

Public Easements in Spectrum: A Solution to Protect the Public Interest

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I. INTRODUCTION

A recent shift in Federal Communications Commission (“FCC”) policy has favored stronger protection for unlicensed spectrum users, even when they encounter interference from licensed operators. In 2009, the predecessor to mobile satellite company LightSquared applied to the FCC for a modification to its license to operate in spectrum blocks adjacent to those used by unlicensed Global Positioning System (“GPS”) devices.¹ In response, the GPS industry raised concerns about interference from the licensee’s spectrum use that would be detrimental to the operation of GPS devices.² As a condition for transfer of the license to LightSquared, the FCC ordered LightSquared to meet certain build-out requirements, which included establishing a 4G mobile network.³ Before LightSquared could begin building out its network, however, the FCC required LightSquared to show that its operations would not cause interference with GPS.⁴ As of 2012, LightSquared had still failed to satisfy this requirement, and both the FCC and the National Telecommunications and Information Administration (“NTIA”) found that LightSquared will not be able to meet its build-out requirements without interfering with GPS.⁵ In March 2012, the FCC proposed suspending indefinitely LightSquared’s authorization to use its license to build a 4G network.⁶ Regardless of the outcome of this dispute, it is illustrative of the shift in FCC policy in recent decades to stronger protection for unlicensed spectrum operators.

The LightSquared matter highlights the tension between licensed and unlicensed spectrum uses. Part 15 of the FCC’s Rules provides for the unlicensed use of certain bands of spectrum, subject to specific

1. See Int’l Bureau Invites Comment on NTIA Letter Regarding LightSquared Conditional Waiver, *Public Notice*, DA 12-214, paras. 2–4 (2012) [hereinafter *LightSquared Notice*], available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-12-214A1.pdf. It is important to note that the unlicensed nature of GPS is slightly different than other services, such as Wi-Fi. Whereas Wi-Fi operates in unlicensed spectrum, such that anyone may set up a Wi-Fi network without permission, the GPS spectrum is licensed but the federal government operates GPS satellites, making GPS service free for use by GPS receivers. See Marshall Brain & Tom Harris, *How GPS Receivers Work*, HOWSTUFFWORKS, <http://electronics.howstuffworks.com/gadgets/travel/gps.htm> (last visited July 21, 2013). Historically, GPS devices have been treated as, and subject to the same rules as, Part 15 unlicensed devices. See, e.g., GARMIN, GPS 15H AND 15L TECHNICAL SPECIFICATIONS 1 (2006), available at http://www8.garmin.com/manuals/237_TechnicalSpecifications.pdf.

2. See *LightSquared Notice*, *supra* note 1, at para. 4. The GPS device industry was concerned about operations in the LightSquared spectrum because GPS devices do not have filters that would adequately block signals from LightSquared’s band. See Jon Brodtkin, *Why LightSquared Failed: It Was Science, Not Politics*, ARS TECHNICA (Feb. 19, 2012, 9:00 PM), <http://arstechnica.com/tech-policy/2012/02/why-lightsquared-failed/>.

3. See *LightSquared Notice*, *supra* note 1, at para. 4.

4. See *id.* at para. 7 (noting that this was required by a 2011 congressional statute).

5. See *id.* at para. 8.

6. See *id.* at para. 9.

prescriptions.⁷ Unlicensed use of spectrum is highly valuable to society, and has provided for the growth and widespread use of such wireless technologies as Wi-Fi, Bluetooth, and GPS.⁸ However, use of unlicensed spectrum is not without costs. FCC regulations stipulate that unlicensed spectrum use must not cause interference to licensed users, and unlicensed users are not formally entitled to any protection against interference from other users, licensed or unlicensed.⁹

Conflicts between unlicensed and licensed users raise spectrum ownership issues¹⁰ because of the process through which licenses are issued, and whatever rights those licenses may entail. 47 U.S.C. section 301 specifically states that spectrum licenses do not convey any rights of ownership, constituting an explicit proscription on the assertion of property rights in spectrum licenses.¹¹ After decades of advocacy by legal and economic scholars for a property approach to spectrum management, however, it seems the FCC is increasingly relying on common law property principles in its treatment of spectrum.¹² In the LightSquared–GPS case, the FCC appeared to recognize the long-standing operation of GPS devices in a certain frequency when it protected GPS services from interference, as it would for a licensed user. The FCC’s recognition of a beneficial use and its protection of that use is similar to a court finding the existence of an easement in real property.

Of course, the FCC cannot adopt pure property law as a spectrum management regime, because doing so would violate a congressional prohibition on private spectrum ownership.¹³ It would also entail some major shifts in settled rights and expectations.¹⁴ Still, adoption of certain

7. 47 C.F.R. § 15.1(a) (2012); *see generally* 47 C.F.R. §§ 15.1–15.407 (2012).

8. *See* Kenneth R. Carter, *Policy Lessons from Personal Communications Services: Licensed vs. Unlicensed Spectrum Access*, 15 *COMMLAW CONSPECTUS* 93, 96, 111–12 (2006).

9. *See* Ellen P. Goodman, *Spectrum Rights in the Telecosm to Come*, 41 *SAN DIEGO L. REV.* 269, 288 (2004); 47 C.F.R. § 15.5(b) (2012).

10. Though legal ownership of spectrum is prohibited, *see* 47 U.S.C. § 301 (2006), users do exercise something like ownership of spectrum. This *de facto* ownership, combined with a lack of a determinate right of exclusion, is what causes some disputes and leaves the FCC with no clear guidance as to how to adjudicate such disputes.

11. *See* 47 U.S.C. § 301 (2006).

12. *See* Dale B. Thompson, *Of Rainbows and Rivers: Lessons for Telecommunications Spectrum Policy from Transitions in Property Rights and Commons in Water Law*, 54 *BUFF. L. REV.* 157, 157–58, 170 (2006) (citing Peter C. Cramton, *The FCC Spectrum Auctions: An Early Assessment*, 6 *J. ECON. & MGMT. STRATEGY* 431 (1997), and noting the 1994 and 1996 spectrum auctions as the FCC’s initial acceptance of a property theory).

13. *See* 47 U.S.C. § 301 (2006) (“It is the purpose of this chapter, among other things, to maintain the control of the United States over all the channels of radio transmission; and to provide for the use of such channels, but not the ownership thereof, by persons for limited periods of time, under licenses granted by Federal authority, and no such license shall be construed to create any right, beyond the terms, conditions, and periods of the license.”).

14. *See* Goodman, *supra* note 9, at 309–11 (discussing the FCC’s “‘first-in-time’ principle, whereby the rights of the more established licensee are privileged over those of the newer entrant, regardless of the efficiency implications”).

property law principles could help resolve some spectrum management issues.¹⁵ Property law concepts could be particularly useful in resolving disputes between licensed and unlicensed users. This Note focuses on the application of the public prescriptive easement concept to certain unlicensed uses of spectrum. Part II provides background on current FCC regulation of unlicensed spectrum and the interaction between property law and FCC spectrum policy. Part III analyzes how the concept of easements could be applied to spectrum. Part IV argues that an easement framework should be adopted for unlicensed spectrum use and provides potential solutions to problems that could arise if the easement framework is utilized.

II. BACKGROUND

A. Statutory and Regulatory Bases for Licensed and Unlicensed Spectrum

Congress passed the Communications Act of 1934 (“the Act”) in response to the problem of increasing radio interference.¹⁶ The Act established the basis for spectrum management policy in the United States.¹⁷ In the Act, Congress created the FCC and authorized it to allocate certain spectrum frequencies to operators via a licensing regime.¹⁸ The license sets out the legal responsibilities and rights of the licensee.¹⁹ Typically, the licensee agrees, among other things, that it will use its allotted spectrum for a specified service and that its spectrum use will not interfere with other licensed uses.²⁰ The law also protects licensees from harmful interference and provides means for adjudication of conflicts between users.²¹ To enforce this protection, the FCC may require the interfering operator to correct its technology or cease operations; the Commission might also levy a fine for failure to comply with the license.²²

Spectrum use is not limited to licensed operators. In the Communications Act, Congress also granted the FCC authority to waive licensing; consequently, the FCC promulgated regulations to allow for certain devices to utilize spectrum without a license.²³ These devices are

15. *See id.* at 274–75.

