This is the written testimony of Fred Gurney, PhD, of MAGLEV, Inc. for the field hearing before the Committee on Transportation and Infrastructure's Subcommittee on Railroads, Pipelines, and Hazardous Materials on "Expanding Passenger Rail Service." This hearing will take place on Monday, June 22, 2009 at 10:00 a.m. in Pittsburgh, Pennsylvania.

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Testimony of F. J. Gurney

President and CEO of MAGLEV, Inc.

June 22, 2009

Congressman Altmire, Ranking Member Shuster, Committee members and ladies and gentleman, I am delighted to have the opportunity to testify this morning before this Sub-committee hearing on Expanding Passenger Rail Service. I particularly want to focus on high-speed maglev technology and initiating true high-speed intercity passenger rail service and its potential economic impact. I am the President and CEO of MAGLEV, Inc., a company that is vitally concerned with the future developments in both transportation and job creation and is the private partner, with PENNDOT, in the Pennsylvania High-Speed Maglev Project.

High-speed maglev offers an unprecedented opportunity to establish long-term, high-speed intercity rail service and it can do so without the need for an annual operating subsidy. Pittsburgh, at the core of this ultimate multi-state, intercity operation, is located within a five hundred mile radius of one-half the population of the United States, or directly in the heart of the five-hundred mile range, referred to by FRA as the "sweet spot" or optimum range for applying the technology.

It is truly high-speed, cruising at speeds up to 310 mph; it is green technology; it is energy efficient transportation; it offers substantial timesavings and quality of life enhancements to travelers and it is self-sustainable once built. With a minimal amount of required maintenance, it has a projected 80-year life cycle.

The Pennsylvania High-Speed Maglev Project utilizes a fully developed, high-

speed train system that has been developed and continually improved by Transrapid International for over thirty years at its facilities in Germany. It has been operational in Shanghai, China since April 2004 where its on-time performance is 99.8% within one minute of schedule. It is the high-speed system most frequently referred to by President Obama and Vice President Biden.

The proposed 54-mile long project will provide extremely reliable service while reducing travel times by as much as thirty minutes per segment between stations during rush hours and other congested periods and in all weather conditions. It will reduce highway congestion and the related emission of NOX fumes in an area identified by the EPA as having a high level of particulates.

The Pennsylvania Project will demonstrate the technology's capabilities and adaptability throughout the entire United States based on the region's rugged terrain, 100+ degree temperature variation across the seasons and its ability to enter easily into a compact and densely populated urban area.

It will provide immediate and direct access to the airport ticket counter area via escalators and elevators. It will provide full, direct intermodal access between buses, auto, and light rail systems and enter the heart of a major city with an unprecedented low-impact on existing structures (less than four per mile).

High-speed maglev requires a grade-separated guideway. In Pittsburgh, it will be entirely elevated except at the stations. Capital costs of high-speed maglev are competitive to those of grade separated steel-wheel-on rail systems and to four-lane super-highways. However, because maglev transportation has no moving parts and is elevated above the guideway during operation, it has almost no wear and virtually no

need for alignment maintenance. This allows it to operate nearly twenty-four hours per day and lowers its operation and maintenance costs to approximately one-half those of a steel-wheel system.

MAGLEV, Inc. is pleased to report that the project's Final Environmental Impact Statement is ready to be published in the Federal Register. The Pennsylvania Project is the only high-speed maglev project to have completed its environmental impact statement.

In May 2009, Transrapid International, the developer of the technology, completed certification of the ninth version (TR-09) of this advanced vehicle design that incorporates the most recent refinements in the system technology. MAGLEV, Inc. has maintained a very close working relationship with Transrapid International and is currently in the process of implementing a technology transfer agreement to assure that the entire vehicle and system controls are manufactured in the United States, as well as the guideway.

MAGLEV, Inc.'s many years of working with the Transrapid International system has enabled it to develop a detailed cost analysis, which has been verified by independent cost studies.

