Rewriting the Rules for Ethanol’s Future
Regulatory Strategies for Removing Barriers to Biofuel

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Boyden Gray & Associates is a boutique litigation and public policy firm, continuing C. Boyden Gray’s decades of service as counselor to presidents, business leaders, legislators, and regulators on matters of constitutional law, regulatory policy, and international affairs.
Urban Air Initiative (UAI)

Urban Air Initiative is a non-profit organization dedicated to improving air quality and protecting public health by reducing vehicle emissions. UAI is focused on increasing the use of clean burning ethanol in our gasoline supply to replace harmful compounds in gasoline.
1) **Ethanol for Efficiency.** EPA has agreed to re-start its Mid-Term Evaluation of the 2017-2025 greenhouse gas standards. EPA should consider the high-octane fuel needed to achieve the standards.

2) **Rational RVP Regulation.** EPA should apply the same standard to E10 and higher ethanol blends.

3) **More Ethanol in Legacy Vehicles.** EPA should not finalize a proposed ban on mid-level ethanol blends (over E15) in legacy (non-flex-fuel) motor vehicles.

4) **Emissions Model Reform.** EPA should correct the anti-ethanol bias in EPA’s MOVES2014 vehicular emissions model.
Ethanol for Efficiency

The Mid-Term Evaluation of EPA’s Greenhouse Gas Standards
2012: EPA and NHTSA impose vehicle greenhouse gas and fuel economy standards from 2017 to 2025

In 2012, EPA and NHTSA (DOT) finalized a joint rule requiring passenger cars and trucks to meet increasingly stringent greenhouse gas and fuel economy standards from model years 2017 to 2025. EPA projected an increase from 35.5 mpg in 2016 to 54.5 mpg in 2025. EPA-420-F-12-051.

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<tbody>
<tr>
<td><strong>Passenger Cars (g/mi)</strong></td>
<td>225</td>
<td>212</td>
<td>202</td>
<td>191</td>
<td>182</td>
<td>172</td>
<td>164</td>
<td>157</td>
<td>150</td>
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<tr>
<td><strong>Light Trucks (g/mi)</strong></td>
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<td>295</td>
<td>285</td>
<td>277</td>
<td>269</td>
<td>249</td>
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<td>225</td>
<td>214</td>
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<tr>
<td><strong>Combined Cars &amp; Trucks (g/mi)</strong></td>
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<td>232</td>
<td>222</td>
<td>213</td>
<td>199</td>
<td>190</td>
<td>180</td>
<td>171</td>
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<tr>
<td><strong>Combined Cars &amp; Trucks (mpg)</strong></td>
<td>35.5</td>
<td>36.6</td>
<td>38.3</td>
<td>40.0</td>
<td>41.7</td>
<td>44.7</td>
<td>46.8</td>
<td>49.4</td>
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Mid-Term Evaluation

In 2012, EPA, NHTSA, and California agreed to complete a joint Mid-Term Evaluation of the standards by April 2018 to determine whether they remain “appropriate.”

EPA promised a “collaborative, robust and transparent process.” 77 Fed. Reg. at 62,784.
In late 2016 and early 2017, EPA rushed through a final determination that the existing standards remain “appropriate.” EPA’s order came over a year ahead of schedule, in January 2017.

UAI opposed EPA’s determination.

- EPA failed to coordinate with California and DOT as promised in 2012.
- The auto-industry needs high-octane fuel to meet the standard.
- EPA’s assessment of future technologies relies on high-octane fuel that EPA has not yet permitted automakers to use in certifying new vehicles.
In March 2017, EPA Administrator Pruitt and DOT Secretary Chao reopened the evaluation process so that EPA and DOT can coordinate as they agreed in 2012. The EPA intends to make a new final determination by April 1, 2018.
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Last week EPA reopened the comment period and explicitly invited comment on “the impact of the standards on advanced fuels technology, including but not limited to the potential for high-octane blends.”
Rational RVP Regulation

Reinterpreting the 1 psi RVP waiver
The Clean Air Act’s 1 psi waiver provision makes the RVP standard less stringent for all “fuel blends containing gasoline and 10 percent denatured anhydrous ethanol.” 42 U.S.C. § 7545(h)(4).

EPA interprets this waiver provision to apply only to gasoline with 9-10% ethanol. 40 C.F.R. § 80.27(d)(2).
But the next subsection of the law makes clear that it applies to “all fuel blends containing gasoline and 10 percent denatured anhydrous ethanol.” *Id.* § 7545(h)(5).

The law also includes an affirmative defense for downstream fuel sellers when “the ethanol portion of the fuel blend does not exceed its waiver condition under” the sub-sim law. *Id.* § 7545(h)(4).

If Congress had wanted to limit the waiver to E10, it would have used more limiting language.
RVP Relief

EPA’s interpretation limits E15 sales and discourages retailers from selling it:

The only problem I have with the E15 comes every June 1st. On that day, I need to restrict the sales of E15 to flex fuel vehicles only. . . . And let me tell you, when summer driving season starts, my E15 sales drop like a rock.

EPA’s interpretation is counterproductive, because E15 has lower RVP than E10.

EPA: “[T]he addition of ethanol to gasoline” above 10 percent ethanol “decreases blend volatility.”
More Ethanol in Legacy Vehicles

Renewables Enhancement & Growth Support Rule (REGS Rule)
EPA officials have misinterpreted the Clean Air Act to limit the concentration of ethanol in gasoline.

The proposed REGS Rule (published Nov. 2016) would officially codify that interpretation in a regulation banning more than 15% ethanol in non-flex-fuel vehicles.

