
Studying I-70 for high-speed rail to Eagle County

HARRY DALE
VAIL, CO, COLORADO
NEWSROOM@VAILDAILY.COM,

In working with Transportation and Economic Management Systems Inc, (TEMS, the consultants for the Rocky Mountain Rail Authority High Speed Rail Feasibility Study), I have been learning a number of things that I believe are important for folks in both the corridor and in the Front Range to understand relative to a rail system in the I-70 corridor.

The first is that passenger rail service in the United States has not been immensely successful with approximately 5 percent overall ridership in specific corridors.

Most passenger rail services in the United States start with a proposal to share tracks or right of way with a freight railroad, which allows for some limited type of passenger service with a minimum capital investment.

Freight railroads do not travel at high speeds. Their alignments for the most part have grades and curves that do not allow speeds in excess of 60 or 70 mph. Most passenger services on these lines with station stops only average between 30 mph and 50 mph. Since this is much slower than driving, ridership suffers, fares have to be minimal and huge operating subsidies are required.

The theory behind a high-speed rail service (a passenger rail service that averages 90 mph or more with station stops) is that ridership will increase dramatically over conventional commuter rail and light-rail service because of the convenience and time savings over driving.

In addition, a premium can be collected for fares when rail travel times are significantly faster than driving.

The purpose of the \$1.5 million Rocky Mountain Rail Authority High Speed Rail Feasibility Study is to see if 90 mph average speed passenger rail service is technically, economically and financially feasible in Colorado in the two major corridors (I-25 and I-70).

This information is critical to the Federal Railroad Administration, because they want to know that if federal funds were to be invested in a Colorado high-speed rail system, could it be operated without large operating subsidies and would its operation be financially sustainable. The RMRA Study hopes to answer these questions.

The second item that I am just coming to understand is the impact of grade and curves on overall speed for any technology. I believe that the RMRA study will capture this item in great detail.

Several factors influence the feasibility of passenger rail service due to grades and curves. The first is that any rail or monorail system in operation in Colorado will have to meet some level of federal safety regulations for public transportation. These regulations may be designated by the FRA, FTA, FAA or even some new federal agency, depending on the actual technology used. The safety regulations (not technology) will determine operating speeds on grades and curves to allow for safe emergency stopping distances and to minimize g-force exposure to passengers.

Passenger comfort is also a huge consideration. If a passenger service is desirable that allows passengers to eat, drink and move around the cabin, then both horizontal and vertical g-forces will need to be kept at a minimum.

If acceleration, deceleration and vertical and horizontal banking on the rail system create passenger experienced g-forces that exceed a certain threshold, then passengers will be required to wear seatbelts as they do on airplanes.

The TEMS folks have been looking very hard at potential alignments that would minimize grades and curves in order to allow for safe passenger service operation at 90 mph average operating speeds.

For the most part, this involves keeping curves in the 2 degree range and grades in the 3 to 4 percent range with

an occasional very short section of grade in the 5 to 6 percent range. This requires a fresh look at alignments outside the actual state I-70 right of way.

This may be the single most important component of the RMRA study for the I-70 corridor.

Harry Dale
Evergreen

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