

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matters of

Unlicensed Operation in the TV Broadcast Bands

ET Docket No. 04-186

Additional Spectrum for Unlicensed Devices
Below 900 MHz and in the 3 GHz Band

ET Docket No. 02-380

CONSOLIDATED OPPOSITION TO PETITIONS FOR RECONSIDERATION

DELL INC. AND MICROSOFT CORP.

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TABLE OF CONTENTS

I.	Introduction and Summary.	1
II.	Wireless Microphone Operations Do Not Require Sweeping New Protections.....	2
A.	The Commission Should Decrease, Not Increase, the Size of the “Keep Out” Zones That Currently Over-Protect Licensed Wireless Microphones.	2
B.	Criticism of the Commission’s Device Certification Process is Unjustified.....	4
C.	Additional Restrictions on Adjacent Channel Use are Unnecessary.....	5
D.	The Geolocation Database Effectively Protects Licensed Microphone Operations.....	6
E.	FCC Rules Must Not Reward Those Responsible for Widespread Unauthorized Operations in the TV Bands.....	7
III.	The Rules Provide Adequate Protection to Cable Providers.....	10
A.	The Commission Has Already Thoroughly Considered and Rejected NCTA’s Direct Pickup Interference Arguments.....	10
B.	Additional Accommodations for Cable Headends Are Not Justified.....	13
1.	Headends inside service contours already receive protection.....	13
2.	Current rules already over-protect headends outside service contours, and the Commission should reduce rather than increase restrictions related to these facilities.....	14
IV.	The Commission Did not “Fail” to Address Specific Aspects of Database Operation.....	16
V.	The Commission Should Not Impose Additional Restrictions on White Space Devices to Accommodate Speculative Future Uses.	18
A.	The Commission’s Planned NOI on Higher Power Rural Use Should Not Include Licensed Uses.	18
B.	Speculation About Future Broadcast Service Does Not Justify Restrictions on Adjacent Channel Power Today.....	19

VI. Conclusion21

I. INTRODUCTION AND SUMMARY.

The Commission's white spaces rules are a "cautious and conservative" first step with numerous safeguards to protect incumbent licensees.¹ These rules provide much more protection for incumbents than is legally or technically necessary. Nonetheless, apart from the quite limited set of issues detailed in the Petition for Reconsideration of Dell and Microsoft, the rules by and large achieve a workable balance between enabling innovation, creating value for consumers, and protecting incumbent operators. Dell and Microsoft remain committed to bringing the public powerful and innovative white spaces technologies under these rules, provided that the Commission makes a few minor, but important, adjustments.²

The current rules would allow the public to realize the benefits of white space technologies, even if these benefits would be limited by the overprotective aspects of the *Second Report and Order*. But several petitions for reconsideration propose radical changes that would destroy the value that the FCC worked five years to create and strangle innovation in the crib. Most of these petitions rely on arguments and proposals that already have been considered and rejected by the Commission. Many were filed by corporations whose existing or planned business models will benefit if the public is denied access to the white spaces. And all would thwart the Commission's goal of building on the success of Wi-Fi by providing the public with access to the higher quality unlicensed spectrum experience that white space technologies will deliver.

¹ Unlicensed Operations in the TV Broadcast Bands; Additional Spectrum for Unlicensed Devices, Below 900 MHz and in the 3 GHz Band, Second Report and Order and Memorandum Opinion and Order, 23 FCC Rcd 16807 (2008) (¶¶ 1-3) ("*Second R&O*").

² See generally Petition for Reconsideration of Dell Inc. and Microsoft Corp. (filed Mar. 19, 2009) ("Dell and Microsoft Petition").

The Commission should deny petitions calling for additional restrictions on top of the already extremely conservative operating parameters set forth in the rules. The existing rules already overprotect incumbent operators. The onerous new restrictions proffered by these petitions for reconsideration are unnecessary, and would undermine the public interest by making it practically impossible for consumers to use white spaces devices in large portions of the country, especially in large cities.

