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Hearing on "How Autonomous Vehicles Will Shape the Future of Surface Transportation"

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Chairman Petri, Ranking Member Holmes Norton, and the distinguished members of this subcommittee, thank you for inviting me here today to testify before you. My name is Joshua Schank and I am the President and CEO of the Eno Center for Transportation. Eno is a 92-year-old national transportation policy think tank. The founder, William P. Eno, got into a traffic jam as a child while riding in a horse and buggy, and from then on was devoted to improving traffic and highway safety; he left the Eno Center for Transportation as his legacy. Eno is a neutral, non-partisan organization that aims to promote policy innovation within transportation and provide leadership development for transportation professionals. It is through the lens of innovation that we approach the policy issues surrounding the introduction of autonomous vehicles.

Last month Eno released a paper titled *Preparing a Nation for Autonomous Vehicles: Opportunities, Barriers, and Policy Recommendations,* authored by Eno Fellow Daniel Fagnant and his advisor at the University of Texas, Kara Kockelman. Substantial time and research has been devoted to the development of autonomous vehicles, how they function, how they can be improved, and what possibilities they hold. However, much less information is available exploring how these vehicles will relate and interact with the driving infrastructure and system we currently have in place. Creating fully functional vehicles that can operate themselves is only half of the battle, figuring out how these vehicles will integrate onto our highways and roads is a much more challenging task. Working with Daniel over the past year, we sought to define the barriers that exist to integration and determine how federal policy can play a role in facilitating a relatively smooth transition.

Our report analyzed existing research that has quantified the potential benefits of autonomous vehicles. These potential benefits include increased safety, reduced traffic congestion, fuel savings, and greater mobility for those who cannot drive. If autonomous vehicles are able to reach a significant market penetration, it is likely that these benefits will be quite substantial. AVs could improve safety by eliminating human errors and impaired or distracted driving. Over 40 percent of fatal automotive crashes involve alcohol, distraction, drug involvement and/or fatigue. Self-driven vehicles will not have human failings, and we estimate that a 50 percent market penetration alone could save almost 10,000 lives per year. Congestion will be diminished because with a 50 percent market penetration, cooperative adapted cruise control is projected to increase highway lane capacity by 21 percent, and cut fuel consumption by 224 million gallons per year, for a savings of approximately $37.4 billion annually. In terms of behavior, autonomous vehicles offer independent mobility to populations that previously did not have that

luxury, including children and the elderly. At a 50 percent market penetration, it is estimated that in comprehensive costs, including safety, congestion benefits, and other impacts, AVs will save the economy $3,320 annually per vehicle.

However, vehicle costs, licensing, liability, and security and privacy concerns create considerable impediments to the proliferation of autonomous vehicles. It is estimated that autonomous vehicles will initially cost more than $100,000, a price tag that is simply unaffordable for most Americans. Licensing and liability become problematic, as there are no standards in place and it is unclear who the responsible party would be in an incident involving an AV operation. Finally, security and privacy concerns are always present when new technologies and data accumulation are factors. AV technology is likely to advance with or without legislative and agency actions at the federal level. However, the manner in which AV technologies progress and will eventually be implemented depends on overcoming these barriers.

The Eno Center for Transportation recommends a number of policy advances including the expansion of autonomous vehicle research, the development of federal guidelines for autonomous vehicle licensing, and defining appropriate standards for liability, security, and data privacy.

1. **Expand Autonomous Vehicle Research:** There has been substantial investment in research and development of AV technologies, but there is relatively little understanding of how AVs will affect the transportation system. Federal, state, and local agencies, as well as stakeholders should facilitate and fund research to enable us to better anticipate and more effectively plan for AV opportunities and impacts.

2. **Develop Federal Guidelines for Autonomous Vehicle Licensing:** To facilitate regulatory consistency, the U.S. DOT should develop a framework and set of national guidelines for AV licensing at the state level. Though NHTSA has developed broad principles for AV testing, licensing AVs for use by the general public is mostly a state-by-state endeavor at this point. With a more uniform set of standards in place, states can pool efforts in developing safety, operations, and other requirements. Policy makers should also consider potential regulatory downsides and the effects of excessive caution, which may be harmful to technological advancement and delay or reduce economic benefits.

3. **Determine Appropriate Standards for Liability, Security, and Data Privacy:** Liability, security, and privacy concerns represent a substantial barrier to widespread implementation of AV technologies. Federal and state governments need to address these issues to give manufacturers and investors more certainty in development. Any AV-enabling legislation should also consider privacy issues to balance concerns against potential data-use benefits.

Technological advances in autonomous vehicles are progressing and it is possible that these vehicles will be commercially available within the decade. The introduction of vehicles that drive themselves will present a challenge in terms of culture, legalities, liability, security, and

privacy. While the process of integration of autonomous vehicles into our system is likely to be rocky, there are steps that we can take in order to provide the clearest opportunity and space for these vehicles. Through expanding our research and creating legal standards and regulations for autonomous vehicles, we have the opportunity to provide an example for other nations in their own transitions. If we are able to facilitate the introduction of autonomous vehicles into our system, comprehensive benefits will include crash cost savings, congestion benefits, and behavioral changes.

Again, Chairman Petri, Ranking Member Holmes Norton, and the distinguished members of this subcommittee, thank you for inviting me here to testify before you today, and I look forward to participating in continuing conversations on this emerging issue.