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The Honorable Jack Reed  
United States Senate  
728 Hart Senate Office Building  
Washington, DC 20510

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Dear Senator Reed,

The Resilient Navigation and Timing Foundation is a scientific and educational charity dedicated to protecting Global Positioning System (GPS) signals and users. We strongly recommend and encourage your support of two relatively minor, but essential, 2020 budget items for the U.S. Department of Transportation.

The first is full funding of the President's request for Research and Technology in the Office of the Secretary. This includes \$15M requested by the President for monitoring performance of GPS civil signals. While China, Russia and Europe have or are deploying their own satellite navigation systems, America's GPS still sets the "gold standard." Our system's credibility will be undermined if we are unable to fulfill our national promise to monitor and document its outstanding performance to the world.

Monitoring and reporting the performance of civil signals is rightly the responsibility of the Department of Transportation, our nation's lead agent for civil positioning, navigation and timing issues. The funding requested will be added to \$70M our nation has already invested in a project to incorporate this capability in the new OCX ground control segment. It is essential to the future of America's leadership in satellite navigation and we strongly recommend full funding.

We also request you advocate for funds in the fiscal year 2020 budget to establish the terrestrial timing system mandated by Senator Markey's and Senator Cruz's National Timing Resilience and Security Act of 2018. This system will provide difficult to disrupt terrestrial timing signals that users can pair with GPS signals to better protect themselves against jamming and spoofing.

Wireless precise timing services, now provided almost exclusively by GPS, are essential to a host of telecommunications, information networks, transportation, and other critical infrastructure. Yet these signals from space are very weak and easy to jam or spoof by accident or maliciously. In 2017 an improperly secured piece of test equipment caused cell phones at a trade show in Portland, OR to report that they were in France and the year was 2014. Many had to be returned to providers for serious maintenance. Last month a prankster at the Geneva, Switzerland auto show caused all the cars to report they were in England and the year was 2036. Amusing stories and fairly harmless incidents, but the possibilities for much more severe consequences are quite real. Deliberate GPS disruptions in America have idled container ports, aided in serious crimes, and brought down wireless networks.



Having a second set of timing signals will help make critical national systems more robust and resilient. We believe it will also help deter malicious jamming and spoofing of GPS timing signals since users will be less likely to be as seriously impacted.

Chairman DeFazio in the House has called our lack of a backup system for GPS an “...important missing piece of our nation’s present and future infrastructure.” The Markey/Cruz bill enacted in December was built upon bipartisan initiatives Representatives Garamendi, DeFazio, LoBiondo, and others in the House have advocated for years.

A request for funds to establish the timing system, required by the Act to be in place by 2020, was not included in the President’s budget request. This may be due to the Act’s passage late in the year. It will not be possible for the Department of Transportation to meet the Act’s mandates and protect GPS and the nation without such funding. Our interaction with officials within the administration of late have been very positive and convince us that these funds would be put to immediate and good use.

GPS has been an incredible economic engine and empowers most of our technology in one way or another. It is a national treasure and America’s gift to the world. Please help us to protect it and build upon it.

We would be happy to discuss these issues further with you and your staff and can direct you to additional resources and sources of information.

Thank you for your support on these important issues.

Dana A. Goward, President