16. *See id.* at 281–85.

17. *See* 47 U.S.C. § 301 (2006) (“No person shall use or operate any apparatus for the transmission of energy or communications or signals by radio . . . except under and in accordance with this chapter and with a license in that behalf granted under the provisions of this chapter.”).

18. *See id.* § 303.

19. *See id.* § 308(b).

20. *See id.* § 301(d).

21. *See id.* § 333.

22. *See, e.g.*, 47 C.F.R. §§ 1.80, 22.353, 24.237, 90.173(b), 90.403 (2012).

23. *See* 13 Fed. Reg. 4392, 4398 (July 22, 1948) (codified at 47 C.F.R. §§ 15.1–15.4 (2012)).

generally free to operate, subject to the rules laid out in Part 15 of the Commission's Rules, which are meant to prevent any harmful interference they might create.²⁴ For example, unlicensed devices are subject to technical rules governing device design, and operators may be required to alter the design or cease operating under order of the FCC.²⁵ Part 15 rules also make clear that unlicensed operators have limited regulatory rights, stating that they do not have any "vested or recognizable right to continued use of any given frequency by virtue of prior registration or certification of equipment," and must accept interference from other operators, whether licensed or unlicensed.²⁶ In other words, unlike licensees, unlicensed operators are not ensured any formal protections should interference impair the functionality of their services.

Despite these limitations on unlicensed spectrum use, the public has widely adopted technology that utilizes unlicensed spectrum.²⁷ These technologies have become increasingly important to consumers and society at large.²⁸ Technologies that utilize unlicensed spectrum range from personal devices such as garage door openers and baby monitors to widely used communications and navigation services such as Wi-Fi and GPS.²⁹ Wireless local area networks, commonly called Wi-Fi networks, are a prime example of a ubiquitous unlicensed spectrum service that the public

24. See generally 47 C.F.R. § 15 (2012) (stating rules governing unlicensed devices, including minimal emission strength and device or system design). "Harmful interference" is defined as "any emission, radiation or induction that endangers the functioning of a radio navigation service or of other safety services or seriously degrades, obstructs or repeatedly interrupts a radio communications service operating in accordance with this chapter." 47 C.F.R. § 15.3(m) (2012).

25. See Carter, *supra* note 8, at 115 (noting that Part 15 devices normally cause interference to licensed services when they become faulty; subsequently, FCC field personnel locate and repair the source of the interference at the owner's cost).

26. See 47 C.F.R. § 15.5 (2012).

27. See Gregory Staple & Kevin Werbach, *The Coming Spectrum Explosion-A Regulatory and Business Primer*, COMM. LAW., Fall 2003, at 23–25. Up until roughly the year 2000, unlicensed spectrum was generally used for personal devices such as baby monitors and cordless phones. See *id.* at 24. After developments in technology, however, unlicensed devices have become pervasive in society. See *id.* A 2009 report by Richard Thanki surveyed the prevalence of unlicensed spectrum use. See generally RICHARD THANKI, THE ECONOMIC VALUE GENERATED BY CURRENT AND FUTURE ALLOCATIONS OF UNLICENSED SPECTRUM 4 (2009), available at <http://apps.fcc.gov/ecfs/document/view?id=7020039036>. The report notes that in 2008, sales of devices enabled for unlicensed use was roughly equal to devices that utilize licensed spectrum alone, and predicts that by 2014, sales of unlicensed-only devices will greatly outpace sales of both licensed-only and hybrid devices (which are enabled for both licensed and unlicensed spectrum use). *Id.* at 19. The study also predicted that between 2009–2025, unlicensed spectrum use could generate \$16–37 billion per year for the United States economy. *Id.* at 34–35.

28. Unlicensed spectrum was once used for mundane applications such as cordless phones, but market demand has since shifted to wireless local area network equipment which enables increasingly important high-speed data connections. See Staple & Werbach, *supra* note 27, at 24.

29. Goodman, *supra* note 9, at 288.

highly values.³⁰ Wi-Fi networks create wireless connections by operating on radio bands dedicated for unlicensed use.³¹ Perhaps the most valuable function of Wi-Fi is wireless access to the Internet.³² The public's increasing use of wireless devices to connect to the Internet has contributed to the growth of Wi-Fi use over the past decade.³³ As the proliferation of Wi-Fi-utilizing devices such as smartphones and tablets continues, Wi-Fi (and other unlicensed services) will continue to be a valuable resource to the public.³⁴

The FCC has enhanced access to unlicensed spectrum for approximately the past decade, recognizing its current and potential value. The FCC's actions accomplished this goal by permitting unlicensed operations in additional frequency bands, including so-called "white spaces," and lowering regulatory burdens for certain unlicensed operators.³⁵ The FCC has used at least two methods for decreasing regulatory burdens on unlicensed operators: relaxing enforcement of regulatory violations, and adopting rules that are favorable to unlicensed operators.³⁶ For example, the FCC removed some certification requirements of cognitive radio technologies in order to foster their development in 2005.³⁷ The following

30. See Staple & Werbach, *supra* note 27, at 24 ("Since 2000, the market demand for wireless local area network equipment has been extraordinary.").

31. *Discover & Learn*, Wi-Fi ALLIANCE, <http://www.wi-fi.org/discover-and-learn> (last visited Sept. 13, 2013). Wi-Fi operates in the 2.4 GHz or 5 GHz bands and "can be used to connect electronic devices to each other, to the Internet, and to wired networks which use Ethernet technology." *Id.*

32. See KATHRYN ZICKUHR & AARON SMITH, PEW RESEARCH CTR., *DIGITAL DIFFERENCES 2* (2012), available at <http://pewinternet.org/Reports/2012/Digital-differences.aspx>. According to the Pew report, the majority of adults who use mobile devices such as smartphones and tablets, as well as PCs and laptops, utilize wireless access to the Internet on those devices. *Id.*

33. See *id.*

34. See THANKI, *supra* note 27, at 57–62. 3G and 4G cellular services (which operate in licensed spectrum bands) also provide wireless Internet access on mobile devices, but are not utilized as frequently for large data transfers on those devices as is Wi-Fi; one reason is that large data transfers would overburden the cellular networks. *Id.* at 27.

35. See Staple & Werbach, *supra* note 27, at 24–26; Kathryn A. Watson, *White Open Spaces: Unlicensed Access to Unused Television Spectrum Will Provide an Unprecedented Level of Interconnectivity*, 2010 U. ILL. J.L. TECH. & POL'Y 181, 181–82 (2010); Revision of Part 15 of the Comm'n's Rules Regarding Ultra-Wideband Transmission Sys., *Second Report and Order*, FCC 04-285, paras. 10–14 (2004) [hereinafter *UWB Order*], available at <http://sss-mag.com/pdf/FCC-04-285A1.pdf> (discussing lowering regulatory standards and controlling potential interference to permit use of ultra-wideband ("UWB") devices in spectrum bands licensed to other devices); Revision of Part 15 of the Comm'n's Rules to Permit Unlicensed Nat'l Info. Infrastructure (U-NII) Devices in the 5 GHz Band, *Notice of Proposed Rulemaking*, FCC 13-22, para. 2 (2013), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-13-22A1.pdf (proposing expansion of Wi-Fi use of some 5 GHz frequencies that are also used by a licensed operator).