II. WIRELESS MICROPHONE OPERATIONS DO NOT REQUIRE SWEEPING NEW PROTECTIONS.

As innovators, public interest organizations, and IEEE have explained, many of the substantial overlapping protections created by the *Second Report and Order* for wireless microphones are not necessary, and should be relaxed or eliminated.³ Notwithstanding the Commission’s extremely cautious approach, Shure has renewed its calls for additional sweeping restrictions on white space devices. These proposals would render many if not all metropolitan and suburban white space applications and services infeasible, are not necessary to protect wireless microphone operations, and in most cases already have been considered and rejected.

A. The Commission Should Decrease, Not Increase, the Size of the “Keep Out” Zones That Currently Over-Protect Licensed Wireless Microphones.

The existing rules already require all geolocation-enabled white space devices not to operate within one kilometer of wireless microphone locations registered in the white

³ See, e.g., Dell and Microsoft Petition at 2-5; IEEE 802 Petition for Reconsideration at 5-6 (filed Mar. 16, 2009); Wi-Fi Alliance Petition for Reconsideration at 4-5 (filed Mar. 17, 2009); Petition for Reconsideration of The Public Interest Spectrum Coalition at 5-9 (filed Mar. 17, 2009).

spaces database.⁴ Nevertheless, Shure maintains that higher power fixed devices should be subject to a new wireless microphone “keep out” zone that is twice as large.⁵ Shure provides no data or analysis suggesting that the already-enormous one kilometer keep out zone established by the Commission would be inadequate - particularly given that licensees can register multiple locations for larger events where low power broadcast auxiliary services are used.⁶ However, Shure *is* correct that the same “keep out” zone should not apply to higher power fixed devices and to personal/portable devices.

Since the Commission established a one kilometer keep out zone for devices transmitting using 4 Watts E.I.R.P., an identical restriction for devices that transmit using at least 40 times less power is significantly overprotective and unnecessary. As the Commission has recognized throughout this proceeding, promoting efficient use of vacant television spectrum is essential to delivering the benefits of white spaces technologies to the public.⁷ This is especially true in densely populated areas, where vacant spectrum will be at a premium. Accordingly, the Commission should modify its rules to indicate that the one kilometer keep out distance applies only to 4 Watt E.I.R.P. high power fixed devices. The Commission should then establish much smaller keep out distances for personal/portable devices to reflect their substantially lower maximum power. For example, the keep out zone for a personal/portable white space device operating on an adjacent channel should be much smaller than the keep out zone for a

⁴ 47 C.F.R. §15.712(f)(1).

⁵ *See* Petition for Reconsideration of Shure Incorporated at 14 (filed Mar. 19, 2009) (“Shure Petition”) (advocating “proportionality between the protective zone around wireless microphones and the interference range of high powered fixed TVBDs”).

⁶ *Second R&O* ¶ 199.

⁷ *See, e.g., Second R&O* ¶¶ 126, 200.

personal/portable device operating on a non-adjacent channel. Any keep out zone for a personal/portable device should be much smaller than one kilometer. Indeed, even if the Commission reduced the keep out zone to 160 meters for personal/portable devices transmitting at 100 milliwatts, this separation distance would still provide the same level of protection to wireless microphones that the one kilometer distance currently provides for 4 Watt fixed devices. Similarly, a separation distance of 100 meters would be sufficient for personal/portable devices operating on adjacent channels, which will transmit using a maximum 40 milliwatts of power.⁸

B. Criticism of the Commission’s Device Certification Process is Unjustified.

Shure asks the Commission to apply a “proof of performance” standard when evaluating the sensing component of devices that use geolocation technology to avoid harmful interference to licensed microphone operations.⁹ As the Commission has explained, however, it created the extremely stringent proof of performance standard to evaluate devices for which sensing is the *only* interference-avoidance technology used.¹⁰ This would not be the case for geolocation-enabled white space devices that use a database to avoid interference, with sensing merely serving as a “back up.”¹¹

Shure’s argument rests only on its unsubstantiated mistrust of the Commission. Apart from its suggestion that the Commission might not “get it right” and might allow non-compliant white space devices to enter the market, Shure does not explain why the

⁸ These calculations were based on a free space propagation model. However, in all cases a personal/portable device would require a much smaller separation distance to avoid causing harmful interference, regardless of the propagation model used.