Sustainability

Under TEA-21 and SAFETEA-LU, the federal High-Speed Maglev Deployment Program required all maglev projects to be financially self-sustaining following construction. As opposed to steel-wheel-on-rail systems, high-speed maglev requires no routine or recurring track adjustment (nor would it be operationally acceptable) to

maintain high-speed maglev service. Steel-wheel-on-rail operations require intensive track maintenance to sustain proper gauge, elevation, cross level and other track standards that become more stringent with increased operating speeds. Maintaining these stringent standards is further compromised when the track is shared with heavy freight operations, a phenomenon that applies strong geometric forces to the rails and causes a shift in their alignment, necessitating constant correction. The absence of a similar maintenance requirement for high-speed maglev is based on the fact that there is no unintended shift or movement in the guideway. The end result is that no annual operations and/or maintenance subsidy would be required to support the operation of the high-speed maglev system. This is unprecedented for any transportation system worldwide. The fact that high-speed maglev has no moving parts and does not touch the guideway during operation results in very low O&M costs and enables the project to be self-sustaining.

The following projected revenue and cost information contained herein is from the project's completed Draft Environmental Impact Statement (DEIS) as required under the National Environmental Policy Act (NEPA). Capital cost estimates for the Environmentally Preferred Build Alternative were prepared by MAGLEV, Inc., and are based on engineering plans, profiles and other engineering details and the use of the ***PENNDOT Bulletin 50-Construction Cost Catalog*** and other information for unit construction cost estimates. Cost information supplied by Transrapid International (developers of the maglev system) was also used in the development of the maglev system cost elements and operating and maintenance (O&M) costs.

Since no high-speed maglev project has been implemented in the U.S., a consulting group retained by the public sponsors conducted an independent cost/risk assessment study in 2003. Based on MAGLEV, Inc.'s target construction schedule for the entire 54-mile project (including contingencies and using conventional construction techniques), the cost study results were within 10% of the presented project cost.

Two investment grade ridership studies, with a Federal Railroad Administration appointed peer review panel of national experts, form the basis of these revenue calculations. While the fare structure has not been finalized, and further revenue optimization will be studied, a fare structure of $5.00 between each station with 10-minute peak frequency of service intervals was used in the DEIS to provide an estimate of fare-based revenues.

Some passenger trips will comprise travel on more than one segment of the 54-mile route, thereby resulting in "passenger links", which represents the average number of segments traveled by each passenger in terms of route segments. Passenger link ridership differs slightly from total passenger trips, with each passenger trip averaging 1.2 to 1.3 links. Each link volume, plus special event trips, was multiplied by the $5.00 segment fare and then by an annual multiplier of 300 days of normal usage to produce the annual revenue estimate.

The forecast for the annual fare box revenue for the initial operation from the Pittsburgh Airport to downtown is $19,731,000. Additional non-fare box revenue accruing from advertising, extended parking, power and communications, naming rights, light freight, joint station development and other revenue sources is projected at

$10,489,000 annually, for a combined total revenue forecast of $30,220,000 for the airport to downtown segment.

The annual O&M expenses for this initial segment were calculated to be $16,680,000. The basis for estimating O&M costs includes input from the technology supplier, Transrapid International, and staffing plans developed by MAGLEV, Inc. The O&M costs include maintenance of right-of-way, maintenance of vehicles, equipment and all guideway related infrastructure, labor for transportation of passengers and freight services, energy and utility supply, insurance and general administration expenses.

These projections provide an annual positive operating cash flow balance of $13,540,000 for the initial year of operations. An Operating Pro Forma Cash Flow Schedule highlighting operating revenues, costs, debt service and maintenance reserve fund balances for the entire 54-mile project over a thirty-five year operating schedule was developed.

A Major Maintenance Reserve Fund is planned to be created from the surplus revenues generated by the project after O&M costs and debt service payments are covered. The reserve fund is designed to support vehicle replacements and major infrastructure reinvestment capital after twenty years of service. However, if the initial segment(s) is/are funded through the current high-speed section of the American Recovery and Reinvestment Act at a higher level federal funding, there should correspondingly be no debt service component.

Again, the Pennsylvania High-Speed Maglev Project offers an unprecedented opportunity to establish long-term high-speed rail service without the need for an annual operating subsidy.

Precision Fabrication

Construction of high-speed maglev initiates an important associated economic spin-off technology that offers additional long-term job creation. The precision manufacturing of large steel structures, such as required in the fabrication of high-speed maglev guideway, is vital to the performance and operation of the high-speed system. Guideway beams must be within five millimeters of deviation throughout a 204 foot-long beam, depending on the specific location on the guideway beam, to produce a product acceptable for high-speed maglev operations.

