



March 26, 2021

The Honorable Pete Buttigieg  
Secretary of Transportation  
U.S. Department of Transportation  
1200 New Jersey Ave, SE  
Washington, DC 20590

Dear Mr. Secretary:

Congratulations on your confirmation as the 19<sup>th</sup> Secretary of Transportation. On behalf of the Fiber Optic Sensing Association (FOSA), we wish you the very best as you take your place in President Biden's cabinet.

Our association is comprised of industry leaders in distributed fiber optic sensing (DFOS) technology and include companies and academic institutions that manufacture, install, test, evaluate, and support or use DFOS systems and equipment. Our members have delivered thousands of mature, commercially ready, and viable solutions across the United States and around the world.

DFOS systems are sensor technologies used to constantly and consistently monitor roads, bridges, railways, pipelines, power stations, terrestrial and subsea power cables, international borders, critical infrastructure, and telecom networks. DFOS systems connect laser interrogator units to a fiber optic cable converting the optical fiber to an array of distributed sensors. DFOS systems can improve the safety and efficiency of a number of modes of transportation:

- The technology is an effective means of monitoring the structural health of roads, bridges, and tunnels as well as detecting fires in tunnels.
- It is used as an intelligent traffic sensor to detect congestion or queuing and assist with traffic management, thereby reducing emissions. DFOS also can easily add value to all autonomous vehicle monitoring by providing an independent audit of the autonomous vehicle position.
- For the railroad industry, a DFOS system can enhance safety by continuously monitoring the condition of rail, track, and rolling stock. The system can also detect and accurately locate unauthorized persons or falling objects on the tracks, and alert for intrusions, vandalism, and cable thefts.
- And remote-sensing technologies like DFOS are making it easier and more cost-effective for pipeline operators to continually monitor very long assets, inspect for problems, and proactively address potential concerns. DFOS has a well-proven

capability of detecting smaller pipeline leaks faster, with high location accuracy, as well as providing early warning of pipeline intrusion threats on the right of way, typically before pipeline damage occurs.

To encourage the increased implementation of DFOS systems to monitor our nation's infrastructure assets, FOSA supports and encourages adoption of the following initiatives:

- Funding for programs that promote the use of advanced technologies that monitor and increase the structural integrity of surface transportation infrastructure and detect fires in tunnels.
- Establishment of goals and metrics for tracking the percentage of federal-aid highways with broadband conduit in their rights-of-way.
- Funding for research programs that are focused on integrating and deploying smart infrastructure and new technologies to address emerging challenges and accommodate autonomous vehicles.
- Establishment and maintenance of goals and metrics for tracking the percentage of federal-aid highways with broadband conduit in their rights-of-way, and provide this data in a publicly available format.
- “Dig Once” policies, regulations, and initiatives that support joint use of rights-of-way of public roads and streets to reduce the number and scale of excavations and encourage a coordinated approach to conduit and fiber installation. The presence of fiber optic cable, or even the availability of conduit, will facilitate emerging broadband applications, such as “smart roads” and can help “future-proof” transportation arteries.
- Authorization and appropriations of funding for research on deployment of distributed fiber optic sensing at railway-highway grade crossings to reduce pedestrian fatalities and injuries and to detect third-party intrusions at grade crossings and along railroad rights-of-way.
- Increased funding for the Consolidated Rail Infrastructure and Safety Improvements (CRISI) grant program.
- Expand eligibility of CRISI grants to allow commuter rail authorities to compete for funds for installation of railroad safety technologies.
- Future development and testing activity by the Transportation Technology Center, Inc. (TTCI) address:
  - Optimization of track side security
  - Increasing worker safety
  - Reducing the number and severity of derailments
  - Development of optimal DFOS installation techniques
  - Leveraging of existing fiber networks near railways (including addressing barriers to using non-railroad owned fiber optic cable along rail rights-a-way)
  - Cost benefit analysis to evaluate alternative safety technologies
- Authorization and appropriation of sufficient funding for the design and development by PHMSA of a world-class pipeline Research, Development, and Testing (RDT) Facility at the Transportation Technology Center (TTC) in Pueblo, CO, to facilitate the demonstration and development of DFOS and other pipeline safety technologies.
- Legislation and regulations to expand “Dig Once” policies to new pipeline construction projects requiring pipeline operators and third parties to assess the long-term

costs/benefits of installing fiber optic infrastructure along open trenches in new pipeline construction projects.

- Stronger regulations requiring performance-based standards for leak detection (including size of leak detectable, speed of detection, and location accuracy) for monitoring pipelines in high consequence areas, such as subsea and in populous areas or near water crossings.
- Continue to encourage and fund the research and development of fiber optic retrofitting on existing 'brownfield' pipelines.

As the administration prepares a plan to invest in and rebuild our nation's infrastructure, FOSA would appreciate the opportunity to brief you and your appropriate staff and present demonstrations of DFOS technology being used to monitor infrastructure assets. FOSA's Executive Director, Mark Uncapher, can be reached at 240-685-1853 for scheduling.

On behalf of the members of FOSA, we thank you for your consideration. FOSA and its industry members are committed to providing the best and most cost-effective operational solutions to the federal government.

Sincerely,

/s/ Kent Wardley

Kent Wardley  
Chair