



# ***GPS Program Update***

***IS-GNSS***

***Hong Kong***

***12 December 2017***

***Colonel Frank Zane, Deputy Director,  
National Coordination Office United States of America***



# *U.S. National Space Policy*



## *Space-Based PNT Guideline: Maintain leadership in the service, provision, and use of GNSS*

- Provide continuous worldwide access to GPS for peaceful uses, free of direct user charges
- Engage with foreign GNSS providers on compatibility, interoperability, transparency, and market access
- Operate and maintain GPS constellation to satisfy civil and national security needs
  - Foreign PNT may be used to strengthen resiliency
- Invest in domestic capabilities and support international activities to detect, mitigate, and increase resiliency to harmful interference



# GPS Overview

## Civil Cooperation

- 3+ Billion civil & commercial users worldwide
- Search and Rescue
- Civil Signals
  - L1 C/A (Original Signal)
  - L2C (2<sup>nd</sup> Civil Signal)
  - L5 (Aviation Safety of Life)
  - L1C (International)



## Department of Defense

- Services (Army, Navy, AF, USMC)
- Agencies (NGA & DISA)
- US Naval Observatory
- PNT EXCOMS
- GPS Partnership Council

## Maintenance/Security

- All Level I and Level II
  - Worldwide Infrastructure
  - NATO Repair Facility
- Develop & Publish ICDs Annually
  - Public ICWG: Worldwide Involvement
  - Materials Available at: [gps.gov/technical/icwg](http://gps.gov/technical/icwg)
- Update GPS.gov Webpage
- Load Operational Software on over 970,000 SAASM Receivers
- Distribute PRNs for the World
  - 120 for US and 90 for GNSS

## Spectrum

- World Radio Conference
- International Telecommunication Union
- Bilateral Agreements
- Adjacent Band Interference

## 35 Satellites / 31 Set Healthy Baseline Constellation: 24 Satellites

Satellite Block	Quantity	Average Age	Oldest
GPS IIR	12	15.9	20.3
GPS IIR-M	7	10.3	12.2
GPS IIF	12	3.8	7.5
Constellation	31	10.0	20.3

AS OF 22 NOV 17

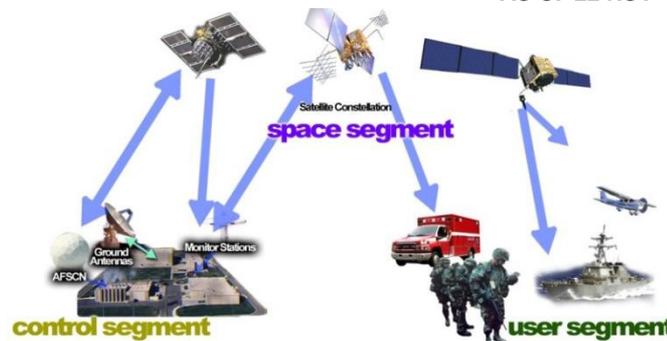


## Department of Transportation

- Federal Aviation Administration

## Department of Homeland Security

- U.S. Coast Guard



## International Cooperation

- 57 Authorized Allied Users
  - 25+ Years of Cooperation
- GNSS
  - Europe - Galileo
  - China - Beidou
  - Russia - GLONASS
  - Japan - QZSS
  - India - NAVIC