“No person shall] Sell, introduce, cause, or permit the sale or introduction of gasoline containing greater than 15 volume percent ethanol (i.e., greater than E15) into any model year 2001 or newer light- or medium-duty gasoline motor vehicle.” 81 Fed. Reg. at 80975
The proposed rule misinterprets the sub-sim law, section 211(f) of the Clean Air Act, to limit ethanol concentration:

“[I]t shall be unlawful for any manufacturer of any fuel or fuel additive . . . to increase the concentration in use of, any fuel or fuel additive . . . which is not substantially similar to any fuel or fuel additive utilized in the certification of any . . . vehicle or engine.”


Ethanol is a fuel additive used in certification. Starting this year, the gasoline certification fuel contains 10% ethanol. 40 C.F.R. § 1065.710, tbl. 1
If EPA wants to limit ethanol concentration, it must use a separate Clean Air Act provision, section 211(c), which requires a finding that the fuel harms public health or emissions control devices:

“The Administrator may . . . control or prohibit . . . any fuel or fuel additive . . . if, in the judgment of the Administrator [it] causes, or contributes, to air pollution . . . that may reasonably be anticipated to endanger the public health or welfare, or (B) if emission products of such fuel or fuel additive will impair to a significant degree the performance of any emission control device . . . .” 42 U.S.C. § 7545(c).

EPA has not attempted to make this demonstration. The best available science shows that adding ethanol reduces harmful emissions.
Emissions Model Reform

MOVES2014
EPA vehicular emissions models: Why do they matter?

EPA’s vehicular emissions model, MOVES2014a, estimates the pollution produced by a given fleet of vehicles running on fuel with defined parameters.

States that are in nonattainment with EPA’s air quality standards must use EPA’s vehicular emissions model in developing implementation plans to demonstrate that they will come into attainment with the air quality standards.

Implementation plans can involve state vehicle and fuel policies.
MOVES2014: Three big problems

MOVES2014 erroneously reports that higher concentrations of ethanol increase vehicular emissions, because of three sets of modeling defects:

1) **Tailpipe Emission Factors.** MOVES2014 relies on the EPAct study, failed to control for the confounding variables that resulted from its match-blending methodology.

2) **Evaporative Emission Factors.** MOVES2014’s “fuel adjustment” for ethanol’s permeation emissions is wrong, because the studies that the model relies on were systemically biased against ethanol.

3) **Default Fuel Parameters.** MOVES2014 requires states to use flawed default fuel parameters that contradict real-world market surveys.
The EPAct Study generated the emissions factors in MOVES2014. It erroneously concluded that “[o]ther factors being equal, increasing ethanol is associated with an increase in emissions.”
UAI’s FOIA litigation revealed that the EPAct Study test fuels were designed by oil industry employees who chose parameters that produced bad results for ethanol.

EPA solicited oil industry input by advertising that the study’s results would “be critical to future policy decisions” related to biofuels.
MOVES2014: Tailpipe Emission Factors

The MOVES2014 tailpipe emissions factors result from fundamental defects in the EPAct Study’s design:

- The test fuels failed to “span the ranges of in-use fuel properties.”
- The EPAct Study did not control for confounding variables.
- The fuels selected for speciation were biased against ethanol.
EPA intended the test fuels to “span the ranges of in-use fuel properties,” but its arbitrary “match-blending” methodology prevented this.

For example, the octane levels found in the EPAct test fuels exceeded the octane levels found in the market. Auto Alliance 2014 Fuel Survey.
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Each EPAct test fuel included between 14.1% to 35.8% aromatic hydrocarbons.

But the market includes fuels with as low as 3.9% aromatics.
MOVES2014: Evaporative Emission Factors

MOVES2014 includes a “fuel adjustment” factor, which predicts that adding any amount of ethanol to ethanol-free gasoline more than doubles permeation emissions.

<table>
<thead>
<tr>
<th>Model Year</th>
<th>Fuel Adjustment (%)</th>
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<tbody>
<tr>
<td>1995 and older</td>
<td>65.9</td>
</tr>
<tr>
<td>1996</td>
<td>75.5</td>
</tr>
<tr>
<td>1997-2000</td>
<td>107.3</td>
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<tr>
<td>2001 and later</td>
<td>113.8</td>
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MOVES2014: Evaporative Emission Factors

MOVES2014’s “fuel adjustment” factor is based on 4 CRC Studies: E-65, E65-3, E77-2, and E-77-2b. Each of these CRC studies suffers from one or more of the following design defects:

- **Aromatics.** The ethanol test fuels contained artificially high levels of aromatics. The studies’ failure to model the effect of aromatics is significant, because aromatics are known to permeate at high rates.

- **Confounding Variables.** The studies ignored other confounding variables known to affect permeation emissions, including aromatic and paraffin speciation.

- **High Emitter Vehicles.** Two of the CRC studies were dominated by the permeation emissions of a single vehicle with unusually high emissions: CRC E-77-2 (Ford Escape) & CRC E77-2b (Nissan Altima).
In the real world, reformulated gasoline (RFG) tends to have a higher T50 than conventional gasoline, because high-boiling-point hydrocarbons are added to lower RVP. This increases real-world emissions for RFG. But the MOVES2014 defaults reverse this relationship without explanation, discounting the emissions effects of high-boilers.
To correct the model’s errors:

- UAI is participating in EPA’s MOVES Review Work Group to advise EPA on the MOVES model’s errors and suggest corrections for a revised model to be issued as early as 2018.
Thank you.

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