



SPACE-BASED POSITIONING
NAVIGATION & TIMING
NATIONAL COORDINATION OFFICE

U.S. Space-Based Positioning, Navigation & Timing (PNT) Policy Update

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Overview



- **U.S. Space-Based PNT Organization**
- **Policy and Issues Update**
- **LightSquared Update**



U.S. Policy History

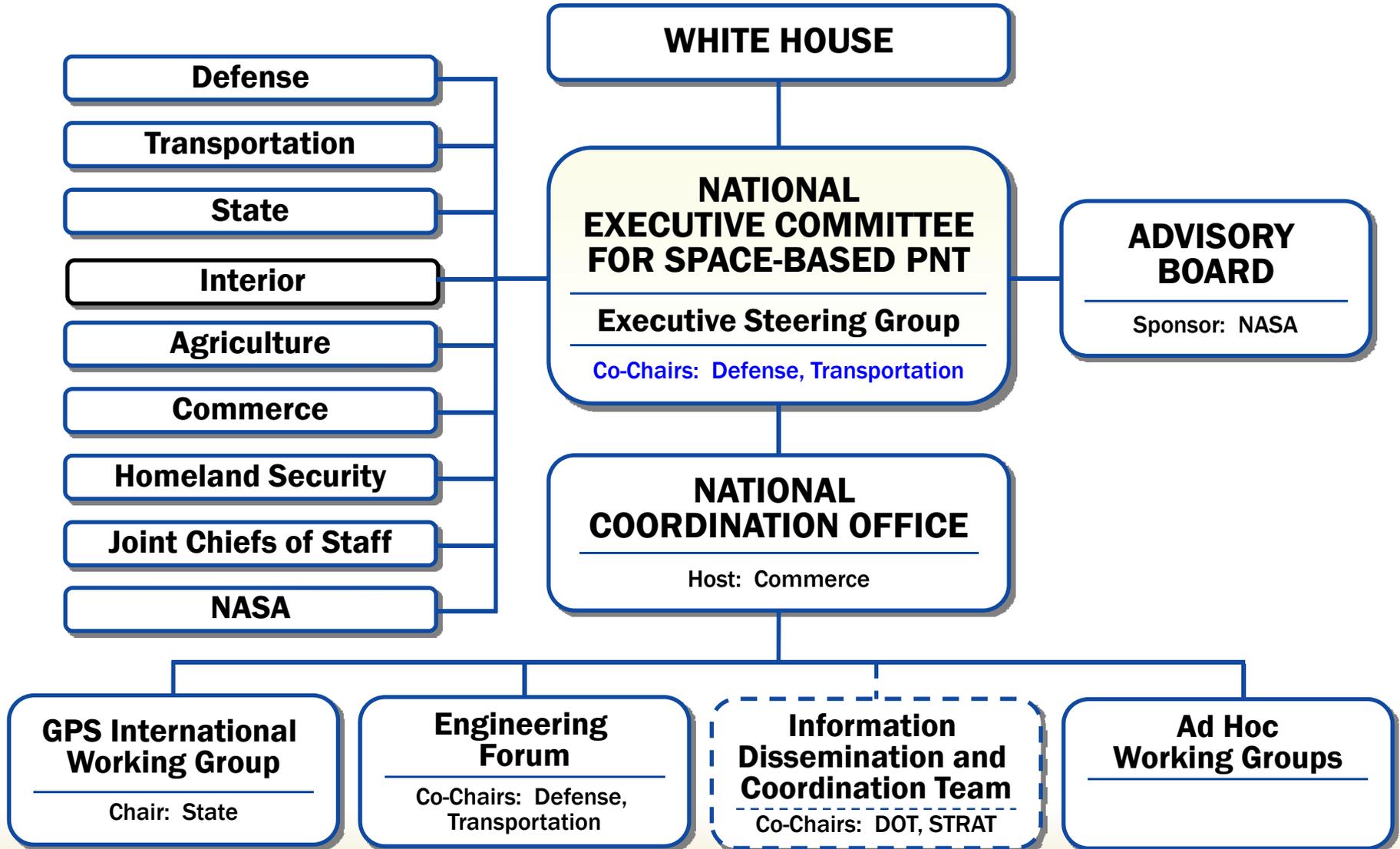


- **1983:** President announces civilian access to GPS following loss of KAL 007
- **1994:** U.S. offers free civil GPS service to the International Civil Aviation
- **1996:** First U.S. GPS Policy establishes joint civil/military management
- **1997:** Civil GPS access free of direct user fees codified in U.S. statute
- **2000:** President ends use of *Selective Availability*
- **2004:** President issues U.S. Policy on Space-Based PNT
- **2004:** Agreement signed on GPS-Galileo Cooperation
- **2007:** President announces *Selective Availability* eliminated from future GPS III satellites
- **2010:** New National Space Policy includes specific PNT guidance





