Before the
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, DC 20554

In the Matter of

LightSquared Subsidiary LLC
Request for Modification of Authority
For an Ancillary Terrestrial Component
LightSquared Technical Working Group Report

File No. SAT-MOD-20101118-00239
IB Docket No. 11-109

To: The Commission

COMMENTS OF

AIRCRAFT OWNERS AND PILOTS ASSOCIATION

AND

GENERAL AVIATION MANUFACTURERS ASSOCIATION

Jens Hennig
Vice President, Operations
General Aviation Manufacturers Association
1400 K St., NW Suite #801
Washington, DC 20005-2485
202-393-1500

Melissa Rudinger
Senior Vice President, Government Affairs
Aircraft Owners and Pilots Association
421 Aviation Way
Frederick, MD 21701
301-695-2000

August 1, 2011
SUMMARY

The Aircraft Owners and Pilots Association (“AOPA”) and the General Aviation Manufacturers Association (“GAMA”) strongly urge the Commission to rescind the conditional waiver granted by the International Bureau on January 26, 2011 to LightSquared Subsidiary Inc. (“LightSquared”), rescind LightSquared’s underlying ATC authorization, and commence a rulemaking to ensure that future proposed service using the Ancillary Terrestrial Component (“ATC”) adequately protects Global Positioning System (“GPS”) and that such use receives concurrence from the Federal Aviation Administration (“FAA”) and Department of Defense.

AOPA and GAMA represent the general aviation industry – which is all aviation operations, pilots, and manufacturers, other than scheduled commercial airlines and military aircraft. The general aviation sector adds at least $150 billion to the U.S. economy annually, supports over 1.2 million jobs, and provides crucial air services to every community in the United States. General aviation’s services are particularly important to small and medium sized communities unserved by major airports. The benefits of general aviation to Americans – particularly rural Americans – will only continue to grow with the introduction by the FAA of its “NextGen” air traffic management system, which promises to expand general aviation’s ability to provide service to numerous communities not currently served by air. Such benefits will continue – that is, unless the Commission allows LightSquared’s proposed operations and the harmful interference it would bring to GPS – to proceed.

The record in this proceeding conclusively shows that LightSquared’s proposals will cause harmful interference to GPS, endangering the businesses, and, more seriously, the lives of those that rely on air travel. That record includes technical studies by RTCA, Inc. (“RTCA”) and the Technical Working Group (“TWG”) established by the International Bureau’s January 26,
2011 decision, as well as an economic and safety impact study very recently performed by the FAA. It also includes reams and reams of comments from concerned aircraft owners, pilots, and manufacturers. The record demonstrates irrefutably that LightSquared’s effects on GPS will be immediate and severe. Indeed, the FAA found that LightSquared’s proposed network is a particular threat to the general aviation industry, the safety record of which has improved dramatically over the last five years as pilots have increased their reliance on GPS. During this period, fatal controlled flights into terrain have decreased 44 percent; fatal approach and landing and all fatal night-time accidents have declined 30 percent. The FAA stated that these safety gains would disappear if LightSquared is permitted to proceed and interfere with GPS.

Industry, government, and taxpayer investment in NextGen also would similarly be for naught if LightSquared’s proposed service is allowed to commence. Huge investments have been made in NextGen, which promises to revolutionize air traffic management by providing pilots and air traffic controllers with more precise location information for aircraft in the sky and on the ground, allowing for better organized, more efficient, and ultimately much, much safer use of airports and airspace as well as increasing general aviation access to small and rural communities that have not previously had air transportation service. Again, the FAA has found that these benefits will be delayed or lost if LightSquared is permitted to proceed.

LightSquared claims that the proposed changes in its operations that it submitted on June 30 solve the interference problem. That is false. No study has concluded that any aspect of its latest configuration can coexist with aviation use of GPS. The RTCA Report suggested that operations restricted to the lower 10 MHz of LightSquared’s spectrum may possibly be compatible with GPS, but that additional study was necessary to test that possibility. LightSquared’s revised proposal calls for eventual use of the upper 10 MHz of spectrum, which
the TWG and RTCA found incompatible with aviation use of GPS. In short, none of LightSquared’s service proposals avoids harm to aviation safety.

The record also shows that no technology exists to mitigate the interference LightSquared will cause. Most discussion related to mitigation has centered around filters that simply do not exist. Even if such filters someday come into existence, retrofitting the entire base of installed and in-use aviation GPS devices would be logistically impossible in the timeframe LightSquared appears to have in mind. It would take years to obtain the required changes to FAA standards and then to accomplish the necessary equipment installations. The FAA estimates that ten to fifteen years would be required, and AOPA and GAMA agree with that estimate.

The Bureau has permitted LightSquared more than sufficient time to try to show that its proposals can safely coexist with GPS, and LightSquared has failed. The only choice open to the Commission that is consistent with the public interest is to rescind the conditional waiver. More than that, however, it should commence a rulemaking proceeding to revise its ATC rules to ensure that no LightSquared-like service threatens GPS in the future. The TWG exercise and the numerous other studies that have been conducted over the last half year show that science does not allow proposals, such as LightSquared’s, to exist in frequencies adjacent to GPS. If the Bureau deems the LightSquared service sufficiently important to warrant further consideration, it should consider moving LightSquared to spectrum conducive to that proposed service, but under no circumstances should LightSquared be permitted to implement any of its service proposals in frequencies adjacent to those used by GPS.
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COMMENTS OF

AIRCRAFT OWNERS AND PILOTS ASSOCIATION

AND

GENERAL AVIATION MANUFACTURERS ASSOCIATION

The Aircraft Owners and Pilot Association (“AOPA”) and the General Aviation Manufacturers Association (“GAMA”) hereby submit these comments in response to the Federal Communications Commission International Bureau’s (the “Bureau’s”) June 30, 2011, Public Notice\(^1\) seeking comment on the TWG Final Report\(^2\) and the “LightSquared Recommendation”

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\(^1\) Comment Deadlines Established Regarding the LightSquared Technical Working Group Report, Public Notice, IB Docket No. 11-109, DA 11-1133, rel. June 30, 2011 (the “Public Notice”). The Public Notice sought comment by July 30, 2011, which falls on a Saturday. Under 47 C.F.R. §§ 1.4(e) and (j), when a comment date falls on a Saturday, a submission may be timely made on the next business day, in this case, August 1, 2011. These comments, therefore, are timely filed.

filed in the above-captioned proceeding.\(^3\) The record before the Commission unequivocally demonstrates that none of LightSquared’s service proposals is compatible with aviation use of GPS and that LightSquared’s service cannot be safely implemented. Accordingly, the Commission should rescind LightSquared’s authorization and commence a rulemaking to review the rules governing operation of service using the ancillary terrestrial component (“ATC”) to ensure that neither LightSquared nor any other future ATC operator is permitted to harm GPS.

