CRS INSIGHT

Reid Vapor Pressure Requirements for Ethanol

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Legislation has been introduced in Congress (H.R. 1311, S. 517) that would give ethanol-gasoline fuel blends containing greater than 10% ethanol (e.g., E15, an ethanol-gasoline fuel blend of 15% ethanol and 85% gasoline) a waiver from the Clean Air Act (CAA) requirement that gasoline meet strict limits on volatility. At present, E15 cannot be sold during summer months because it does not meet the Reid Vapor Pressure (RVP) requirements for the summer ozone season (generally June 1-September 15). This waiver could be a favorable development to some stakeholders that want increased market share for ethanol. Stakeholders and federal agencies have weighed in on the economic and environmental implications of waiving the RVP requirements for E15. At issue for Congress is whether to maintain the status quo or to amend the CAA to exempt higher ethanol-gasoline fuel blends from the RVP requirements.

RVP Requirements Under the Clean Air Act

The CAA authorizes the Administrator of the U.S. Environmental Protection Agency (EPA) to regulate fuels and fuel additives. It contains a section on RVP requirements (Section 211(h)), which is applicable to the 48 contiguous states and the District of Columbia. RVP is a common metric used to determine gasoline volatility; the lower the RVP, the less volatile the gasoline. In general, the CAA prohibits the sale of gasoline with an RVP greater than 9 pounds per square inch (psi) during the high ozone season as set by EPA (see **Figure 1**). The act provides some exceptions, including an ethanol waiver stipulating that ethanol-gasoline fuel blends containing 10% ethanol (E10) are subject to an RVP requirement 1 psi greater than the 9 psi limit for other fuels, given certain conditions (i.e., 1 pound waiver). Further, the act provides exclusions from the waiver, such that upon notification by a governor that the RVP limit granted for E10 will increase air pollutant emissions in that state, the Administrator must revert to the 9 psi limit for that area. In response to these provisions, EPA amended the RVP limit to 9.0 psi for designated ozone attainment areas and to 7.8 psi for certain designated ozone nonattainment areas. A nonattainment area is any area designated as exceeding the National Ambient Air Quality Standard (NAAQS) for ozone.

H.R. 1311/S. 517

H.R. 1311 and S. 517 would amend two sections of the CAA. First, the bills would amend Section 211(h) to include such fuel blends for both the RVP ethanol waiver and the RVP exclusion from the ethanol waiver (note that a governor has the right to petition the EPA Administrator for an exclusion from the waiver if the RVP limit granted for ethanol will increase air pollutant emissions). Second, the bills would amend the CAA section on new fuels and fuel additives

(Section 211(f)(4)) to allow for a fuel or fuel additive that received a waiver under Section 211(f)(4) prior to January 2017 and met all of that waiver's requirements, except for the RVP requirement, to be sold. This portion of the bill would apply to E15, which was granted a partial waiver by EPA in 2011 under CAA Section 211(f)(4).

