

# DEF Committee- What is DEF?

- Diesel exhaust fluid (DEF) is a urea based product to neutralize the oxides of nitrogen in the diesel engines exhaust. DEF is manufactured from urea based animal byproducts.
- DEF is a water-based fluid that is inserted in the diesel engine's exhaust stream and chemically reacts with the oxides of nitrogen (NoX) to neutralize them. The DEF is chemically basic and NoX is chemically acetic. When the two combine chemically, the NoX component of the exhaust stream is neutralized thus meeting USEPA Tier-4 requirements.
- Cummins has more information available
  - [https://www.cumminsfiltration.com/pdfs/product\\_lit/americas\\_brochures/MB10033.pdf](https://www.cumminsfiltration.com/pdfs/product_lit/americas_brochures/MB10033.pdf)



# DEF Committee

## Committee members

- Owners, Operators, Industry Rail Experts, Equipment Manufacturers, DEF suppliers, FRA & USEPA

## Purpose:

- To communicate the logistics of the use of DEF in the US rail industry
- Known users to date:
  - Metrolinx in Toronto
  - DEF will be used by Charger locomotives in the Midwest, CALTRNS, WA, MD
  - DEF will be used by SCRRA (Los Angeles) on new F-125 locomotives
- DEF has being used as key component of the North American highway trucking industry for more than five years.



The NGEC will provide national leadership in standardization, acquisition, financing and management of passenger rail equipment.



# To Date-

- Industry representatives from the diesel engine manufacturers and DEF vendors were instrumental in educating the team about the use and handling of DEF. They were able to clarify that that DEF is not a hazardous material.
- Both Short term and long term delivery methods identified;
  - Short term- truck delivery
  - Long term- Permanent Storage facilities
- Presentation from Metrolinx (Go Transit- Toronto) on the permanent storage building they have retrofitted for DEF storage.



# To Date- continued

- We confirmed with interested parties that the design criteria of the locomotive dictates that the quantity of DEF will exceed the fuel range. (Loco would run out of fuel before it ran out of DEF)
- Midwest Fuel filling/DEF service points have been verified and all existing fuel points will work for the Charger locomotives, for both fuel service and DEF service
- Met with DEF suppliers on nozzle styles and availability as applied to the Charger locomotive
- Confirmed DEF and fuel specification with Amtrak fuel logistics personnel.



# Timeline & Next Steps

## In Progress

- Amtrak environmental group investigating permit needs and storage requirements

## Going forward

- First charger locomotives delivery to the Midwest in July 2016, Into service Dec 2016
- Midwest states contract with Amtrak needs to be in place first quarter 2016
- Amtrak DEF vendor procurement to take place 2<sup>nd</sup> quarter 2016
- Vendors in place 3<sup>rd</sup> quarter 2016
- Assist Siemens if needed on testing needs



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