I. INTRODUCTION

AOPA and GAMA represent hundreds of thousands of pilots, aircraft owners, and general aviation manufacturers who rely on the Global Positioning System (“GPS”) for their safety and their livelihoods every day.\(^4\) AOPA and GAMA members largely comprise the general aviation industry, which includes the production, maintenance, and operation of Federal Aviation Administration (“FAA”)-certified aircraft other than military aircraft and aircraft used for scheduled commercial passenger air and transport service. This industry adds at least $150

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\(^4\) AOPA is a non-profit individual membership organization that represents more than 405,000 pilots, aircraft owners, and aviation enthusiasts in the United States. AOPA’s mission is to represent its members’ interests in the economy, safety, utility, and popularity of flight in general aviation aircraft. See AOPA ONLINE, About AOPA, http://www.aopa.org/info/ (last visited July 26, 2011). GAMA represents over 70 of the world’s leading manufacturers of fixed-wing general aviation airplanes, engines, avionics, and components. In addition to building nearly all of the general aviation airplanes flying worldwide today, GAMA member companies also operate fleets of airplanes, fixed-based operations, pilot and technician training centers, and maintenance facilities worldwide. GAMA is devoted to fostering and advancing the general welfare, safety, interests and activities of general aviation. See GAMA, About GAMA, http://www.gama.aero/about-us (last visited July 26, 2011).
billion to the U.S. economy annually and supports over 1.2 million jobs.\textsuperscript{5} General aviation is particularly critical in small and medium-sized communities across the country because only about 350 U.S. communities have scheduled air service; the rest rely on general aviation as the only option for air transport of passengers and cargo.\textsuperscript{6} Each year, 170 million passengers fly using general aviation, the equivalent of one of the nation’s major airlines.\textsuperscript{7} General aviation also is responsible for specialized air services like air ambulances and traffic patrols, even in communities that have scheduled commercial air service.\textsuperscript{8} Performing these specialized, local services requires a large number of aircraft, and consequently, general aviation aircraft make up approximately 97\% of the aircraft fleet in use in the U.S. today.\textsuperscript{9} Many of these individual aircraft are used on a less intensive basis and for shorter trips than commercial aircraft, but general aviation aircraft still fly more than 57\% of air hours logged annually by U.S. aircraft.\textsuperscript{10}

Just as Americans rely on general aviation, general aviation has come to rely on GPS. As of 2008, approximately 65\% of the general aviation fleet – nearly 150,000 aircraft – was


\textsuperscript{6}Id.

\textsuperscript{7}Statement of Craig Fuller, President and CEO, Aircraft Owners and Pilots Association, Before the Subcommittee on Aviation and Subcommittee on Coast Guard and Maritime Transportation, U.S. House of Representatives, Concerning “GPS Reliability: A Review of Aviation Industry Performance, Safety Issues, and Avoiding Potential New and Costly Government Burdens,” dated June 23, 2011, at 3 ("Fuller Testimony").

\textsuperscript{8}See id. General aviation includes aircraft other than fixed-wing airplanes, including helicopters.


\textsuperscript{10}See Number of GA Aircraft vs. Number of GA Hours Flown, ADS-B FOR GENERAL NAVIGATION BLOG (Dec. 20, 2010), http://ads-bforga.blogspot.com/.
equipped with GPS. That number surely is higher today. As it does for all aviation operators, GPS offers general aviation pilots and aircraft improved navigation, more efficient routing, and more accurate landings. All these benefits deliver significantly enhanced safety and fuel efficiency. With the advent of GPS-based Automatic Dependent Surveillance-Broadcast technology and the FAA’s introduction of the “NextGen” air transportation management system, these benefits will increase. For these reasons, the members of AOPA and GAMA have a substantial interest in the robustness and reliability of the GPS system and an important stake in the outcome of this proceeding.

AOPA and GAMA were among the many GPS users who opposed the granting of LightSquared’s waiver request related to its introduction of a high-power, non-integrated ATC service using the low-power MSS bands adjacent to the spectrum used by GPS. Given the well-documented risks to GPS and the attendant dangers to public safety, AOPA and GAMA were very concerned when the Bureau granted even a conditional waiver in the LightSquared Order before definitively guaranteeing the continued safe use of GPS by aviation and important

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11 See Federal Aviation administration, General Aviation and Part 135 Activity Surveys – CY 2008, Table AV.16 – 2008 General Aviation and Air Taxi Active Aircraft with Navigation Equipment by Aircraft Type, available at http://www.faa.gov/data_research/aviation_data_statistics/general Aviation/CY2008/media/FAA%202008%20Avionics.xls. This figure does not include the estimated 200,000 portable aviation GPS devices that have been sold in the U.S. and that are not installed in individual aircraft but that help pilots safely navigate flights every day.

12 NextGen is a Congressionally authorized program to modernize air traffic control that was designed to carry out the 2003 Congressional mandate of Vision 100 – Century of Aviation Reauthorization Act, which directed the FAA to develop a “Next Generation Air Transportation System” designed to meet anticipated traffic demands by 2025.” See Pub. L. No 108-176, § 709, 117 Stat. 2490, 2582-84 (codified at 49 U.S.C. § 40121 note).

13 See AOPA, Reply to Oppositions to Application for Review at n.1, filed Mar. 29, 2011 (citing AOPA, Application for Review, n.3, filed Feb. 25, 2011 (the “AOPA AFR”), and describing previous participation by AOPA and its members); GAMA, Reply to Oppositions to Application for Review at 4 & n.23, filed Mar. 29, 2011 (citing GAMA, Application for Review
public safety and military users. AOPA and GAMA each filed applications for review of that
decision that remain pending before the Commission.¹⁴

Both AOPA and GAMA also participated in the work of the Aviation Subgroup of the
Technical Working Group (“TWG”), which was established pursuant to the LightSquared Order,
through their representatives on the Program Management Committee (“PMC”) of RTCA, Inc.
(“RTCA”). As noted in the TWG Final Report, the TWG worked closely with RTCA and built
upon RTCA’s review in developing its own report.¹⁵ The PMC oversaw RTCA’s study of the
effect of LightSquared’s proposals on aviation use of GPS and voted to approve RTCA’s
report.¹⁶ The RTCA Report concluded that LightSquared’s proposed uses of the upper 10 MHz
of its spectrum are entirely incompatible with continued aviation use of GPS and called for
further testing before evaluating whether LightSquared’s use of only the lower 10 MHz of its
spectrum may be compatible with continued aviation use of GPS.¹⁷