36. See Watson, *supra* note 35, at 181–82.

37. See *Facilitating Opportunities for Flexible, Efficient, and Reliable Spectrum Use Employing Cognitive Radio Technologies*, *Report and Order*, FCC 05-57, para. 3 (2005)

year, the FCC removed limitations on emissions of unlicensed ultra-wideband devices (“UWB”).³⁸ In some conflicts between licensed and unlicensed operators, the FCC stated its intent to protect the unlicensed providers’ interests over the licensed provider.³⁹ In the same Order authorizing higher UWB device emissions, the FCC rejected arguments from licensed providers that the new rules would infringe upon the rights established by their licenses.⁴⁰ In addition to the LightSquared–GPS dispute, the FCC recently waived certain operation requirements for Progeny, a licensed Location and Monitoring Service (“LMS”) provider, on the condition that it show that its services would not interfere with Part 15 devices operating in the same frequency band.⁴¹

Despite actions favoring unlicensed spectrum use, the FCC has neither proposed nor issued regulations eliminating or relaxing the Part 15 rules. Likewise, the FCC has not promulgated any rules that would protect unlicensed operators from interference. However, the decisions mentioned above evidence a limited common law property thinking. I will expand on this potential in the next sections.

B. A Shift to Property Law Concepts in Spectrum Management Policy

At common law, a property owner is generally entitled to a bundle of rights: “the right to possess, the right to use, the right to exclude, [and] the right to transfer.”⁴² An owner may be entitled to compensation if another

[hereinafter *Cognitive Radio Report*], available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-05-57A1.pdf.

38. See *UWB Order*, *supra* note 35, at para. 1.

39. See, e.g., *id.* at paras. 64–68 (stating that Congress has been aware of the FCC’s toleration of unlicensed devices for almost seventy years); *LightSquared Notice*, *supra* note 1, at paras. 3–4 (stating that FCC approval of the transfer of MSS/ATC licenses to LightSquared was predicated upon a finding of a lack of interference to GPS devices in the L-Band despite lacking a license to operate in that band); Request by Progeny LMS, LLC for Waiver of Certain Multilateration Location and Monitoring Serv. Rules, *Order*, DA 11-2036, paras. 24–25 (2011) [hereinafter *Progeny Order*], available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-11-2036A1.pdf (stating that Progeny is obligated to demonstrate through actual field tests that its M-LMS licenses will not cause unacceptable interference with unlicensed Part 15 devices).

40. See *UWB Report*, *supra* note 35, at paras. 33–35.

41. See *Progeny Order*, *supra* note 39, at paras. 24–25. Though the unlicensed operators did not receive the full protection they sought, see Harold Feld, *The Progeny Waiver: Will the FCC Wipe Out Smart Grid? Save Thousands of Lives? Both? This Season on Spectrum Wars!*, WETMACHINE (Mar. 5, 2013), <http://tales-of-the-sausage-factory.wetmachine.com/the-progeny-waiver-will-the-fcc-wipe-out-smart-grid-save-thousands-of-lives-both-this-season-on-spectrum-wars/>, the fact that the unlicensed operators did receive some protection is indicative of the trend towards protection for unlicensed spectrum use.

42. See JESSE DUKEMINIER ET AL., PROPERTY 83–84 (Vicki Been et al. eds., 7th ed. 2010) (noting that certain classes of property are subject to restrictions on one or more of these rights).

interferes with these rights.⁴³ Though spectrum licenses may seem to convey something like property rights, both the Communications Act and 47 C.F.R. section 15 explicitly state that neither spectrum licensees nor unlicensed users have ownership rights in spectrum.⁴⁴ Instead, the FCC historically operated in what it terms a “command-and-control” model of spectrum allocation, that is, it “allocates and assigns frequencies to limited categories of spectrum users for specific government-defined uses.”⁴⁵ The Commission’s authority extends beyond initial allocation and can constrain a licensee’s ability to transfer a license to another user.⁴⁶ The command-and-control model allowed supervision and prevention of interference issues and permitted the FCC to carry out its mandate to manage spectrum use in a manner beneficial to the public.⁴⁷

In the decades following the passage of the first Communications Act, a rich body of commentary developed regarding the economic efficiency of spectrum management policies.⁴⁸ Influential economist Ronald Coase, and commentators who followed, criticized the United States method of spectrum management as economically inefficient.⁴⁹ They argued that the licensing regime did not allow for market forces to determine the best use of spectrum and, in some instances, created barriers for technological innovation.⁵⁰ Coase advocated for private, exclusive ownership of spectrum.⁵¹ According to this theory, the possession of exclusive ownership rights in spectrum would expose spectrum to market forces, facilitating the flow of spectrum to its most valued uses.⁵² Coase contemplated that the rights and obligations of spectrum owners would largely be the same as the owner of any other type of property.⁵³ He argued that applying property law in the context of spectrum would enhance efficiency since property law, in theory, tends to reward those who efficiently use their resources and punish those who do not.⁵⁴ For example, Coase likened interference conflicts between spectrum users to real

43. See *id.* at 84 (discussing conversion remedies); see also *id.* at 133 (discussing compensation as a remedy for adverse possession).

44. See 47 U.S.C. § 301 (2006); 47 C.F.R. § 15.5 (2012).

45. See FCC SPECTRUM POLICY TASK FORCE, REPORT OF THE SPECTRUM EFFICIENCY WORKING GROUP 29 (2002) [hereinafter TASK FORCE REPORT], available at http://transition.fcc.gov/sptf/files/SEWGFinalReport_1.pdf.

46. See 47 U.S.C. § 310(d) (2006) (stating that transfer of licenses are permitted only if the parties file an application with the FCC and that the FCC finds that such a transfer is in the public interest).

47. See Goodman, *supra* note 9, at 281–82, 286.

48. See Thompson, *supra* note 12, at 169–71.

49. See *id.*

50. See Christopher S. Yoo, *Beyond Coase: Emerging Technologies and Property Theory*, 160 U. PA. L. REV. 2189, 2191–92 (2012).

51. See Goodman, *supra* note 9, at 270.

52. See Yoo, *supra* note 50, at 2193.

53. See R. H. Coase, *The Federal Communications Commission*, 2 J.L. & ECON. 1, 14 (1959).

54. See *id.* at 18.

property conflicts that give rise to actions in trespass or nuisance, and argued that these common law doctrines were appropriate and efficient means for parties to settle interference conflicts.⁵⁵ Some courts have been receptive to Coase's spectrum theories and have recognized that while spectrum licenses are not property, a spectrum license is an asset in which spectrum licensees do have some legally protected interests.⁵⁶

While the FCC has yet to adopt a wholesale reformulation of the regulatory scheme for spectrum management, it has responded to some of the inefficiencies in a strict command-and-control regime.⁵⁷ In 1997, a new law required the FCC to issue licenses to the highest bidder at auction, a more market-oriented approach to licensing.⁵⁸ However, the law did not totally fulfill Coase's vision for spectrum management because the FCC still limited how an operator may use its license.⁵⁹

In 2002, the FCC created a Spectrum Policy Task Force to assist in identifying and evaluating spectrum policies that would promote new and expanded use of spectrum services.⁶⁰ New spectrum policies that would have promoted expanded spectrum use were stymied by the fact that "most 'prime' spectrum has been assigned" and that current licensed spectrum is not used efficiently.⁶¹ The Task Force analyzed various models of spectrum management—including those based in property law—and recommended that the FCC integrate some principles from property models into its regulatory policy, particularly to encourage unlicensed device development.⁶² Specifically, the Task Force recommended that where spectrum was scarce and the costs of market-based negotiations high, the FCC should apply an exclusive-use policy that would entitle licensees to rights similar to those of property owners.⁶³ The Task Force also advised that, where spectrum is not scarce and transaction costs are high, a commons model would be more efficient than the command-and-control model.⁶⁴ The Task Force further stated that "[c]ontinuing and expanding

55. *See id.* at 25–26.

56. *See, e.g.,* *IRS v. Subranni (In re Atl. Bus. & Cmty. Dev. Corp.)*, 994 F.2d 1069, 1073–74 (3d Cir. 1993); *Orange Park Fla. T.V., Inc. v. FCC*, 811 F.2d 664, 674 n.19 (D.C. Cir. 1987); *see also* Goodman, *supra* note 9, at 320–21.

57. *See* Yoo, *supra* note 50, at 2191–92.

58. *See* Balanced Budget Act of 1997, Pub. L. No. 105-33, § 3002, 111 Stat. 251 (codified as amended at 47 U.S.C. § 309(j) (2006)).

