

Before the
FEDERAL COMMUNICATIONS COMMISSION

Washington, D. C. 20554

In the Matter of)
)
Commission Seeks Public Comment on) ET Docket No. 02-135
Spectrum Policy Task Force Report)
)
)

**COMMENTS OF THE
UNITED TELECOM COUNCIL**

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SUMMARY

UTC applauds the initiative of the Spectrum Policy Task Force (SPTF) in re-examining spectrum policies. UTC supports its recommendations designed to mitigate interference and to make more spectrum available for critical infrastructure and other public safety radio services. Critical infrastructure entities continue to make efficient use of their spectrum and are interested in moving to advanced technologies, including new unlicensed services, in addition to the land mobile systems that they have used for decades to safely, effectively and reliably deliver essential services to the public at large. But, the explosive demand for spectrum that the SPTF documents is also causing congestion and interference in bands that CI use for routine and emergency communications. The Commission must recognize the different requirements inherent in spectrum used for business communications and mission-critical systems, and make additional spectrum available for non-commercial services at the same time that it allocates more spectrum for commercial services, whether using the exclusive use or unlicensed model. Utilities can put this spectrum to good use, exploring secondary markets and other options for promoting rural communications. But, the Commission must mitigate interference in existing bands by developing new quantitative standards for interference and by enforcing basic principles of accountability that require licensees to fix the interference that they cause.

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The United Telecom Council (“UTC”) hereby submits its Comments on the *Public Notice* in the above-captioned proceeding.¹ UTC applauds the FCC’s initiative in rethinking its current spectrum policies, and supports the recommendations that would increase spectrum availability for critical infrastructure (CI) as part of the public safety radio services and protect CI communications from interference.

Technology provides some of the answers for meeting spectrum demand, but experience has demonstrated that spectrum policy is as much a matter of principle as detailed rules or abstract calculation. UTC supports fully the SPTF’s recommendations to develop clearer standards for interference and stronger standards for out-of-band emissions and receiver performance. UTC also recommends that spectrum should be allocated for compatible uses and that compatible technologies should be collocated, regardless of user group. These

¹ Commission Seeks Public Comment on Spectrum Policy Task Force Report, ET Docket No. 02-135, FCC 02-322, 2002 WL 31654590 (2002).

common-sense technical solutions must be supplemented by basic principles for enforcing responsibility for interference. Accountability under these basic principles will lay the foundation for enduring rules that keep pace with changes in technology.

Building on that foundation, the Commission should encourage secondary markets; grant flexibility in rural areas; and introduce carefully unlicensed underlays in exclusive-use, and possibly command and control, spectrum bands. Although the members of UTC are interested in these options to promote spectrum efficiency, the Commission should not mistake these options as a substitute for dedicated spectrum for critical infrastructure and public safety emergency communications that is needed immediately.

I. INTRODUCTION

UTC is the national representative on communications matters for the nation's electric, gas, and water utilities, natural gas pipelines and other critical infrastructure industry ("CII") entities. Approximately 1,000 such entities are members of UTC, ranging in size from large combination electric-gas-water utilities that serve millions of customers, to smaller, rural electric cooperatives and water districts that serve only a few thousand customers each. Together with the Critical Infrastructure Communications Coalition ("CICC")², UTC

² The CICC is composed of the following organizations: The American Gas Association, the American Petroleum Institute, the American Public Power Association, the American Water Works Association, the Association of American Railroads, the Edison Electric Institute, the Interstate Natural Gas Association of America, the National Association of Water Companies, the National Rural Electric Cooperative Association and UTC.

represents the telecommunications and information technology interests of virtually every utility, pipeline, railroad and other CI entity in the country.

The members of UTC and its affiliates are directly affected by the recommendations within the SPTF Report. CI entities rely upon private internal communications systems to support their core services, and the systems are designed to the highest standards to ensure the integrity of the infrastructure that delivers essential services to the public at large. As the Commission itself has recognized, “any failure in their ability to communicate by radio could have severe consequences on the public welfare.”³ As such, UTC is pleased to have the opportunity to submit its comments on the SPTF Report.