Heretofore, such precise fabrication of large welded components has generally been considered a liability because of the difficulty in controlling the welding process. However, MAGLEV, Inc is developing and demonstrating a fabrication methodology that not only addresses fabrication issues, but does so at reduced costs. These newly developed precision fabricating methods, with cost-reduction and quality benefits, will create new opportunities for the steel industry, shipbuilding, highway bridge and access-ramp construction and any other large-scale metal fabrication application

When applied to bridge component construction or rejuvenation, the benefits of precision fabrication will manifest themselves in the lower costs in direct fabrication and in reduced rework. This will make the tax funds dedicated to bridge construction go further. If we consider that the National Bridge Inventory statistics that more than 30 percent of all bridges in the United States are deficient in some way it is easy to see that even small cost reductions in fabrication can make a significant impact on projects funded by tax dollars. Our nation's fabrication industry will produce product less expensively with higher quality and product that is faster to market.

Job Stimulation from Building High-Speed Maglev

Building high-speed maglev will be a long-term economic generator for our nation. The raw materials, fabrication expertise and construction requirements to build high-speed maglev by themselves would provide an economic stimulus of significant magnitude.

The system will use American-made steel guideway. At a prior T&I Railroad Sub-committee hearing, a former US Steel executive was asked what impact high-speed maglev would have on the nation's steel industry. He said that if this nation builds only 200 miles of high-speed maglev per year, it would require the total output of the Gary, Indiana plate mill just to provide the steel for maglev. It would require a 12.5% increase in the demand on the nation's total steel plate production.

Pennsylvania Transportation Secretary Al Biehler has identified job creation potential from transportation projects of 30,000 jobs of all types for every $1 billion of transportation construction funds.

Raw Material Usage

The following list shows some of the raw material usage associated with the construction of the 54-mile long Pennsylvania Project:

- 330,000 tons of plate steel
- 140,000 tons of steel reinforcing bar
- 41,000 tons of magnetic steel laminates
- 1,400 miles of aluminum conducting wire of ¾ in diameter
- 712,000 cubic yards of concrete

The vehicles will also require sheet aluminum, copper, steel and various non-metallics in the body structure.

The transportation power, signal, and communication and control system will require power transformers, computers and control electronics. The stations and support buildings themselves will require all the assorted materials that compose modern buildings.

Linking Cities through Travel Time Reduction

Another concern impacting the growth of commerce in our region and in the United States is the increasing travel delays associated with congestion on the nation's highways and at its airports. Almost every day reports of road rage, and more increasingly, air rage are broadcast to us over the media emphasizing the growing frustration of travelers. Statistics on lost productivity from travel delays show the growth of the problem. The cities and regions that provide a mechanism for capturing that lost time will place themselves in a significant position to reap the tremendous economic benefits that will result.

High-speed maglev offers a means and opportunity to capture some of this lost travel time. As an example, the current highway travel time between downtown Philadelphia and downtown Pittsburgh requires about six hours. Traveling that distance by air with consideration of time delays at each airport makes that travel time average three hours. Since all maglev stations will be off line, traveling the same distance by high-speed maglev on an express run bypassing intermediate locations would require slightly less than two hours, even with stops at intermediate locations.

High-speed maglev offers an excellent return on public investment with the creation of 60,000 direct and indirect jobs for construction of the initial segment. It offers the ability to create an entirely new industry in Pennsylvania while delivering the most advanced intercity ground transportation system in the world. MAGLEV, Inc. has developed a precision fabricating system with computer-integrated technologies that were designed and developed to drive down the cost of building the system's guideway. This advanced technology is also applicable to bridge construction, ship building and other large-scale metal fabricating uses.

The Obama-Biden Administration's emphasis on high-speed passenger rail represents a major policy change for transportation in the United States. However, this transformation cannot take place overnight. We recognize the need for incremental improvement in rail passenger service throughout the United States, primarily through improvements in service provided by Amtrak in rights-of-way shared with freight service. But we must also begin to deploy true high-speed service were it will ultimately be part of a broader national network of high-speed service.

The Pennsylvania High-Speed Maglev Project is the only high-speed project that is ready for construction in the near term. We have all seen President Obama and Vice-President Biden repeatedly refer to the high-speed maglev train in Shanghai, China. Well, this is that same train and it is ready to be built right here in the U.S. and, if funded, can be completed within the next 2 1/2 years.