U.S. Space-Based PNT Organizational Structure





National Space-Based PNT Advisory Board



- Provides independent advice and recommendations on variety of PNT issues
- Current Taskings
 - Non-ICD Compliant Civil/Commercial Receivers
 - PNT Architecture Implementation Plan Assessment
 - GPS Commercial Outage Impact Assessment
- 25 members (including 5 international members)
 - Co-chaired by Dr. James Schlesinger & Dr. Brad Parkinson





Recent PNT EXCOM Issues



- **Emerging Threats to GPS**
 - Intentional and Unintentional
- **Comprehensive Civil Risk Assessment**
 - DHS National Risk Estimate
- **Implications of President Obama's Space Policy**
 - NSPD-39 Policy Review
- **LightSquared Interference Impacts**



President Obama's Space Policy June 2010



The U.S. must maintain its leadership in the service, provision and use of Global Navigation Satellite Systems (GNSS)

- Provide continuous worldwide access for peaceful uses, free of direct user charges
- Encourage compatibility and interoperability with foreign GNSS services
- Operate and maintain 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



What is LightSquared?



- **New Telecom company formed Mid 2010**
 - Formerly SkyTerra
 - FCC approved SkyTerra transfer order Mar 2010
- **Company formed to create a nationwide 4G LTE (Long Term Evolution) open wireless broadband network**
- **Intends to provide coverage to 92% of US population by 2015**
- **Key Asset**
 - **Mobile Satellite Service /Ancillary Terrestrial Component license for 1525–1559 MHz; 1626.5-1660.5 MHz**



Background

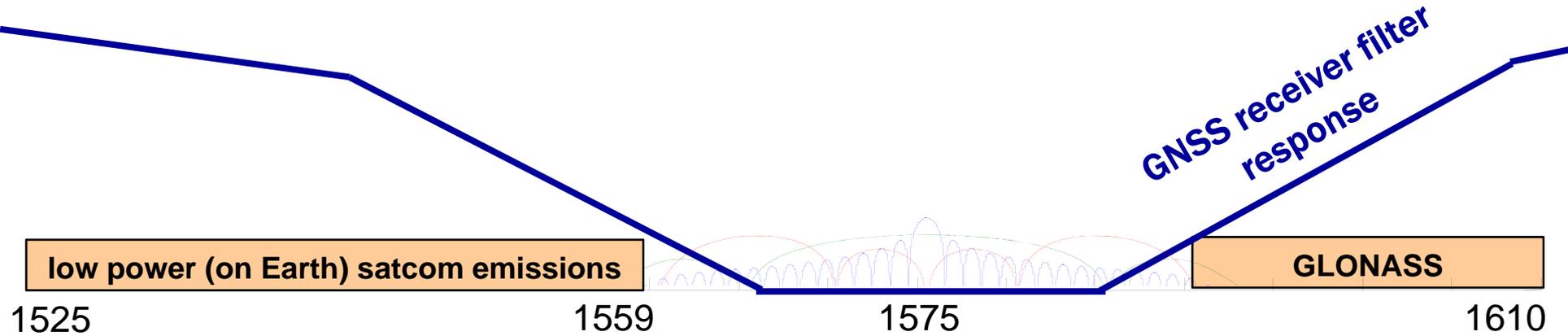


- **26 Jan 11: FCC grants waiver of “Integrated Service Rule”**
 - Conditional on resolution of GPS interference issues to FCC satisfaction
 - Recommended formation of a working group to analyze potential GPS interference and recommend mitigation steps
 - Responsibility assigned to LSQ, but GPS Industry and federal agency participation was highly encouraged
- **Technical Working Group – LSQ + USGPSIC as co-chairs**
 - Technical reps from LightSquared, Industry and U.S. Govt participated
- **National PNT Systems Engineering Forum (NPEF)**
 - Co-chaired by FAA and USAF
 - Independent test effort by U.S. Government
 - Included DoD, interagency and industry participants