In light of the RTCA Report and for the reasons described more fully below, AOPA and
GAMA are convinced that no permutation of LightSquared’s proposed operations can safely
coexist with aviation use of GPS. Maintaining a safe and economically sound aviation system
today requires a GPS system that is as reliable as possible. Reaching that degree of reliability is
simply impossible in the interference environment that any of LightSquared’s proposals would

¹⁴ See AOPA AFR; GAMA AFR.
¹⁵ TWG Final Report at 27.
¹⁶ See Letter from Margaret Jenny, President, RTCA, Inc., to Marlene H. Dortch, Secretary,
FCC, dated June 16, 2011 (submitting for the record RTCA, Inc., Assessment of the
LightSquared Ancillary Terrestrial Component Radio Frequency Interference Impact on GNSS
L1 Band Airborne Receiver Operations (June 3, 2011) (the “RTCA Report”)).
¹⁷ Id. at Executive Summary. RTCA found that LightSquared’s proposed operations on
only the lower 5 MHz of its MSS spectrum appears to be compatible with aviation GPS use.
create. Moreover, LightSquared should not be permitted to force both general and commercial aviation industries to abandon the significant investment that they have already made in GPS to improve the safety and efficiency of air travel, whether that be in equipping today’s aircraft cockpits or working to develop tomorrow’s NextGen systems. If LightSquared is permitted to commence operations, the reduced safety, greater inefficiency in flight operations, and increased greenhouse gas emissions that would result would not be in the public interest.

The Bureau has entertained LightSquared’s shifting proposals for long enough. LightSquared’s system is incompatible with safe aviation use of GPS. It is time to choose the public’s interest in a safe and environmentally sound aviation system over LightSquared’s proposals and start finding other, less dangerous and less damaging ways to increase wireless broadband competition.

II. GPS HAS BECOME INTEGRAL TO SAFE AIR TRAVEL AND WILL BECOME EVEN MORE IMPORTANT IN THE FUTURE.

A. LightSquared Threatens the Significant Safety Gains Realized by the Increasing Reliance of General Aviation on GPS During All Aspects of Flight.

General aviation pilots now rely on GPS in all phases of flight. From takeoff through landing, GPS provides navigation information that allows for the safe and efficient operation of general aviation aircraft for business and personal transportation as well as medical, firefighting, law enforcement, humanitarian, and agricultural operations. Today, approximately 70% of

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18 See AOPA, GPS from the Ground Up at 8 (Feb. 2009), available at http://www.aopa.org/asf/publications/sa01.pdf (“GPS has been a revolutionary force in the general aviation cockpit. It can dramatically enhance situational awareness, open up more airports, and expand routing options – and it’s becoming more capable, and more integrated into everyday flying all the time.”).
AOPA’s members rely on GPS as their primary means of navigation while many of the rest use it as a backup form of navigation.\(^{19}\)

GPS has largely replaced ground-based instruments as the primary means of assuring safe take-offs and landings. As of March 2011, pilots relied on GPS for more than 65% of approaches, replacing traditional ground-based instrument approaches.\(^{20}\) The precision instrument approaches made possible by the coupling of GPS and the GPS-dependent Wide Area Augmentation System (“WAAS”) allow general aviation pilots to fly safely in all weather conditions and gain access to more than 2,000 airports nationwide at only a small fraction of the cost of traditional ground-based approaches.\(^{21}\) The improved safety, flexibility, and efficiency have led general aviation to embrace WAAS, and more than 74,000 WAAS-enabled receivers have been sold for use in general aviation aircraft.\(^{22}\)

The adoption of GPS by general aviation has led to dramatic safety gains. Since the introduction of GPS-enabled onboard integrated flight decks – so-called “glass cockpits” –

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\(^{19}\) Fuller Testimony at 4.


\(^{21}\) WAAS relies on GPS signals and provides pilots with both vertical and horizontal navigation information, which is crucial for in-flight navigation. According to the FAA, WAAS “improves GPS signal accuracy from 100 meters to approximately 7 meters.” This additional precision allows (1) greater runway capability; (2) reduced aircraft separation standards and accompanying safe airspace capacity; (3) more direct flight paths; (4) new precision approach services; (5) reduced and simplified onboard equipment; and (6) substantial cost savings for the government, which can phase out expensive ground-based navigation aids. See Federal Aviation Administration, Navigation Services – WAAS – Benefits, available at http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/navservices/gnss/waas/benefits/. See also AOPA, Safety Advisor, Technology No. 1: GPS Technology at 4-5, 13-14 (November 2006), available at http://download.aopa.org/epilot/2006/sa01.pdf.

\(^{22}\) Fuller Testimony at 4.
commenced in earnest around 2003, both the number of accidents and the number of fatal accidents have decreased substantially in most categories.\(^{23}\) Increasing use of GPS has been particularly effective in reducing the number of controlled flight into terrain (“CFIT”) and approach-and-landing accidents. Indeed, in a recent FAA report assessing the safety and economic impact of LightSquared’s lower 10 MHz service proposal on aviation, the agency found a 44% decrease in fatal CFIT accidents in general aviation over the past five years, as well as a 30% decrease over the same period in fatal approach-and-landing accidents and all fatal accidents at night.\(^ {24}\) The FAA further concluded that as general aviation use of GPS becomes more and more common, these safety benefits – which amount to saving many lives and much property – should only increase over the next several years.\(^ {25}\)

Given the increasing widespread adoption of GPS throughout the general aviation industry, the loss of reliable GPS service would deal a severe blow to safety advances. In fact, the FAA Impact Statement concluded that if LightSquared is permitted to institute service on the terms proposed in the LightSquared Recommendation, the safety benefits already realized by general aviation would “be immediately reversed, and the opportunity for even more long-term benefits would be lost.”\(^ {26}\) The FAA also found that the negative safety impact on general aviation would exceed the impact on commercial aviation and that “[t]he safety impacts and costs to GA [general aviation] would be felt in full and would be severe.”\(^ {27}\)


\(^{25}\) See id. at 3.

\(^{26}\) See id.

\(^{27}\) See id.
The FAA quantified the impact of a loss of GPS service to general aviation as costing an average of 73 lives and $440 million dollars per year and said that an estimate of 730 additional deaths over the next ten years “is at the low end of estimated fatalities.”

For aviation generally (including general aviation), the FAA concluded that “[i]f LightSquared deploys as planned, all current GPS efficiency and safety benefits would be lost, or at least severely reduced, until all aircraft operating in U.S. airspace could be retrofitted over a period of 10 and possibly up to 15 years.”

