TESTIMONY OF
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BEFORE
THE PENNSYLVANIA HOUSE OF REPRESENTATIVES
COMMITTEE ON TRANSPORTATION
HEARING ON
HIGH-SPEED RAIL AND MAGLEV IN PENNSYLVANIA
AT CARNEGIE MELLON UNIVERSITY
PITTSBURGH, PENNSYLVANIA
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Mr. Chairman and committee members, thank you for conducting this hearing to examine that status of high-speed maglev in Pennsylvania. I also want thank the Pennsylvania General Assembly, as a body, for its long-standing support of the Pennsylvania High-Speed Maglev Project. I also want to acknowledge the support of the Pennsylvania Congressional Delegation as evidenced in a letter to U.S. Transportation Secretary Mary Peters urging the agency to move forward in support of high-speed maglev. *(Attachment #1)*

Like other similar projects of this magnitude, the length of time from conception to construction seems like an eternity – I personally have over twenty years of involvement in the project. But we have made great strides in its development over those years.

In recent months, announcements have been made regarding funding for the project including: (a) $28 million from competition provided under SAFETEA-LU, (b) $1 million of RACP funding through the Allegheny County Redevelopment Authority and County Executive Dan Onorato; (c) $950,000 in the Omnibus Federal Appropriations Act passed in February, largely through the efforts of Senator Specter and with help from Senator Casey; and (d) $175,000 in a Legislative Initiative Grant provided by the efforts of the Pennsylvania House Democratic Caucus. However, you should be aware that while the announcements for all of these funds have been made, the funding has not yet been delivered for any of them.

We are now at a critical juncture with regard to being prepared to deploy high-speed maglev. The Commonwealth of Pennsylvania has filed an application for $2.3 billion under the American Recovery and Reinvestment Act of 2009 to construct the first true (250 MPH) high-speed rail operation in the United States. The statute includes $8 billion for high-speed rail. We need to take expedite the delivery of these announced funding sources to keep the project on track to receive a portion of the $8 billion when the decisions are made, perhaps as early as January 2010.

The Pennsylvania High-Speed Maglev Project is a fully developed and innovative true high-speed (250 MPH) transportation project that is ready to meet our increasing demand for transportation, reduce highway congestion, improve air quality and reduce our dependence on foreign oil. This environmentally friendly and energy efficient transportation system fully meets the purpose and published criteria of the high-speed rail section of the stimulus bill and it can deliver, both directly and indirectly, extensive job creation and economic development to Pennsylvania. The question to be asked is, "Do we want the jobs and economic development?"

Description of Project – The Pennsylvania High-Speed Maglev Project covers a 54-mile long route in three sections that connects the Pittsburgh International Airport (PIA) with downtown Pittsburgh and the eastern suburbs at the Pennsylvania Turnpike and the City of Greensburg. It is situated as the hub of a future multi-state, intercity network that will reach from the major northeast cities to those in the Midwest.

It is within a 500-mile radius of one-half the population of the U.S. and Canada *(Attachment #2)* and it has the capability of doing for high-speed rail what Eisenhower's Interstate plan did for building the highway system, but without the large annual maintenance subsidy required for highways. In 2001, it was one of the two projects down-selected by the Federal Railroad Administration (FRA) under the National Maglev Deployment Program and funded to complete the Environmental Impact Statement (EIS).

The Project has further national significance, as the topography and climate variations of the Pittsburgh region will verify maglev's adaptability to all regions of the U.S. In the initial section from the airport to downtown, it will climb up to a 7.5% grade (more than twice the ability of steel-wheel systems, although the technology being used is capable of climbing 10% grades). The initial deployment will Americanize and certify the German Transrapid technology for adaptation and public use throughout the entire United States.

Ready for Near-Term Construction – A Project Final Environmental Impact Statement (FEIS) has been presented to the FRA for signatures and authorization to be published for the final 45-day review in accordance with the National Environmental Policy Act (NEPA). A Record of Decision (ROD) can be issued in as little as 6 months. Final design and construction can begin immediately thereafter. It is the only true high-speed (250 MPH) project in the country that can be characterized as ready for construction. It is part of the Southwestern Pennsylvania Metropolitan Planning Organization's plan. The initial 19-mile segment from the PIA to downtown Pittsburgh will serve an immediate defined need to alleviate highway congestion on the Parkway West and avoid having to construct additional lanes of highway with another tunnel and bridge to enter the City of Pittsburgh from the west. With the availability of funds, it can be completed within approximately 2½ years after receiving a ROD.

Manufacturing Development – The guiderails for the Pennsylvania Project will be made of steel with an estimated 80-year life cycle requiring only a minimal amount of maintenance. Approximately 70% of the cost of the system is consumed in constructing the guideway. MAGLEV, Inc., the private partner in the public-private partnership, has developed a computer integrated robotic welding process that has been focused on driving down the cost of fabricating the guideway using a robotic Gas Metal Arc Welding (GMAW) system. This is a more sophisticated application than that investigated by FHWA on its 2001 scanning tour of Europe and Japan to conduct a broad overview of newly developed manufacturing techniques being used abroad for steel bridge fabrication. The purpose of that tour was to help in modernizing structural steel fabricating facilities in the U.S. The computer integrated welding system developed in conjunction with this project meets that goal. Part of the development process has included precision welding for the Office of Naval Research in creating its next-generation of stealthy ships.

