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# **Frequency Matters**

## **Current Spectrum Sharing Status**

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**RF Spectrum**



# Overview



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- **Spectrum Management Defined**
  - **Satellite Program Spectrum Requirements**
  - **Current Spectrum Sharing Status**



# Spectrum Management Defined



**Spectrum Management - Planning, coordinating, and managing joint use of the electromagnetic spectrum through operational requirements, engineering analysis, and applicable National and International administrative procedures & regulations.**

**Spectrum Management Objective - To enable electronic systems to perform their mission functions in the intended environment without causing or suffering unacceptable interference.**



# Satellite Program Spectrum Requirements



- **NESDIS Satellite Program Offices MUST obtain spectrum certification and obtain frequency authorization prior to transmitting. This certification and authorization is obtained by the NESDIS Spectrum Manager and the DOC/NOAA RFMD from the Federal spectrum regulator (National Telecommunication and Information Administration (NTIA))**
- **Satellite Registration with the International Telecommunication Union (ITU) is required in coordination with the NTIA spectrum certification process and interface with DOC/NOAA RFMD**
- **NESDIS Spectrum Management has Program Lifecycle requirements from conception to decommissioning (i.e. NTIA 5 Year Validations, Engineering Change Proposals (ECPs), Radio Frequency Interference (RFI) mitigation, etc.)**



# Spectrum Sharing

## 1695-1710 MHz Auction



- **Middle Class Tax Relief and Job Creation Act of 2012 (PUBLIC LAW 112-96-FEB. 22, 2012)**
- **1695-1710 MHz auction complete (part of AWS-3)**
- **Major NOAA efforts to enable 1695-1710 MHz sharing:**
  - **GOES-R frequencies shifted below 1695 MHz**
  - **Development, management and operation of a Spectrum Coordination Portal to address requests for commercial operations within Protection Zones**
  - **Development, deployment, and operation of a Spectrum Monitoring System to monitor for potential harmful interference**
  - **Replacement of the current Radiosonde Observing Systems (relocate to a lower frequency band)**
- **NOAA ground stations protected by Protection Zones**
- **NOAA and non-federal direct broadcast receivers outside Protection Zones may receive interference**



# 1695-1710 MHz Band Sharing Estimated Costs and Timelines



Entity	MetSat Monitoring & Coordination Portal				RadioSondes Relocation		Total Estimated Costs (\$M)
	TTL (mos.)	Costs (\$M)	TTL (mos.)	Costs (\$M)	TTL (mos.)	Costs (\$M)	
DOC	39	179.474	N/A	3.69	72	80.139	263.303



# Potential Impacts if 1675-1695 MHz is Shared with Mobile Broadband



- **Interference could degrade severe weather monitoring and prediction from satellites (e.g. hurricane tracking, floods,)**
- **Users of Emergency Managers Weather Information Network (EMWIN), 1692.7 MHz, broadcasts outside protection zones will be subject to interference.**
  - **Could prevent reception of data needed to make critical decisions with weather forecasts, warnings, alerts and other safety of life and property information during emergency situations**
  - **Other communications means cannot provide required availability and reliability**
- **Users of DCPR broadcasts, 1692.7 MHz (GOES N-P), 1679.7 MHz (GOES-R) outside protection zones will be subject to interference.**
  - **Could prevent reception of hydrological data from sensors deployed nationwide which provide data needed for flood prediction and warnings**
  - **Could prevent sensor data required for wildfire management**



