

Lack of Attention to PNT & GPS Endangers America

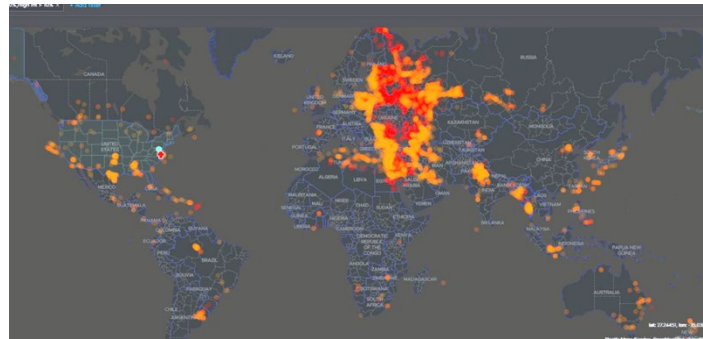
Critical Issue for New Administration and Congress

February 2025

Cause for Action: Positioning, navigation, and timing (PNT) services underpin **all the systems and technologies that enable modern life**. GPS has become the primary source of PNT and has enabled unprecedented benefits for the U.S. and the world.

The last four years have seen massive increases in threats and disruption of GPS signals around the globe, especially impacting aviation. Loss of GPS would seriously compromise America's national defense, public safety, economic security, and global standing.

Additionally, GPS's capabilities are being surpassed by other national satnav systems.



30 days of GPS interference in 2024. Source: US DOD & DOT

China is a particular concern.

The first Trump administration's SPD-7 and EO 13905 sought to address these issues. Yet, there has been little progress fielding improved PNT capabilities.

Ensuring PNT for domestic critical infrastructure, economic competitiveness, and military superiority is a vital national interest. As such, it requires urgent and high-level leadership attention.

Threatened areas include:

- **National Defense** – GPS disruptions have degraded the effectiveness of U.S. military systems and the implementation of more resilient military PNT is late to need. In the homeland, degradation of civil GPS use would greatly impede military outload, other logistics, and the defense industrial base.
- **Public Safety** - Intentional or inadvertent disruption of GPS (jamming and spoofing) endangers civil aviation and other modes of transportation. Such denial also severely hampers the National Guard and other first responder communications and ability to maneuver in times of civil unrest, natural disaster, and other contingencies.
- **Economic Security** - America has benefited economically over the last 40 years from the efficiencies-enabled by widely available, free-to use, reliable PNT from GPS. It is used in virtually all aspects of life including financial systems, electric grids, telecommunications, IT, and transportation. If GPS were denied for any significant period of time the economic impact would be devastating.

- **Global Standing/ Great Power Competition –**

China has established multiple sources of PNT, both space-based and terrestrial, such that it is far more resilient to disruptions. The U.S. is largely dependent on GPS alone. This gives China significant strategic and tactical advantages over the U.S. **See attached chart.**

As **China and Europe’s satnav systems continue to outpace America’s**, GPS will lose its place as the preferred system. GPS as “America’s gift to the world” will cease to be a soft power asset.

Recommendation: The new administration must **ensure America has the resilient national PNT we need**. This will require **evaluating the current leadership structure** and decision-making process, and ensuring adequate funding for the protection, toughening, and augmentation of both civil and military capabilities.

Public and Private Roles - The U.S. government has been the authoritative source for time and navigation utilities for 180 years. As technology has evolved, commercial and private entities have become able to establish their own references, add value and help in distribution of authoritative, government-endorsed time and location. We urge the government to leverage commercial services as much as possible while ensuring the nation is protected.

Additional Recommendations

A selection of RNT Foundation recommendations to government agencies is available at:
<https://rntfnd.org/rntf-recommendations/>

We also endorse recommendations made by the National Space-based Positioning, Navigation, and Timing Advisory Board which are available at:
<https://www.gps.gov/governance/advisory/recommendations/>

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Attached: **Comparison of US and China PNT capabilities** from the President’s National Space-based PNT Advisory Board, July 2024

The Resilient Navigation and Timing Foundation is a public benefit, scientific, and educational charity 501(c)3 advocating for policies and systems to protect GPS satellites, signals, and users.

Comparing Advanced GNSS Capabilities and Plans

PNT Sources & Modernization Efforts			
	United States		China
Global Navigation Satellite System ¹	GPS		BeiDou
Low Earth Orbit - based PNT Satellites	RDT&E by govt and industry Satelles timing (fee-based)		Deployment on-going ²
Terrestrial Broadcast	None deployed		eLoran in east and offshore eLoran being installed in the west ³
Fiber-based timing	Some major telecoms have deployed		Comprehensive national program w/ 295 timing centers, 20,000km fiber ⁴
Authentication/ integration of timing*	National Guard NITRO pending cancellation		National system being implemented ⁵
*China's terrestrial timing network is designed to integrate space-based, terrestrial broadcast, and fiber-transmitted time in a coherent and consistent architecture.			

Green = Most advanced feature, or national system funded and being completed

Yellow = Less capable, or some efforts in progress but no national system planned

Red = No national capability, none planned

Chart from Chairman of the National PNT Advisory Board's Memo to Deputy Secretaries of Defense and Transportation on 19 July 2024

¹ Chairman's letter Jan 2023 and Board's preliminary GNSS comparison matrix for GPS, BeiDou, and Galileo

² Numerous announcements, papers. See for example [presentation at UNOOSA](#)

³ Numerous Chinese academic papers, several media announcements see for example: "[The Paper – Accelerate construction, High-precision, Ground-based Timing System](#)"

⁴ [National Time Service Center, Chinese Academy of Sciences](#)

⁵ Ibid 3 & 4. Strategy outlined in [presentation at 2019 Stanford PNT Symposium](#)

Notes:

- In October 2024 *GPS World* magazine announced China had completed its eLoran system.
- Commercial PNT services available in the U.S. are not listed. They are not national systems or capabilities, nor are they widely adopted.