Henry Ford's real invention wasn't the automobile; it was the assembly line that produced it. In much the same way, a major contribution of MAGLEV, Inc. to high-speed maglev development is the computer integrated precision fabrication technology that enables timely production of over 3,000 geometrically unique sections of maglev guideway using an automated rapid reconfiguration fit-up table and robotic welding system that economically expedites production of the steel guideway. *(Attachment #3)*

In addition to the guideway, there is national significance in the application of the manufacturing technology through an estimated 20% reduction in the cost of fabricating highway bridge components,

and in reducing the cost and improving the quality of ship construction and other large scale steel products. The development of this technology can be utilized to create jobs across Pennsylvania and recapture some of the manufacturing that has been transferred to other countries and resulted in our importing their products.

Related to the fabrication of the high-speed maglev guideway is a proprietary software program (MAGride®) that creates a unique guideway design that ultimately produces guideway components to match the terrain while greatly minimizing g-forces, thereby permitting passengers to walk comfortably throughout the train while traveling at speeds up to 310 MPH. Rather than trying to alter the shape of the earth to accommodate the rail system, this unique system more adequately adapts the right-of-way and guideway to conform to the topography, thus reducing construction and excavation costs.

Initial Direct Local Job Creation – The first 19-mile segment from the airport to downtown will utilize 132,000 tons of plate steel, 16,400 tons of electrical steel, 47,670 tons of rebar, 500 miles of ¾-inch diameter aluminum conducting wire, 237,000 cubic yards of concrete and other materials associated with the electrical stations and related facilities. Based on standard job projection formulas used in the transportation industry, the first segment will create nearly 57,000 overall jobs, including approximately 2,500 construction jobs for the first segment's 2½ year construction period. The entire 54-mile project will use 330,000 tons of plate steel, 41,000 tons of electrical steel, 143,000 tons of rebar, 1,250 miles of ¾-inch diameter aluminum cable and 712,000 cubic yards of concrete.

With an initial deployment of high-speed maglev in Pennsylvania, and the associated precision manufacturing technology developed here, we are in an ideal position to establish an entire new industry. As noted in an October 26, 2009 news article by Michael Dresser of the Baltimore Sun, "Already our reluctance to play in the high-speed rail market, which has been around since Japan took the lead in the 1960's, has cost the United States the opportunity to be a player in one of the world's leading heavy industries. Do we surrender that to other countries in perpetuity?" Today, other countries are aggressively pursuing the emerging U.S. market for high-speed rail, wanting to sell their systems and equipment here. They have already established a high-speed rail industry; we are in a unique position to do the same in the United States with high-speed maglev.

Other Public Benefits – As the system expands, current infrequent and unreliable short commuter connecting flights to Pittsburgh International Airport can be replaced by fast, frequent and dependable high-speed rail service in all types of weather conditions. Regional airports now providing only a handful of flights per day can be replaced at a substantial savings by frequent service over an eighteen-hour service period per day. This will improve utilization of the Pittsburgh International Airport and help alleviate local air traffic congestion. A reduction in local commuter air traffic can also free-up air space at major airports, a growing problem across the country. In a recent interview with Dow Jones Newswires, FRA Administrator Joseph Szabo noted that high-speed rail lines would allow airlines to focus on more lucrative long routes. "In small communities, where air service is subsidized by the government, they really don't need air service. What they need is reliable transportation," he said. He also noted that reliability is key to the success of new passenger rail service. With a 99.99% on-time performance record within one minute of schedule since 2004, the Shanghai Transrapid high-speed maglev operation demonstrates the unmatched reliability of the technology.

The project can also provide a solution to often-contentious proposals to construct high-energy electric transmission lines. Transmission towers are frequently opposed by communities and landowners on the basis of potential harmful effects of the exposed wires and diminished land values associated with the towers. Exposed high-voltage lines are susceptible to weather damage and are difficult to maintain. Burying transmission lines is expensive, difficult to access and is the least favored method of energy transmission companies. As an alternative, MAGLEV, Inc. holds patents to encapsulate high-voltage transmission lines and other communications and data systems within the maglev guideway. *(Attachment*

#4) With a right-of-way established and secured for the maglev guideway with the acceptance of the FEIS, the utilities are included and thereby also provided with a right-of-way. All energy and communications lines are protected from the elements and afford easy access for maintenance.

The general trend for energy transmission in the northeast is from west to east and the PA Project and its future expansion facilitates this need as confirmed in discussions with energy distribution companies. As it traverses the rural areas between cities, the guideway will deliver power and also other data and communications lines to these areas, including those where it has thus far been deemed uneconomical to deliver them. These applications will provide an additional source of revenue for the project that was not included in the original financial plan.