59. *See* Yoo, *supra* note 50, at 2191–92.

60. Press Release, FCC, FCC Chairman Michael K. Powell Announces Formation of Spectrum Policy Task Force (June 6, 2002), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-223142A1.pdf.

61. *See* TASK FORCE REPORT, *supra* note 45, at 4, 21 (noting that some licensees may be unable to maximize their allotted spectrum due to regulatory restraints or prohibitive costs).

62. *Id.* at 36.

63. *Id.* at 31–32.

64. *Id.* at 32. The commons model, like Coase's exclusive-use model of spectrum allocation, is a long-standing theory among legal scholars. *See* Thompson, *supra* note 12, at 171–72. The model is based on the property law concept of the "commons," or a piece of

the use of the commons model in some lower bands [i.e., sub-3 GHz] also is important to encourage the development of low-power, short-distance communications and emerging technologies.”⁶⁵

Subsequent FCC actions seem to indicate that the FCC has been receptive to the recommendations of the Task Force. For example, the FCC has somewhat relaxed its control over how licensees use their allotted spectrum, allowing for licensees to enter into secondary-use agreements, or leases, with other spectrum users.⁶⁶ Additionally, the FCC provided that licensees and lessees could create “private commons.”⁶⁷ These actions treat spectrum licenses more like property, in that they grant licensees more freedom in choosing how to use the license, similar to the way a property owner is free to dispose of her property by selling some or all of it.⁶⁸ The FCC also considered implementing a policy that would focus enforcement efforts on interference regulations rather than specific use requirements, further freeing licensees to engage in secondary use agreements and expanding unlicensed use.⁶⁹ Though the proposal was ultimately declined, the FCC has stated that it has “implemented a ‘flexible use’ policy that

property to which all members of the community are equally entitled. See *DUKEMINIER ET AL.*, *supra* note 42, at 43. The spectrum commons is frequently analogized to the concept of a public park, where any member of the public may access and enjoy the park as long as the user adheres to certain rules. See *TASK FORCE REPORT*, *supra* note 45, at 33–34. The model is reminiscent of how bands dedicated to unlicensed use function now. See *Goodman*, *supra* note 9, at 360. Both in property law and in spectrum theory, the commons model is subject to risk of the “tragedy of the commons,” where the property is devalued by overuse. See *id.* at 273 n.10; *DUKEMINIER ET AL.*, *supra* note 42, at 53.

65. *TASK FORCE REPORT*, *supra* note 45, at 34.

66. Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Dev. of Secondary Mkts., *Second Report and Order*, FCC 04-167, para 1 (2004) [hereinafter *Secondary Markets Order*], available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-167A1.pdf; Yoo, *supra* note 50, at 2191.

67. *Secondary Markets Order*, *supra* note 66, at paras. 91–92 (describing “private commons” as an option in which a licensee would “lease” its allotted spectrum to a user, subject to certain specifications set by the licensee).

68. See Gregory L. Rosston & Jeffrey S. Steinberg, *Using Market-Based Spectrum Policy to Promote the Public Interest*, 50 *FED. COMM. L.J.* 87, 99 (1997) (“[F]lexibility increases users’ incentives to expand spectrum capacity by enabling them to profit from investments in more efficient use of spectrum, either by using spectrum for additional purposes or by transferring the authorization to use part of the spectrum to a party that values it more highly.”).

69. Establishment of an Interference Temperature Metric to Quantify and Manage Interference & to Expand Available Unlicensed Operation in Certain Fixed, Mobile and Satellite Frequency Bands, *Order*, FCC 07-78, paras. 1–2 (2007), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-07-78A1.pdf. The FCC has “generally establishe[d] protection requirements each time it authorizes a radio service.” *Task Force Report*, *supra* note 45, at 25. The Spectrum Policy Task Force found that this method promotes inefficient spectrum use. *Id.* It recommended that the FCC instead use an “interference temperature” metric, which would set maximum noise floor levels for licensees. *Id.* Any other operator could use the same frequency in the same geographic area as the licensee as long as those operations did not exceed the maximum level of tolerated interference. *Id.*

focuses on technical rules to prevent or limit interference among multiple spectrum uses, rather than prescribing specific uses.”⁷⁰ More recently, the FCC proposed compensating operators for surrendered spectrum via “incentive auctions” in accordance with new statutory authorization.⁷¹ In addition to compensation for relinquishing the spectrum, the statute and proposed regulation require that the relinquishment be voluntary.⁷² The voluntary element of the proposed regulation seems to recognize a property right to exclude, while the compensatory aspect seems to recognize that interference with the licensee’s rights in the license requires compensation, much like property.

C. *The Elements of a Public Prescriptive Easement*

The easement is one property law concept that may be useful to consider in the effort to achieve more efficient spectrum management. In property law, an easement is an interest in land that allows one party to enter upon or use the land of another.⁷³ Easements may be expressly agreed upon, or they can be established by law.⁷⁴ An easement by prescription is an easement that arises under circumstances similar to adverse possession.⁷⁵ Like adverse possession, an easement by prescription requires the following: (1) that the property at issue has been used continuously and without interruption during the statutory period;⁷⁶ (2) that the use has been open and notorious; and (3) that the use was adverse and under a claim of right.⁷⁷ A subtype of these easements is referred to as public prescriptive easements, which require the same elements as individual prescriptive

70. See Expanding the Econ. and Innovation Opportunities of Spectrum Through Incentive Auctions, *Notice of Proposed Rulemaking*, FCC 12-118, para. 23 (2012) [hereinafter *Incentive Auction NPRM*], available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-12-118A1.pdf; see also 47 U.S.C. § 309(j)(8)(G)(i) (2006).

71. See *Incentive Auction NPRM*, supra note 70, at para. 5. The FCC defines the reverse auction as a process “in which broadcast television licensees submit bids to voluntarily relinquish spectrum usage rights in exchange for payments.” *Id.* Like other spectrum policy changes over the past decade, the reverse auction is meant to increase efficient use of spectrum by freeing underused licensed spectrum for flexible use. *Id.*

72. See *id.* at para. 28.

73. See Easement Definition, BLACK’S LAW DICTIONARY (9th ed. 2009)

74. See DUKEMINIER ET AL., supra note 43 at 785.

75. See *id.* at 794. The difference between adverse possession and prescriptive easements is that adverse possession typically applies to possessory estates (such as life estates and fees simple), while easements apply to (1) a right-of-way, (2) a right of entry for any purpose relating to the dominant estate, (3) a right to the support of land and buildings, (4) a right of light and air, (5) a right to water, (6) a right to do some act that would otherwise amount to a nuisance, and (7) a right to place or keep something on the servient estate. BLACK’S LAW DICTIONARY 62, 585-86 (9th ed. 2009); see also RESTATEMENT (THIRD) OF PROP.: SERVITUDES § 2.17 (2000).

76. The “statutory period” refers to the statutory limitation on an owner’s right to bring an action in trespass, or other applicable statute of limitations. See DUKEMINIER ET AL., supra note 42, at 120–21.

77. See *id.* at 122, 795.

easements, except that the owner of the property in question must be put on notice that the property is being used by the public.⁷⁸

The rationale for the doctrine of prescriptive easements is based on utilitarian property theory, which states that the “primary function of property rights is to promote the efficient use of resources.”⁷⁹ The doctrine of prescriptive easements supports efficient use of resources because, when all requirements are met, the law favors the party that has made use of the land over the owner that has not.⁸⁰ The legal title to the property is thus corrected to reflect the actual use of the property.⁸¹ This doctrine also protects the user’s reliance interest in the property developed through long-term use, while punishing the inattentive owner who “sleeps on his or her rights.”⁸²

1. Open and Notorious

The first element necessary to establish a prescriptive easement is the “open and notorious” use of property.⁸³ In general, this requirement means that the acts of the trespasser would put a “reasonably attentive” owner on notice that someone is using her property.⁸⁴ To establish a public prescriptive easement, the public use must have been “so frequent, widespread, and common that a reasonable property owner would have been aware of it.”⁸⁵ For example, in *Stickney v. City of Saco*, the court found that the open and notorious element for a public prescriptive easement was satisfied not only because the private road in question was used by the public, but also because no one had ever asked permission to use it, nor had the owners obstructed public use.⁸⁶ The reasoning behind the open and notorious element is that it gives the owner a “full opportunity to assert his rights and challenge the claimant’s use of the easement.”⁸⁷ An owner who does not take this opportunity is negligent and “sleeping upon his rights.”⁸⁸

78. *See id.* at 798.

