June 20, 2019

Re: FCC action on sharing 1675-1680 MHz - likely interference to GOES GRB and DCS

To Whom It May Concern:

On behalf of the ALERT Users Group (AUG), I am submitting my comments during the public comment period to voice our concerns in order to urge the FCC to safeguard the 1675-1680 MHz spectrum band currently used to receive and transmit hydrologic data for public safety specifically with the use of the Geostationary Orbiting Environmental Satellites (GOES) along with the forthcoming GOES-Series-R Satellites.

AUG is dedicated to reducing injuries, deaths, and property damage caused by floods. Reliable flood forecasting and early detection of flood conditions are critical components of an effective local flood warning program. For over three decades, user groups have maintained close associations with private sector vendors, consultants and government agencies involved with the business of flood warning. This has contributed substantially to the technological advancement of automated real-time monitoring systems. In addition to flood warning, these technologies are useful in many other areas of water resource management and planning.

AUG is specifically concerned with the real-time delivery of stream, rainfall and other crucial hydrological and meteorological data during high risk storm events. The National Oceanic and Atmospheric Administration’s (NOAA) National Weather Service also heavily relies on this data for issuing life-saving flood warnings to the public.

Ground receiving stations reliant on this real-time data are operated and funded by the U.S. Geological Survey (USGS), the U.S. Army Corps of Engineers, the U.S. Bureau of Reclamation, and many regional, state and local water resources and flood control agencies. Across the nation, federal and non-federal agencies work closely together in collecting, sharing, and analyzing this hydrologic data to reduce loss of life, injuries, property damage, school and business closures, and post-flood recovery costs.

**Reliable, accurate, and timely data is imperative for flood warnings, emergency management, operational hydrologic models, water supply management, reservoir operations, and recreation safety. Anything less than real-time information transmitted via the GOES and GOES-R satellites using this spectrum will threaten public safety. We believe the risk of radio frequency interference from sharing this spectrum with commercial terrestrial broadband towers, which are many times stronger than the weak signals relayed via these satellites from space, is a significant threat to the continuing operation of this service.**

In addition, emergency managers, first responders, public works officials, engineers, flood control districts, river authorities, reservoir operators, environmental agencies, local news media, and many others rely heavily on GOES radio frequencies (and will rely upon GOES-R frequencies post launch in 2016) to collect real-time hydrologic data and disseminate urgent warning information. Without this time sensitive information, it would not be possible for these people and their public safety organizations to fulfill critical missions related to floods, hurricanes, droughts, dams, levees, tsunamis and other hydrologic hazards.

**These users of real-time flood information and the vast numbers of citizens and decision makers who rely on their flood communications cannot risk delayed delivery or loss of this information. Unacceptable delays or losses would result from interference in this band that has not been appropriately accounted for in Ligado/New LightSquared planning, as noted in their filings.**

Flooding and drought accounts for a significant amount of the billion dollar weather disasters as tracked and reported by NOAA. The Data Collection System (DCS) data relayed by GOES/GOES-R satellites provide an essential contribution to reducing the impacts of these flooding and drought events.

AUG understands that the proposed high power commercial wireless services are likely to interfere with the low power GOES/GOES-R satellite transmissions to ground receiving stations, especially since these stations will not likely be subject to protection zones.

Manufacturers of receiving equipment have concerns that interference to such strong signals at 1680 MHz will be nearly impossible to mitigate at 1679-1680.4 MHz for the GOES DCS. Engineers indicate that the signal strength of the proposed terrestrial commercial transmitter is over a million times stronger than a DCS downlink to earth system station, which can cause DCS receiver electronics to function improperly.

AUG urges the FCC to help protect all zones across the nation where GOES/GOES-R signals are transmitted or received. Such protection is crucial in avoiding the disruption of vital information used to ensure that the nation’s economic health, safety and security interests are safeguarded. Without significant research customized to our use of GOES/GOES-R AUG is not confident disruptive interference can be avoided.