⁹ Shure Petition at 4-7.

¹⁰ *Second R&O* ¶ 257.

¹¹ *Id.* ¶ 198.

Commission's existing device certification process would be inadequate to evaluate the back up sensing component of geolocation-enabled devices.¹² Shure seems to confuse the Commission's testing of development tools in the white spaces proceeding with the FCC's equipment certification process.¹³ These two processes are fundamentally different.¹⁴ The Commission has not yet determined that any individual device complies with its rules, and has a long history of using the certification process in other contexts to ensure that manufacturers comply with its rules.

C. Additional Restrictions on Adjacent Channel Use are Unnecessary.

Shure also repeats its request to restrict white space devices from operating on a large number of first adjacent channels.¹⁵ The Commission already considered and rejected these arguments, noting that white space devices should "operate on the largest practicable number of television channels,"¹⁶ and should reject them again here.

¹² Shure Petition at 2.

¹³ *See, e.g.*, Steven K. Jones and Thomas W. Philips, Initial Evaluation of the Performance of Prototype TV-Band White Space Devices, FCC/OET 07-TR-1006 at vi (2007) (observing that the "devices are not intended as actual consumer products but rather are development tools"); Steven K. Jones and Thomas W. Philips, Plan for Tests of Prototype Personal/Portable TV White Space Devices (Phase II) at 2 (released Jan. 17, 2008) ("Phase II Report") ("The Commission may ultimately establish requirements that the current prototype devices do not meet."); Phase II Report at iv-v ("The tests are not intended for equipment authorization or to determine whether the devices would comply with any possible standards that the Commission might adopt. Rather, they will provide information in support of the Commission's action in this matter.").

¹⁴ *See generally* 47 C.F.R. §§ 2.901 *et seq.*

¹⁵ Shure Petition at 7-9.

¹⁶ *See Second R&O* ¶ 148.

Alternatively, Shure asks the FCC to restrict white space devices operating on first adjacent channels to a maximum power of 10 mW.¹⁷ Shure does not explain how it arrived at this number, which represents a 75% decrease in operating power and is tantamount to an outright ban on adjacent channel operation – an idea that the Commission has explicitly rejected.¹⁸ Lacking new arguments or data to support this demand, Shure instead claims that test results obtained from early sensing-only test devices somehow requires the 75% decrease in operating power. This is clearly not the case. White space devices should be permitted to transmit at a level that will enable broadband communications as long as the white space device avoids channels used by incumbent licensees. And the Commission’s insistence that white space devices include geolocation and database look-up capabilities ensure that such devices will avoid such channels, whether they are adjacent to broadcast operations or not. Geolocation capability makes avoiding an incumbent in an adjacent channel no harder than avoiding an incumbent in any other channel.

D. The Geolocation Database Effectively Protects Licensed Microphone Operations.

Shure asks the Commission to change its rules to require white space devices to “check frequency availability in real-time” from the database, or at minimum, at least once an hour. Shure also asks the Commission to limit the amount of time a white space device can operate if a database connection is unavailable to four hours.¹⁹ Shure argues

¹⁷ Shure Petition at 9.

¹⁸ See *Second R&O* ¶ 148.

¹⁹ Shure Petition at 14-15.

that its proposals are necessary to accommodate wireless microphone users whose locations will be unknown 24 hours before use.

This change is unnecessary, and, in any case, Shure's request is not appropriately considered in this context. The Commission has already considered the question of how often a white spaces device must poll the database. It determined that one poll per day adequately protects incumbent users. In fact, the Commission already provides protection for users whose locations will be unknown 24 hours before use by reserving channels where wireless microphones may operate and where white space devices may not operate.²⁰ Shure provides no new data or arguments on why the Commission should change its decision.

Nonetheless, Dell and Microsoft suspect that Shure will raise this issue yet again in response to Commission's forthcoming public notice regarding database administration.²¹ The Commission can fully address these concerns by ensuring that industry has the flexibility to implement a number of different database capabilities. This approach will allow parties to operate consistent with the FCC's rules and protect incumbent licensees without restricting innovation or locking in place technologically limiting database architectures.