The FAA’s findings stand in stark contrast to LightSquared’s rosy claims that GPS will continue to work for 99% of receivers under its most recent proposal. As discussed further below, that claim actually is contradicted by the evidence in the record of this proceeding. But even if it were true, that margin of error is insufficient for aviation, particularly for general aviation. General aviation carries 170 million passengers each year. Ensuring that 99% of devices function properly for airplanes to carry their passengers safely to their destinations simply is not good enough. LightSquared’s service will damage a wide range of GPS users and a significant portion of American industry, but its effect on the safety of general aviation alone is sufficient to demonstrate that no version of LightSquared’s proposed service should be permitted to commence on spectrum adjacent to GPS.

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28 Id. at 3-4.

29 Id. at 5. The FAA explicitly stated that its conclusions were based on the impact that would be caused by implementation of LightSquared’s revised proposal to operate initially on its lower 10 MHz spectrum. Id. at 6 (“This operational, economic, and public safety impact assessment is based upon LightSquared’s June 30, 2011 proposal and June 23, 2011 LightSquared testimony to the House Transportation and Infrastructure Committee . . .”).

30 LightSquared Recommendation at 2.

31 See infra at Section III.
B. LightSquared Threatens the FAA’s Multi-Billion Dollar Transition to Its “NextGen” Satellite-Based Air-Transportation System.

LightSquared’s operations also will irrevocably damage the safety and efficiency gains that the FAA’s long-planned introduction of the NextGen air transportation management system will bring throughout the country.\textsuperscript{32} NextGen is designed to revolutionize air traffic management by replacing traditional ground-based surveillance systems with the GPS-based Automatic Dependent Surveillance Broadcast (“ADS-B”), which uses GPS satellite signals to provide air traffic controllers and pilots with much more accurate information that will help keep aircraft safely separated in the sky and at airports.

By providing pilots and air traffic controllers with more precise location information for aircraft in the sky and on the ground, NextGen will allow for better organized, more efficient, and ultimately much, much safer use of airports and airspace.\textsuperscript{33} It will permit the most efficient possible routing of all flights and facilitate more intensive use of limited airport capacity.\textsuperscript{34} These improvements will help travelers by reducing the risk of accidents and the annoyance of flight delays and the environment by saving aviation fuel.

NextGen also will increase general aviation access to small and rural communities that have not previously had air transportation access. Many rural airports do not have the financial means to implement ground-based approach navigation aids. As a result, these communities have not been able to offer access to general aviation flights during periods of inclement weather, such as low visibility, low cloud ceilings, and other conditions that impair flight. Aircraft operators seeking to reach these communities in poor weather conditions have been required to

\textsuperscript{32} See FAA Impact Statement at 4, 5, 6-7.
\textsuperscript{34} See id.
fly greater distances to alternative airports and drive the remaining distances to their intended destinations.

Through GPS and core NextGen technologies like WAAS and ADS-B, small communities that have never had all-weather access for their airports will now find such access, and the related safety benefits, become a reality. This increased access will also allow aircraft operators to reduce flying time and distance with improved environmental impact. Communities like Lynchburg, Virginia and Benton, Kansas will realize significant benefits from the increased access.

NextGen also will bring huge economic benefits. “The FAA estimates the cumulative benefits of NextGen to be $23 billion through 2018; and by 2030, the cumulative benefits grow to $123 billion and reduce CO₂ emissions by 64 million tons.”\(^{35}\) Moreover, the FAA has publicly stated that “modernizing FAA’s air traffic control system with NextGen will create jobs immediately and reduce air traffic delays in the years ahead” and has cited with approval the Air Transport Association’s estimate that NextGen will create “75,000 high paying jobs in the high-tech fields of civil aviation manufacturing, flight operations, maintenance and environmental protection.”\(^{36}\) For all these reasons, NextGen should not be seen as an optional improvement. While the safety benefits alone justify its unfettered implementation, the positive economic benefits it portends are very substantial.

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\(^{35}\) FAA Impact Statement at 2.

The flip-side of these numerous benefits that the FAA has identified is that without NextGen, the FAA has warned that “there will be gridlock in the skies.”\footnote{Federal Aviation Administration, \textit{Fact Sheet – NextGen}, Feb. 14, 2007, http://www.faa.gov/news/fact_sheets/news_story.cfm?newsid=8145 (last visited July 26, 2011).} The agency estimates that absent the transition to NextGen, the inefficiencies of the current system will cost the economy $22 billion annually by 2022, a figure that will grow to $40 billion annually by 2033.\footnote{See id.}

NextGen, however, requires a robust and dependable GPS system. Indeed, RTCA has described NextGen as “highly (if not totally) GPS centric.”\footnote{RTCA, \textit{NextGen Mid-Term Implementation Task Force Report}, at 75 (Sept. 9, 2009) (“NextGen Midterm Report”).} Unfortunately, a GPS system strong enough to support NextGen simply will not exist if LightSquared is permitted to move forward in the form represented by its original proposal or under any of the revised proposals it has put forward thus far. The FAA Impact Statement confirms that if LightSquared is permitted to “deploy[] as currently proposed, the NextGen investments would need to be replanned and most corresponding benefits would be delayed by approximately 10 years.”\footnote{FAA Impact Statement at 4.} That is the time period the FAA conservatively estimates it would take to retrofit the U.S. air fleet with equipment that could accommodate interference from LightSquared, though it also states that the period could be as long as fifteen years.\footnote{\textit{Id.} at 5.} For purposes of its analysis, the FAA assumes that a technical solution can be found,\footnote{\textit{Id.} at 7.} although, as discussed below, no such solution yet exists.\footnote{See infra at III.B.3.} The FAA estimates that the cost of this delay over the next 10 years would amount to a direct loss of $59 billion in NextGen benefits, approximately 794 lives lost, an additional 31 million
tons of carbon dioxide emissions pumped into the atmosphere, and a loss of $2 billion in GPS aviation efficiency benefits.\textsuperscript{44}

All the specific and tangible costs must be balanced against the benefits that LightSquared claims it will deliver with its wholesale wireless broadband system. AOPA and GAMA submit that LightSquared has not provided any evidence that the benefits it claims it will produce in any manner offset the costs of impairing GPS, delaying NextGen, wasting taxpayer money, and depriving the public of the substantial safety, enhanced access, and efficiency benefits that will be realized when NextGen is introduced on its current timetable.

The FAA and the aviation industry already have invested years of work and billions of dollars – including approximately $3 billion in U.S. taxpayer funds – in the effort to make NextGen and all the benefits it promises a reality.\textsuperscript{45} The result of this effort will be safer skies, safer aircraft, greater efficiency, and increased access to air travel and transport for small and rural communities. If NextGen is delayed or scuttled, these benefits will be lost.

