

# Section 305 Technical Subcommittee Progress Report



Mario Bergeron – Chairman

Dale Engelhardt – Vice-Chairman

Washington, DC

February 19, 2016



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

# Presentation Summary

## Highlights Since Last Meeting: 2/20/15

- Technical Subcommittee Overview
- Document Management
- Vehicle Specification Current Versions
- Dual Mode Locomotive Specification
- Diesel Exhaust Fluid (DEF) Working Group
- Diesel-Electric Locomotive Procurement
- Bi-Level Car Procurement
- RVAAC/Accessibility Working Group



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

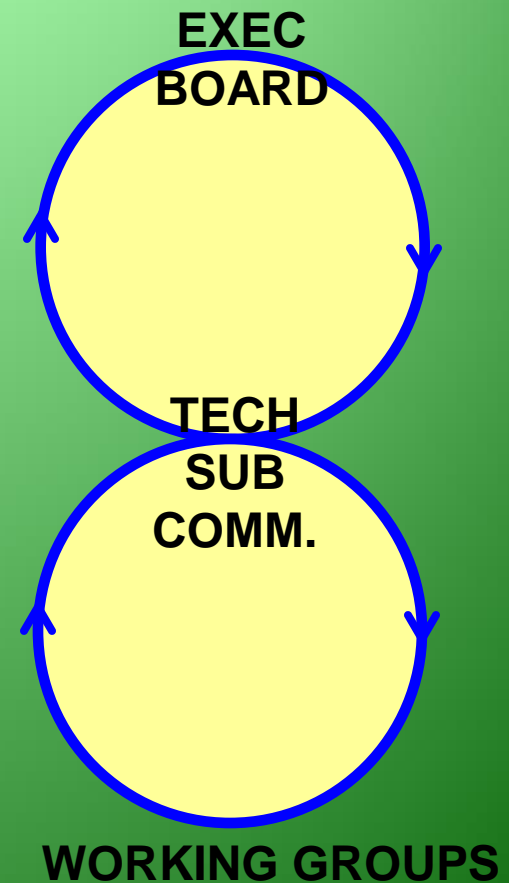
# Technical Subcommittee Overview

- **Membership**
  - Core Team; Members from Amtrak, FRA and States
  - Industry Members; 258 Registered Participants
- **Structure**
  - Technical Working Groups; VTI, Structural, Electrical, Mechanical, Interiors, DTL and DEF
- **Meetings**
  - Subcommittee; Alternate Thursdays @ 3:00pm ET
  - Technical Working Groups; As Needed

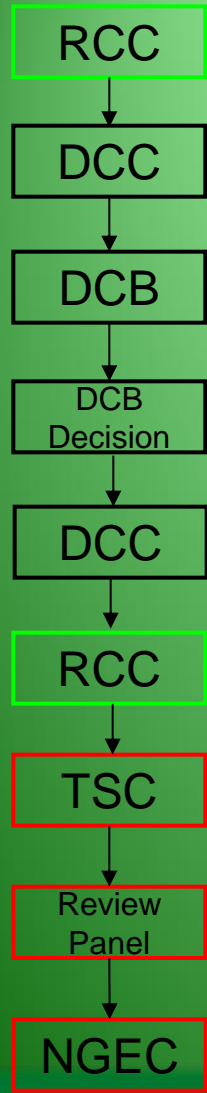


# Document Management - To Create Specifications

- Major PRIIA Technical Subcommittee Effort
- Technical Writer Support Contract Through AASHTO
- Change review process essentially the same for each document