II. AVOIDING INTERFERENCE IN PRIVATE WIRELESS BANDS

A. UTC supports the recommendation to adopt an interference temperature measurement.

The SPTF Report recommends that the Commission shift its current paradigm for assessing interference – based on transmitter operations – toward operations using real-time adaptation based on actual RF environment measurements of the “interference temperature,” in which transmitters and receivers interact.⁴ The SPTF Report states that interference temperature can be calculated as the power flux density available at an antenna in watts per

³ See, In the Matter of Implementation of Sections 309(j) and 337 of the Communications Act of 1934 as Amended; Promotion of Spectrum Efficient Technologies on Certain Part 90 Frequencies; Establishment of Public Service Radio Pool in the Private Mobile Frequencies Below 800 MHz; Petition for Rule Making of The American Mobile Telecommunications Association, *Report and Order and Further Notice of Proposed Rulemaking*, 15 FCC Rcd. 22709, 22746 at ¶76 (2001)(“BBA97 Report and Order”).

⁴ Spectrum Policy Task Force Report at 27 (rel. Nov. 2002)(hereinafter “SPTF Report”).

meter squared, multiplied by the effective capture area of the receiving antenna in meters squared, divided by both the associated RF bandwidth in Hertz and Boltzman's constant.⁵ The degree of certainty of the estimate of the RF environment would depend on such factors as transmitter signal ranges, uniformity of signal levels over an area, the density of temperature measuring devices and the sharing of data taken by nearby devices; e.g. through *ad hoc* cooperative wireless networks.⁶

UTC is intrigued by the concept of a quantitative standard for interference based upon clear and verifiable measurements. Certainly, this is a concept whose time has come in order to resolve the ongoing rhetorical debate over harmful interference in the 800 MHz PLMR bands, for example. But, the interference standard could also help to provide better guidance for coordinating facilities in the PLMR shared spectrum below 512 MHz as well. Therefore, UTC supports the recommendation of the SPTF Report to develop an interference temperature measurement standard.

However, it is still very much conceptual and needs to be developed in more detail before it can be implemented. As the Commission has recognized, an interference temperature metric must be based upon a study of the noise floor, which has not been conducted or even funded.⁷ It also relies on the creation of "a public/private partnership for long term noise (interference

⁵ *Id.* at 27, n. 38.

⁶ *Id.* at 28.

⁷ *Id.*

temperature) monitoring network and for the archiving of data, for use by the FCC and the public.”⁸

The interference temperature standard itself raises difficult questions about the threshold levels that should be set for each band, geographic region or service.⁹ What is acceptable for some users may not be acceptable for others; however, the FCC should take care not to adopt a position that some user groups are more entitled to interference-free operations than others in the same service. At the same time, a more relaxed standard may be appropriate in order to promote important public interest objectives, such as rural telecommunications and broadband services. The fundamental approach that the FCC should take in any case is to transition to thresholds without undue impact on incumbents. Otherwise, future investment in wireless systems will be discouraged, resulting in economic inefficiencies that will harm the public interest in affordable and reliable communications. Moreover, critical communications may be further disrupted by inappropriately permitting higher levels of interference, resulting in spectrum degradation that cannot easily be remedied and potential loss of life and property.

⁸ *Id.*

⁹ See, SPTF Report at 28 (stating that “different threshold levels could be set for each band, geographic region or service, and these thresholds should be set after the Commission has reviewed the condition of the RF environment in each band.”)

B. UTC supports tightening out-of-band emission limits and increasing receiver performance standards, but opposes user fees on spectrum used by CI.

The SPTF Report recognizes that additional techniques for mitigating interference are necessary, particularly while long-term standards for interference temperature are developed. UTC specifically supports the recommendations to tighten out-of-band emission limits and to improve receiver standards.¹⁰

Ideally, in-band and out-of-band emissions could be controlled by integrating automatic transmitter controls in conjunction with interference temperature sensory and control mechanisms, but that does not preclude the Commission from adopting stricter standards for out-of-band emission limits – at least in the interim – while the industry develops “thermometers” that would adjust output to the RF environment.¹¹ Moreover, there is an immediate need to improve the performance characteristics of transmitters *now* to discourage irresponsible users of shoddy equipment from causing interference to innocent licensees. The lack of clear standards for out-of-band emissions harms the public interest by unfairly shifting economic costs and rewarding inefficiency.