C. Approving LightSquared’s Proposal Will Have a Detrimental Effect on International Aviation.

Recent comments from international aviation organizations and authorities confirm that LightSquared’s proposed operations also will have a negative impact on international air transport. Foreign aircraft entering U.S. air space will need to contend with LightSquared’s interference just as U.S. aviation will. AOPA and GAMA represent general aviation pilots and manufacturers from abroad.\textsuperscript{46} The two organizations share the concerns raised by international

\textsuperscript{44} See FAA Impact Statement at 2.
\textsuperscript{45} The FAA estimates that the aviation industry’s investment in GPS and NextGen totals $3-4 billion thus far and that between 2012 and 2018, industry investments are expected to total $9 billion. See id. at 4.
\textsuperscript{46} GAMA’s membership is worldwide and currently includes members from the U.S., Canada, Europe, and Brazil. AOPA is a member of the International Council of Aircraft Owner
colleagues at the International Air Transport Association ("IATA"), the International Civil Aviation Organization ("ICAO"), the European Commission (the "EC"), and the European Positioning Navigation and Timing Industry Council ("EPIC").

Both IATA and ICAO have warned of the dangers to international aircraft flying into U.S. airspace and cautioned the Commission that, to ensure the safety of international flights, it should take all steps necessary to avoid compromising the existing GPS system or delaying the coming benefits of NextGen.47 ICAO explained that LightSquared’s system might disrupt not only NextGen, but also its European counterpart, the SESAR ("Single European Sky ATM Research") program.48 ICAO added that “the potential disruption to aviation use of GPS . . . would not only be limited to the United States. The international aircraft flying into the United States would be directly affected and also similar developments could arise elsewhere and propagate the disruption beyond their borders."49

As EPIC pointed out, under International Telecommunications Union treaty obligations, “international allocations in the frequency bands adjacent to GPS have been used for space communications, radio navigation, and radio astronomy since the 1970s, creating a manageable interference environment for GNSS equipment.”50 Granting LightSquared’s requested operating

and Pilot Associations, which has members in 69 countries worldwide and represents the interests of more than 470,000 aircraft pilots and owners. AOPA also has official observer status at the International Civil Aviation Organization.


48 See id.

49 See id.

50 Letter from John Wilde, Chief Executive, EPIC, to FCC Chairman Julius Genachowski, dated July 4, 2011.
authority would be a significant breach of this international practice, and EPIC pointed out that the U.S. provided the international community with no warning and no opportunity for international parties to reassess their reliance on the U.S. GPS system.

Most recently, the EC wrote the Commission that interference from LightSquared likely will have a direct interference impact on receivers using GPS, citing European analyses indicating that aircraft equipped with devices operating with the future Galileo satellite navigation system that may fly into the United States will receive interference from LightSquared at ranges of 100 – 1000 meters. This interference has considerable potential to negatively affect European aircraft in U.S. airspace in exactly the same way LightSquared transmissions will impair American aviators. In addition, the EC expressed concerns that LightSquared would cause degradation to the availability and reception of U.S. WAAS GPS-augmentation application signals being received by equipment installed in European aircraft. The EC also noted that the Galileo system will offer safety-related applications for maritime and aviation that will be protected from interference under Article 4 of the International Telecommunications Union’s Radio Regulations, and that ITU regulations would assume that approved frequency uses in the U.S. would protect that service from any harmful interference.


52 See EC Letter at 2. This would apply to aircraft capable of utilizing the equivalent and interoperable European Geostationary Navigation Overlay System (“EGNOS”) signals. Id.

53 See id. The Aircraft Owners and Pilots Association of Australia (“AOPA Australia”) recently echoed the international aviation community’s concerns in a letter to FCC Chairman Julius Genachowski, stating as follows:

[G]eneral aviation operators in many countries are equipping with precision navigation systems that leverage the GPS, Galileo, WAAS and EGNOS services and technologies. Whilst we are confident that the FCC would not knowingly put
The FAA Impact Statement addresses what these letters suggest – approval of LightSquared given its risk to aviation use of GPS would be a significant blow to U.S. credibility in the international air transport arena. These international objections demonstrate that the safety and efficiency dangers LightSquared presents are global in scope and that the Commission’s actions will have a substantial negative effect on relations with our international partners, not to mention compromising the safety of international travel into the United States. When coupled with the dangers to the safety of the domestic aviation industry, these international concerns should definitely preclude allowing LightSquared’s proposed operation to proceed.

III. THE LIGHTSQUARED RECOMMENDATION ADMITS THAT THE COMPANY’S ORIGINAL AUTHORIZATION CANNOT BE SAFELY IMPLEMENTED AND, AT THE SAME TIME, fails TO DEMONSTRATE THAT THE REVISED PROPOSAL PROTECTS GENERAL AVIATION SAFETY.

A. LightSquared Admits What the TWG and NPEF Studies Clearly Show – That Its Conditionally Authorized Service Proposal Cannot Be Safely Implemented.

The LightSquared Recommendation effectively admits what AOPA, GAMA, and other GPS users and manufacturers have maintained all along – that the proposal conditionally approved by the Bureau in the LightSquared Order last January is unsafe and cannot be

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that program at risk, we are less certain that design and operational dependencies associated with current and future aircraft equipment for use in US, European and other regions are sufficiently understood to provide assurance about the on-going safety of satellite based navigation and the viability of investments now being made by aircraft operators world-wide, if the LightSquared proposal was allowed to proceed.

See Letter from Phillip Reis, President, AOPA Australia, to FCC Chairman Julius Genachowski, dated July 25, 2011.

54 FAA Impact Statement at 1.
implemented.\textsuperscript{55} The TWG Report shows beyond any reasonable doubt that LightSquared’s conditionally-approved operation will greatly impair the GPS service on which nearly all Americans have come to depend. In particular, LightSquared’s initial proposal would be entirely incompatible with aviation use of GPS.\textsuperscript{56}

The Aviation Subgroup found that operation of LightSquared’s service on the upper 10 MHz of its spectrum was out of the question based on technology available today; that operation on only a single lower 5 MHz channel of spectrum appeared compatible with aviation receivers; and that operation on the entire lower 10 MHz channel of spectrum required further study because the limited analysis the Subgroup performed suggested aviation receivers could not acquire GPS signals in the presence of interference from LightSquared.\textsuperscript{57} RTCA, with which the Aviation Subgroup worked closely, recommended that “upper channel operation should not be allowed,” and recommended that lower 10 MHz operation undergo further study to determine whether it might be feasible.\textsuperscript{58}

\textsuperscript{55} LightSquared Recommendation at 1 (“Although the results vary among devices, the overall conclusion is that transmissions in the 10 MHz band at the top of LightSquared’s downlink frequencies – the band nearest to the GPS frequencies – will adversely affect the performance of a significant number of legacy GPS receivers.”). Throughout the LightSquared Recommendation, LightSquared incorrectly (and for entirely transparent rhetorical purposes) refers to the entire existing installed user base of GPS receivers as “legacy” devices. What LightSquared is calling “legacy GPS receivers” are in fact state-of-the-art devices.