E. FCC Rules Must Not Reward Those Responsible for Widespread Unauthorized Operations in the TV Bands.

Finally, Shure asks the Commission to change its rules to prohibit database administrators from refusing to register wireless microphones the Commission has not

²⁰ See *Second R&O* ¶ 199.

²¹ See *Second R&O* ¶ 221.

authorized.²² This request should trouble not only the Commission, but all stakeholders whose applications and services depend on compliance with the Commission’s rules. Shure does not dispute – nor could it – that it designed and manufactured TV band equipment that was never intended for television production or other permissible Part 74 uses, or that it marketed its TV band equipment to groups that are ineligible to obtain a license.²³ There is overwhelming evidence of Shure’s role in enabling widespread unauthorized wireless microphone use.²⁴ This evidence must be the starting point for examining any wireless microphone rule changes Shure advocates.

Shure objects that a white space device manufacturer, user, or database administrator should not determine who is and is not eligible for a wireless microphone license.²⁵ This argument misses the point of the FCC’s licensing process. Licensing is not an optional process, and *determining whether the Commission has authorized a Part 74 microphone use is not a subjective inquiry*. If a user has not obtained a license, that user is transmitting without the required authorization from the Commission and is subject to an enforcement action rather than special protection. Restricting database registration to licensees is the only way to protect incumbents without unjustly enriching

²² Shure Petition at 16-17.

²³ *See generally Revisions to Rules Authorizing the Operation of Low Power Auxiliary Stations in the 698-806 MHz Band; Public Interest Spectrum Coalition, Petition for Rulemaking Regarding Low Power Auxiliary Stations, Including Wireless Microphones, and the Digital Television Transition*, Notice of Proposed Rulemaking and Order, 23 FCC Rcd 13106 (2008); *Complaint of Public Interest Spectrum Coalition (PISC) Against Shure, Inc., Nady Systems, Inc., VocoPro, Audio2000, Sennheiser Electronic Corporation, Audix Microphones, Electro Voice, Hisonic International, Inc., Pyle Audio, et al.*; Petition To Create a General Wireless Microphone Service (GWMS), Informal Complaint and Petition for Rulemaking (filed Jul. 16, 2008) (“PISC Informal Complaint”).

²⁴ *See generally* PISC Informal Complaint.

²⁵ Shure Petition at 17.

manufacturers marketing unlawful microphone uses at the expense of innovative white space applications and services.

The consequences of allowing unauthorized users to seek registration in the database would be dire. Expanding Part 74 eligibility – either de facto or de jure – would render widespread white space use infeasible. As Dell and Microsoft have explained elsewhere, accommodating unlawful non-broadcast uses and non-broadcast users will dramatically increase white space database “keep out” zones.²⁶ It could mean that every karaoke club, corporate boardroom, theater, or meeting hall in the United States could receive the same protection zone of two kilometers in diameter as Yankee Stadium. As a result, white space spectrum would be restricted in large areas of the country, with many portions of densely populated areas where no white space devices could function at all.

One needs look no further than New York City’s theatre district to illustrate this point. These theatres use wireless microphones extensively,²⁷ and “as many as 400 wireless microphone systems operat[e] simultaneously” in the theatre district.²⁸ There is a high likelihood that there will be only three unoccupied television channels in Manhattan at the close of the DTV transition. If theatres were allowed to reserve all of these channels in the white spaces database, the protection zone of two kilometers in diameter around the theatres would preclude white space use in a large portion of mid-town Manhattan. As the attached Exhibit 1 illustrates, registrations by theatres would

²⁶ See Ex Parte Letter of Dell Inc. and Microsoft Corp. to Marlene H. Dortch, ET Docket Nos. 04-186, 02-380, WT Docket Nos. 08-166, 08-167 (filed May 6, 2009).

²⁷ See, e.g., Ex parte letter of Charlotte St. Martin, Executive Director, The Broadway League to Marlene H. Dortch, WT Docket Nos. 08-166, 08-167 (filed Feb. 13, 2009).