Of course, incumbents have a responsibility to avoid interference by using high-quality receivers. UTC continues to support the need for voluntary receiver performance requirements.¹² However, UTC is concerned about the public policy

¹⁰ See SPTF Report at 31-32.

¹¹ See SPTF Report at 30 (suggesting that interference temperature mechanisms could serve as an alternative to out-of-band emission limitations.)

¹² See, Comments of the United Telecom Council in ET Docket No. 02-135 at 10 (filed July 8, 2002).

implications of the SPTF recommendation to eliminate interference protection to those operations that fail to meet these performance requirements.¹³ There is something fundamentally wrong with punishing the victims of interference for failure to defend themselves against it, particularly when the rules fail to impose reciprocal requirements on in-band and out-of-band emissions against the users that cause the interference. Self-defense may be the best defense, but there remains a role for the FCC to police against intruders, as well.

Similarly, UTC does not believe that the heavy hand of regulation in the form of user fees should be reserved for non-commercial licensees, such as government and CI entities, as a means of encouraging spectrum efficiency where marketplace forces are considered inadequate.¹⁴ First, imposing user fees on auction-exempt entities would be contrary to the intent of Congress to provide access to affordable spectrum for “public safety radio services”. Nor would it be appropriate to presume that “inefficient” use of the spectrum is being made simply because it is not filled to a commercial idea of capacity. The members of UTC are adopting new technologies that increase capacity within limited bandwidth,¹⁵ but at the same time “spectrum must be viewed from a more

¹³ See SPTF Report at 31 (permitting the manufacture of receivers that do not meet voluntary performance requirements, but stating that the Commission would not protect users of such receivers against interference resulting from failure to meet the performance requirements.)

¹⁴ See SPTF Report at 21 (recommending that in those instances where marketplace forces may be inadequate, *e.g.* in spectrum that is allocated for government use, alternative mechanisms such as user fees should be considered to stimulate improvements in efficiency.)

¹⁵ One of UTC’s members, Ameren, is one of many member companies undertaking the process of converting their 800 MHz systems to digital, which increases capacity and functionality. Ameren also is conducting a trial of M/A Com’s Open Sky technology,

subjective and qualitative standpoint,” whereby a premium is placed on instantaneous channel access, superior signal quality, and improved signal coverage that is needed for CI and emergency communications.¹⁶ The SPTF wisely recognized that “one size does not fit all” in spectrum policy.¹⁷ The definition of “spectrum efficiency” most definitely is one of those cases.

C. UTC supports allocating spectrum for compatible uses and collocating compatible technologies.

Since Refarming, UTC has continued to advocate for policies that promote compatible use of PLMR spectrum. It is pleased that the SPTF has reached the similar conclusion that “good neighbor” incentives should become a key element in future spectrum policy. Specifically, the SPTF advocates grouping technically compatible systems and devices in close spectrum proximity. As the SPTF recognizes, there is a delicate balance between the need for flexibility and compatibility. However, UTC submits that compatibility goes beyond technology and includes compatible uses. The Commission should group like users, such as public safety and critical infrastructure, together, as well as like systems and devices. Not only would this help to prevent interference, but it would also promote opportunities to pool resources to develop public safety/public service

and it will connect into the St. Louis Police Department trunked radio network to explore the feasibility connecting the networks together for interoperability. Another UTC member, PSE&G, reports that it has deployed a gas distribution dispatch channel in two districts within its territory, and also uses the same channel for demand-side management for air-conditioning cycling in Summer, as well as state-wide storm restoration.

¹⁶ Comments of UTC in Docket No. 02-135 at 10 (filed Jul. 8, 2002).

¹⁷ SPTF Report at 36.

shared systems, promoting spectrum efficiency and better service to consumers. Many such systems have been developed in partnerships between states or municipalities and CI entities to improve the coverage and overall quality of public safety and safety-related communications.¹⁸ These systems also promote interoperability among first responders in emergency situations, a primary national Homeland Security goal.

D. The FCC must adopt and enforce basic principles of accountability for interference.

Designing detailed regulations for future technologies will be a fruitless task if the Commission does not enforce basic principles of accountability for interference, as well. It is all well and good to provide flexibility to encourage the development of new technologies that can adapt dynamically to avoid causing interference, but inevitably there will be instances where the technology fails to prevent interference. For those instances, the Commission must enforce general principles of accountability that require those that cause the interference to fix it, in a timely fashion and at the interferor's cost. Such rules are simple to implement and must be included in the FCC's policies; reliance on technology is not enough.