79. *See id.* at 50 (noting that the utilitarian theory is “the dominant view of property today”); RESTATEMENT (THIRD) OF PROP.: SERVITUDES § 2.18 cmt. f (2000).

80. *See* RESTATEMENT (THIRD) OF PROP.: SERVITUDES § 2.17 cmt. c (2000).

81. *See id.*

82. *See id.*

83. *See* DUKEMINIER ET AL., *supra* note 42, at 795.

84. *Id.* at 120; *see* RESTATEMENT (THIRD) OF PROP.: SERVITUDES § 2.17 cmt. h (2000) (noting the various ways in which the true owner may be held to have been aware of the adverse possession).

85. 2 AM. JUR. 3D *Proof of Facts* § 5 (1988).

86. *Stickney v. City of Saco*, 770 A.2d 592, 602 (Me. 2001).

87. 2 AM. JUR. 3D *Proof of Facts* § 5 (1988).

88. DUKEMINIER ET AL., *supra* note 42, at 120–21.

2. Adverse and Under a Claim of Right

For a prescriptive easement to be established, adverse possession must be “accompanied by a ‘claim of title.’”⁸⁹ The majority of jurisdictions define this requirement as being satisfied whenever an “owner is dispossessed by someone taking possession inconsistent with . . . his title.”⁹⁰ In the majority of interpretations of this element, the entrant’s state of mind towards the legal ownership of the property is of no consequence—all that matters is that the trespasser entered upon another’s property and that she did not do so in subordination of the true owner’s rights.⁹¹ This means that the adverse possessor must not have used the property with authority or permission from the owner.⁹² For example, if the public uses a private road believing that it is open to public use, or even with knowledge that it may be private, the use is adverse.⁹³ However, if the owner were to inform users that the road belonged to her but that the public was free to use it, the adverse use requirement would not be satisfied.⁹⁴ The reasoning behind the “adverse and under a claim of right” requirement is that if the use is subordinate to the true owner’s rights, the law would consider the use more like a license than an easement.⁹⁵

3. Continuous and Uninterrupted Use

The third element that is required to establish a prescriptive easement is continuous and uninterrupted use during the statutory period, that is, the period during which the owner may bring an action for trespass or a similar action.⁹⁶ The “uninterrupted” element refers to a lack of action by the true owner to stop the adverse use.⁹⁷ The “continuous” element refers to continuous, but not necessarily constant, use in the context of normal usage for a property of that nature.⁹⁸ In the case of public prescriptive easements, this requirement may be met when “exercised by the public at such times as

89. *DUKEMINIER ET AL.*, *supra* note 42, at 131. This element is also termed “claim of right” or “hostility.” *Id.* at 132.

90. *Id.* at 132.

91. *Id.*; see RESTATEMENT (THIRD) OF PROP.: SERVITUDES § 2.16 cmt. f (2000). The other interpretations of this element include the “good-faith” view, which requires that the entrant believe, in good faith, that she has a right to be on the property, and the “aggressive trespasser” view, which requires that the entrant intended to take the property for herself while knowing that it belongs to someone else. See *DUKEMINIER ET AL.*, *supra* note 42, at 132. Under this view, if title is awarded to the adverse possessor, she may be required to pay fair market value for the property. See *id.* at 133.

92. See RESTATEMENT (THIRD) OF PROP.: SERVITUDES § 2.16 cmt. f (2000).

93. See *id.*

94. See *id.*

95. See *id.*

96. See *DUKEMINIER ET AL.*, *supra* note 42, at 120-21.

97. See *Stickney*, 770 A.2d at 602.

98. See *DUKEMINIER ET AL.*, *supra* note 42, at 121.

the public's convenience and business require."⁹⁹ If the adverse possessor uses the property in the way that the average true owner would, this constitutes continuous use.¹⁰⁰ For example, if the public uses a road for occasional hiking for fifteen years, assuming fifteen years satisfies the statutory period, the use would be continuous.¹⁰¹ However, if the owner were to successfully block access, or bring an action for trespass or ejection after fourteen years of the same use, the owner would have interrupted the use and this element would not be satisfied.¹⁰²

4. Public

The defining requirement for the *public* prescriptive easement is, of course, that the property in question is actually used by the public.¹⁰³ Specifically, "the landowner must be put on notice . . . that an adverse right is being claimed by the general public, not by individuals."¹⁰⁴ One factor in determining whether the use is by the general public is the purpose of the use.¹⁰⁵ Generally, courts will not find that the use was public if the use was not for a public purpose or benefit.¹⁰⁶ For example, use of a private road by a group of individuals who own or reside on land adjacent to the road is not public use, while use by members of the community without interest in the adjacent land may establish public use.¹⁰⁷

5. Other Considerations

Two other considerations in determining public prescriptive easements are the applicable statute of limitations, and, if an easement is found, the scope of the easement. Public prescriptive easements require that all the aforementioned elements be met for the duration of the statute of limitations for a trespass or nuisance claim against the entrant.¹⁰⁸ Alternatively, a jurisdiction may have statutory limitations specifically for establishing a prescriptive easement.¹⁰⁹ If any of the elements are not met or cease to be satisfied during this period, there can be no claim of a prescriptive easement.¹¹⁰

99. See 2 AM. JUR. 3D *Proof of Facts* § 7 (2012).

100. See *id.*

101. See RESTATEMENT (THIRD) OF PROP.: SERVITUDES §2.17 cmt. j (2000).

102. See *id.*

103. See 2 AM. JUR. 3D *Proof of Facts* § 2 (2012).

104. See DUKEMINIER ET AL., *supra* note 42, at 798. Courts have occasionally restricted the public easement to a smaller locality when general public use would overburden the land. See RESTATEMENT (THIRD) OF PROP.: SERVITUDES §2.18 cmt. c (2000).

105. See 2 AM. JUR. 3D *Proof of Fact* §§ 2-4 (1988).

106. *Id.*

107. See *id.*

108. See DUKEMINIER ET AL., *supra* note 42, at 120.

109. See *id.*

110. See *id.*

The “nature of the right acquired by prescription is generally measured by the actual use made of the property by the public during the prescriptive period, and the physical extent of the easement is generally determined by the [geographic] extent of such use.”¹¹¹ Recognition of an easement requires that these two measures of scope be fairly definite.¹¹² For example, a public prescriptive easement for a road cannot be established if there is no single route that the public travels over because the extent of the use could not be adequately defined to create a specific interest in the land.¹¹³

As use of unlicensed spectrum increases, conflicts between licensed users and unlicensed users are bound to increase.¹¹⁴ The FCC should adopt a consistent means of adjudicating these conflicts, since a constantly shifting spectrum policy has led to unpredictable results.¹¹⁵ Property law may provide a guide for the FCC to use in developing a coherent framework.

III. UNLICENSED VS. LICENSED DISPUTES IN THE PUBLIC PRESCRIPTIVE EASEMENT FRAMEWORK

In the case of unlicensed spectrum use, the framework of easements by prescription would be useful. This section will explain how the easement framework would function in the spectrum context, analyzing how each element required of public prescriptive elements might be met by a spectrum user.