**Such a clear risk of significant interference to DCS users, who range across multiple areas of the economy and public safety functions, in addition to the nation’s flood and hydrologic warning industry, is simply not acceptable.**

AUG would like the FCC to take the following comments in regards to the below questions into consideration and protect the critical GOES/GOES-R spectrum bands from interference:

1. **Which non-Federal entities operate receive earth stations in the band?** There are non-Federal entities across the Nation that use GOES/GOES-R which Federal Government agencies like NOAA and USGS depend upon to receive hydrologic data. Many of the over 17,000 Data Collection Platforms (DCPs) that transmit rainfall, river stage, reservoir levels, and other meteorological data to the GOES satellites are owned by non-Federal entities, but the earth receive stations are governmentally owned. (See [https://www.nws.noaa.gov/oh/hads/dcp\_operators.html](https://urldefense.proofpoint.com/v2/url?u=https-3A__www.nws.noaa.gov_oh_hads_dcp-5Foperators.html&d=DwMFaQ&c=ZWY66qCYUTYUcOev9C2GlDEcKuYKzoWDVNR_L93Z9mQ&r=sCNsry5zzbBR8GCpXMQIjekRO_YRSk5sf8jAuFpHKsQ&m=dATTbJFbIKUjBZ5fI6ZJjV81F8LmfCc_FG3JzP4ljeU&s=XDBSKK1bgF8FUeJTeXzCCuv_BczsB7k4F8WPQvmPEek&e=) for a list of DCP owners/operators who provide data to the Federal Government's Hydrometeorological Automated Data System (HADS) that, in turn, provides data to end users, both public and private.)
2. **Which entities rely on this direct read out data?** There are many State, local governments, water districts, and private companies which depend on this data as part of warning systems to help protect the public and property.
3. **What other options exist for non-Federal users to access the data from NOAA satellites?**  There are no other options that exist for non-Federal users to access the DCP data aside from the Federal Government sources.
4. **Is a content delivery system operated over the Internet an acceptable alternative?**  No, trying to send data over the Internet is not an acceptable alternative. Telephone company Content Delivery Networks (CDNs) are vulnerable to interruptions and slow-downs, especially during major weather events (such as a hurricane landfall or tornado outbreak) for timely, low latency, reliable data receipt. (See [https://blogs.oracle.com/internetintelligence/internet-impacts-of-hurricanes-harvey-irma-and-maria](https://urldefense.proofpoint.com/v2/url?u=https-3A__blogs.oracle.com_internetintelligence_internet-2Dimpacts-2Dof-2Dhurricanes-2Dharvey-2Dirma-2Dand-2Dmaria&d=DwMFaQ&c=ZWY66qCYUTYUcOev9C2GlDEcKuYKzoWDVNR_L93Z9mQ&r=sCNsry5zzbBR8GCpXMQIjekRO_YRSk5sf8jAuFpHKsQ&m=dATTbJFbIKUjBZ5fI6ZJjV81F8LmfCc_FG3JzP4ljeU&s=vhEgNlKquXlB_fmHWTlovEAoktOC-L6lPKfdczsWL1Q&e=) for a summary of impacts of Hurricanes Harvey, Irma, and Maria on Internet availability).
5. **Would such a system increase the total number of users with reliable access to NOAA satellite data?**  No, having a CDN will not enhance access or increase the total number of users. Many sites do not have the ability to connect to anything phone, internet, cell or radio related due to their remoteness which is why the GOES/GOES-R are used at these locations. It may also actually deter access to critical real-time data by weather and water experts across the private and academic sectors because of the many demands on that network to provide various types of information (not just weather-related data).

Moving forward AUG would suggest the following:

1. Provide protection and priority for the GOES/GOES-R satellite 1675-1680 MHz spectrum band.
2. Require a “prove-it-will-work” period of several years showing that high-power commercial wireless service systems can safely co-occupy with the nationally critical hydrometeorological spectrum without interrupting GOES/GOES-R services.
3. Require a clear and fair process between the wireless service companies and the impacted Federal and non-Federal agencies for resolving spectrum use conflicts when they arise.

On behalf of AUG, the hydrologic warning community and the thousands of citizens we serve, I want to thank you for the opportunity to express our concerns on this important issue.

Sincerely,

Ronald Marotto, P.H.

President, ALERT Users Group