²⁸ Comments of the Microphone Interests Coalition, ET Docket No. 04-186, at 5 n. 19 (filed Aug. 15, 2007).

create a “keep out zone” for all white space applications in midtown Manhattan even if database protection is extended only to accommodate theatres with 500 seats or more.²⁹

Unfortunately, this problem would only be the tip of the iceberg. If the FCC allows users who are not eligible to obtain a license under Part 74 to reserve one or more channels in the white spaces database and even a small percentage do so, consumers will find that they are *blocked from broadband access using their white spaces devices in all of Manhattan*.³⁰ Virtually every major metropolitan area in the United States would face similar white space restrictions.³¹

Finally, even when some unauthorized uses of regulated devices have a clear social benefit, and even when the FCC has not enforced its rules, post hoc protection of devices that violate FCC rules would create a dangerous precedent. The Commission must reject requests for protection for unauthorized operations, or risk sending a counter-productive message to parties violating FCC rules in other contexts.

III. THE RULES PROVIDE ADEQUATE PROTECTION TO CABLE PROVIDERS.

A. The Commission Has Already Thoroughly Considered and Rejected NCTA’s Direct Pickup Interference Arguments.

NCTA asks the Commission to significantly reduce the maximum permitted transmit power of white space devices to accommodate some cable systems’ alleged

²⁹ See Exhibit 1: TV White Spaces Potential Keep Out Zones: Theater District (500+ seats).

³⁰ See Exhibit 2: TV White Spaces Potential Keep Out Zones: Manhattan. This map uses the location of a class of currently ineligible wireless microphone users, houses of worship, to illustrate the extent of the challenge.

³¹ See Exhibit 3: TV White Spaces Potential Keep Out Zones: Brooklyn; Exhibit 4: TV White Spaces Potential Keep Out Zones: San Francisco. These maps use the location of a class of currently ineligible wireless microphone users, houses of worship, to illustrate the extent of the challenge.

inability to reject direct pick-up interference.³² NCTA maintains that it is “not seeking absolute protection from interference,”³³ and its new proposals are an effort to “meet the proponents of [white space] devices half-way.”³⁴ But cable companies, who are not incumbent licensees, are entitled to no interference protection whatsoever. The *Second Report and Order* already considered NCTA’s request for reduced transmit power to accommodate its constituents and determined “that the risk of [direct pickup] interference is [not] sufficiently great to warrant a reduction in power that could impede the viability of certain TVBD applications.”³⁵ Nothing in NCTA’s petition, including what is clearly a description of a “worst case” scenario, changes the Commission’s correct analysis of this issue.

It is also important to note that NCTA cites “worst case” results that are based only on a study of analog cable signals. And when it did examine digital signals it used only much lower VHF frequencies below television channel 14.³⁶ *In other words, NCTA did not test any digital cable signal using UHF frequencies on which personal/portable devices operate.* Moreover, when NCTA tested television receivers isolated from cable wiring, its study found that “all of the tested receivers appear to be able to withstand a 100 dBu external field from a white spaces device when tuned to digital signals.”³⁷ This

³² Petition for Reconsideration of the National Cable and Telecommunications Association at 13 (filed Mar. 19, 2009) (“NCTA Petition”).

³³ *Id.* at 4.

³⁴ *Id.* at 13.

³⁵ *Second R&O* ¶ 126.

³⁶ NCTA Petition, Attachment, Dave Large, Field Tests to Assess Adequacy of Protections Afforded Cable Television Operations from White Spaces Devices, at 9 and n.9 (“Large Report”).

³⁷ Large Report at 13.

result is fully consistent with the Commission’s determination that “[c]able systems are rapidly moving to digital technology which should further alleviate the potential for interference.”³⁸

NCTA does not dispute that digital signals are less susceptible to interference, but objects that most cable systems “will serve analog households for a long time to come.”³⁹ However, to the extent that signals are delivered in digital format and then converted to analog by the cable box, viewers with analog sets will still benefit from digital signals’ increased resistance to interference. For example, direct pickup interference testing conducted by the Commission that involved a cable-box connected directly to the TV receiver revealed that “interference ... was virtually non-existent on the digital tier of channels.”⁴⁰ By NCTA’s own estimates, digital cable reached the “tipping point” at which digital video subscribers surpassed analog video subscribers back in 2007, and cable companies continue to add approximately one million digital subscribers each quarter.⁴¹ Thus, there is a strong likelihood that there will be few legacy analog system components remaining by the time white space devices are available to consumers.