Spectrum is not a physical resource that can be clearly marked off like a parcel of land, which would seem to limit the applicability of property law concepts to spectrum.¹¹⁶ While establishing a physical presence on another’s land may be relatively easy, it is more difficult to picture how an operator’s use of licensed spectrum would support finding an easement. However, an analysis of the public prescriptive easement doctrine, which takes into consideration principles of notice, duration of use, and use by the public, reveals that these principles can be adapted to describe the way spectrum is used. There are two scenarios in which an operator might pursue a claim for a public prescriptive easement: one in which the unlicensed device interferes with a licensed use, and a second in which the licensed operator interferes with an unlicensed operator (as in the LightSquared–GPS case). For example, in the latter scenario, a court would find that a user of unlicensed spectrum, such as for Wi-Fi, could continue her use at the expense of interference to the licensee. The following

111. See 2 AM. JUR. 3D *Proof of Facts* § 9 (1988).

112. See *id.*

113. See *id.*

114. See Goodman, *supra* note 9, at 393–94.

115. See *id.*

116. See *id.* at 272.

sections will analyze how the prescriptive easement elements might be met in each scenario.

A. *Open and Notorious*

The open and notorious element of prescriptive easements, which requires that the acts of the trespasser would put a reasonably attentive owner on notice that someone is using her property, can be adapted to spectrum use.¹¹⁷ “Acts” for this purpose could include unlicensed device emissions over licensed frequency when the unlicensed transmission interferes with a licensed transmission. When the licensed transmission interferes with an unlicensed transmission, “acts” might mean actual or predicted interference with other operators, since both would put an observer on notice that some operator may be using that band.¹¹⁸ A “reasonably attentive” operator would at least be aware of harmful interference, since by definition such interference would impair the operator’s service or device.¹¹⁹

Again, this element may not be easily satisfied in every case, because in some cases the source of the interference is quite difficult to determine and may be caused by many different devices.¹²⁰ However, in the case of GPS devices, Wi-Fi, and other technologies that would be protected by a public prescriptive easement, it is easier to identify the source of the transmission.¹²¹ Some bands are designated by FCC regulations for unlicensed spectrum use, and adjacent users should be aware of this fact.¹²² GPS devices, Wi-Fi, and other wireless devices, for example, operate in a specific frequency band.¹²³ Therefore, licensees in the same or adjacent bands would be aware of at least the type of unlicensed devices causing the interference, if not the actual source. In the second scenario, unlicensed operators might be able to determine the source of interference from the licensed operators that transmit at a nearby frequency.

To illustrate, in the LightSquared-GPS case, GPS device utilization of the L-band could be considered an open and notorious “act” for the purpose of a public easement analysis. Though the GPS devices did not interfere with LightSquared’s operations and therefore did not “trespass” on LightSquared’s licensed spectrum, the devices could not filter out

117. See *supra* Part II.C.1.

118. See Yoo, *supra* note 50, at 2204–07 (noting that interference can be caused by inanimate objects, terrain and weather). Predicted interference could come in the form of comments to the FCC about laboratory trials in the disputed frequencies. See *LightSquared Notice*, *supra* note 1, at para. 8.

119. See 47 C.F.R. § 15.3 (2012).

120. See Yoo, *supra* note 50, at 2204–07.

121. See *id.*

122. See Staple & Werbach, *supra* note 27, at 24–25.

123. See 47 C.F.R. § 2.106 (2012).

LightSquared's signals after preliminary tests were performed.¹²⁴ Such predicted interference could establish "open and notorious" use of the licensed spectrum because it would put the reasonably attentive licensee on notice that another operator's spectrum use conflicts with license.¹²⁵

B. Adverse and Under a Claim of Right

In property law, the "adverse and under a claim of right" element of an easement describes when the owner's cause of action against the trespasser arises, that is to say, when the trespasser uses the property without the permission of the owner.¹²⁶ A spectrum licensee's correlating cause of action might arise when there is actual interference or potential interference, since the law provides that licensees may enjoy their licensed spectrum free of interference just as real property owners are entitled to enjoy their land free of trespass.¹²⁷ An operator who is transmitting at a power level that would interfere with an adjacent licensee's use is reducing the quality of the licensee's spectrum and is inconsistent with the licensee's "title."¹²⁸ The majority interpretation of the "adverse and under a claim of right" element in property law is also well suited for spectrum disputes. Devices unintentionally transmit spurious emissions out of their assigned bands, and the provider might not even be aware of this until notified by an adjacent user.¹²⁹ Therefore, state of mind would be difficult to determine. Under the majority interpretation, it would only matter that the operator is creating interference or emitting at a level that would cause interference. State of mind would not be relevant so long as the operator is not interfering pursuant to authorization or permission of the licensee.

124. See *LightSquared Notice*, *supra* note 1, at para. 8; Brodtkin, *supra* note 2.

125. Note that in real property, a property owner generally may not prevent a neighbor from building a structure that would interfere with the light, air, or view on the owner's property. See, e.g., *Fontainebleau Hotel Corp. v. Forty-Five Twenty-Five, Inc.*, 114 So. 2d 357, 359 (1959) (quoting *Reavers v. Martin Theatres*, 52 So. 2d 682, 683 (Fla. Dist. Ct. App. 1951)); JAMES W. ELY, JR. & JON W. BRUCE, *THE LAW OF EASEMENTS AND LICENSES IN LAND* § 5.30 (2013) (noting that in the United States, courts have generally found that easements in light, air, or view may not be established by prescription). For example, the court in *Fontainebleau* found that a property owner could not enjoin its neighbor from building a structure that would cast shade on its beach area. See *Fontainebleau*, 114 So. 2d at 360. Following this logic, one might argue that a spectrum user similarly should not be able to establish a prescriptive easement to prevent predicted interference. Some courts, however, have made exception to the general rule against easements in light to protect users of solar-powered technology. See ELY & BRUCE, *supra*, § 5.30; *Tenn. v. 889 Assocs., Ltd.*, 500 A.2d 366, 377 (N.H. 1985). Similarly, an exception to the general rule might be made in order to protect and foster spectrum use that satisfies the other elements of a public prescriptive easement.

126. See *supra* Part II.C.2.

127. See 47 U.S.C. § 333 (2006).

128. In this case, the licensee's title is the license to use the spectrum.

129. See Yoo, *supra* note 50, at 2212–13.

This element may be more difficult to establish in the scenario of an unlicensed operator seeking protection from a licensed operator because the analogy from property use to spectrum use is not as clear. In this case, the unlicensed operator is not “trespassing” on the licensee’s allotted spectrum because it is not creating interference but rather receiving it. However, the “adverse and under claim of right” element can be adapted for this scenario. The unlicensed operator’s adverse action to the licensee’s “claim of right” in this scenario would be the inability to operate without experiencing interference from the licensee’s operations in an adjacent band. While the unlicensed operator in this situation is not technically using the licensee’s spectrum, it is acting adverse to the licensee’s use of that spectrum if it is to operate without interference because this would necessarily limit the licensee’s ability to fully utilize (or “enjoy”) its licensed spectrum. For example, in the LightSquared-GPS case, GPS devices could not filter out interference from LightSquared’s operations in an adjacent band.¹³⁰ In this situation, GPS device operations were adverse to LightSquared’s licensed use of spectrum because the two operations could not coexist without interference to GPS devices.¹³¹ In other words, GPS devices were “trespassing” on LightSquared’s licensed spectrum, in that they could not fully operate without limiting LightSquared’s use of its licensed spectrum.¹³²

C. Continuous and Uninterrupted

In property law, the “continuous and uninterrupted” element of an easement is established when the trespasser uses another’s land in a manner consistent with how the average owner would use the land during the statutory period, without the owner attempting to block the trespasser’s access to the land during that time.¹³³ In the context of spectrum, continuous use could likewise be measured. If the unlicensed service makes use of the spectrum in a way that a licensee would, the use could be considered continuous for the purpose of establishing an easement. Under this standard, so long as the unlicensed operator is transmitting in the way an average operator would under the circumstances (as opposed to a random out-of-band emission), the continuous element would be satisfied. This standard would work quite well for spectrum use since emissions may or may not be constant.¹³⁴ The “uninterrupted” element could also be easily

130. See Brodtkin, *supra* note 2.

131. See *id.*; see also *LightSquared Notice*, *supra* note 1, at para. 6.

132. Taken to an extreme, under this element, it might be argued that a spectrum user might manufacture a device that receives interference from wide range of spectrum, and thus claim an easement in that range of spectrum. However, such a user would not be putting that spectrum to productive use and, it is unlikely that such a user could meet all the elements for a public prescriptive easement throughout the statutory period.