\textsuperscript{56} TWG Final Report at 15-16. See also id. at 27 (“the Aviation Sub-team concluded that all three phases of the currently proposed LightSquared deployment plan are incompatible with aviation GPS operations absent significant mitigation, and would result in a complete loss of GPS operations below 2000 feet above ground level (AGL) over a large radius from the metro deployment center.”).

\textsuperscript{57} See id. See also id. at Table 3.1.10 (showing that under LightSquared’s original proposal, GPS operation will be disrupted over large regions of the country at any normal aircraft altitude).

\textsuperscript{58} RTCA Report at 51. As described above, AOPA and GAMA participated in the RTCA and TWG process through representatives on the RTCA PMC. Supra at 5.
The National Space-Based Positioning, Navigation, and Timing Systems Engineering Forum ("NPEF"), which examined LightSquared’s initial service proposal for the National Executive Committee for Space-Based Positioning, Navigation, and Timing, reached the same conclusion as the TWG and RTCA.59 The NPEF Report found that LightSquared’s proposed operations, including transmission on an upper 10 MHz channel, would cause significant detrimental impacts to all GPS applications it studied.60

B. LightSquared’s Revised Proposal Also Fails To Protect Aviation Use of GPS and Must Be Rejected.

Despite the obvious questions about aviation safety raised by the TWG and RTCA findings, LightSquared’s Recommendation barely mentions aviation.61 The brevity of its discussion of aviation is in stark contrast to the great danger that LightSquared’s deployment would pose to the safety of the nation’s air transportation system, in general, and to general aviation, in particular. These are critical issues of great public concern, yet LightSquared spends less than two pages discussing them. The limited discussion it does include offers nothing that should reassure the Commission that Lightsquared’s modified proposal will adequately protect aviation use of GPS. LightSquared mischaracterizes the RTCA report as essentially a “green light” for LightSquared’s revised proposed operations, suggesting that a few weeks of additional study will alleviate any concerns about LightSquared’s impact on aviation.62 That is simply not true.

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59 See Letter from Lawrence E. Strickling, Assistant Secretary of Commerce for Communications and Information, to FCC Chairman Julius Genachowski, dated July 6, 2011 (attaching NPEF, Assessment of LightSquared Terrestrial Broadband System Effects on GPS Receivers and GPS-dependent Applications (June 1, 2011) (the “NPEF Report”)).

60 NPEF Report at i (Recommendation 1).


62 Id. at 31.
1. The Record Forecloses LightSquared’s Use of the Upper 10 MHz of Its Spectrum.

In its latest proposal, LightSquared offers to refrain from using the upper 10 MHz channel for a “standstill” period of unspecified length. It does hint that the period may be six months. No matter what the length, however, LightSquared says that, after the standstill, it intends a full introduction of service on all its MSS spectrum.\(^63\) The Aviation Subgroup and RTCA Reports completely undercut any such proposal simply to delay use of the upper 10 MHz channel. The reports are unequivocal on this point; they do not even remotely suggest that any future changes will make the upper 10 MHz conducive to LightSquared operation. Indeed, no data from any party suggest that LightSquared’s use of the upper 10 MHz of its spectrum is compatible with aviation.

LightSquared’s suggestion that following a six-month “standstill” filtering technology may become available that could make use of the upper 10 MHz spectrum feasible is nothing but speculation.\(^64\) It provides no basis for the Commission to approve LightSquared’s proposed future operations. The bottom line is that LightSquared admits that its conditionally-authorized proposal will not work, and there is no evidence that its revised proposal will work.

The best course is simply for the FCC to reject LightSquared’s revised proposal and rescind the conditional waiver granted in the *LightSquared Order*. At a minimum, the Commission cannot grant a proposal that may, down the road, allow operation in the upper 10 MHz of LightSquared’s spectrum until LightSquared demonstrates non-interference with aviation uses of GPS. Any such finding of non-interference must be made by a neutral third party only after a process that is at least as rigorous as the recently completed TWG process.

\(^{63}\) *Id.* at 25-26.

\(^{64}\) *Id.*
Such a third party should be given the authority to take as much time as necessary to evaluate LightSquared’s proposals and to receive input from interested parties. The object of any future process must be to make absolutely certain that LightSquared’s upper 10 MHz operations do not cause any interference to aviation use of GPS.

2. The RTCA and Aviation Subgroup Reports Provide No Support for Allowing LightSquared To Begin Operating on Its Lower 10 MHz Spectrum.

LightSquared also badly misportrays the Aviation Subgroup’s and RTCA’s findings regarding its newly proposed limited operations on only a 10 MHz channel, suggesting that RTCA found use of the lower 10 MHz to be compatible with aviation GPS and that the additional recommended study is basically an afterthought that could be completed in a few weeks.65 RTCA and the Aviation Subgroup, in its subsequent report, made clear that they could not conclusively determine whether aviation receivers could acquire GPS signals in the presence of LightSquared transmissions on the lower 10 MHz channel.66 For a pilot relying on GPS for takeoff, landing, or in-flight navigation, that means that all the aspects of his or her primary means of navigation may or may not be available, creating a situation fraught with obvious and intolerable risks. The experts who spent months analyzing the issue recommended more in-depth study of the impact of LightSquared’s proposed operation on a lower 10 MHz channel to determine the probability of GPS failure in the presence of LightSquared signals; they expressed no opinion about what they expected that additional study to show.67 Clearly, an inconclusive study based on interference concerns and recommending further study is no support for allowing LightSquared to proceed.

65 Id. at 31.
66 RTCA Report at 51; TWG Final Report at 15.
67 RTCA Report at 51.
Even the information that LightSquared touts to argue that any currently-produced aviation GPS receiver meeting the FAA’s minimum performance standard has sufficient margin to coexist with lower 10 MHz operations raises serious questions about the safety of LightSquared’s proposal.\(^{68}\) While the data showed margin in some respects, the TWG Final Report points out that at LightSquared’s proposed power level, the GPS receivers failed the WAAS message loss-rate standard.\(^{69}\) WAAS is critical for Localizer Performance with Vertical guidance (“LPV”) approaches, providing both horizontal and vertical guidance that improve aviation safety by allowing a pilot to fly a stabilized approach to a safe landing. LPV approaches also facilitate improved access to airports not served by ground-based navigation aids such as the Instrument Landing System (“ILS”). Lost WAAS messages translate diminished safety and reduced access, particularly to airports not served by scheduled commercial passenger air and air transport service. The study did not identify a power level at which LightSquared might satisfy the WAAS standards. LightSquared’s offer to operate at the “reduced” power of 32 dBW EIRP\(^{70}\) does not help because that is the power level RTCA and the Aviation Subgroup analyzed. The results of the study leave in serious doubt whether LightSquared’s lower 10 MHz operation can coexist with WAAS, and if it cannot, then it cannot coexist with aviation.