# Document Management – To Control Changes

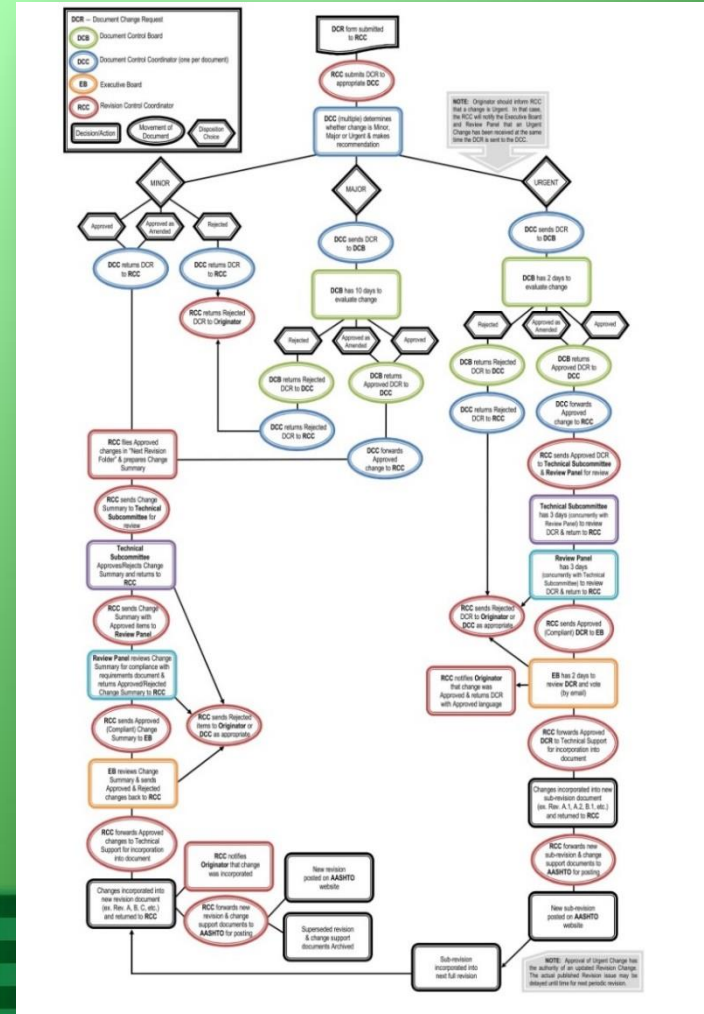


← Summary

Details →

RCC-Revision Control  
Coordinator  
DCC-Document Control  
Coordinator  
DCB-Document Control  
Board  
TSC-Technical  
Subcommittee  
NGEC-Executive Board

Next Generation  
Equipment Committee





# Vehicle Specs: Current Versions

- Bi-Level: C.3 – 7/21/15
- Locomotive: A.1 – 12/9/14
- Single Level: A – 11/13/12
- Trainset: A – 12/10/13
- DMU: IR – 9/4/12
- Dual Mode Locomotive:  
IR – 2/2/16



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

# Dual Mode (DM) Locomotive Specification



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

# Dual Mode Locomotive Specification Development

- Requirements Document Initial Release
  - Approved by Executive Committee on December 6, 2011
- Requirements Document Rev A
  - Approved by Executive Committee on January 6, 2015
  - Provides Basis for Specification Details
- Develop First Draft Chapters 1/7/15 to 5/7/15
- TSC Open Comment Period 6/4/15 to 7/2/15
- Technical Subcommittee Approval 8/19/15
- Create Review Panel Review Spec vs. Req. Document
- Review Panel Approval 1/28/16
- Executive Committee Approval 2/2/16