133. See *supra* Part II.C.3.

134. See Goodman, *supra* note 9, at 387.

met. If the licensee formally complained of interference or of a possible conflict with an unlicensed operator before the statutory period, the unlicensed operator's ability to claim an easement would end. Likewise, if an unlicensed operator utilized spectrum without conflict with a licensee during a statutory period, the "continuous and uninterrupted" element could be met in the scenario where the unlicensed operator seeks protection from a licensed operator. In the *LightSquared-GPS* case, for example, the federal government made GPS available for civilian use in the 1980s and, until the *LightSquared* case, operated in its band without major conflict.¹³⁵ Furthermore, GPS devices operated in a typical manner during that time; that is to say, they consistently used a certain band of spectrum. Therefore, in this situation, GPS would be able to meet the "continuous and uninterrupted" element of an easement.

D. Public

The "public" element of a public easement requires that the property at issue be used by or for the benefit of the general public, not just for a specific group of individuals.¹³⁶ For certain uses of unlicensed spectrum, the "public" requirement would be easily met. Many devices that use unlicensed spectrum are sold to and used by the public—Wi-Fi routers, cell phones, and so forth.¹³⁷ The way the public uses spectrum through these devices is more like a road thought to be open to the public than a private road used by individuals with adjacent property. Furthermore, the private members of the public who purchase wireless products are not the only unlicensed user—government entities also use unlicensed spectrum.¹³⁸ Perhaps not every unlicensed spectrum use would meet this standard, but it would clearly be met by many unlicensed services that are beneficial to the public. The unlicensed operator's relationship to the licensee (i.e., whether the unlicensed operator is interfering with a licensee's operations or is seeking protection from a licensee's interference with its operations) is of no consequence to the analysis for this element because in either scenario, the "public" element will be satisfied as long the unlicensed operation at issue is used by or for the benefit of the public. For example, GPS would meet the "public" element of a potential easement because the band in which many GPS devices operate is specifically available for public use and is, in fact, used by the public for a variety of applications.¹³⁹

135. See *What is GPS?*, GARMIN, <http://www8.garmin.com/aboutGPS/> (last visited Sept. 2, 2013); Stephen Lawson, *LightSquared v. GPS Raises Big Spectrum Issues*, PCWORLD (July 25, 2011, 2:30 PM), <http://www.pcworld.com/article/236501/article.html>.

136. See *supra* Part II.C.4.

137. See Thompson, *supra* note 12, at 166.

138. See *id.*

139. See *Applications*, GARMIN, <http://www8.garmin.com/aboutGPS/applications.html> (last visited Sept. 2, 2013).

E. Statute of Limitations

There are various regulations that could be used to establish a public easement in spectrum. Though interference is the natural analog to a trespass in the context of spectrum, regulations regarding procedures for interference complaints do not specifically state a time within which a complaint must be made.¹⁴⁰ 47 U.S.C. section 503 does limit the period during which the FCC may fine an interfering operator to one year after the complaint is made; however, this would not be helpful for measuring a time during which *the licensee* should be on notice of a “trespasser.”¹⁴¹

To find an adequate solution to this problem, it is useful to remember the purpose of adverse possession and prescriptive easement laws—to reward the party that has “earned” his right to the property by making use of it and to punish the owner who has “slept” on her rights.¹⁴² The FCC places certain obligations on licensees to ensure that they are making efficient use of their licenses in the form of build-out and “substantial service” requirements.¹⁴³ These regulations mandate that a licensee provide a defined level of service within a period of time.¹⁴⁴ For example, the regulations governing Broadband PCS require that

licensees of 30 MHz blocks must . . . provide adequate service to at least one-third of the population in their licensed area within five years of being licensed and two-thirds of the population in their licensed area within ten years of being licensed. Licensees may, in the alternative, provide substantial service to their licensed area within the appropriate five- and ten-year benchmarks.¹⁴⁵

The regulations further specify that failure to meet the requirement results in forfeiture or non-renewal of the license.¹⁴⁶ The FCC has very

140. See, e.g., 47 C.F.R. §§ 90.674, 22.879, 25.274 (2012).

141. No forfeiture penalty shall be determined or imposed against any person under this subsection if--

(A) such person holds a broadcast station license issued under subchapter III of this chapter and if the violation charged occurred--

(i) more than 1 year prior to the date of issuance of the required notice or notice of apparent liability; or

(ii) prior to the date of commencement of the current term of such license, whichever is earlier.

47 U.S.C. § 503 (2006).

142. See *DUKEMINIER ET AL.*, *supra* note 42, at 120–21.

143. See 47 C.F.R. § 27.14 (2012).

144. *Id.*

145. See 47 C.F.R. § 24.203 (2012) (“Substantial service” is defined as service which is sound, favorable, and substantially above a level of mediocre service which just might minimally warrant renewal.”).

146. *Id.*

similar construction and renewal requirements for many types of licensees.¹⁴⁷

These regulations could establish the time in which a licensee must make use of its allotted spectrum after the FCC grants the license. If, within that time, the licensee does not recognize that another operator causes or will cause harmful interference, this could establish that the licensee was not reasonably attentive in making efficient use of its spectrum allotment and has therefore “slept” on its rights as a licensee, while the unlicensed user has “earned” rights by using the spectrum to provide service to the public. Likewise, in the scenario where the licensee interferes with an unlicensed operator, if the conflict is not recognized and raised within the build-out period, the claimant would lose the right to bring the dispute before the FCC.

There are some difficulties with adapting the statute of limitations requirement of a prescriptive easement in real property to current FCC procedures. In the *LightSquared–GPS* case, for example, GPS raised the issue of potential interference during the applicable period, causing *LightSquared* to take actions that, under this framework, would likely toll the statute of limitations.¹⁴⁸ To adequately fit the statutory period element of public prescriptive easements to spectrum disputes, it may be necessary to establish new procedures, such as a requirement that the party seeking ejection make a special filing.

F. *Scope of the Easement*

While spectrum is not a physical entity that can be obviously parceled off, the FCC does create “parcels,” or blocks, of spectrum. The FCC either licenses operators to use a certain block of spectrum or allocates it to unlicensed uses.¹⁴⁹ Different services use different bandwidth; for example, Wi-Fi devices operate in the unlicensed 2.4 GHz, while the 4.9 GHz band is dedicated to public safety use.¹⁵⁰ The scope of an easement for an unlicensed use could be measured by the frequency that is necessary for functional transmission. The *Progeny* and *LightSquared* cases are illustrative: in both cases, the licensee was required to show that it would not interfere with unlicensed services.¹⁵¹ The scope of an easement

147. See, e.g., 47 C.F.R. §§ 24.203, 27.14, 90.743 (2012) (Broadband PCS, wireless communications services, and land mobile radio services, respectively).

148. See *LightSquared Notice*, *supra* note 1, at paras. 1–7. If GPS already had established an easement, its notice of potential interference could toll the statute of limitations if it were seeking ejection of *LightSquared*.

149. See Goodman, *supra* note 9, at 280–81.

150. See 47 C.F.R. § 2.106 (2012); ABB INC., THE 4.9 GHz SPECTRUM AND MUNICIPAL UTILITIES (2013), available at http://www.tropos.com/pdf/technology_briefs/4.9_GHz_Spectrum_Municipal_Utilities.pdf.

151. See *LightSquared Notice*, *supra* note 1, at para. 9; *Progeny Order*, *supra* note 39, at para. 25.

for the unlicensed user would be to the extent that other transmissions do not create interference with its operations.

The prescriptive easement framework could be used when an unlicensed operator interferes with a licensee's spectrum use or when an unlicensed operator experiences interference from a licensee. The scenario where an unlicensed operator interferes with a licensee's spectrum use may more clearly correlate to the traditional concepts of "trespass" and other easement elements, but with some adaptations, the easement framework can also be used to analyze and resolve disputes in a scenario where the unlicensed operator seeks protection from a licensee.