AOPA and GAMA have serious doubts that further testing will show LightSquared’s proposed lower 10 MHz operation is compatible with aviation use of GPS. RTCA studied whether airborne GPS systems could both acquire and track GPS signals in the presence of interference from LightSquared. As noted above, RTCA’s analysis did not conclusively determine whether aviation receivers could acquire GPS signals during lower 10 MHz

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\(^{68}\) LightSquared Recommendation at 30-31.

\(^{69}\) Final TWG Report at 46.

\(^{70}\) LightSquared Recommendation at 28.
operations. The RTCA analysis determined only a slightly positive margin for GPS tracking, and the TWG Aviation Sub-team further noted a negative margin for initial GPS signal acquisition.\textsuperscript{71} One of the additional issues RTCA identified for further study was a determination of the cumulative probability distribution function for the aggregate “path-loss,” which could lead to a further reduction in aviation margins for GPS tracking and initial GPS signal acquisition.\textsuperscript{72} This is a crucial issue, and AOPA and GAMA would argue that no reduction in receiver margin is tolerable; in any case further study is absolutely necessary to show that GPS signal tracking and initial acquisition will be sufficiently dependable to ensure safety.

Moreover, even presuming the unlikely outcome that further study shows LightSquared’s lower 10 MHz operations are compatible with on-board aviation GPS devices, the FAA Impact Statement points out that lower 10 MHz operation still would substantially impair aviation because it would interfere with the many aviation uses of high-precision GPS receivers, including, “airfield and flight procedure surveys, flight test tracking, space weather monitoring, and GPS timing for computing resources and mission critical systems.”\textsuperscript{73} The LightSquared Recommendation admits that use of the lower 10 MHz spectrum will cause problems for high-precision devices, but it neither acknowledges nor provides any justification for the dangers those operations would create for the nation’s air transport system. These issues must be resolved before LightSquared’s revised proposal may proceed.

AOPA and GAMA do not oppose additional study. LightSquared’s suggestion, however, that such study can be completed in a matter of weeks is ludicrous. At the moment, RTCA has

\textsuperscript{71} RTCA Report at 51; TWG Final Report at 48-49.
\textsuperscript{72} RTCA Study at 41.
\textsuperscript{73} FAA Impact Statement at 7.
not been asked to undertake any further study, and LightSquared says nothing to suggest that study is proceeding in any other forum. Assuming FAA requested such a study and the request was accepted by RTCA, the study results would have to be made public and vetted by subject-matter experts and interested parties before the Commission could rely on it as the basis for concluding that LightSquared’s proposed lower 10 MHz operations can coexist with GPS. Again, any such study should be conducted by neutral third parties and should be at least as rigorous as the recently completed TWG testing. That process would take far more than the few weeks that LightSquared envisions. The protection of aviation use of GPS, which is critical for public safety, the lives of Americans, and the functioning of the economy, requires no less.

3. The Interference Mitigation LightSquared Suggests Is Impractical, If Not Impossible, and, in Any Case, Would Take Many Years To Accomplish for Aviation Users.

During the proposed six-month “standstill” period, LightSquared’s revised proposal calls for GPS manufacturers and users to begin “improving” their equipment to accommodate LightSquared’s spectrum use.74 LightSquared suggests that “appropriate filtering” installed in GPS devices will solve the interference issues that the TWG identified.75 This part of LightSquared’s proposal is extremely far-fetched in the aviation context for multiple reasons. First, the proposal assumes that suitable filters will soon become available. No evidence suggests that will be the case. Absolutely no filters exist today that can reliably protect GPS from LightSquared interference. Designing such filters presents special challenges, and the FAA Impact Statement outlines those challenges, concluding that presuming an interference solution will be found creates a “moderate technical risk.”76 To be effective, any filters would have to

75 Id.
76 FAA Impact Statement at 7.
screen out LightSquared’s signal without eliminating so much of the GPS signal that the GPS receiver can no longer acquire or track signals or achieve the accuracy and integrity required by the FAA’s minimum performance standards.

Filters for aviation GPS devices also must be capable of withstanding the sudden and extreme changes in temperature, powerful vibrations, and electrostatic discharge inherent in aircraft operations. They must be small enough to install in a wide variety of aircraft where space is almost always at a premium. Even if suitable filters were conceived and developed, they would need to be tested and approved, a process that would take many months, if not years. And, given the number of interested stakeholders, including important government agencies like the FAA and the Department of Defense, that approval process must be inclusive, open, and transparent to ensure that all parties’ views are heard and their rights protected. Such participation inevitably adds time to the process, further demonstrating the folly of LightSquared’s estimation that studies will produce solutions in the next several weeks.

Second, assuming appropriate filters do become available and are incorporated into new aviation GPS products, retrofitting the nearly 150,000 GPS devices that currently are installed in aircraft and utilized in general aviation aircraft throughout the country (not to mention the approximately 375,000 portable aviation GPS devices that have been sold) would be extremely time consuming and highly expensive – taking years and costing government and industry

77 The FAA uses the following industry standards to determine compliance with these requirements: “RTCA DO-160, Environmental Conditions and Test Procedure for Airborne Equipment” and “RTCA DO-254, Design Assurance Guidance for Airborne Electronic Hardware.”
billions of dollars. The processes that have been put in place by the FAA to ensure safe air
transport are designed to create safe aircraft, not to guarantee quick design changes.78

To maintain the high safety standards required for air travel, the FAA requires that all
aircraft components – particularly crucial components like navigation systems – be consistent
with exacting specifications, embodied in Technical Standard Orders (“TSOs”)79 and type
certifications.80 The FAA typically formulates TSOs based on recommendations from
collaborative industry organizations – most frequently RTCA81 – which produce Minimum
Operational Performance Standards (“MOPS”) that are then incorporated by reference in the
TSOs.82 The type certification process requires a showing that any parts used in the aircraft
comply with all applicable TSOs.83 Any significant change in the performance characteristics or
required design elements necessary to accommodate interference from LightSquared would
require changes to both the MOPS and the TSOs governing GPS devices used for aviation.
Changes to the MOPS likely would be handled by RTCA in a collaborative, public process that

