



# Impact of Potential 8-State RVP Waiver Exclusion on Midwest Gasoline Markets

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# 1. Executive Summary (TBD)

The Renewable Fuels Association (RFA) commissioned ICF to assess the potential refinery and fuel logistics impacts associated with a decision by the Governors of eight Midwest states to opt out of the 1-psi Reid Vapor Pressure (RVP) fuel volatility waiver for summer E10 gasoline (motor gasoline blended with a 10 percent ethanol blend) in order to create a level playing field between E10 and E15 (gasoline with 15% ethanol). The focus of this study was limited to the supply chain for petroleum-derived gasoline blendstocks, including impacts to refiners, pipelines, and distribution terminals. The study provides an overview of the summer gasoline supply/demand balance and the composition of gasoline demand within the 8-state region and projects how these market dynamics are expected to change by summer 2023 when the RVP waiver opt-out would take effect. The study also discusses the specific changes to the gasoline blending pool needed to achieve a 1-psi reduction in gasoline RVP after the waiver is removed; analyzes the impact of those changes on refinery configuration, logistics, and overall gasoline production; and analyzes the impacts of an expansion of gasoline blendstock types on regional pipeline logistics. Key findings of the study include:

- **Supply/Demand Balance:** the 8-state study region is expected to have a surplus of motor gasoline supply in summer 2023 as projected refinery gasoline production is in excess of projected demands. Although there are substantial movements of gasoline into and out of the region, this production surplus indicates that most required refinery changes would take place at refineries that are primarily supplying in-region demands.
- **Gasoline Demand Composition:** aside from portions of Illinois and Wisconsin that use reformulated gasoline, gasoline RVP specifications are largely uniform across the 8-state region. This means that most refineries, pipelines, and distribution terminals within the region should be able to fully switch over to the new lower-RVP gasoline specification with minimal challenges associated with product segregation. However, there may be some additional challenges for refineries and pipelines that serve markets both inside and outside the 8-state region.
- **Gasoline Production:** the 1-psi RVP reduction for conventional gasoline blendstock would be most effectively achieved by removing nearly all butane from the gasoline blending pool. This would reduce refinery motor gasoline blendstock production by about 2% assuming no other changes to refinery operations. Because the region is projected to have a surplus of in-region refinery gasoline production in summer 2023, this reduction is expected to be manageable without the need to bring in new supply from outside the region.
- **Refinery Butane Logistics:** The biggest challenge for refineries after the 8-state RVP waiver exclusion involves butane containment. Because refineries typically have limited pressurized storage for butane and other hydrocarbon gas liquids (HGLs), refiners would need to ship excess butane to regional HGL storage hubs (primarily Conway, Kansas) mostly by pipeline, rail, or truck. Midwest refineries typically bring in butane from outside sources for gasoline blending during the fall and winter months when gasoline RVP limits are relaxed. As a result, refinery, pipeline, rail, and truck operators already have significant capacity to move butane and handling surplus butane during the summer month is not expected to cause a significant issue.

- **Refinery Gasoline Blendstock Logistics:** For refineries primarily serving markets within the 8-state region, the change from higher to lower RVP gasoline blendstock will not create significant segregation issues because these refineries would be changing over all their gasoline production to the new specification. For refineries that are currently supplying markets both inside and outside the 8-state region, the new, lower RVP specification may create some segregation issues as the lower and higher RVP blendstocks would need to be stored and transported separately, potentially requiring investments in additional tankage. Alternatively, refiners may choose to produce only a single type of gasoline while utilizing exchange agreements with other refiners to supply customers that use the other gasoline spec.
- **Pipeline Logistics:** Pipeline systems and portions of multi-state pipeline systems that are fully contained within the 8-state region (e.g., shipping gasoline from in-region refineries to in-region markets) would see all of the gasoline shipped on their systems change over to the new, lower RVP specification and this would avoid any segregation issues. For portions of pipeline systems that are serving markets both inside and outside the 8-state region—for example the Magellan Pipeline system between Oklahoma and Kansas or the Cenex Pipeline between Montana and North Dakota—there may be some challenges associated with product segregation. Some of these pipelines may need to add additional tankage to accommodate the new lower RVP gasoline or may need to decide which gasoline type—higher or lower RVP—they will ship.
- **Responding to Disruptions:** Although refinery and pipeline issues are likely to be mostly manageable under normal circumstances, there is some concern that creating a separate conventional gasoline specification in the 8-state region may make it more difficult for refiners and pipeline shippers to move additional supply into the region in response to supply disruptions. Historically, shortage events in the Midwest have occurred approximately once every four years with each event lasting less than eight weeks. Loss of fungibility between fuel markets caused by the 8-state waiver exclusion may increase the frequency and duration of shortage events and may increase price volatility within the 8-state region.