IV. WHY THE PUBLIC PRESCRIPTIVE EASEMENT FRAMEWORK SHOULD BE ADOPTED

The FCC should apply the public prescriptive easement framework to unlicensed use that is facing a complaint of interference or complains of potential interference. It could do so by issuing new regulations that adopt this framework. It is probable that not all unlicensed spectrum operators would meet every requirement necessary to establish a public prescriptive easement, which limits the types of operators who would benefit from implementation of this framework. However, the types of unlicensed uses that would meet the necessary requirements are services that merit protection in order to ensure that the public has access to these valuable services.

Furthermore, in hotly contested cases like the dispute between GPS device manufacturers and LightSquared, the public prescriptive easement framework would allow for more reasoned and predictable outcomes. This is in contrast to the FCC's recent, seemingly random decisions to protect certain unlicensed operators in disputes with licensees. This section will further discuss the benefits of using the public prescriptive easement framework as well as the potential hurdles to implementing the framework.

A. Benefits

1. Public Interest

The FCC has a broad mandate to carry out its duties as the "public convenience, interest, or necessity requires."¹⁵² The FCC promotes the use of unlicensed spectrum on the basis that it furthers the public interest.¹⁵³ Specifically, the FCC has stated that it seeks to foster technological development by allowing developers access to unlicensed spectrum.¹⁵⁴ New

152. See 47 U.S.C. § 303 (2006).

153. See Watson, *supra* note 35, at 181–82.

154. See *id.* at 186–87.

technology can provide direct benefits to the public in the form of new services or devices. It can also benefit the public in the form of increased spectrum efficiency since new technologies like smart radio are better at economizing spectrum use.¹⁵⁵ Finally, with access to unlicensed spectrum, developers can easily overcome one very costly barrier to entry—obtaining a license from the FCC.¹⁵⁶ These cost savings may be passed along to consumers as they need only purchase the spectrum-using device instead of paying a fee for use of the provider’s service.¹⁵⁷

The public prescriptive easement framework is harmonious with the goal of spurring development of public-benefitting technology because one of the requirements is that the use must be by the public and for the benefit of the public, not just a small group of individuals. The “public” element echoes the FCC’s public-interest mandate because, in most cases, protecting services widely used by the public will be in the public interest. This can provide assurance that where there are competing interests, the public prescriptive easement doctrine as applied to spectrum will protect the interest most benefitting the public.

2. Equity

The public prescriptive easement doctrine would be fairer than current regulations because it would more equitably balance the interests of unlicensed and licensed operators. The current rules clearly favor licensees over unlicensed operators.¹⁵⁸ There are some obvious justifications for this policy; for one, licensees spend large sums of money and other resources in reliance on certain guarantees provided by the license, such as interference protection.¹⁵⁹ Manufacturers and service providers, however, also spend their resources in reliance on access to unlicensed spectrum necessary to develop and operate their technologies.¹⁶⁰ Consumers purchase these products or services based on an implicit guarantee that they will be able to access spectrum.¹⁶¹ Because, in some circumstances, all parties may have equal and competing interests in spectrum access free of interference, at least one party must be disregarded in favor of the other. The current law and regulations simply protect one party in all circumstances where

155. See *Cognitive Radio Report*, *supra* note 37, at para. 4.

156. See Carter, *supra* note 8, at 111.

157. See Harold Feld, *From Third Class Citizen to First Among Equals: Rethinking the Place of Unlicensed Spectrum in the FCC Hierarchy*, 15 *COMMLAW CONSPECTUS* 53, 54 (2006).

158. See *UWB Order*, *supra* note 35, at para. 21.

159. See Goodman, *supra* note 9, at 284.

160. See Feld, *supra* note 157, at 54.

161. See Thompson, *supra* note 12, at 166.

unlicensed and licensed uses conflict—the licensee.¹⁶² But this may not always be the most equitable resolution to the dispute, particularly with consideration of the “public interest” mandate.

For example, in the LightSquared–GPS dispute, LightSquared argued that it spent a vast amount of resources in reliance on the license.¹⁶³ However, GPS device manufacturers made note of meaningful interests in protecting the functionality of GPS beyond money spent—access to the service itself is highly valuable for the public and the government.

The public prescriptive easement doctrine applied in this situation would lead to the result that is most harmonious with the goals of the FCC and would provide a reasoned, balanced basis for the outcome. GPS, having utilized certain spectrum bands for at least a decade to the extent that the FCC was aware of it, and meeting the requirement of public use, would satisfy the requirements of a public prescriptive easement. This resolves the dispute in favor of the established service that is already supplying a benefit to the public, rather than the licensee who has not yet made its service available.

3. Uncertainty

Implementation of the public prescriptive easement doctrine would help reduce regulatory uncertainty for both licensees and unlicensed spectrum users. Despite contrary regulations, the FCC has recently issued decisions to protect or expand unlicensed access in the face of interference concerns from licensees. This situation creates uncertainty in the law since it seems neither party can be assured to any degree which one will merit the FCC’s protection. Applying a prescriptive easement framework would eradicate the problem of uncertainty in the current law. Certainty in the law is desirable because parties may more confidently invest in spectrum with the knowledge that their spectrum use will not be subjected to inconsistent application of the law. An established framework would also improve adjudication of disputes. By providing certain requirements, both unlicensed and licensed users alike will be aware of the actions that are necessary to succeed in a conflict over interference by taking steps that satisfy the elements of a prescriptive easement.

162. As discussed above, the FCC’s actions toward unlicensed spectrum users do not always closely reflect the law and regulations regarding protection from interference. Those laws and regulations, however, still plainly protect the licensee without exception.

163. Letter from Lawrence E. Strickling, Assistant Sec’y for Commc’ns and Info., U.S. Dept. of Commerce, to Julius Genachowski, Chairman, FCC (Feb. 14, 2012) (NTIA Letter), available at <http://apps.fcc.gov/ecfs/document/view?id=7021860324>.

B. Potential Problems and Solutions

There are some potential obstacles to the FCC in implementing a public prescriptive easement framework to spectrum management. First, the FCC cannot, by law, adopt outright property law principles in its spectrum management duties since the Communications Act prohibits licensees from having a property interest in spectrum.¹⁶⁴ However, by creating regulations that simply adopt the framework of prescriptive easements, the FCC would not have to specifically recognize property ownership rights in spectrum. Furthermore, the FCC has stated that Part 15 devices, though referred to as unlicensed, may have a kind of “license by rule” in unlicensed bands that are adhering to FCC regulations.¹⁶⁵ Under this interpretation, the public prescriptive easement doctrine can be seen as a way of managing licenses rather than awarding property.

Another possible obstacle is that if there is a rigid regulatory regime, the FCC would lose some degree of control over which unlicensed spectrum uses it will protect. Furthermore, it may allow licensed users to defeat unlicensed uses valuable to the public if interested parties are unable to show that the use has met all the requirements of a public prescriptive easement. However, current uncertainty is not a tenable policy going forward as unlicensed spectrum use increases; there must be some standard so that users may conform their behavior and expectations. The public prescriptive easement doctrine would provide the necessary predictability while producing results that will generally reflect public interest goals.

V. CONCLUSION

Unlicensed spectrum use has increased exponentially and, if the FCC’s current policy choices are any indication, will continue to do so. Increased use will mean increased potential for interference. If there is to be any accord between licensed and unlicensed operators, there must be some way to equitably consider the interests of each. The public prescriptive easement doctrine, which takes into consideration principles of notice, duration of use, and use by the public, would be the best means of providing predictable results that will generally resolve disputes in the public interest. In the LightSquared-GPS case, the result would be clear and predictable: interference protection would be afforded to GPS, a service that has been used by the public over many years, regardless of its unlicensed status.

164. See 47 U.S.C. § 301 (2006).

165. See *UWB Order*, *supra* note 35, at para. 75.