# Potential Impacts if 1675-1695 MHz is Shared with Mobile Broadband (Cont.)



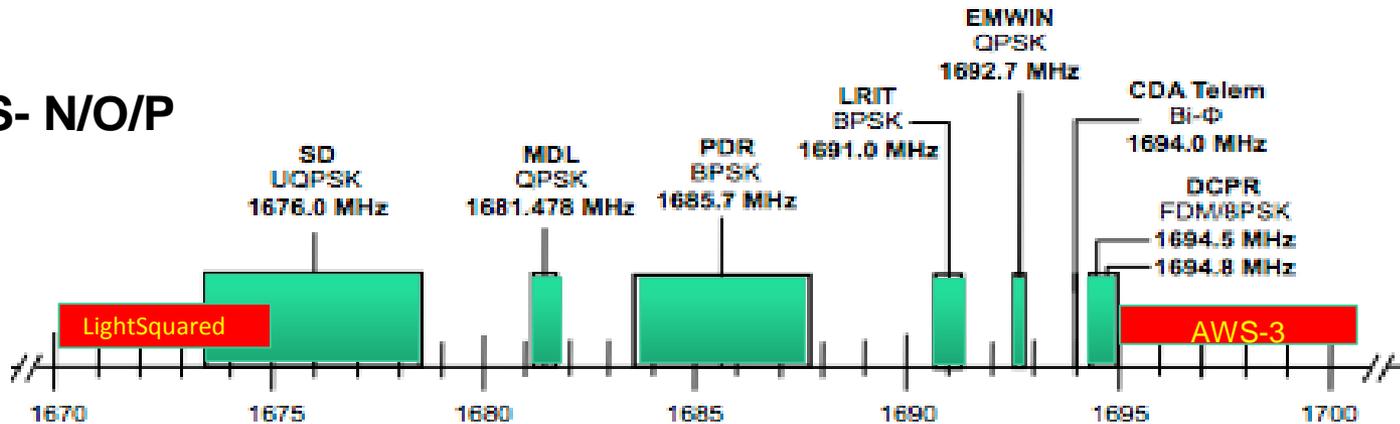
- Possible reduction of quality in the regional and global data sets required for climate monitoring and prediction
- Band is part of globally coordinated meteorological operations
  - Sharing could have a negative impact on global harmonization and interoperability



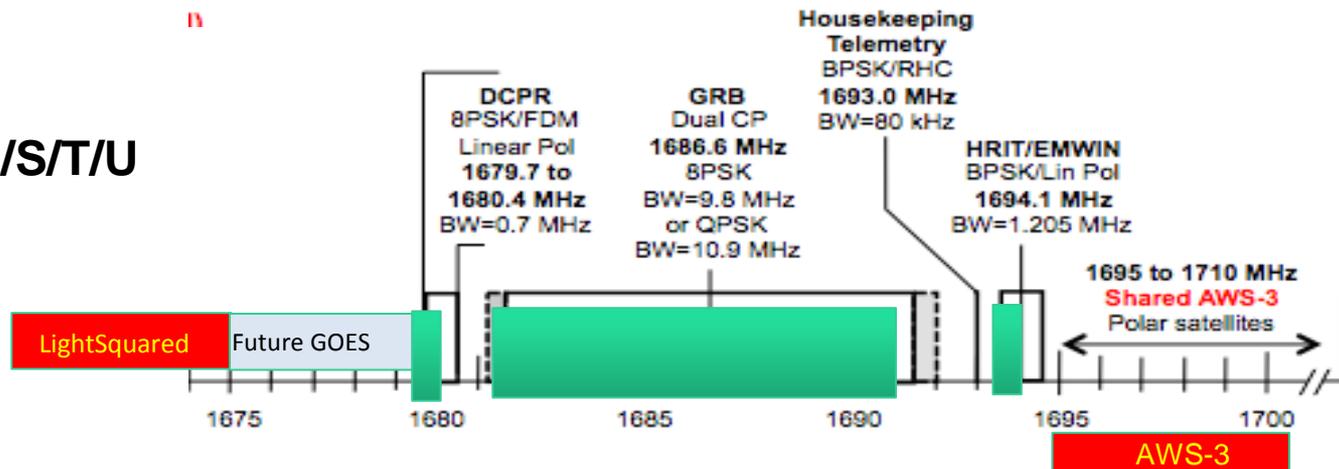
# NOAA's Use of 1675-1695 MHz



## GOES- N/O/P



## GOES- R/S/T/U





# Summary



- **NESDIS spectrum management program functional capabilities:**
  - **National Spectrum Certification/Authorization Package Development**
  - **International ITU Satellite Registrations**
  - **RFI Resolution and Lifecycle Spectrum Updates**
  - **Engagement in National and International Band Re-allocation, Sharing, and Regulatory Changes**