In this regard, UTC is encouraged that the SPTF recommended defining clear and exhaustive spectrum rights and responsibilities, based upon:

- 1) Designated frequency range and bandwidth;
- 2) Geographic scope of right to operate;

¹⁸ See n. 15, *above*. These companies are only two among many such endeavors, both among municipal entities and in public/private partnerships.

- 3) Maximum RF output, both in-band and out-of-band; and
- 4) Interference protection, *i.e.* the maximum level of noise/interference that the spectrum user must accept from other RF sources.

UTC agrees that the Commission should continue to follow a basic approach that permits that which is not prohibited under the Communications Act, its Rules, Orders, and licenses or authorizations. This is certainly a more preferable approach than the presumption that anything not affirmatively authorized requires a rule change or waiver before it can be done. However, the absence of specific rules should not represent a loophole through which to escape responsibility for sound system design and implementation. UTC is particularly concerned that commercial wireless carriers, in a drive for maximum capacity at the lowest cost and in the shortest time, may not ensure that their systems are designed and built to good engineering standards, thus potentially causing harm to other licensees that may require complicated proceedings to correct. Thus, the presumption of flexibility must be coupled with basic principles of accountability to correct interference.

III. SPECTRUM USAGE MODELS

A. The Commission should dedicate spectrum for CI communications.

UTC is encouraged that the SPTF recognizes that critical infrastructure requires dedicated spectrum to ensure priority access for critical communications.¹⁹ This recommendation is consistent with the public interest, and carries out the intent of Congress when it directed the FCC to make

¹⁹ SPTF Report at 41.

spectrum available for Public Safety Radio Services for entities such as utilities, pipelines, railroads and other critical infrastructure industries. Critical infrastructure must have dedicated spectrum in order to deliver essential services to the public at large safely, effectively and reliably. The Commission has repeatedly acknowledged this, but it has yet to allocate any dedicated spectrum for critical infrastructure communications. UTC submits that the time is ripe for this kind of reform, as well as the other specific reforms outlined in the SPTF Report.

Utilities and pipelines require spectrum, generally under the “command and control” model, for many of the same reasons that Public Safety does: instantaneous, reliable, communications that ensure the safety of workers and the public at large. Utilities need dedicated spectrum that is available in times of system outages, storms, or other emergency conditions.²⁰ Priority access through commercial carriers is not a reasonable alternative that meets the extreme standards required for CI communications. Current concepts of “priority access service” being developed in the commercial mobile radio service market are viewed as not only inadequate, but completely inappropriate to meet public safety/public service requirements. Commercial systems are not designed with

²⁰ UTC members, PSE&G (New Jersey) reports that Public Safety emergency response is often delayed until the appropriate utility services can be disconnected. The longer it takes utility personnel to respond and make the area safe, the longer the victims wait for emergency medical attention, the greater the loss of property (especially at a fire scene), and the longer public safety personnel must protect the public from the hazard. At fire scenes, unless there is a human life to rescue, firefighters may not enter a burning structure until electric and gas utilities have been disconnected at the street or pole. Such emergency response often has been delayed due to interference to PSE&G’s communications.

significant backup power sources, and fail after only a short time during a power outage. Moreover, they are susceptible to congestion during emergency situations. Therefore, while utilities are ready to make use of other spectrum models for non-emergency needs, UTC urges that the Commission provide command and control spectrum for CI as well as public safety communications.

B. The Commission should not allocate spectrum exclusively through auctions.

UTC is concerned that the SPTF Report favors the exclusive use model, practically to the exclusion of other models, particularly below 5 GHz.²¹ The SPTF recommends that the exclusive use model should be applied to most spectrum, especially the most “highly valued” spectrum. Although economic considerations should be a factor in deciding appropriate business models, the Commission should not lose sight of a different, but no less important, public interest than finances. In sound spectrum policy, auction revenue returns cannot be the sole measure by which spectrum is valued. The public interest is equally well served when spectrum is made available for services that cannot afford to compete for spectrum at auction, but which nonetheless provide vital services to the public at large. Therefore, the Commission must make future allocations for spectrum available for these services apart from the “exclusive use” rubric.