Finally, many, and possibly most, cable systems are not even susceptible to the interference concerns NCTA has raised. This is because many cable television systems already use frequencies up to 1 GHz.⁴² Existing wireless operations, including cellular

³⁸ *Second R&O* ¶ 126.

³⁹ NCTA Petition at 12 n.25.

⁴⁰ *Second R&O* ¶ 126.

⁴¹ NCTA Annual Report at 5, http://i.ncta.com/ncta_com/PDFs/NCTA_Annual_Report_05.16.08.pdf.

⁴² *See, e.g.*, Jeff Baumgartner, *Cox Makes 1 GHz Moves*, Cable Digital News, Nov. 12, 2007, http://www.lightreading.com/document.asp?doc_id=138717&site=cdn.

phones in the 800 MHz band, transmit at powers many times higher than the power levels authorized for personal/portable white space operations. These higher-power operations have not resulted in cable companies filing any interference complaints with the FCC. More fundamentally, were direct pickup interference a real interference risk for cable companies, these companies would need to address it to accommodate licensed devices using 700 MHz spectrum. These 700 MHz devices will soon begin transmitting nationwide on frequencies corresponding to cable channels, again at powers far in excess of those authorized for personal/portable white space devices.⁴³

In short, neither NCTA's new study nor the actual experience of cable operators suggests that direct pickup interference to cable systems will be an issue for white space device operations. But even if it were an issue, cable companies undoubtedly would already have begun addressing it as they complete their transition to all-digital systems, and as they make adjustments to any systems vulnerable to interference from licensed 700 MHz devices that will soon begin ubiquitous operation.

B. Additional Accommodations for Cable Headends Are Not Justified.

1. Headends inside service contours already receive protection.

NCTA, the Society of Broadcast Engineers, and others also ask for increased protection for cable headends.⁴⁴ As a threshold matter, the Commission should reject out of hand calls to allow cable headends residing *inside* a service contour to register

⁴³ See, e.g., Reply Comments of the White Spaces Coalition, ET Docket No. 04-186, at 5 (filed Aug. 27, 2007).

⁴⁴ See NCTA Petition at 15-17, Petition for Reconsideration of the Society of Broadcast Engineers at 14-15 ("SBE Petition"). See also DIRECTV and Dish Network, LLC Petition for Clarification and Reconsideration at 3.

channels for protection in the geolocation database.⁴⁵ The channels these headends receive already are protected from co-channel interference because they reside within the television station service contour. Allowing headends to block out two additional adjacent channels for each received channel would therefore needlessly create large “dead zones” where white space operations would be precluded entirely without adding any improvement in headend operation.

The Commission already determined that personal/portable devices can operate on first adjacent channels at up to 40 mW without causing interference to consumer-grade television receivers, let alone the high gain professional directional antenna systems typically used by headends. Indeed, as Adaptrum has observed, FCC tests demonstrated that its white space device would not cause interference to a headend even with “worst case” geometry and a 10 meter antenna height, and even when only slightly more than 12 meters away from the tower base – much closer than any consumer is likely to get to a headend tower.⁴⁶

2. Current rules already over-protect headends outside service contours, and the Commission should reduce rather than increase restrictions related to these facilities.

Dell and Microsoft agree with Adaptrum that protection for cable headends outside of service contours should be reduced, particularly for adjacent channel operations.⁴⁷ Moreover, as Dell and Microsoft previously have explained, such protections should be limited to *local* stations rather than extending also to out-of-market

⁴⁵ *See id.*

⁴⁶ Revised Petition for Reconsideration of Adaptrum, Inc. at 11 (filed Mar. 18, 2009) (“Adaptrum Petition”).

