ENVIRONMENTAL HEALTH TRUST

FACT SHEET: FEDERAL LEGISLATION ON WIRELESS COMMUNICATIONS

Satellite Proliferation: Hundreds of Thousands of US Launches With No Environmental Review.[1]

Three Bills Pending

HR 1338 Requires FCC to process satellite applications, with an approach similar to HR 3557. Imposes shot clocks, automatic approvals of applications, and automatic renewals.

HR 1339 Requires the FCC to pursue additional regulations to promote satellite use for precision agriculture.

S. 1648 / HR 682 Allows commercial satellite launches to use spectrum that is currently reserved for national security (passed each chamber, pending reconciliation).

Context: Over 1 Million Satellites Planned

Satellite operators plan over one million satellites globally in the coming years.[2] By comparison, in 2018, prior to the recent wave of expansion, just over 1,300 satellites were active from all previous history.[3] In the US alone, the FCC has received 70,000 applications since 2016 and granted approximately 10,000.[4] With a lifespan of only five years per satellite,[5] the US is on a path to launching 14,000 satellites per year, just to maintain US-licensed networks.

Regulatory Gap

- In 1986, FCC determined that, "based upon the Commission's experience," its authorizations and licensing of satellites were categorically excluded under the National Environmental Policy Act,[6] although the FCC has provided no justification for maintaining this exclusion despite evidence of significant environmental effects of individual and cumulative satellite deployments.[7]
- In 2022, GAO recommended that FCC justify its NEPA categorical exclusion; FCC has not yet complied.[8]
- No federal agency has conducted a comprehensive review of the current body of science on the health and environmental impacts of wireless radiofrequency (RF) radiation,[9] despite significant evidence of serious biological harm.[10] The US Court of Appeals for the DC Circuit has twice ruled the FCC failed to address environmental effects of its actions.[11]

Environmental and Other Impacts of Satellites

- Increase radiofrequency (RF) radiation across the entire planet.[12]
- Release chemical and particulate emissions from satellite launches, which may affect climate and the ozone layer.[13]
- Spread alumina[14] and other toxic metals[15] upon reentry, as each satellite eventually falls to earth and disintegrates.
- Increase the risk of orbital debris, which is a growing threat to space infrastructure, as documented by GAO and others.[16]
- Increase light and radio pollution from satellites, which adversely impacts astronomy and dark skies.[17]
- Increase RF radiation on farms (particularly when combined with other bills pending in Congress[18]) despite known harms to plants,[19] birds, animals, and insects[20] (particularly pollinators and bees[21]), and despite zero assessment of the harms from this radiation or the threat to farm yields.[22]
- Create liability for US taxpayers under international law, as the FCC has not required satellite companies to bear this liability.[23]

Pending Bills Would Fast-track Satellite Deployment, Despite:

- No review of environmental or agricultural impacts
- No national security impact assessment, such as from orbital debris and spectrum sharing.[24]

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References

[1] The FCC Is Supposed to Protect the Environment. It Doesn't.
https://www.propublica.org/article/fcc-environment-cell-towers-failures
Environmental Procedures at the FCC: A Case Study in Corporate Capture (2022)
https://www.fcc.gov/ecfs/document/1222046629894/7

[2] One million (paper) satellites, *Science* 2023
https://www.science.org/doi/10.1126/science.adi4639

[3] Union of Concerned Scientists Satellite Database
https://www.ucsusa.org/resources/satellite-database
As of Nov. 7, 2022, only 14,450 satellites had been launched in all of human history, with 6,800 currently active according to the European Space Agency (ESA).
https://www.space.com/spacex-starlink-satellites.html

[4] https://www.osstp.org/fcc-analysis

[5] https://www.space.com/spacex-starlink-satellites.html

[6] Federal Register at page 14999
https://www.govinfo.gov/content/pkg/FR-1986-04-22/pdf/FR-1986-04-22.pdf

[7] *The Balance Group v. FCC* (opening brief, DC Circuit, 2020), page 29
https://www.thebalancegroup.net/uploads/7/0/4/2/7042138/viasat.bg_--_opening_brief.pdf

[8] GAO noted that "*because large constellations of satellites did not exist [in 1986], FCC's experience up to that point would not have involved the consideration of this technology*." Satellite Licensing: FCC Should Reexamine Its Environmental Review Process for Large Constellations of Satellites (November 2022)
https://www.gao.gov/products/gao-23-105005

[9] https://ehtrust.org/wp-content/uploads/5G-and-Cell-Tower-Radiation-Briefing-1.pdf

[10] https://ehtrust.org/science/top-experimental-epidemiological-studies/

[11] *Environmental Health Trust v. FCC* (DC Circuit, 2021)
https://www.cadc.uscourts.gov/internet/opinions.nsf/FB976465BF00F8BD85258730004EFDF7/$file/20-1025-1910111.pdf
Keetoowah Band of Cherokee Indians v. FCC (DC Circuit, 2019)
https://www.cadc.uscourts.gov/internet/opinions.NSF/4001BED4E8A6A29685258451005085C7/$file/18-1129-1801375.pdf

[12] Global coverage map:
https://orbitalindex.com/feature/starlink-coverage/

[13] Large Constellations of Satellites: Mitigating Environmental and Other Effects (September 2022)
https://www.gao.gov/products/gao-22-105166

[14] See note 7

[15] NOAA scientists link exotic metal particles in the upper atmosphere to rockets, satellites
https://research.noaa.gov/2023/10/16/noaa-scientists-link-exotic-metal-particles-in-the-upper-atmosphere-to-rockets-satellites/

[16] See note 13 above for GAO report, September 2022.
https://www.space.com/starlink-satellite-conjunction-increase-threatens-space-sustainability
See S. 447, currently pending, which seeks to mitigate orbital debris.

[17] *International Dark Sky Association v. FCC* (2022)
https://darksky.org/news/ida-appeals-fcc-approval-of-spacex-gen2-satellite-constellation/
See also, Astronomer makes prediction on satellite pollution, *CNN*, June 11, 2022
https://www.cnn.com/videos/world/2022/06/11/satellite-pollution-threatens-night-sky-fisher-pkg-ndwkd-vpx.cnn

[18] See all bills promoting wireless radiation and antenna proliferation with precision agriculture HR 1339, S.2542, HR 1697/S.734, HR 4351, HR 5062

[19] https://ehtrust.org/electromagnetic-fields-impact-tree-plant-growth/

[20] https://ehtrust.org/environmental-effects-of-wireless-radiation-and-electromagetic-fields/

[21] https://ehtrust.org/published-research-adverse-effect-wireless-technology-electromagnetic-radiation-bees/

[22] https://ehtrust.org/radiofrequency-radiation-effects-on-agronomy-agricultural-crops-and-crop-yields

[23] In 2018, the FCC recognized that under international treaties the US government is liable for damages that US satellites cause abroad, including falling debris. See paragraphs 76-80.
https://www.fcc.gov/document/fcc-launches-review-rules-mitigate-orbital-space-debris-0
In 2020, the FCC decided not to require satellite companies to carry insurance (paragraph 135). FCC has not required satellite companies to indemnify the US government (paragraph 136) for liability (paragraph 177), and acknowledged that: *"[T]hose costs would be borne by U.S. taxpayers."* (paragraph 178)
https://www.fcc.gov/document/fcc-updates-orbital-debris-mitigation-rules-new-space-age-0

[24] Letter to Congressional committees, National Call for Safe Technology (September 19, 2023)
https://drive.google.com/file/d/1dfjM0yvGM08XjPV9XU2s6SRwEKFSbcJo/view