# GPS SIS Performance Scoreboard



## GPS SIGNAL IN SPACE (SIS) PERFORMANCE (CM)

**BEST WEEK \***

**BEST DAY \***

**WORST DAY \***

**ENDING**

**SIS**

**ENDING**

**SIS**

**ENDING**

**SIS**

**ROLLING YEAR**

**29 NOV 16**

**44.1**

**26 JAN 17**

**35.0**

**15 JUN 17**

**69.7**



**BEST WEEK EVER**

**29 NOV 16**

**44.1**

*\*ROLLING YEAR*





# *National Space Council*

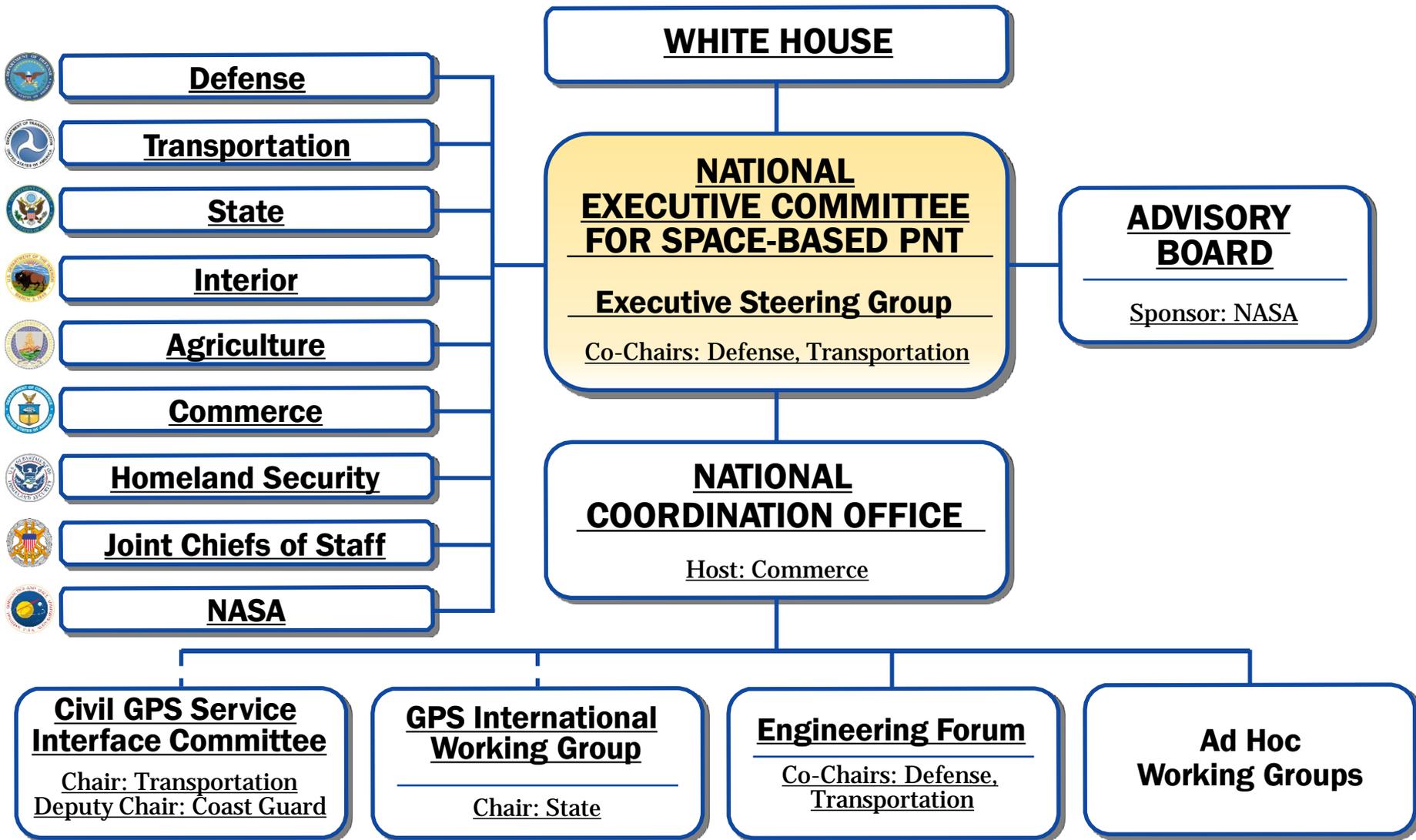


- On June 30, 2017, President signed an executive order which revived the National Space Council (NSpC)
  - Advise and assist on National Space Policy and Strategy
  - Chaired by Vice President
- October 5, 2017, first NSpC meeting
  - Testimony from:
    - Civil Space
    - Commercial Space
    - National Security space Industry





