



# FAMA Fire Apparatus 2010 Engine Strategy

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Chassis Technical Task Group

Roger Lackore – Chair



# 2010 Engine Changes

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- NO<sub>x</sub> Aftertreatment
  - SCR
  - NO<sub>x</sub> Adsorber
  - Enhanced EGR
- On-Board Diagnostics
  - Phase-In 2010 to 2016
- Engine Heat Rejection Increases
  - 15 to 30 percent



# 2010 Engine Packaging Challenges

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- Diesel Particulate Filter (DPF)
- Selective Catalyst Reductant
  - Urea Tank with Heater
  - Urea Pump
  - Injector & Heated Lines
  - Catalyst Device (same size as a DPF)
- More EGR Cooling
  - Larger EGR Coolers
  - Air-To-Air Coolers

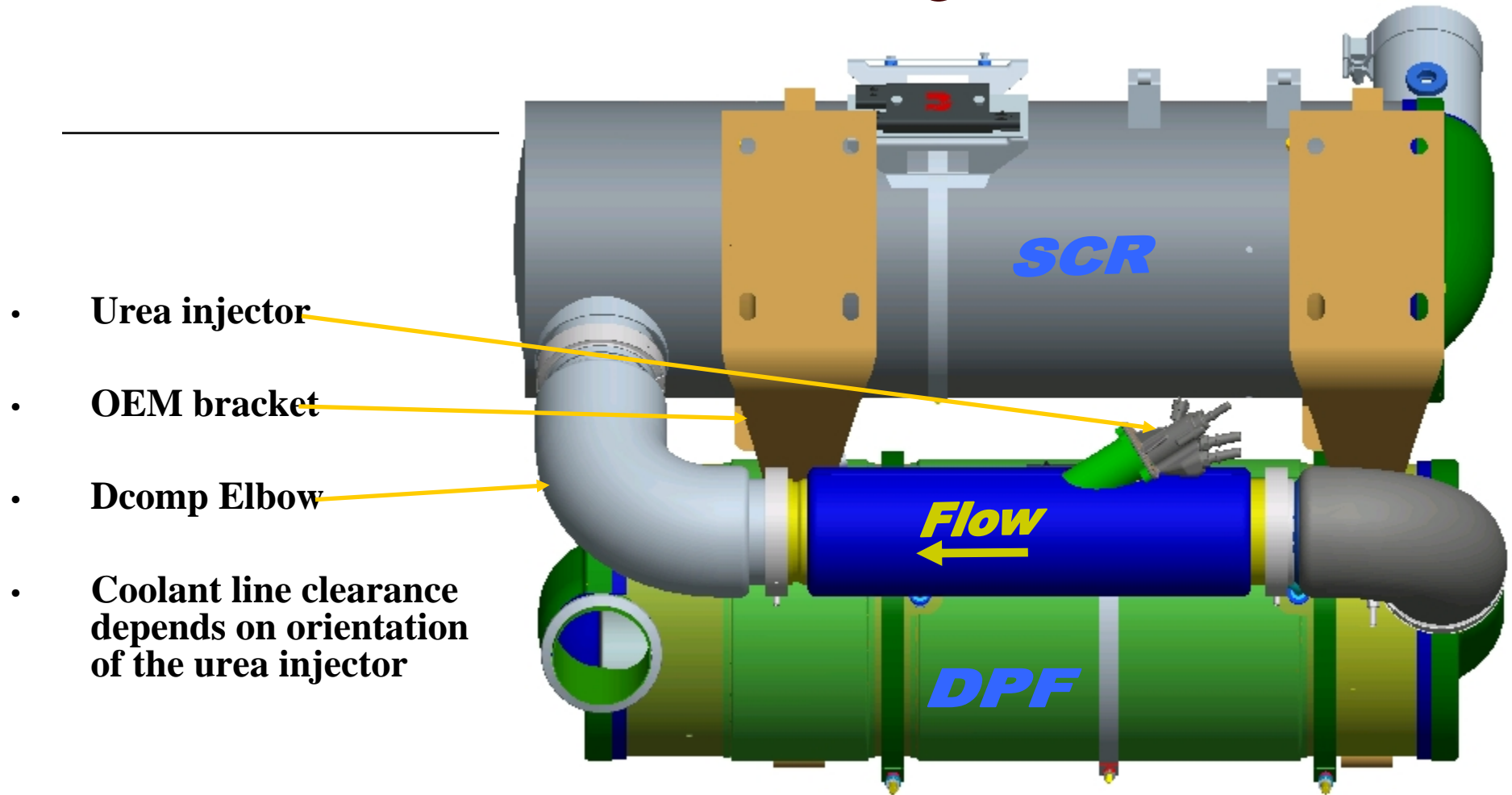


# On-Board Diagnostics

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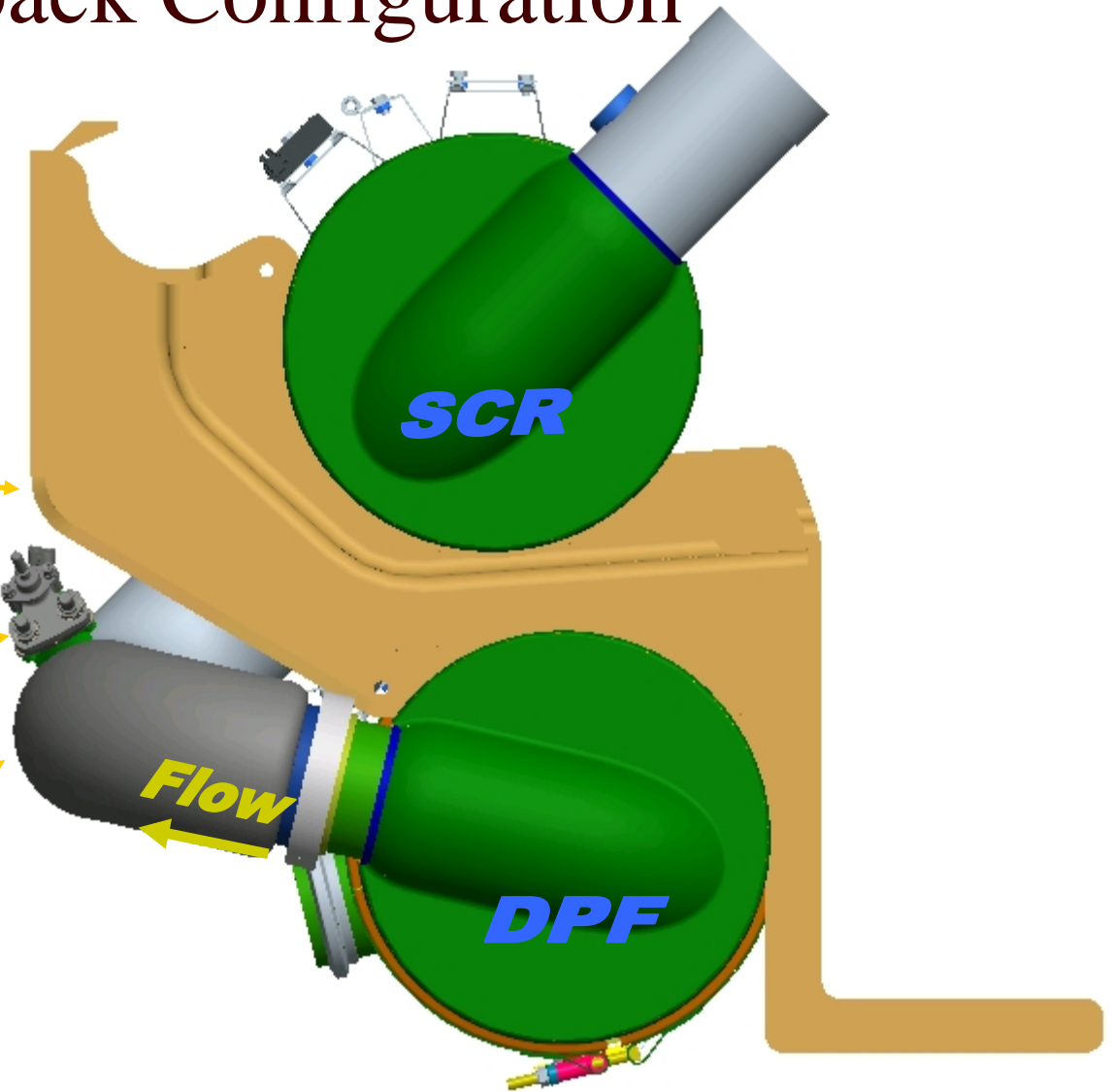
- Vehicle system monitors
  - Cooling sytem
  - Fuels systems
  - EGR
  - SCR/Urea
- Compliance
  - Must apply OBD in 2010 to one engine family.
  - All families must comply by 2013
  - VIN must be recorded in the ECM.
- New Components:
  - SCR lamp
  - MIL lamp
  - Temperature and Barometric Pressure Sensors

