

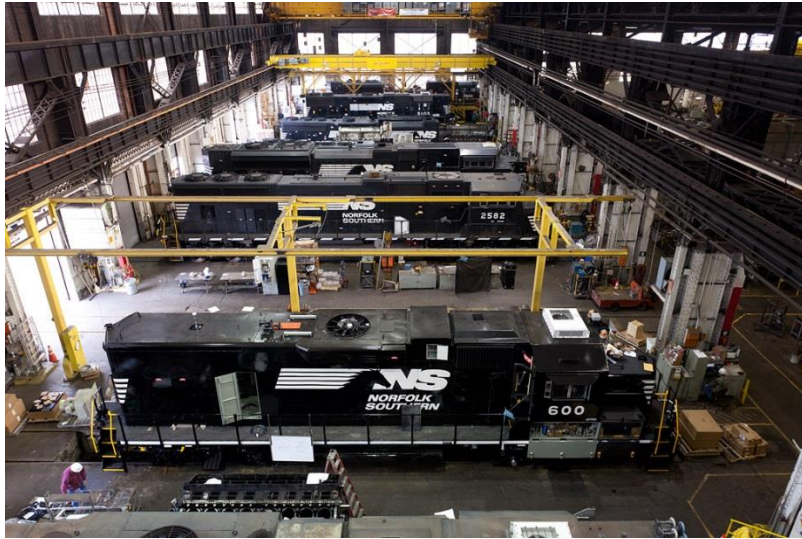


Don Graab  
Vice President-Mechanical

# Northeast Diesel Collaborative.

- Engine Overhaul
- Reduced Locomotive Idling
  - Automatic Engine Stop Start (AESS) Systems
  - *SLEEPERS*
  - *Yard Air Systems*
- GP33 Eco Low Emissions Locomotives
- Emissions Testing at Altoona, PA
- Reducing the non-Locomotive Carbon Footprint

# Engine Overhaul – Tier 0,1, 2, 3, 0+, 1+,2+



# Automatic Engine Stop Start (AESS)

- Installation beginning 2000
- Auxiliary Power Units – EcoTrans
  - CSX
  - Norfolk Southern
- Federal regulations now require installation at Engine Overhaul since 2010

# SLEEPER System

**440 Volt**



*Stationary  
Locomotive  
Emissions  
Elimination  
Plug-in  
Electrical  
Receptacle*

- Commuter Rail Concept
- Heat & Circulate Water
- Kim HotStart Systems
- Power Drives Inc.
- Works Well for Switchers

# “Yard Air” – Compressed Air for Brakes



FRA Regulation requires Inspection and Test after four Hours off Air

Stationary Compressor



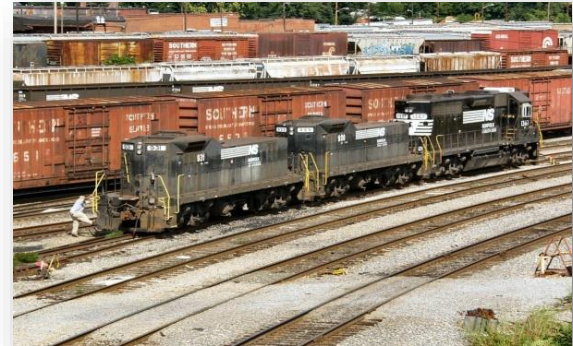
# Yard and Local Fleet *(Switch Engines)*

**SW1500 / MP15 (116)**



375 hp/TM

**Mothers & Slugs (150)**



**GP 38-2 (500)**



500 hp/TM

**SD40-2 (385)**



# GP33Eco for Atlanta and Chicago



- Progress Rail
- 3300 horsepower
- Tier 3 Emissions
- Partners
  - Illinois DOT
  - Georgia DOT
- Contractual Agmts



# Emission Test Site – Altoona, PA



# Energy Conservation Project (2015-17)

- Replace Coal Fired Boilers
- Replace many...
  - Roofs
  - Doors
  - Windows
- Install 4000 hp Combined Heat Power system
- Emissions Reductions
  - 58% Reduction in Carbon or 29,047 Tons/Year
  - 7 % of Corporate non-Locomotive Emissions
- 49.4 million gallons of Water (5.5% of Corporate)

**\$51 Million**