2 Amtrak P-32DMs - Built 1998



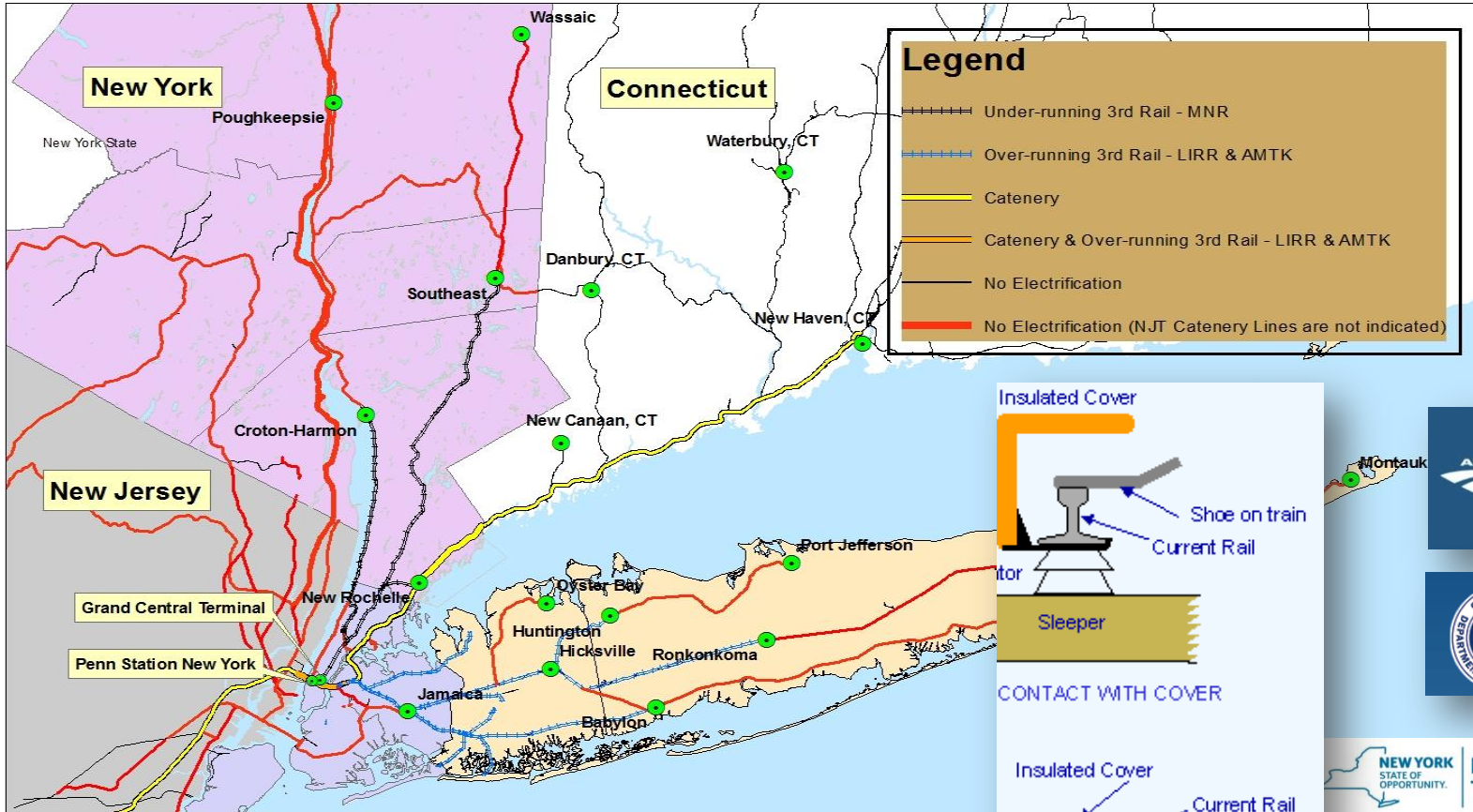
The NGEC will provide national leadership in standardization, acquisition, financing and management of passenger rail equipment.





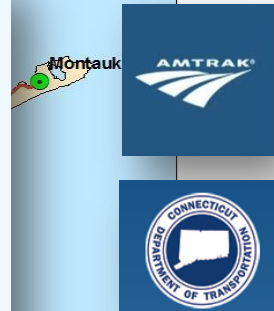
# DM- Amtrak, MNR & LIRR Service into New York City

Tracks with Over-running 3rd Rail, Under-running 3rd Rail, and Catenery Electrification in NYC Metropolitan Area



Data Source: NYSDOT Rail Program Delivery Bureau  
Various Railroad Employee Timetables  
19 August 2015

Not All Lines Shown



NEW YORK STATE OF OPPORTUNITY  
Department of Transportation

Miles  
30 40

MTA Metro-North Railroad

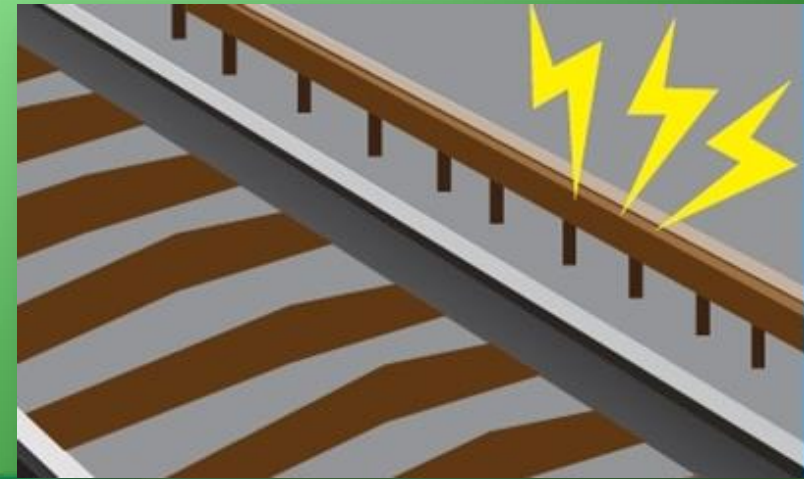
MTA Long Island Railroad



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

# DM- Environmental and Operating Conditions Specification

- Original revised to include North East Corridor, Tunnel and Third Rail Information
- Technical Subcommittee Approval 9/24/15
- Executive Committee Approval 10/27/15