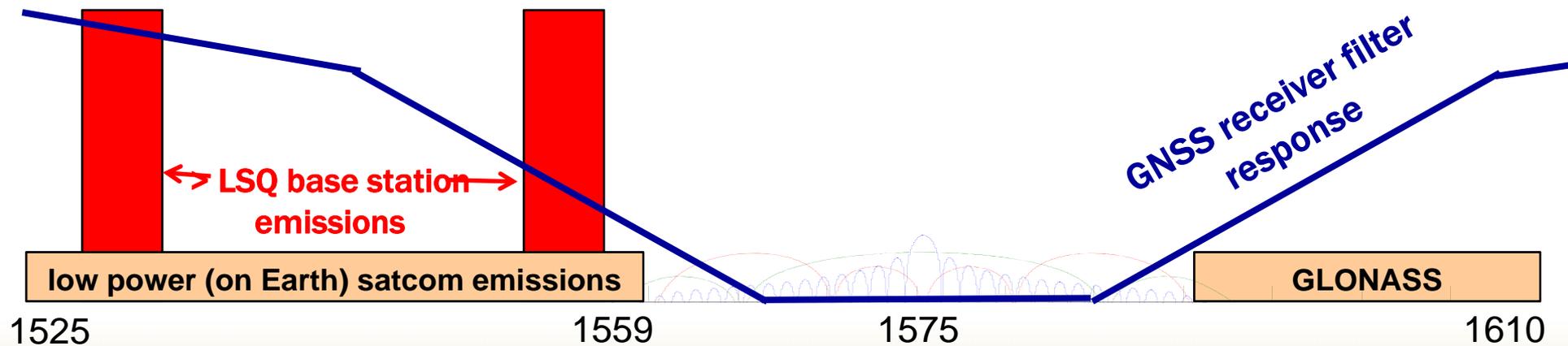


Illustration of Concerns with LightSquared

Situation before LightSquared

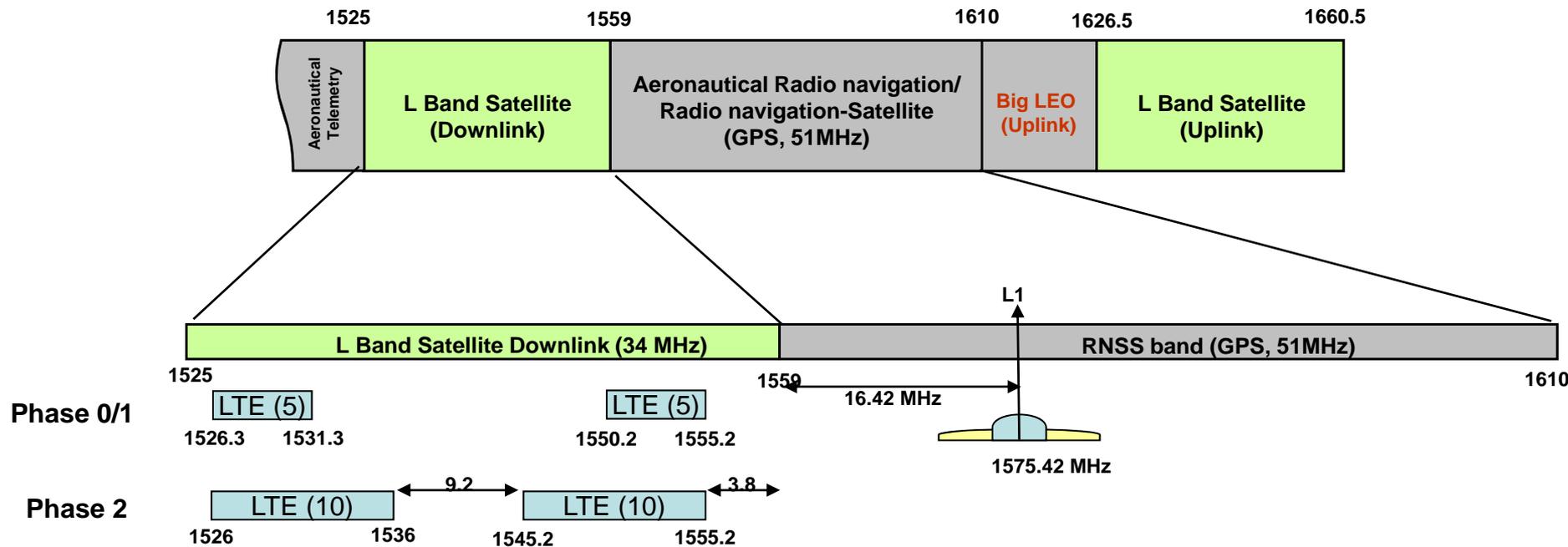


Situation with LightSquared



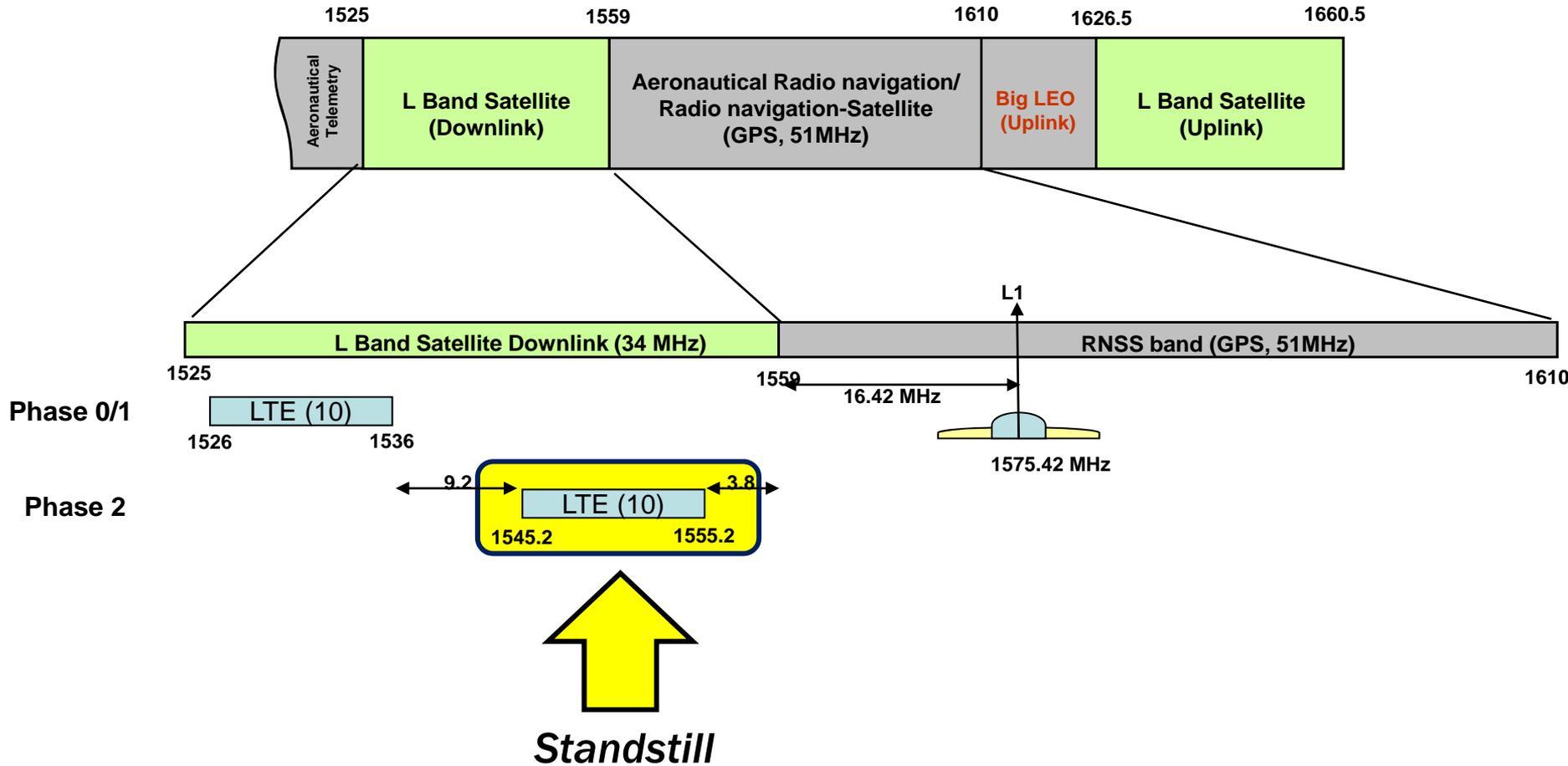


LightSquared Spectrum Plans





LightSquared Spectrum Plans





LightSquared Interference to GPS



- Testing thus far has shown widespread harmful interference to GPS devices
 - Based on original deployment proposal
 - TWG showed unacceptable interference across all 7 sub-groups of representative receivers
 - NPEF receiver applications tested showed unacceptable loss or degradation
 - RTCA study showed unacceptable impacts from upper channel, inconclusive on lower channel
- Some testing accomplished on lower channel only

***Consensus is more testing is required for alternative
“10 MHz Low” proposal***



Current Status



- **FCC still evaluating reports and all comments**
- **NTIA has asked Departments for a test plan to validate performance of cellular and personal/general navigation receivers**
- **Testing should be concluded by Nov 30, 2011**
 - **2nd Phase of testing on High Precision and Timing receivers to follow at a later date**
 - **Contingent on LightSquared development of filter solution**
- **Recent Congressional Hearings**
 - **Space, Science and Technology Committee**
 - **Armed Services Strategic Subcommittee**



Summary



- **GPS has a history of stable, consistent policy**
 - New U.S. policy encourages worldwide use of civil GPS and augmentations
 - Permits U.S use of foreign PNT to increase resiliency
- **Emerging challenge to future of GPS**
 - Broadband priorities attempting to squeeze efficiencies from already congested spectrum
 - LightSquared implementation likely to cause significant interference
 - Working systematically through all avenues for coexistence



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