



The U.S. Landscape for Dark and Quiet Skies Regulation and Legislation

Roohi Dalal
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AMERICAN ASTRONOMICAL SOCIETY

An Introduction to AAS

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Expert volunteer committees:

- Committee for Protection of Astronomy and the Space Environment (COMPASSE)
- Committee on Astronomy and Public Policy (CAPP)

Engagement with the IAU CPS.

AAS President



Dara Norman

COMPASSE Co-Chairs



Samantha Lawler and Michelle Wooten

CAPP Co-Chairs



Richard Green and Andrew Baker

Facilitating engagement with industry

AAS co-organized the SATCON1 and SATCON2 workshops which brought together various stakeholders to develop recommendations.

We are currently looking into funding streams for SATCON3.



Existing Legislation

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For the National Science Foundation:

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- (2) supporting research** on potential satellite impacts and benefits and mitigation strategies to be carried out at one or more Foundation supported Federally Funded Research and Development Centers or major multiuser research facilities [...]
- (3) supporting workshops** related to the potential impact of satellite constellations on scientific research and how those constellations could be used to improve scientific research.

Draft and Potential Future Legislation

A BILL

To establish a Center of Excellence for Dark and Quiet
Skies, and for other purposes.

Dark and Quiet Skies Act

Establishes a Center of Excellence for Dark and Quiet Skies, which would carry out transdisciplinary research, develop and disseminate best practices.

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Potential Future Legislation: Codifying coordination agreements

- Currently, the Federal Communications Commission requires various satellite operators to execute a coordination agreement with the National Science Foundation as a condition of licensing.
- As Congress considers commercial space bills, there might be opportunity to have this practice codified through legislative language.

The U.S. Regulatory Landscape



Federal Communications Commission (FCC)

- Licenses and regulates use of radio spectrum.
- Focused on on-orbit operations.
- Requires debris mitigation plans, coordination agreements for licensing.



Federal Aviation Administration (FAA)

- Licenses commercial launch and reentry.



Office of Space Commerce (OSC)

- Licenses commercial remote sensing systems.
- Tasked with developing a licensing framework for “novel space activities.”

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Satellite Spectrum Abundance

- We note that some of the bands considered for repurposing are protected radio astronomy bands, per ITU regulations. We encourage the Commission to add new coordination zones around radio astronomy sites.

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Modernizing the Commission’s National Environmental Policy Act Rules

- We note that it cannot be assumed that satellites have no environmental impact in the jurisdiction of the United States.

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Modernizing Space Licensing

- Proposal to expedite licensing requests presumed to be in the public interest, increasing flexibility for licensed operations.
- Coordination agreements proposed for space systems traveling beyond geosynchronous orbit.
- Establishment of small protection zones around U.S. radio astronomy sites
- Suggested scheduling of radio astronomy observations in 1610.6-1613.8 MHz band outside peak satellite traffic periods.

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Spectrum Auctions

- FCC preparing to auction Upper C-band spectrum (3.98-4.2 GHz) – potential impacts on Very Long Baseline Interferometry (VLBI) and geodesy (used for GNSS calibration).

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Novel Space Activities and Licensing Authorities

- August 13 Executive Order requires Secretary of Commerce to propose a process for licensing novel space activities by mid-January.

Lessons Learned

Progress can often be slow, but it doesn't mean that you aren't being heard.

Working with other stakeholders, especially industry, is key. Focus on places where common ground can be found.

Engage with as many parts of the government as possible, even if you don't see the immediate connections with dark skies.

Come with proposed solutions and requests.

Pathways Forward and Challenges

Coordination agreements remain promising and amenable to all, but:

- Dedicated and sufficient staffing is needed to execute them.
- In such a challenging time for scientific funding, it is expensive for observatories to regularly update code for coordination (e.g. boresight avoidance) – dedicated funding would be very helpful.
- Not always well understood by the community – could yearly reports be made public?

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Novel Space Activities

- Unknown challenges on the horizon with novel space activities, e.g. sunlight as a service and space-based solar power.
- Organizations like AAS can raise awareness and carry out surveys of expected impacts, but how do we bring industry and regulators into the D&QS conversation?