78 The FAA Aircraft Certification Service has collaborated with GAMA and the Aerospace
Industries Association (“AIA”) to publish a guide that generally summarizes the FAA’s
equipment approval process. See AIA, ET AL., THE FAA AND INDUSTRY GUIDE TO PRODUCT
media/ CPI_guide_II.pdf.
79 For example, the most recent TSO issued for navigation sensors using GPS and WAAS is
TSO-C145c, which was issued in 2008. This is only one of several TSOs that govern the
functioning and installation of GPS devices on aircraft.
80 See Type Certification, FAA Order No. 8110.4 at 13 (Mar. 28, 2007) (“Type Certification
0/d21193af2d37a88ba862570ab0054c104/$FILE/8110.4C_CHG1_Incorporated.pdf.
81 See RTCA Task Force 4, Final Report of RTCA Task Force 4 “Certification” at
Appendix F-7 (Feb. 26, 1999) (describing process for adopting national standards for aviation
equipment).
82 TSO-C145c, for example, incorporates several MOPS developed by RTCA, including
Minimum Operational Performance Standards for Global Positioning System/Wide Area
83 Type Certification Order at 39.
would involve receiving technical input from interested parties followed by RTCA deliberations and finally promulgation of a new set of MOPS standards.\textsuperscript{84} This process would take anywhere from a minimum of several months to, more likely, years. Changes to the relevant TSOs and FAA airworthiness guidelines would follow, typically adding another lengthy period to the process.

After suitable design criteria for new and retrofitted GPS devices are adopted, manufacturing new devices and retrofitting the installed aircraft can commence. But just as the FAA oversees the manufacture and incorporation of components to aircraft through the TSO, approval and type certification processes, it also closely supervises the process of installing new component parts in existing aircraft. For installation of new GPS devices into existing aircraft, the FAA will require FAA Certified Repair Stations to do the work. Due to resource constraints, the FAA already has a significant backlog for component approvals, so the process of approving and installing new parts in the nearly 150,000 aircraft that will need them will be delayed further by already existing backlogs at the FAA. Indeed, in a recent report on the logistics of NextGen, RTCA expressed great concern that at current levels of FAA staffing, the necessary equipment approvals and installations would take an unacceptably long time:

\begin{quote}
Because both the final oversight and issuance of equipment approval and critical installation approvals rely upon FAA [Aircraft Certification Office (“ACO”)]
engineer involvement, there is great concern that the existing workforce will not be able to accomplish the scope of work according to the necessary timeline. Today, for example, FAA ACOs are strapped for capacity and it is typical for an applicant, for many installation approvals, to wait for about 6 months until FAA engineering resources are available to oversee the project. As these offices are
\end{quote}

currently at capacity for avionics projects, any increase in work demand has the potential to result in significant delays.85

A recent Government Accountability Office report echoed these concerns. It noted that costly delays were a problem given resource constraints at the FAA and recounted the experience of one “aviation industry representative [who] reported that his company incurred a delay of over five years and millions of dollars in costs when it attempted to obtain approvals from Aircraft Certification and Flight Standards field offices.”86 These same delays likely would beset any effort to retrofit the aviation fleet with GPS devices specially designed to accommodate interference from LightSquared.

Taking all these steps into account, the FAA Impact Statement concludes that no realistic chance exists that a suitable interference solution can be invented, qualified for aviation use, and certified for installation across the fleet in less than ten to fifteen years.87 Even if possible, these processes cannot and should not be fast-tracked for LightSquared’s benefit; the review and study they entail are too important to ensuring the integrity and safety of the country’s air travel.

Third, LightSquared’s suggestion that GPS users should pay for whatever hypothetical mitigation technologies emerge is unfair and unacceptable.88 The FCC’s rules are clear that an ATC operator that causes interference is required to resolve that interference.89 LightSquared appears to argue that GPS users should pay for mitigation because they should have known their

85 NextGen Mid-Term Report at Appendix K, 11-12.
86 U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-11-14, AVIATION SAFETY: CERTIFICATION AND APPROVAL PROCESSES ARE GENERALLY VIEWED AS WORKING WELL, BUT BETTER EVALUATIVE INFORMATION NEEDED TO IMPROVE EFFICIENCY at 16-17, 30 (2010).
87 FAA Impact Statement at 5, 7.
88 LightSquared Recommendation at 4 (LightSquared offers to “share the cost of underwriting a workable solution” to interference concerns), 19-20.
89 47 C.F.R. § 25.255.
devices would not work once LightSquared commenced operations. In reality, numerous U.S. government agencies as well as GPS manufacturers and commercial users had no reason to anticipate LightSquared’s proposals since the FCC’s own rules prohibited the operations that LightSquared proposed for the very first time in November 2010 the proposals required a waiver that had not even been suggested before LightSquared filed its modification request late last fall. The Bureau’s waiver made an exception to the FCC’s rules that no party could have foreseen. The party that pays for interference mitigation should be the party causing the interference – and that party is LightSquared.

Given the extremely time consuming and expensive difficulties presented by any mitigation solution involving filtering, LightSquared’s offer of a six-month “standstill” is really no offer at all. The Commission must recognize that for aviation, the process of designing equipment with new filters and introducing that equipment to the installed user base could take up to fifteen years and would require significant contributions from the FAA and private industry. Taking the time to get it right, however, is what a safe aviation system and the public interest demand.

IV. CONCLUSION

For the foregoing reasons, the Commission should reject LightSquared revised proposal and rescind LightSquared’s Order and Authorization. LightSquared has had ample time to demonstrate that its proposed operations are compatible with existing GPS uses, and it has entirely failed. Now that the problems ATC systems can cause to GPS have been conclusively

90 LightSquared Recommendation at 18.
91 See Letter from James A. Kirkland, Vice President and General Counsel, Trimble Navigation Ltd., to Julius P. Knapp, Chief Engineer, Office of Engineering and Technology, Federal Communications Commission, File No. SAT-MOD-20101118-00239, dated June 14, 2011.
documented, the Commission also should commence a rulemaking to reconsider its rules
governing ATC operations to ensure that issues like those implicated by LightSquared’s proposal
or proposals from other broadband providers in the future do not threaten aviation GPS and are
fully reviewed and approved by the FAA and the Department of Defense before such proposals
receive any type of conditional or permanent authorization from the FCC.

Respectfully submitted,

Jens Hennig
Vice President, Operations
General Aviation Manufacturers Association
1400 K St., NW Suite #801
Washington, DC 20005-2485
202-393-1500

Melissa Rudinger
Senior Vice President, Government Affairs
Aircraft Owners and Pilots Association
421 Aviation Way
Frederick, MD 21701
301-695-2000

August 1, 2011