

plain his own more long-range interest in the question of developing alternative fuels. He and his associates are not convinced that the greenhouse effect will be a serious problem, but they are committed to developing alternative fuels in order to conserve petroleum for use as petrochemicals. They also, of course, operate in a country which is dependent on imported oil. Looking ahead 50 years, he said, he felt that it would certainly be necessary to have developed alternate fuels for automobiles, trucks, and trains.

Autos become trolleys

Moroto is committed to adapting the idea of magnetically levitated rails to an entirely new design of automobile. In Japan, associates of his are involved in planning new magnetically levitated train systems in which the train's cars could also function independently as trucks, so as to have an integrated train-and-trucking freight system. These two concepts, for trains which become trucks and automobiles which

become trolleys, are in a sense complementary, although the technologies involved are quite different.

The magnetically levitated car would take an individual from his own door to his final destination, but during the bulk of its trip, it would travel on a special highway on which it would be guided. Since it could travel at speeds as high as 500 kilometers per hour (312.5 miles per hour), it would not be driver-controlled. It would have to be carefully guided because of these high speeds.

The maglev car would also operate under its own power, entering and leaving the special highway at the will of the driver, under his or her direct control. Under these circumstances, it would function like the currently designed Equos, running under battery power, with one essential difference: It would be designed to travel at city speeds of around 25 miles per hour only. Reducing the speed would allow battery weights to be reduced and the time between recharges to be extended.

Infrastructure must be rebuilt and redesigned

Infrastructure development has been a key feature of Lyndon LaRouche's program over the past 12 years. During that period, a diametrically opposite program to that which he proposed has been implemented in the United States, with results which have been disastrous. Air traffic deregulation has led to the bankruptcy of major U.S. airlines, a deterioration in service and, more seriously, in safety standards.

Since 1980, railroads have been cut back by at least 25%, as measured by track length. Railroad employment has been cut by half, which is an indication that fewer trains are running on these tracks. With the shift back to coal production, much of the existing rail capacity is used up in transporting coal. Half of total freight moved is accounted for by coal shipments and the movement of crude oil and refined petroleum products (some of the latter by pipeline).

Bridges are collapsing and highways are in disrepair. Many U.S. ports have been turned into tourist areas, and none of those remaining can handle a vessel in excess of 100,000 tons, which is standard for world shipping.

Trucking now accounts for over 40% of the freight moved in the United States, and rail for only about 18%.

Magnetic levitation technology in Japan

While the United States has lagged behind, the Germans and the Japanese have magnetically levitated train

systems ready for commercial development, with Germany presently in the lead. The German Transrapid system has received government approval for commercial operations, and in the first phase it will be used to connect the airports of Cologne-Bonn and Düsseldorf.

Magnetic levitation means that a train can run suspended above the track bed, so that the friction between wheels and road is eliminated.

The Japanese presently have two different magnetic levitation system-designs which are running experimentally. The High Speed Surface Transport system has been developed by Japan Airlines, with the drive provided in the vehicle, not in the guideway. It runs at lower speeds than the mainline Japanese Linear Motor Car (MLU), which uses an electrodynamic levitation system based upon the principle of repulsion. The MLU is scheduled to begin transporting passengers in the densely populated 320-mile-long Tokyo-Nagoya-Osaka corridor by the end of this decade.

The MLU uses superconducting coils which are cooled by liquid helium. These are located on the vehicle and interact with a magnetic field which is generated by induction in the guideway coils. Up to speeds of 62 miles per hour, it operates on wheels.

Magnetic levitation technology developed in Germany operates by a different principle. It operates with ordinary magnets, and does not use wheels. Its support and guidance system operates according to the principle of electromagnetic levitation, based upon the forces of attraction between electromagnets arranged under the floor of the vehicle which are individually controlled, and the ferromagnetic reaction rails installed under the guideway.