# MR 2010 Switchback Configuration



# MR 2010 Switchback Configuration

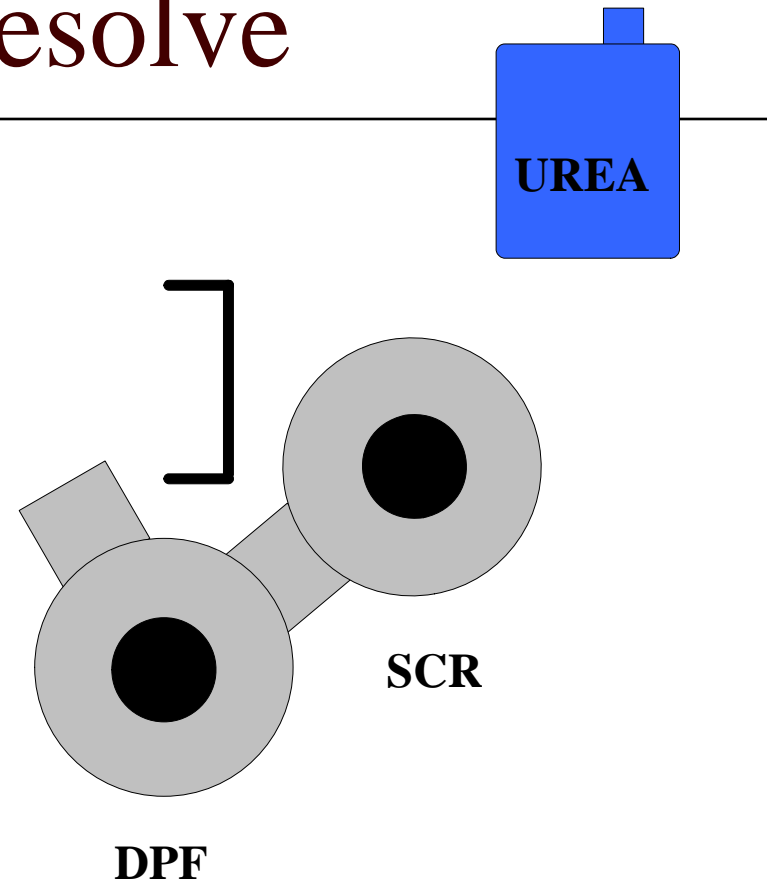
- OEM bracket
- Urea injector
- Coolant line clearance depends on injector orientation and frame rail position/size
- Dcomp Elbow



# SCR Questions to Resolve

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- ❑ Packaging
- ❑ Tank Size
- ❑ Tank Location
- ❑ Urea Fill Enforcement
- ❑ Urea Distribution





# EPA Issues

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- AECD Relief
  - EPA Relief During High-Load; High Ambient Conditions
  - Same Arguments Apply
  - Initial Meeting with EPA in May
- Urea Shut-Down Relief
  - Fire Trucks Can't Shut Down
- Urea Tank Size Relief