



**Billing Code 4910-9X**

**DEPARTMENT OF TRANSPORTATION**

**Office of the Secretary of Transportation**

**DOT-OST-2016-0227**

**Positioning, Navigation, and Timing (PNT) Service for National Critical Infrastructure**

**Resiliency**

**AGENCY:** Office of the Secretary (OST), U.S. Department of Transportation (DOT).

**ACTION:** Request for information (RFI).

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**SUMMARY:** This RFI provides an outline for the potential use by the Federal Government of one or more Positioning, Navigation, and Timing (PNT) technologies to back up signals from the Global Positioning System (GPS) and to ensure resiliency of PNT for U.S. Critical Infrastructure (CI) operations. As a co-chair and member of the National Executive Committee for Space-based PNT, and a provider and user of U.S. critical infrastructure services, the Department of Transportation is investigating opportunities by which the Federal Government may make use of service(s) which can provide the necessary backup capability or capabilities to ensure PNT continuity for U.S. CI in the event of a temporary disruption in GPS availability. Further, as the lead civil agency for PNT in the Federal Government, the Department of Transportation is interested in leveraging PNT service technology initiatives under consideration or currently undertaken by industry.

The Federal Government is presently documenting civil requirements for PNT capabilities to serve as the basis for potential future acquisition activity. The initial objective is to support sustainment of domestic CI timing continuity with the capability to extend service(s) in the future to provide positioning/navigation continuity as well.

**DATES:** Responses should be filed by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN FEDERAL REGISTER].

**ADDRESSES:** You may file responses identified by the docket number DOT-OST-2016-0227 by any of the following methods:

- Federal eRulemaking Portal: go to <http://www.regulations.gov> and follow the online instructions for submitting comments.
- Mail: Docket Management Facility, U.S. Department of Transportation, 1200 New Jersey Ave., SE, West Building Ground Floor, Room W12-140, Washington, DC 20590-0001.
- Hand Delivery or Courier: West Building Ground Floor, Room W12-140, 1200 New Jersey Ave., SE, between 9:00 a.m. and 5:00 p.m. ET, Monday through Friday, except Federal holidays.
- Fax: (202) 493-2251

*Instructions:* You must include the agency name and docket number DOT-OST-2016-0227 at the beginning of your submission. All submissions received will be posted without change to <http://www.regulations.gov>, including any personal information provided.

*Privacy Act:* Anyone is able to search the electronic form of all submissions received in any of our dockets by the name of the individual submitting the document (or signing the submission, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act statement in the Federal Register published on April 11, 2000 (65 FR 19477-78), or you may visit <http://DocketsInfo.dot.gov>.

*Docket:* For access to the docket and comments received, go to <http://www.regulations.gov> or to the street address listed above. Follow the online instructions for accessing the docket.

**FOR FURTHER INFORMATION CONTACT:** Karen L. Van Dyke, Director, Positioning , Navigation, and Timing & Spectrum Management, Office of the Assistant Secretary for Research and Technology, U.S. Department of Transportation, 1200 New Jersey Ave., SE., Washington, DC, 20590, 202-366-3180, karen.vandyke@dot.gov.

**SUPPLEMENTAL INFORMATION:**

**1. Overview**

This RFI provides an outline for the potential use by the Federal Government of one or more PNT technologies to back up signals from GPS and to ensure resiliency of PNT for U.S. critical infrastructure operations. The national policy requirement to ensure resilient PNT capabilities is expressed in two Presidential policy documents. The National Space Policy of the United States of America, dated June 28, 2010, states, "...the United States shall...Invest in domestic capabilities and support international activities to detect, mitigate, and increase resiliency to harmful interference to GPS, and identify and implement, as necessary and appropriate, redundant and back-up systems or approaches for critical infrastructure, key resources, and mission-essential functions." This follows a statement in U.S. Space-based PNT Policy dated December 15, 2004 (National Security Presidential Directive (NSPD)-39) that, "...the United States Government shall...Improve the performance of space-based positioning, navigation, and timing services, including more robust resistance to interference for, and consistent with, U.S. and allied national security purposes, homeland security, and civil, commercial, and scientific users worldwide...and, Promote the use of U.S. space-based positioning, navigation, and timing services and capabilities for applications at the Federal, State, and local level, to the maximum practical extent."

As defined in NSPD-39, the responsibility to “...advise and coordinate with and among the Departments and Agencies responsible for the strategic decisions regarding policies, architectures, requirements, and resource allocation for maintaining and improving U.S. space-based PNT infrastructures, including the GPS, its augmentations, [and] security for these services...” rests with the National Space-Based PNT Executive Committee, co-chaired by the Deputy Secretaries of the Department of Defense and the Department of Transportation. NSPD-39 also specifically requires that the Secretary of Transportation, in coordination with the Secretary of Homeland Security, “...develop, acquire, operate, and maintain backup position, navigation, and timing capabilities that can support critical transportation, homeland security, and other critical civil and commercial infrastructure applications within the United States, in the event of a disruption of the GPS or other space-based positioning, navigation, and timing services...”

As a co-chair and member of the National Executive Committee for Space-based PNT, and a provider and user of U.S. CI services, the Department of Transportation is investigating opportunities by which the Federal Government may make use of service(s) which can provide the necessary backup capability or capabilities to ensure PNT continuity for U.S. CI in the event of a temporary disruption in GPS availability. Further, as the lead civil agency for PNT in the Federal Government, the Department of Transportation is interested in leveraging PNT service technology initiatives under consideration or currently undertaken by industry.

The Federal Government is presently documenting civil requirements for PNT capabilities to serve as the basis for potential future acquisition activity. The initial objective is to support sustainment of domestic CI timing continuity with the capability to extend service(s) in the future to provide positioning/navigation continuity as well.