Competing technologies – In open, flat terrain, construction of an additional track adjacent to existing freight tracks and dedicated to passenger operations may be a potential, physically practical solution. However, in hilly and mountainous terrain, the addition of an adjacent dedicated track will not produce the desired speeds or savings in time that maglev is capable of delivering. For example, in Pennsylvania, the current Norfolk Southern (former Pennsylvania RR) right-of-way west of Harrisburg has an abundance of curves as it climbs and then descends the Allegheny Mountains. (The reason for constructing the Horseshoe Curve was to gradually negotiate the steep grades needed to cross the mountains.) This right-of-way was first established nearly 150 years ago and was not designed to accommodate the speeds now being contemplated for passenger service.

An adjacent roadbed does exist as one or more of the original tracks were removed to "rationalize" the system and reduce maintenance costs some years ago. However, industry projections for increased rail freight traffic into the future will again necessitate rebuilding the removed tracks and utilizing the vacant roadbed for freight service. Once again, this roadbed has an abundance of curves and steep grades which are not favorable to high-speed rail.

Even the Association of American Railroads (AAR), the national trade association whose members include the nation's major freight railroads (and Amtrak), maintains that for speeds in excess of 90 MPH, the expectation must be that passenger and freight train service will operate over separate tracks, possibly in a shared right-of-way. The AAR also notes that, "Ideally, freight railroads and passenger railroads would operate in completely separate worlds....However, for passenger rail operators to acquire their own completely separate right-of-way would be prohibitively expensive...." *(Attachment #5)* In terms of traditional steel-wheel systems this may be true but, in terms of elevated high-speed maglev, the PA Project dispels this theory while operating from the doors of the Pittsburgh International Airport into the heart of the City of Pittsburgh and through to the eastern suburban cities with an extraordinarily small number of impacts on homes and businesses, utilizing both public and private land in a cost-effective manner. Specifically, in reaching the Downtown Pittsburgh MAGport® Station between the USX Tower and the Mellon Arena, a review of the Draft Environmental Impact Statement reveals that the alignment only impacts one building from the time it emerges along the slope of Mt. Washington above Carson Street across from Brunot Island, still traveling at 100 MPH. Upon reaching open countryside, where speeds can increase up to 310 MPH, the deployment costs are even further reduced.

There are a number of other cost issues associated with passenger operations on freight railroads included in the attached AAR testimony before the Federal Railroad Administration. These include compensation for interfering with freight operations, paying for installation of recently enacted Positive Train Control technology involving passenger trains, paying for track and bridge upgrades and increased maintenance and absolving the host freight railroads from increased liability risks. A thorough reading of these stipulations should be undertaken before any high-speed proposals are made that share either tracks or rights-of-way owned by freight railroads. From the very beginning of the document it is clear that high-speed passenger service is not compatible with freight service as the document states, "At higher speeds, tracks should be separated and dedicated, as they are in the overwhelming majority of high speed rail

systems around the world."

Recently enacted legislation mandates Positive Train Control be installed by December 30, 2015 on all Class 1 railroads and passenger railroad main lines where intercity passenger and commuter rail operates. Its purpose is to prevent train-to-train collisions, over-speed and unauthorized entry into certain areas under specific conditions. The FRA has estimated the cost could range from $7 billion to $24 billion and the American Public Transit Association estimates that it will cost more than $2 billion for commuter agencies to comply with the rules. Amtrak has told the FRA that the cost of installing collision-avoidance systems in at least twelve states "may be so high as to not be undertaken and therefore result in the elimination of Amtrak service." By comparison, the Transrapid high-speed maglev system has a similar technology already built into the system.

Summary – This is a multi-faceted project with national significance in both transportation and manufacturing and it is ready for final design and construction. The Transrapid high-speed maglev system operating in Shanghai, China, is also the technology being utilized in the PA Project. This is the very same high-speed maglev technology that President Obama and Vice-President Biden were praising when they began discussing high-speed rail, lamenting the fact that it wasn't operating in the United States.

On June 17, 2009, the Federal Railroad Administration issued a Notice of Funding Availability including an issuance of program guidance for the High-Speed Intercity Passenger Rail (HSIPR) Program under the American Recovery and Reinvestment Act of 2009. The evaluation and selection criteria in this notice are intended to prioritize projects that deliver transportation, economic recovery and other public benefits, including energy independence, environmental quality, and livable communities; ensure project success through effective project management, financial planning and stakeholder commitments; and emphasize a balanced approach to project types, locations, innovation, and timing. The notice describes multiple funding paths to accommodate projects at different stages of development, while also rationalizing the variety of statutory and administrative requirements underpinning the program.

A comprehensive evaluation of the Pennsylvania High-Speed Maglev Project, analyzed under the Track 2 selection criteria published in this notice, demonstrates the completeness with which the project meets those criteria. *(Attachment #6)* This is the funding track under which the Commonwealth of Pennsylvania applied for federal funding under the American Recovery and Reinvestment Act of 2009 in the amount of $2.3 billion on October 2, 2009.

For more detailed information on the project, the entire Draft Environmental Impact Statement (DEIS) is available online at – http://www.portauthority.org/PAAC/Portals/Capital/DEIS/DEISFrame.asp .

Thank you for conducting this hearing and for the opportunity to present testimony in support of the Pennsylvania High-Speed Maglev Project.

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