



Downstream Technology

► 10-Year Fuels Outlook

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BP Confidential

11 August 2017

BPA_HC0R_00285525



Outline

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Short-term (2-5 years)

- RFS – legislative/regulatory reform
- Will E15 get the 1 psi RVP waiver?
- EPA Fuels Modernization - sweeping changes in 2 phases
 - Major impact on RVP standard
- Wintertime 1 psi RVP Waiver – Advocacy/State Status
- State Fuel Controls for 2015 Ozone NAAQS Attainment?

Long-term (10+ years)

- Octane
- More Aromatics controls for gasoline engines



Renewable Fuels Standard (RFS) Legislative/Regulatory Reform

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- High probability of EPA Reset of Renewable Fuel Standard (RFS) tables in next two years
- Medium probability of legislative RFS reform in next two years

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Will E15 get the 1 psi RVP waiver?

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- Auto and Ethanol industries advocating for this
- Congress could include as part of RFS reform legislation – 2018-2019
- EPA could decide it has authority to extend the 1 psi waiver to E15 via regulation – 2018-2019
- EPA Modernization Rule Phase 2 – legislation to end both RFG and the 1 psi waiver for E10 – 2023+
- EPA could achieve the same thing by issuing a tighter RVP standard for E10 – 2023+

► EPA Fuels Modernization-- sweeping changes in 2 phases 5 

- EPA announced plans to “simplify” the gasoline regulations
- EPA is beginning initial conversations with industry players
- BP Advocacy teams will need Refining, Supply and Technology input on what is best for BP’s position
- Phase 1 –likely effective 1H2020
- Phase 2 – more tentative – possibly effective 2023

► Modernization Phase 1

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- Consolidate the disparate and confusing USEPA gasoline rules, guidance, and Qs/As
- **Consolidate Northern and Southern RFG VOC Regions to Southern standard -- required by Energy Policy Act of 2005**
- **Remove the Chicago-Milwaukee-Gary VOC Allowance**
- **Remove the %VOC reduction requirements and Complex Model**
 - **Toxics are now controlled with MSAT Benzene limits**
 - **NOx now controlled with Tier 3 gasoline sulfur limits**
 - **%VOC Reduction is controlled mostly with vapor pressure (RVP)**
- **RFG to have a summertime downstream RVP maximum of 7.4 psi cap**
- **-- with ethanol /no waiver**
- Keep Conventional Gasoline “as is” with 1 psi ethanol blend waiver in areas where it is allowed today
- State-adopted summertime low RVP areas remain in place
- California CARBOB remains unchanged



Modernization Phase 2

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- Very early stage – EPA seeking industry input on concept
- Remove the distinction between RFG and Conventional Gasoline
- Just one class of gasoline for the 49 states - no more RFG (CARBOB remains)
- Summertime max 9 psi RVP / NO ethanol blend waiver, i.e., 9 psi summertime max for both ethanol blends and straight gasoline (OEMs want this)
- Existing state-adopted summertime low RVP areas most likely will remain – states decide if prefer new CG standard
- Some states (particularly former RFG areas) may move to a more stringent summertime vapor pressure
- Would require Congressional action to rescind the RFG program and withdraw the 1 psi waiver for CG with 9-10% EtOH
- Potential effective date 2023



Phase 2 Impacts to BP, Industry, Shippers

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- Conventional Gasoline becomes more stringent
- Former RFG areas become less stringent
- Potential to reduce number of state-adopted low RVP fuels
- Simpler supply and distribution / changes in competitive dynamics
- Refinery tank farm utilization
- No prohibitions on mixing gasolines
- Changes in light ends balances in refinery during summer
- Tankage at terminals now open for more options
- Outages now simpler to supply from alternate sources
- Reduced paper work and testing

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State Fuel Controls for 2015 Ozone NAAQS Attainment? 10



States submit designation recommendations to EPA 10/01/2016

EPA to finalize State nonattainment designations 10/01/2017

States submit attainment SIPs 10/01/2018

- Low Reid vapor pressure (RVP) and Reformulated Gasoline (RFG) fuels have been attractive control measures for States
- Three pathways for state fuel control measures:
 1. Opt-in to the federal RFG program
 2. Opt out of the federal 1 psi waiver for Conventional Gasoline areas
 3. Adopt a State law requiring low RVP fuel



Long-term (10+ years) – Octane

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- **D3 automakers need 95 RON minimum to enable advanced gasoline engine technology and achieve 2022-2025 CAFE and vehicle GHG emission standards.**
- **EPA Regulation won't happen soon enough to help D3**
 - Potential EPA regulation of octane is 10+ years out
 - Octane is a vehicle performance spec
 - EPA would need to show that high octane fuel is needed to enable auto technology.
- **D3 need Legislation**
 - D3 engaged AFPM about potential legislative agreement
 - RFS reform/sunset and higher octane pool (95 RON)
- **No oil or auto consensus**
- Proponents say internal combustion engine and liquid fuels would be part of auto strategy to comply with CAFÉ



► Long-term (10+ years)

More Aromatics controls for gasoline engines?

- Auto/oil research is showing that direct injection gasoline engine technology increases particulate matter (PM) emissions
- Industry is working to figure out what in gasoline increases PM -- heavy aromatics are suspected but not confirmed
- EPA is studying the issue - has *not* mentioned regulation
- Be aware of potential for future EPA regulation to address these higher PM emissions with:
 - Controls on the aromatics limit or distillation end point limit for gasoline; or
 - PM controls via engine design, but that costs OEMs more and could also result in higher octane requirements

► Thank you for participating in the briefing

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BPA_HC0R_00285537