

House Transportation and Infrastructure Committee

Railroads, Pipelines and Hazardous Materials Subcommittee

Hearing: "When Unlimited Potential Meets Limited Resources: The Benefits and Challenges of High-Speed Rail and Emerging Rail Technologies"

Testimony of Andres de Leon

CEO, Hyperloop Transportation Technologies

May 6, 2021

Thank you, Chairman DeFazio, Chairman Payne, Ranking Member Graves, Ranking Member Crawford and Members of the Committee, for the invitation to testify before you and share the progress that Hyperloop Transportation Technologies (HyperloopTT) and our partners have made towards realizing the first transportation breakthrough in over a century and share some insights on the role of government in advancing this effort.

HyperloopTT is preparing for commercial deployment of hyperloop systems, a new mode of safe and sustainable high-speed transportation that brings airplane speeds to the ground at a very competitive development cost of only \$54 million per mile, compared to \$150 or even \$250 million per mile with other modes. Hyperloop systems work by levitating pressurized passenger and cargo capsules in a near-frictionless environment to enable energy-efficient and emission-free travel, reaching speeds up to 760 mph. Hyperloop technology has significant potential for passenger, cargo and defense applications.

Currently optimizing our system on the only full-scale hyperloop test track, HyperloopTT integrates breakthrough innovations with proven technology to create safe next-generation travel. Efficiency is key to hyperloop operations. HyperloopTT capsules will levitate over an unpowered, conductive track using proprietary passive magnetic levitation developed at Lawrence Livermore National Laboratory, funded by NASA, tested at full-scale at General Atomics in San Diego and advanced for hyperloop operations by HyperloopTT engineers. Removing steel wheel-on-rail friction and operating in a fully enclosed low-pressure environment, hyperloop travel requires significantly less energy to reach traveling speeds than current transportation methods, reducing the money and time passengers must spend to move between city centers.

Pioneering the first transportation breakthrough in over a century is not easy. To overcome large-scale infrastructure development and innovation challenges, HyperloopTT created a new organizational model, uniting an ecosystem of more than 800 expert contributors, 50 full-time employees, and 50 corporate partners working across 40 countries. As a result, HyperloopTT is a highly capital-efficient network orchestrator and technology creator with a low burn rate and is the subject of two Harvard Business School Case Studies on "Catalyzing High Impact Innovation to Transform Global

Transportation.” Following our advanced business model, HyperloopTT will license our technologies and know-how developed with global industry leaders, including Hitachi Rail, TÜV SÜD and Leybold, and regional partners, like GNB in California, to infrastructure operators, such as Ferrovial, and transportation operators. This approach drastically reduces the time to market for hyperloop systems as it allows experienced infrastructure operators to manage hyperloop networks, similarly to how airports function with gate slots sold to specific airlines. HyperloopTT can then partner with established transportation operators in the airline, rail and shipping industries, creating systems that complement existing infrastructure to serve the American people best and prepare for a more equitable, efficient, competitive, sustainable and integrated transportation ecosystem.

Currently, our Great Lakes Hyperloop project, a Public-Private Partnership with Cleveland MPO NOACA and over 90 regional organizations and institutions, connecting Pittsburgh, Cleveland and Chicago is the most advanced hyperloop project in the United States. Conducted by independent transportation economists at TEMS, the Great Lakes Hyperloop Feasibility Study (GLHFS) found that a HyperloopTT system along the corridor would operate profitably without requiring government subsidies, have a 3-4 year construction timeline and a cost of only \$54 million per mile, resulting in a remarkable Benefit/Cost Ratio of 2.20 with long-standing economic and environmental benefits, including a reduction of 143 million tons of CO₂. The study projects that a fully connected hyperloop network throughout the U.S. could increase GDP by 1%.

Economically, the study found that the region surrounding the 468-mile route would experience a \$74.8 billion increase in property value, a \$47.6 billion increase in income and a \$12.7 billion tax base expansion over 25 years, with a total development cost of about \$25 billion. The cost estimate includes the infrastructure, systems, vehicles, stations and right of way/easements necessary to develop a passenger-ready commercial system and a 30% contingency.

The independent study projects that high-value, time-sensitive cargo will generate 35% of the system’s revenue. Allowing operators to charge passengers bus fare prices and see a positive return on investment without requiring recurring operational subsidies from the government.

Environmentally, the study found that implementing a HyperloopTT system would replace 143 million tons of CO₂ in the same 25-year period, equivalent to cutting Cleveland’s annual emissions by almost half, removing over one million cars from the road every year or eliminating 14 billion miles driven. Additionally, the HyperloopTT system has the potential to generate more clean energy annually than is required for operation, creating a self-sufficient transportation system that can serve as a resilient source of renewable energy for the region.

To summarize, HyperloopTT has developed a hyperloop system that is an efficient, economically viable and sustainable mode of transportation that will significantly improve the passenger experience and quality of life for the American people.

The next phase of the Great Lakes Hyperloop project is the Environmental Impact Statement (EIS). The system’s ability to operate profitably without government subsidies has attracted interest from private companies willing to accept the business risk associated with building and operating a

hyperloop. Still, they are less inclined to expose themselves to the risks associated with funding an EIS that does not have a finite timeline. Therefore, we are requesting government assistance through the Maglev Deployment Grant Program or another funding avenue to advance pre-construction planning activities.

In addition to passenger-focused systems with the ability to transport cargo, HyperloopTT's HyperPort joint venture is pioneering a dedicated system for standardized shipping containers. Leveraging hyperloop technology and leading port automation, the HyperPort can efficiently increase port capacity and reliability while reducing congestion and emissions.

The development of hyperloop technology is not a distraction, as some have called it. While high-speed rail and MagLev technologies have been around for decades, they have struggled for adoption in the United States. Hyperloop technology is the economically viable, natural evolution of these existing technologies. The dedicated teams at HyperloopTT and across the entire industry are demonstrating the short-term development timeline and long-term benefits of investing in innovative hyperloop systems that are good for the public, the environment and governments. The future of sustainable transportation is hyperloop, a reality that the traditional transportation industry is beginning to accept. Right now, the United States can retain its reputation as the breeding ground for innovation, but every day, as more countries look to hyperloop as a solution for modern transportation problems, the window grows smaller.

The role of government in this effort is an important question. While we know private industry will provide financing for constructing and operating the system, the federal government can play a significant role in advancing commercialization efforts in the United States. As Congress continues to draft transportation and infrastructure legislation, we respectfully ask that you consider hyperloop and other new and innovative technologies. Establishing a new hyperloop grant program that would support further research and development, feasibility studies, environmental analysis and other pre-construction activities would go a long way to improve transportation and commerce while spurring business growth and job creation across the country.

At HyperloopTT, we are inspired by the great American innovators that have come before us - Peter Cooper, Henry Ford, the Wright Brothers, and all others that have created what seemed improbable in their day. In our lifetime, we have not seen a new form of land-based transportation. With so much innovation in other areas, why has transportation gotten a pass? Today, thousands of pieces of technology that the world takes for granted can trace their origin to 52 years ago, when the United States invested in science and innovation to land an American on the moon. With minimal investment from the federal government, hyperloop has the same transformative potential and will position the United States as the global leader of a new era of sustainable innovation.

Thank you for inviting me to testify. I hope you join the hyperloop movement and work with us to bring this innovative transportation technology to the American people.