The government would be open to suggestions from industry regarding methods of accessing such services and associated cost-sharing arrangements, including, but not limited to Public-Private-Partnerships, Service Level Agreements, or other Cooperative Arrangements to alleviate or eliminate constraints to meet the general continuity requirements below. The government would also be interested in industry assessment of user participation in the backup GPS market. If a proposed solution or solutions assumes legislative and/or regulatory action on the part of the Federal Government, that should be noted in any response.

## **2. Technical Information**

The Presidential Policy Directive on Critical Infrastructure Security and Resilience (PPD-21; February 12, 2013) designates sixteen CI sectors: Chemical; Commercial Facilities; Communications; Critical Manufacturing; Dams; Defense Industrial Base; Emergency Services; Energy; Financial Services; Food and Agriculture; Government Facilities; Healthcare and Public Health; Information Technology; Nuclear Reactors, Materials, and Waste; Transportation Systems; and Water and Wastewater Systems. To support the initial objective, CI sectors need access to timing information for both nationwide applications and, in some cases, for more stringent regional and local applications.

The Federal Government is interested in services which could be implemented to provide the following capabilities and ensure timing continuity for the domestic CI outlined below. Respondents must include information related to nationwide and regional CI Timing application coverage for GPS backup capabilities as described below. Respondents may also include information on CI timing applications additional to GPS capabilities if desired:

### Nationwide CI Timing Application Coverage for a GPS Backup

- Timing Continuity – Sustained accuracy at 1 microsecond with respect to UTC

- Frequency Stability – Stratum 1 level or better ( $1 \times 10^{-11}$  over 24 hours)
- System Availability – 95%-99%
- System Reliability/Holdover Capability (no access to GPS) – 90 days
- Extent of service coverage area as a function of system architecture
- Considerations for receive antennas and integration with GPS devices (include estimated costs, user equipage requirements, and time-to-market information)
- Considerations for service to mobile vs. fixed users
- Rough order of magnitude cost estimate for service implementation and operation for at least ten years
- How quickly a demonstration of service functionality could be performed
- Scalability and considerations for extending service to a nationwide positioning/navigation capability
- Any off-shore coverage capability

#### Regional/Local CI Timing Application Coverage for a GPS Backup

- Timing Continuity – Sustained accuracy at 100 nanoseconds with respect to UTC
- Frequency Stability – Stratum 1 level or better ( $1 \times 10^{-11}$  over 24 hours)
- System Availability – 99%
- System Reliability/Holdover Capability (no access to GPS) – 30 days
- Extent of service coverage area as a function of system architecture
- Considerations for receive antennas and integration with GPS devices (include estimated costs, user equipage requirements, and time-to-market information)
- Considerations for service to mobile vs. fixed users

- Rough order of magnitude cost estimate for service implementation and operation for at least ten years
- How quickly a demonstration of service functionality could be performed
- Considerations for extending service to include positioning/navigation capability
- Any off-shore coverage capability

Nationwide or Regional/Local CI Timing Application Coverage additional to GPS capabilities

- Considerations for messaging capabilities in terms of data rate and message content (support operations, emergency notifications, etc.)
- Service availability in environments such as indoors, underwater, underground, and urban canyons not feasible with GPS
- Rough order of magnitude cost estimate for service implementation and operation for at least ten years

Respondents please advise if your company has developed and/or offered PNT services in the past and if you are marketing or providing similar services today in foreign markets.

### **3. Requested Information**

Interested companies who believe they are capable of providing all or part of the information requested above are invited to indicate their interest by providing company information to include:

- a) Company name
- b) Company address
- c) CAGE code [if applicable]
- d) Business Point of Contact (POC) name, e-mail address, and telephone
- e) Technical Point of Contact (POC) name, e-mail address, and telephone

4. Responses may be submitted in respondent's preferred format. Abbreviations should be defined either on first use or in a glossary. Charts and graphics should have quantitative data clearly labeled. Assumptions should be clearly identified.
5. Proprietary and other sensitive information should be so marked with requested disposition instructions. Submitted materials will not be returned.
6. Responses are limited to fifteen (15) 8.5" x 11" pages with 1" margins, and 12-point font (Arial or Times New Roman). Pages must be numbered and submitted electronically via e-mail as Microsoft Word or Adobe Acrobat files. Please send responses to the contact information provided in the For Further Information Contact section of the notice.
7. Submitted responses shall be UNCLASSIFIED unless prior arrangements are made with the Contracting Office.

This is a Request For Information (RFI) only. This request is for planning purposes, and shall not be construed as a solicitation announcement, invitation for bids, request for proposals, quotes or an indication that the Government will contract for the items contained in this notice. After reviewing the descriptions currently posted to FEDBIZOPS, interested capable vendors are invited to provide responses. The Government will not reimburse respondents for any costs associated with the submission of the information being requested or reimburse expenses incurred to the interested parties for responses.

Additionally, your response will be treated only as information for the Government to consider. As previously stated, respondents will not be entitled to payment for direct or indirect costs that are incurred in responding to this RFI. Further, this request does not constitute a solicitation for proposals or the authority to enter into negotiations to award a contract. No funds have been authorized, appropriated or received for this effort. The information provided may be

used by the Federal Government in developing an acquisition strategy, Statements of Work/Performance Work Statements and/or Statements of Objectives. Interested parties are responsible to adequately mark proprietary, restricted or competition sensitive information contained in their response accordingly.

**Issued This Day Of November 23, 2016, In Washington, D.C.**

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Sophie Shulman,

Acting Assistant Secretary for Research and Technology

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