaporative emissions than E10 (and, with current vehicle technology, E15 also has lower tailpipe exhaust emissions of ozone precursors).
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# Background on “Sub Sim” under 211(f)(1)

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- **General “sub-sim” principles** (1978-2008 Agency Interpretations)
  - Congress believed that fuels and additives sub-sim to those used in certification would not adversely affect emissions. 45 Fed. Reg. 67,443, 67,445 (Oct. 10, 1980).
  - To determine if sub-sim, EPA considers the chemical and physical properties of fuels and fuel additives, and focuses on potential impacts on drivability, emissions and materials compatibility.
- **“The certification process employs two fuels”** (46 Fed. Reg. 38,582, 38,583 (July 28, 1981))
  - Standardized test gasoline subject to ASTM standards for emissions testing; and
  - Service accumulation fuel representative of commercial gasoline for durability (including materials compatibility) testing.
- **Definitions of fuel and fuel additive** (40 CFR § 79.2)
  - Either could apply to the “sub sim” evaluation
    - A “fuel” is any material capable of releasing energy by combustion.
    - An “Additive” is a substance other than solely carbon/hydrogen intentionally added to a designated fuel (e.g., gasoline), and not intentionally removed before sale or use.

## Additional Background on Potential 211(f)(1) Sub Sim Solutions

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- EPA must update its outdated sub sim interpretive rule regardless.
  - EPA's 1991 interpretive rule limits oxygen content to 2.7%.
  - Yet EPA's 2014 Tier 3 rule required E10 (with oxygen content of 3.5% and RVP of 9.0 psi) for certification testing for certain MY2017 vehicles (and phased in for all vehicles by MY2020). 79 Fed. Reg. 23,414, 23,419 (Apr. 28, 2014), codified at 40 CFR § 1065.710(b)(2).
  - The sub-sim rule also currently references ASTM standard D4814-88, which was revised in 2017; EPA should also update its definition to reference ASTM D4814-17.
  - EPA has continued to define service accumulation (durability) fuel as containing the maximum commercially available ethanol content, which is E15. *Id.* at 23,511 and 23,527; 40 CFR § 1824-08(f)(1).
- EPA's recent change in certification fuel requires a change in sub-sim interpretation because the statute requires comparison of new fuel/additive to:
  - "any fuel or fuel additive utilized in the certification" (so may properly encompass emissions test and service accumulation fuels);
  - "of any model year 1975, or subsequent model year, vehicle or engine" (so a fuel or fuel additive qualifies for use in any vehicle).

## Potential Solution #1 - E15, *as a Fuel*, is Sub-Sim to Fuel Utilized in Certification

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- EPA could interpret fuel utilized in certification to mean both:
  - E10 (certification test fuel for MY 2017 and later vehicles); and
  - E15 (service accumulation fuel used for durability testing).
- EPA could use both cert fuels to conclude that E15 is sub-sim to relevant certification fuel
  - From an emissions standpoint, adding 15% ethanol to gasoline is substantially similar to adding 10% ethanol to the same base gasoline.
  - From a materials compatibility/durability standpoint, adding 15% ethanol to gasoline results in the same fuel (E15) used in certification.
- RVP is not part of the sub-sim analysis under 211(f) and is separately addressed in 211(h).
  - The current “sub sim” definition requires gasoline to meet ASTM D4814-88 (i.e., the gasoline must meet at least one seasonal/geographic volatility class). E15 and E10 are the same in this regard.

## Potential Solution #2 - E15, *as a Fuel*, is Sub-Sim to E10 Cert Fuel, Which EPA Revises from 9 psi to 10 psi

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- Alternatively, EPA could also change the RVP of the cert fuel to 10 psi E10, rather than 9.0 psi
  - EPA justified its decision to specify 9 psi cert fuel in the 2014 Tier 3 rule on policy grounds, such as impact on vehicle evaporative controls, coordination with CARB, nationwide average RVP of gasoline, and states that opt out of 1.0 psi waiver.
  - EPA could simply reconsider these policy reasons in light of technology and other factors.
  - Evaporative emissions of E15 and E10 would be similar (with the same RVP).

## Potential Solution #3 – Ethanol, *as an Additive* in E15, is Sub-Sim to the Additive Used in E10 Cert Fuel

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- Ethanol qualifies as a fuel additive under 40 CFR §79.2
    - It contains oxygen, not just carbon and hydrogen.
    - It is intentionally added to gasoline (and not removed before sale/use).
    - EPA considers the ethanol in E15 to be a gasoline fuel additive – [bit.ly/2jKmpoA](https://www.epa.gov/air-quality/ethanol-bit-ly/2jKmpoA).
  - Ethanol is now a fuel additive utilized in certification
    - It is required in MY 2017 and 2018 for certain vehicles and all vehicles by MY 2020.
    - The ethanol additive in E15 is identical to that used in certification fuel.
  - The 211(f)(1) prohibition against “increas[ing] the concentration” does not apply to ethanol as an additive because that prohibition applies only to fuel additives not sub-sim to those used in certification.
  - If additional environmental limitations are deemed necessary, EPA may regulate ethanol as necessary under Section 211(c), the same way it regulates other sub sim fuel additives.
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## Potential Solution #4 – Change the Certification Test Fuel from 9 to 10 psi RVP and Issue a New E15 Waiver Without an RVP Condition

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- EPA could also revisit its decision to specify 9.0 psi E10 cert fuel, and provide that the cert fuel is 10.0 psi, consistent with market realities.
- EPA could then issue a new 211(f)(4) waiver without a 9.0 psi limit
  - Where E10 at 10.0 psi is used as certification test fuel, E15 would not cause or contribute to a failure by such vehicles to achieve compliance.
  - EPA would have to interpret the waiver to apply to vehicles that were certified using a 9.0 psi cert fuel.