

Rocky Mountain College
of Art + Design

Making Tracks

Getting trains up I-70 was once just a pipe dream. Today there are three technologies to choose from.

By Jessica Centers

Published: March 15, 2007

When Harry Dale gives a PowerPoint presentation on the I-70 corridor, it's always riddled with photos of traffic jams and disturbing figures about the construction and environmental impacts of highway widening. He throws in some amusing cartoons. One shows cars stopped in traffic before an enormous "We apologize for the inconvenience" sign, like those that advise you of the delays along I-70. Another shows a similar scene with a "Roadwork Next 400 Years" sign. Sadly, such jokes tend to depress his audiences more than make them laugh.

But he always closes on a high note, giving people what they want: pictures of really cool-looking trains. They're fast. They're sleek. And they're not imaginary.

"There are things out there," says Dale, chair of the Rocky Mountain Rail Authority. "Things that could work tomorrow."

The RMRA is planning to conduct a rail feasibility study for both the I-25 corridor and the I-70 mountain corridor as a first step toward asking voters in 2008 to approve a statewide passenger rail system. As part of that study, the RMRA plans to examine three technologies.

The first is similar to the ill-fated monorail that was once proposed for the I-70 corridor. The technology is maglev, for magnetic levitation, and it's just as futuristic as it sounds. Following the 2001 failure of a ballot initiative that would have built a \$50 million monorail test track, the Colorado Intermountain Fixed Guideway Authority received a federal grant to study maglev. The Federal Transit Authority (FTA) funded the Colorado Maglev Project as part of the agency's national program to develop that technology.

Maglev uses magnetic fields to create a gap between the vehicle and its guideway, holding the train in place as it literally floats above its track. That means there's no friction for mechanical parts, which makes for a smoother ride and safe braking in bad weather. Electric motors -- which can be located in the vehicle or in the track itself -- propel the vehicle along the guideway.

The Colorado Maglev Project looked at two existing systems in Japan and China. The Japanese Chubu High Speed Surface Transport, or CHSST, in Nagoya had a motor located on the vehicle, which made it a relatively inexpensive system but also low-speed. It could only travel at 37 to 75 miles per hour.

The Chinese version, which uses German technology from the German Transrapid consortium, connects the Shanghai Pudong Airport to the city center. It has efficient motors in the guideway that can propel the train up 10 percent grades and up to 300 miles per hour. Colorado didn't need a train that fast, nor did it want one that expensive.



Though the Japanese train wasn't quite fast enough, the Colorado study identified the technology as its baseline because it was less expensive, readily deployable in the United States and could meet the I-70 corridor's performance needs with minor improvements to propulsion, levitation and guideway. The federal report released in June 2004 determined that it would cost about \$5.6 billion to build the modified system from DIA to Eagle County Airport.

Under the same FTA grant program, General Atomics has been developing a maglev system on a test track in California. Sam Gurol, program manager for maglev at General Atomics, and his colleagues have been out to Colorado several times to drive the I-70 mountain corridor. "Maglev, I think, is an ideal application for that kind of route because of its capabilities to negotiate significant grades, and it's less prone to having problems with ice or snow, because it doesn't rely on friction," Gurol says. "It's a very challenging route, and I think the difficulty with the route will make it expensive. But I don't think there is a cheap solution to solving the problems with congestion on I-70."

In addition to Maglev, the RMRA plans to examine Stadler Rail Group's FLIRT, which carries passengers through Swiss mountains. The light-rail vehicle can travel up to 100 mph, handle a 7 percent grade at 65 mph and climb a 9 percent grade for short distances.

Robert Jones, engineering project manager for Stadler, returned to Colorado last September to talk about FLIRT. Jones was born in Wheat Ridge and now lives in Austria. He laughs at the suggestion that it might not be possible to run a train through the I-70 corridor; how is it being done in Switzerland? He says the FLIRT vehicle is not only feasible, but it's ideal for the steep grades and extreme conditions of the mountains. "It's not really a finished product," he explains. "It's a concept we build. We tailor it specifically to the needs of the railway." Stadler also makes a diesel electric vehicle that could navigate the Rockies, he adds.

The third option the RMRA plans to consider, oddly enough, resembles a traditional train. Colorado Railcar in Fort Lupton makes a DMU, or Diesel Multiple Unit vehicle. Instead of a locomotive hauling coaches, the DMU has a smaller engine in the passenger car, with the ability to pull unpowered coaches. The engines are cleaner, quieter and more fuel-efficient than locomotive-hauled trains. "The beauty of the steel rail is it's proven," says the company's marketing and sales director, Arthur Rader. "They've been doing it for hundreds of years. Of all the places in the world you don't want experimental technology, it's heading up I-70. It just has to be reliable. It doesn't have to be a bullet train."

Though the RMRA plans to look at the products of General Atomics, Stadler and Colorado Railcar, it's not closing the door to other alternatives. Ultimately, the group envisions the state putting out a bid to vehicle manufacturers after a rail system has been approved.

Colorado Department of Transportation Region I director Jeff Kullman says the agency can preserve a corridor for transit along I-70 without defining the technology. "We're certainly going to give it some characteristics," he says. "For example, it's got to be kind of monorail-like and high-speed. But we believe the decision for the final technology needs to be made when the funding is available. Let's assume that's ten years from now.

"A lot is going to change in ten years -- especially in the area of technology."