⁴⁷ *Id.* at 10-11.

signals that have no “must carry” rights.⁴⁸ Cable providers are unlikely to suffer any interference from consumer white space devices. So this policy would more appropriately balance this unlikely situation (which in any case is not a risk at all for the many cable providers that receive signals from microwave or fiber links) against the certainty that an enormous amount of spectrum would be unavailable for white space operations.

NCTA’s cable headend study conducted in Fredericksburg, VA – submitted to justify its request for even larger white space restrictions – amply illustrates this point. Fredericksburg is located in the Washington, DC media market, which is served by multiple PBS stations. Nevertheless, NCTA’s cable headend tests focused on WCVW Channel 44, an out-of-market PBS affiliate licensed to Richmond, VA. Registering this out-of-market station would result in significant harm to the white spaces even under the existing rules. Specifically, 6 MHz of spectrum corresponding to channel 44 suddenly would become unavailable throughout most of the city of Fredericksburg – including the entire campus of the University of Mary Washington – and also in portions of nearby Stafford and Spotsylvania counties, which are also in the Washington DC media market. First adjacent channels would also become unavailable in portions of the city and adjacent suburbs.

NCTA’s petition, which contemplates even larger restrictions on white space operations near headends, would only make this bad problem worse. The risk that a Fredericksburg cable company might have to arrange for alternate signal delivery for an out-of-market PBS station to complement the PBS stations in the Washington DC market

⁴⁸ Dell and Microsoft Petition at 7-9.

simply should not outweigh the certainty that Fredericksburg residents – including more than 5,000 faculty and students at Mary Washington – will be deprived access to spectrum that would otherwise be available for available for full power white space operations after the DTV transition. The Commission should adopt a more equitable balance.

IV. THE COMMISSION DID NOT “FAIL” TO ADDRESS SPECIFIC ASPECTS OF DATABASE OPERATION.

In its petition for reconsideration, the Society of Broadcast Engineers contends that the Commission “failed” to address several database issues, including an issue that the Commission explicitly has indicated is still under consideration.⁴⁹ None of SBE’s arguments has merit.

First, SBE incorrectly contends that the Commission erred in not requiring a single entity to manage the database, notwithstanding the Commission’s plan to seek proposals from multiple entities and, based on the proposals it receives, determine the appropriate number of database operators.⁵⁰ SBE offers no support for its contention that use of multiple operators *per se* raises design or security issues.⁵¹ Quite the opposite is true. Most Department of Defense operational databases, for which security is a design imperative, are interconnected. In addition, SBE does not address any of the potential advantages that multiple database providers would provide, including efficiency, the security of redundancy, lower costs, and the potential that multiple providers will allow for innovation. The Commission should therefore reject SBE’s request or consider it in

⁴⁹ See SBE Petition at 20-22

⁵⁰ *Second R&O* ¶ 221.

⁵¹ SBE Petition at 20.

the future proceedings that concern database design. While data integrity and security are core components of database design, the mechanisms by which these features are implemented should be determined by those who will establish and operate the database. The Commission need not debate the merits of various technological mandates designed to thwart “hacking” or “spoofing”,⁵² but rather should consider the security measures proposed by parties responding to the forthcoming database operator public notice.

SBE also briefly proposes a number of additional restrictions, including registration of personal/portable devices, a shorter timeframe for daily updates, and conveying database information through multiple devices.⁵³ However, SBE provides no analysis or rationale suggesting that the Order’s determinations regarding these issues, which reflect a balance between providing incumbents with the protection to which they are entitled and placing unnecessary burdens on innovative services, were incorrect. Because SBE fails to make any substantive argument to support these proposals, the Commission should reject them.

Finally, SBE appears to argue that the costs incurred by licensees when registering with the database should be billed to equipment manufacturers.⁵⁴ But SBE ignores that fact that incumbent licensees routinely incur “administrative burdens” similar to these costs each time they coordinate existing spectrum uses – often through SBE itself. SBE does not explain or support this strange proposal in a manner that allows the Commission or interested parties to address it. In any case, the simple administrative task

⁵² *Id.* at 22.

