

Northern Tier Passenger Rail Study

massDOT
Massachusetts Department of Transportation

1/30/2023

Public Workshop Recap

The meeting presentation and recording from the Northern Tier Passenger Rail Study public workshop are now available on the Study website: <https://www.mass.gov/northern-tier-passenger-rail-study>.

The virtual public workshop was held on Wednesday, January 11, 2023. At this workshop, the Study team presented the two initial service plan alternatives and evaluation framework. Feedback received will be used to develop four additional service plan alternatives.

Please use the Study's [comment form](#) to submit comments or questions.

Types of Passenger Rail Service Locomotives

Diesel Electric

One of the most common passenger locomotive types in the United States is categorized as a diesel electric locomotive consisting of a prime mover (diesel engine) and engine driven generator or inverter. Most diesel electric passenger locomotives utilize a medium engine speed 900 to 1050 revolutions per minute (RPM). These also usually are "turbocharged", an enhancement that allows the diesel engine to operate more efficiently and to develop higher horsepower output between 3000 - 4700 horsepower (HP). Locomotives haul the coaches that carry passengers and their baggage.

The generator or inverter converts this mechanical energy from the engine into electrical energy. The electrical energy is delivered to the traction motors for "tractive effort," that is to turn the wheels of the locomotive. The locomotive needs to provide electrical power to the coaches for heat, light, public address systems, and other power needs. Diesel electric locomotives have separate power to provide "Head End Power (HEP)" for coach passenger needs. This can be an inverter that changes the power from the main generator for the coaches or a separate engine/generator set that provides HEP. Examples of these locomotives range from the legacy Genesis series locomotives originally built by General Electric for Amtrak Motive Power Industries (MPI) MPx series to EMD's (Progress Rail) F125 and the Siemens Charger.

Locomotives must meet the Environmental Protection Agency (EPA) emissions requirements that were in effect when the locomotives were manufactured or rebuilt.

The MPI and Siemens locomotives meet the current highest requirements of EPA. They can use clean and ultra-clean diesel.

Diesel Electric, High Speed or Genset Locomotives

Some passenger rail agencies have acquired locomotives with high-speed diesel engines, 1500 to 1800 RPM. They may have one or more engine-generator sets (gensets). Horsepower on these locomotives is typically limited to 700 - 800 horsepower per genset. Since these are fairly new to the industry, the performance of these high-speed engines over the long term has yet to be determined. In addition, they may have different engine maintenance requirements that might reduce availability of the locomotives and possibly increase the cost of maintenance.

These locomotives meet the most recent EPA emission requirements.

Electric Locomotives

Almost all North American electric passenger locomotives obtain power from overhead wire or "catenary." Therefore, horsepower is not limited by the diesel engine, so electric locomotives can produce 6000 - 7000 HP. With this electric power, locomotives can achieve higher train speeds. As a result, they are effective on intercity and commuter rail service that usually have stations far apart to take advantage of the increased speeds. Electric locomotives do not produce greenhouse gas (GHG) emissions directly. They do need a 12.0 kilovolts / 25.0 kilovolts overhead catenary system that obtain power from a power plant that may have a variety of fuels or sources.

Dual Mode

A dual mode locomotive can be powered from overhead catenary or third rail when those sources are available. They can also be powered by a diesel propulsion system like a conventional diesel electric locomotive when the wire or third rail are not available. The dual mode locomotive has two types of equipment on it which makes these units tend to be heavier than a diesel electric or electric locomotive.

The diesel equipment must meet EPA emission standards, but their overall emissions impact would depend on how much they are used in the diesel mode.

The Massachusetts Department of Transportation (MassDOT) is conducting a study to examine the benefits, costs, and investments necessary to implement passenger rail service from North Adams to Greenfield and Boston, with the speed, frequency, and reliability necessary to be a competitive option for travel along this corridor. Please visit the Study website for more information on the project: <https://www.mass.gov/northern-tier-passenger-rail-study>

If information is needed in another language, please contact the MassDOT Title VI Specialist by phone at (857) 368-8580.

Caso esta informação seja necessária em outro idioma, favor contar o Especialista em Título VI do MassDOT pelo fone 857-368-8580.

Si necesita información en otro lenguaje, favor contactar al especialista de MassDOT del Título VI al 857-368-8580.

如果需要使用其它语言了解信息, 请联系马萨诸塞州交通部 (MassDOT) 《民权法》第六章专职人员, 电话 857-368-8580.

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