Federal Agency Actions

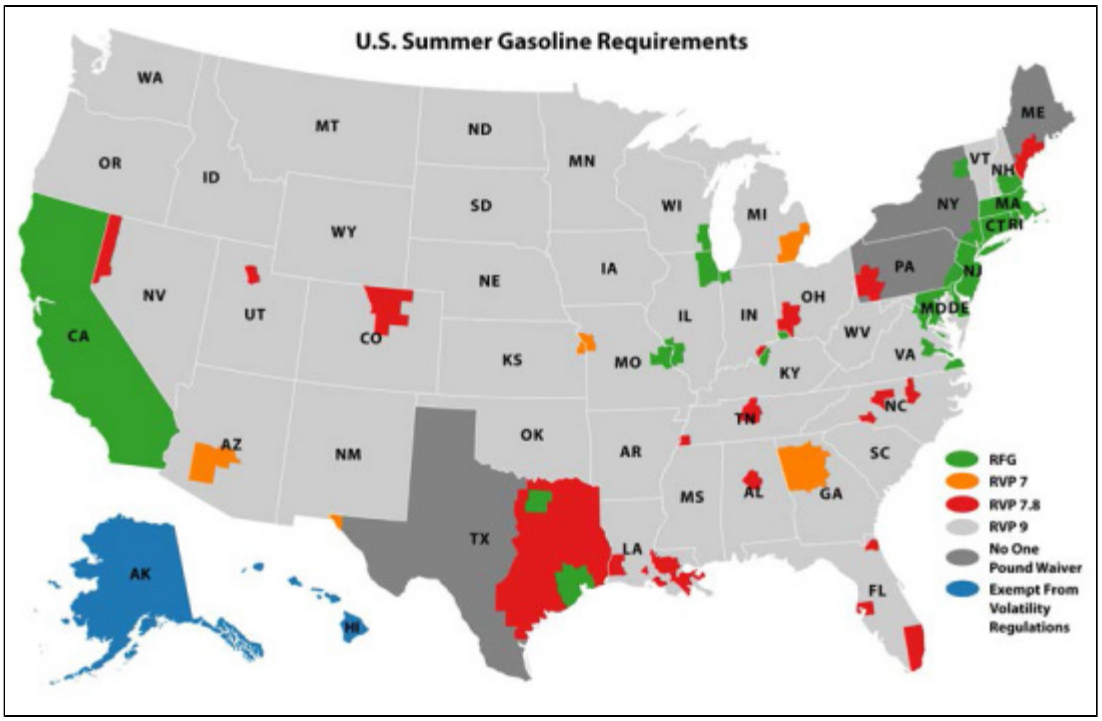
Federal entities—in addition to EPA—have contributed to the E15 RVP discussion. For instance, a 2015 National Renewable Energy Laboratory (NREL) analysis presented several options that address the RVP requirement debate. For example, one option is for Congress to grant a 1 psi RVP waiver for high-octane fuels (i.e., fuel blends with an ethanol concentration of 20%-40%); another option is to eliminate the E10 RVP waiver. Another 2015 NREL analysis reports that "blending of ethanol in to gasoline in the 10 to 15 vol% range typically causes the vapor pressure to increase by 1 pound per square inch." Given this statement by NREL, it could be argued that E15 typically behaves in the same manner as E10 with regard to vapor pressure. The U.S. Department of Agriculture reports that an E15 RVP waiver "would make the marketing of E15 less costly in the summer months."

EPA reports it does not have the authority to include ethanol-gasoline fuel blends with an ethanol component greater than 10% in the ethanol waiver for the RVP requirements. However, EPA recently reported that it is undertaking a statutory analysis of the RVP waiver for inclusion of E15. Further, several recent rulemakings by EPA may indirectly address the RVP requirements. These rulemakings include the 2016 renewables enhancement and growth support proposed rule, which would control evaporative emissions from ethanol flex fuels, and the 2015 final rule for National Ambient Air Quality Standards for ozone, which likely would tighten requirements on evaporative emissions in new and existing ozone nonattainment areas.

Legislative Issues and Options

Congressional options regarding RVP requirements include whether the CAA should be left as is or amended to include higher ethanol-gasoline fuel blends. Amending the CAA—as some stakeholders have supported—could increase demand for ethanol production, which may lead to additional economic development for the sector. Conventional renewable fuel (i.e., cornstarch ethanol) likely would be used to meet the increased demand stemming from amending the CAA as described above. This change might increase development of corn ethanol. It is not clear if such a change would spur additional development of advanced biofuels (e.g., cellulosic ethanol). Also, it is unknown how other stakeholders might regard an RVP policy change. In the past, some in the oil and natural gas industry have not viewed E15 favorably due to concerns about costs and consumer safety, among other things. Additionally, not all vehicle warranties cover the use of E15 in non-flex fuel vehicles. Lastly, some might contend that if Congress amends the CAA for the purposes outlined above, then it is weighing in on the "minutiae" of environmental policy regarding renewable energy. Congress also may debate if it wants to reduce its involvement in stipulating RVP requirements when science or technical capability of a renewable energy type grows.

Figure 1. U.S. Summer Gasoline RVP Requirements



Source: National Renewable Energy Laboratory, *High-Octane Mid-Level Ethanol Blend Market Assessment*, December 2015.

Notes: RFG = reformulated gasoline (gasoline blended to burn more cleanly than conventional gasoline and to reduce smog-forming and toxic pollutants); RVP = Reid Vapor Pressure.