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

# Operations & Performance

- Designed for interoperability with existing single level vehicles in mixed consists
- Designed to be integrated into existing fleet of locomotives with minimal impact or create stand alone new fleet
- Designed for operation requirements for New York City tunnels
- Sustained 110 mph capability in diesel-electric mode
- Sustained 80 mph capability in electric mode
- Designed for ability to make transition between propulsion modes while in motion
- Ability to draw power for both underrunning and overrunning 3<sup>rd</sup> rail
- Meets all FRA laws and regulations



# Safety

- Designed for PRIIA crashworthiness and structural strength regulatory requirements
- Incorporates integrated crash energy management (CEM) features with coach mating push-back couplers
- Cab area design provides for emergency exit or ingress
- Compartmentalized fuel tank

# Electrical/Comm

- Head End Power capacity of 800 kW @ 100% duty cycle
- Includes Positive Train Control (PTC) and Electronic Train Management System Requirements-cab signal and/or ATC
- Design provides for 27 pin MU Trainline and 27 pin Communications (digital train line for communications)





# Environmental Initiatives New Technology

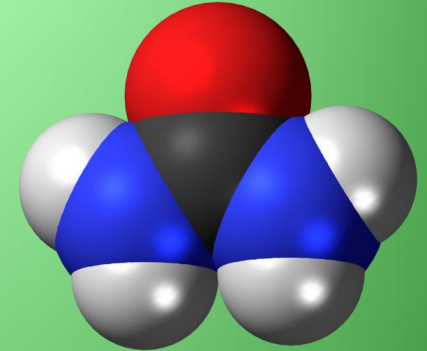
- Designed for lowest possible weight and unsprung mass, weight optimization program
- Regenerative brake system, requires up to 80 % of kinetic energy to be returned to power system
- EPA Tier IV compliant
- Diesel engine equipped with AESS system for fuel management
- Design provides for Crash Energy Management (CEM) energy absorbing couplers, deformable anticlimber
- Environmentally responsible, energy efficient, low weight, low noise and vibration, and energy efficient lighting
- Common design platform for possible electric power by overhead catenary system



# DEF/UREA Working Group

UREA =  $\text{CO}(\text{NH}_2)_2$

DEF = 32.5% UREA and 67.5% De-Ionized Water



- Led by Jennifer Bastian
- Estimated consumption for DEF has been reviewed
- Storage Requirements
  - Freezes at 12°F, Boils >212°F
  - Requires Special Materials because Corrosive
- Handling Requirements
  - Causes Damage to Aquatic Environments



# Locomotive Procurement



- Led by Illinois DOT on behalf of Illinois, Michigan, Missouri, California and Washington
- 11 Locomotives currently in production
- Tier IV Compliant
- FDR is Complete
- Compression Test Passed
- Built by Siemens

# Bi-Level Car Procurement

Led by California on behalf of California, Illinois, Missouri, Michigan and Iowa. Procurement is for a total of 130 cars, made up of Coach, Cab, Café Lounge (CA) and Business Class (IDOT) Cars. Contract is with Sumitomo and manufacturer is Nippon-Sharyo.

- Cars feature Crash Energy Management, PTC and are capable of 125mph.
- Intermediate Design review is complete.
- Full size hard mock-ups of passenger seats, work tables and cab control compartment have been completed. Next milestone is the Final Design Review.





# Accessibility Working Group

- Led by FRA
  - Melissa Shurland is the liaison between the Rail Vehicles Access Advisory Committee (RVAAC) and the PRIIA Accessibility Working Group
  - Bi-weekly updates provided to the Technical Subcommittee on recommendations for improved accessibility on rail vehicles.
- Efforts past year
  - Contract issued to conduct spatial study of AWG recommendations for restrooms and seating area
  - Participated in Full RVAAC meetings and subcommittees monthly calls
  - FRA will continue to work with Oregon State University to review the spatial impact of the on-board circulation and seating recommendations



# Thank You



- NGENC Exec. Board
- Steve Hewitt
- Camren Cordell
- Tammy Krause
- Jeff Gordon
- Technical Working Group Leaders
- Technical Subcommittee Members
- Technical Support, Consultants & Industry Members



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