²¹ The exclusive use model gives the licensee transferable rights to the use of specified spectrum within a defined geographic area, with flexible use rights that are governed primarily by technical rules to protect spectrum users against interference. SPTF Report at 35.

Nor should the FCC transition command-and-control bands used by public safety and critical infrastructure to “flexible use” overlays. The SPTF wisely recognized that “attempting a sweeping transition of existing public safety spectrum to exclusive use or commons model could be highly costly and disruptive to existing public safety uses, and does not appear to offer countervailing public interest benefits.”²² For the same reasons, the Commission should not transition command-and-control bands, now including many other user groups, that are used for CI communications. This would negatively impact safety-related communications and undermine infrastructure integrity at a time when it is under increasing demand and faced with security concerns.

At the same time, UTC welcomes a potential hybrid of the command-and-control model to permit multiple uses of spectrum allocated to critical infrastructure. The PLMR model of shared spectrum using frequency coordination had been successful until refarming consolidation brought undue pressure and interference on CI’s formerly protected frequencies. However, licensees moving to advanced technology or seeking to consolidate multiple systems have been hampered by limitations on PLMR spectrum use.²³ UTC would advocate flexible use of a CI spectrum allocation to encourage integrated voice and data systems, as well as systems that could be shared among various

²² SPTF Report at 46.

²³ For example, fixed wireless systems operating on former offset frequencies below 512 MHz have only secondary status (47 C.F.R. §90.235). Many of these systems are mission-critical, providing absolutely vital control of the Nation’s power and water distribution. However, under current rules, these systems are subject to immediate shutdown should any interference be detected to a business licensee, regardless of the nature of the business.

utilities, local government agencies and public safety entities, with management provided by the industries themselves.

C. UTC supports spectrum efficiency through increased use of unlicensed operations.

Given their need for absolute reliability in their communications, CI entities tend to use well-established technologies; but they also use new, including unlicensed, technologies as part of their communications systems. For this reason, UTC supports the recommendation of the SPTF to make additional spectrum available for unlicensed use above 50 GHz, as well as underlays in exclusive-use bands.²⁴ UTC believes that unlicensed operations could provide alternative communications that could alleviate the explosive demand that is creating congestion in licensed spectrum.²⁵ Transitioning issues, such as relocation or grandfathering incumbents, would also be avoided or reduced by the increased use of unlicensed operations.²⁶ However, the Commission must develop and implement safeguards to prevent interference from unlicensed operations from undermining the integrity of CI communications. Therefore, UTC does support increasing opportunities for unlicensed operations to improve CI communications, both as users and as licensees in extremely congested bands.

²⁴ SPTF Report at 40, 54.

²⁵ See SPTF Report at 12-13 (reporting that explosive demand for spectrum-based services makes it important to evolve to spectrum policies that reflect the increasingly dynamic and innovative nature of spectrum use by unlicensed devices.)

²⁶ See SPTF Report at 46 –53 (discussing issues and various methods for transitioning to overlays on existing bands.)

III. PROMOTING ACCESS TO SPECTRUM

A. UTC supports FCC encouragement of the secondary spectrum market.

A solid foundation of basic spectrum policy principles would add incentives for CI entities to pursue secondary markets, and improve services in rural areas. CI entities already are promoting spectral efficiency by transitioning to digital networks, sharing capacity, and integrating unlicensed communications systems to support their core services. However, spectrum efficiency by CI entities would be encouraged further by eliminating barriers to shared systems, and granting flexibility in rural areas.

First, the Commission should re-examine its decision to require critical infrastructure entities and others in the Industrial Business Pool to obtain a waiver of Section 90.179 of the Commission's Rules in order to share frequencies that are allocated to the Public Safety Pool. The Commission did consider this issue twice during its 1998 Biennial Review Proceeding and refused to lift the restriction. It explained that "while there may be certain benefits to allowing public safety to share spectrum with utilities, they are outweighed by the need to assure adequate spectrum is available to meet the present and future needs of the public safety community."²⁷

Eliminating this restriction would remove an obstacle to the deployment of public safety/public service shared systems. The Commission already has taken