# National Space-Based PNT Organization





# ***EXCOM Strategic Focus Areas***



- **GPS Sustainment and Modernization**
- **International Cooperation**
- **Spectrum Management**
- **Critical Infrastructure**
- **PNT Resilience**
- **Outreach**



# *The Airwaves Are Not Safe*



- **Computers and the Internet: Once Upon a Time...**
  - **A GPS receiver is more computer than radio...**
- **GPS relies on spectrum – no longer a safe haven**
- **GPS receivers lack cyber resilience**
- **Policy directs PNT resiliency (NSPD-39, PPD-4, PPD-21)**
- **Jan 6, 2017 - DHS released Best Practices document now available on GPS.gov:**

*"Improving the Operation and Development of Global Positioning System (GPS) Equipment Used by Critical Infrastructure"*

***Protect GPS and Critical Infrastructure that Relies on GPS***



# *Bilateral Cooperation*



- **Japan – GNSS Technical Working Group (TWG) and Plenary-level meetings held in May 2017 in Washington, D.C.**
  - Discussed GPS and QZSS Compatibility and Interoperability
- **China - Most recent civil GNSS Plenary meeting held June 2015 in Washington, D.C.**
  - Sub-group on Compatibility and Interoperability met in June and September 2017 – resulting in Joint Statement on L1-B1 Signal Compatibility and Interoperability, signed November 29 in Beijing
- **India - U.S.-India Civil Space Joint Working Group (CSJWG) met October 2017 in Washington - Agenda included GNSS discussions**
- **Europe – 4 working groups under GPS-Galileo Cooperation Agreement signed in 2004**
  - Working Group on Next Generation GPS/Galileo Civil Services meets twice per year – most recent meeting September 2017 in Los Angeles



# Thank You

Home What's New Systems Applications **Governance** Multimedia Support

Home » Governance » Program Funding

**GOVERNANCE:**  
Policy & Law  
Organization  
**Program Funding**

FY 2018 **NEW**  
FY 2017  
FY 2016  
FY 2015  
FY 2014  
FY 2013  
FY 2012  
FY 2011  
FY 2010  
FY 2009

Congress  
International Cooperation  
Spectrum & Interference  
Privacy

## Program Funding

### Who Pays for GPS?

The American taxpayer pays for the GPS service enjoyed throughout the world. All GPS program funding comes from general U.S. tax revenues.

The bulk of the program is budgeted through the Department of Defense, which has primary responsibility for developing, acquiring, operating, sustaining, and modernizing GPS.  
[LEARN ABOUT GPS MODERNIZATION](#)

### Civil GPS Funding

U.S. policy assigns the Department of Transportation responsibility for funding the extra costs associated with new, civilian GPS upgrades beyond the second and third civil signals. Agencies with unique requirements for GPS are responsible for funding them.  
[DOWNLOAD BACKGROUND PAPER ON CIVIL FUNDING](#)  
[LEARN ABOUT U.S. POLICY](#)

### GPS Funding for Fiscal Year 2018

- Defense Appropriations
- DOT Appropriations
- DOD Authorization

### Past Fiscal Years

- FY 2017
- FY 2016
- FY 2015
- FY 2014
- FY 2013
- FY 2012
- FY 2011
- FY 2010

[www.GPS.gov](http://www.GPS.gov) provides detailed information on legislation pertinent to GPS, such as:

- Program Funding, specifically information on Defense and Transportation appropriations, as well as Defense Authorization (NDAA). The website has archival information going back to Fiscal Year 2009.
- You may also find information on legislation related to Geolocation, Privacy, and previous Enacted Laws.
- Subscribe to the GPS Bulletin

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