ECONOMIC STRENGTH AND GLOBAL COMPETITIVENESS GRAND CHALLENGE

RESILIENT SUPPLY CHAINS

Create multimodal freight system that can withstand and rapidly recover from severe disruptions.

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CRITICAL RESEARCH TOPICS:

- Freight environment and equity impacts
- Freight infrastructure resilience
- Freight planning
- Freight and logistics workforce needs
- Supply chain data and logistics
- Truck platooning
- Urban freight delivery

VISION: Our Nation depends on resilient performance from our freight system and supply chains to support reliable access to goods, create good jobs at home, and improve economic competitiveness abroad. Supply chains are highly complex, interconnected systems. Shocks to any node can affect supply chain system performance in unexpected ways. A resilient freight and supply chain system allows for reliable service after small disruptions and a quick return to service after large disruptions. We envision a world where our Nation's freight system and supply chains are able to withstand and recover quickly from disruptions and sustain American economic leadership in an increasingly competitive global economy.

DESIRED OUTCOMES:

- Freight planners have the data they need to assess the criticality and vulnerability of freight facilities, take multimodal freight and land use needs into account, develop scenario-based plans, and prioritize investments with resilience as a key consideration.
- Freight rail, inland waterway networks, port, and airport facilities are kept in good repair and have sufficient capacity and connectivity to provide reliable and sustainable multimodal options for shippers.
- Timely and accurate data on goods location and movement and analysis driven by artificial intelligence help shippers and transportation partners quickly detect, respond to, and recover from disruptions and changed conditions.
- Freight stakeholders quickly apply dynamic and adaptive practices, such as the use of "pop-up" freight facilities, to accommodate surges in demand and to adjust to disruptions.
- Electrification and the use of alternative fuels to reduce noise impacts and emissions caused by freight activities, and other mitigations are in place to support the quality of life in communities adjacent to freight activities.
- The use of cybersecurity best practices reduces the vulnerability of supply chains to cyberattacks.
- The use of advanced robotics and information and communications technologies make the freight transportation workforce safer and more productive, increase throughput at freight hubs, expedite inspections, and improve the safety and efficiency of freight movements.
- Innovative practices, such as the use of dynamic curbside management policies and load consolidation facilities, are in place to enhance last-mile logistics.
- Workforce training programs and government-labor-industry partnerships improve work conditions and attract a new generation of skilled workers to good-paying jobs in the freight industry.