²⁷ 1998 Biennial Regulatory Review – 47 CFR §90 – Private Land Mobile Radio Services, *Memorandum Opinion and Order*, WT Docket No. 98-182, 17 FCC Rcd. 9830 at ¶42 (2002). See also 1998 Biennial Regulatory Review, *Report and Order and Further Notice of Proposed Rulemaking*, 15 FCC Rcd. 16,673 at ¶19 (2000).

one step to promote these systems, by allowing utilities to contribute their frequencies without the need for a waiver of Section 90.179. In 2000, it recognized that allowing I/B licensees to share spectrum with public safety and Federal Government users would “allow for additional cost-savings, and would also provide high-quality land mobile communications over a large geographical territory” using modern state-of-the-art systems.²⁸ In order to achieve these economies and spectrum efficiencies, and to promote interoperability between public safety and utilities in emergency response situations, the Commission should lift the restriction also on public safety licensees sharing their frequencies with CI entities. The FCC should note that such requests would not be made, and sharing would not take place, unless the public safety entity considered it worthwhile.

B. UTC supports flexibility in rural areas

Utilities also offer the potential for secondary markets in rural areas. Here again, the Commission could encourage utilities to lease capacity or provide services in rural areas by eliminating restrictions in the rules that discourage or prevent them from doing so. Utilities are uniquely positioned to provide interconnected service to the rural communities in their service territories, and they do have wireless facilities that are located in remote areas that carriers cannot afford to serve.²⁹ But most of those facilities are licensed for private,

²⁸ 1998 Biennial Regulatory Review, *Report and Order and Further Notice of Proposed Rulemaking*, 15 FCC Rcd. 16,673 at ¶21.

²⁹ For example, many municipal utilities have invested significant sums to provide affordable, high quality telecommunications and broadband services to their communities.

rather than commercial, wireless communications. Plus, there is additional administration burden involved with gaining permission to share capacity, either for private or commercial communications. Elimination of such requirements as part of the Commission's move toward flexibility would do much to encourage better efficiency in spectrum use, investment in technology and service to the community.

For example, sharing capacity on a PLMR system is considered a major modification to an existing license, because the station class changes in the process.³⁰ Not only does that entail an application, but frequency coordination as well.³¹ By contrast, if a licensee wants to share capacity on its microwave facilities, no such application is required.³² No useful purpose is served by treating a sharing arrangement of PLMR spectrum as a major modification; the Commission should amend Section 1.929 accordingly.

The larger issue, though, is the restrictions on using private wireless facilities for commercial purposes. UTC applauds the FCC's decision last year to permit licensees to use their private microwave facilities to carry common carrier

³⁰ See Section 1.929 (c)(4)(vi) (stating that a change in the class of a land station, including changing from multiple licensed to cooperative use, and from shared to unshared use is a major modification.)

³¹ See Section 90.175 (stating that each application for a major modification must include a showing of frequency coordination.)

³² See Section 101.135 (permitting shared use of microwave radio stations with other eligible entities provided that the licensee maintains control of the facilities, conducts the sharing pursuant to a written agreement, and maintains an up-to-date list of system sharers and the basis of their eligibility).

traffic.³³ However, there are restrictions on the use of PLMR capacity that prevent utilities from leasing those facilities. Section 90.405 restricts permissible communications on shared channels to *inter alia* those “communications directly related and necessary to those activities which make the licensee eligible for the Part 90 station license.”³⁴ Section 90.179 only permits sharing with other entities that would be eligible for licensing on the frequency themselves. Moreover, it prohibits for-profit entities from sharing PLMR capacity above 800 MHz on a private carrier basis.

Utilities are extremely careful about their use of licensed frequencies; the primary purpose of their communications systems always remains the reliable and safe provision and restoration of power. Their self-policing is more than adequate to negate the need for outdated restrictions. If the Commission were to provide a limited exemption from these rules, utilities would be able to help provide mobile service in rural areas.

In order to provide better coverage in those rural communities, UTC agrees with the SPTF that power limits should be increased in rural areas. This would improve the range of CI communications, and the quality of services that could be offered on a leased-capacity basis, assuming that other restrictions as discussed above were eliminated.

³³ Amendment of Part 101 of the Commission’s Rules to Streamline Processing of Microwave Applications in the Wireless Telecommunications Services, *Report and Order*, 17 FCC Rcd. 15,040, ¶¶ 8-14 (2002).

³⁴ 47 C.F.R. § 90.405.