⁵³ *Id.* at 21.

⁵⁴ *Id.* at 22.

of filling out electronic forms is unlikely to prevent motivated broadcasters from registering their operations in the database.

V. THE COMMISSION SHOULD NOT IMPOSE ADDITIONAL RESTRICTIONS ON WHITE SPACE DEVICES TO ACCOMMODATE SPECULATIVE FUTURE USES.

A. The Commission’s Planned NOI on Higher Power Rural Use Should Not Include Licensed Uses.

FiberTower Corp. *et al.* ask the Commission to reconsider its decision not to designate white space channels for point-to-point backhaul on a licensed basis in rural areas.⁵⁵ However, because of its superior propagation characteristics, TV band spectrum is uniquely desirable for certain uses such as mobile, portable, and broadcast uses. While there is no dispute that parties could profit from the right to exclude others from using this spectrum, the Commission appropriately considered the benefits of both licensed and unlicensed use of TV band spectrum, and concluded that the public should receive the benefits both of licensed use (through the 700 MHz auction) and unlicensed use (through the white spaces).

FiberTower’s petition must be rejected because the Commission already considered at length whether to license the white spaces exclusively to a private party, and determined that the public interest was best served by opening up this portion of the TV bands directly for unlicensed use by the public.⁵⁶ Indeed, this proceeding began with the need to address the “significant growth of and consumer demand for unlicensed

⁵⁵ See generally Petition for Reconsideration of FiberTower Corporation, the Rural Telecommunications Group, Inc., COMPTTEL, and Sprint Nextel Corporation (“FiberTower Petition”).

⁵⁶ *Second R&O* ¶¶ 35-51.

wireless broadband applications and services.”⁵⁷ As Acting Chairman Copps explained, the Commission recently auctioned off approximately 150 MHz of licensed spectrum, and adopted the white spaces order “to increase the amount of *unlicensed* spectrum—especially the amount of spectrum below 1 GHz.”⁵⁸

The record amply reflects that licensed backhaul employing a point-to-point network is not an efficient use for the white spaces, particularly since such use necessarily will preclude unlicensed operations.⁵⁹ Moreover, the Commission already has determined that it will examine higher powered fixed operation in a separate NOI.⁶⁰ As FiberTower acknowledges, this NOI will be limited to “whether higher powered unlicensed operation might be accommodated in the TV white spaces in rural areas.”⁶¹ Thus, it is completely unnecessary to grant FiberTower’s request to warehouse spectrum for future licensed allocations the Commission already has ruled out.⁶²

B. Speculation About Future Broadcast Service Does Not Justify Restrictions on Adjacent Channel Power Today.

Finally, SBE makes a number of other arguments regarding the technical parameters established by the Commission. None of these arguments are supported by new data, and many simply rehash arguments already in the record. While this means

⁵⁷ Unlicensed Operation in the TV Broadcast Bands; Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band, Notice of Proposed Rulemaking, ET Doc. Nos. 04-186, 02-380, 19 FCC Rcd 10018 (¶ 7) (2004).

⁵⁸ *Second R&O*, Statement of Commissioner Copps (emphasis in original).

⁵⁹ White Spaces Coalition ex parte (Sept. 5, 2008) at 2; Ex Parte Letter from Richard S. Whitt, Google Inc., to Marlene H. Dortch, ET Doc. Nos. 04-186, 02-380, WC Doc. No. 05-25, RM-10593 (filed Jan. 22, 2008).

⁶⁰ *Second R&O* at ¶ 106.

⁶¹ *Id.* (emphasis added).

⁶² FiberTower Petition at 9.

that the Commission should reject these remaining proposals, Dell and Microsoft wish specifically to address SBE's contention that accommodating "future broadcast services" requires severe limits on the first adjacent channel operating power for white space devices.

SBE bases its argument on a Commission statement that it takes out of context. When the Commission mentioned the need to protect "future broadcast uses of the television band" it was referring to the need to ensure that white space devices avoid channels that subsequently become assigned to broadcast licensees in the future.⁶³ The Commission in no way determined that white space devices would have to accommodate an endless variety of as yet undefined services that may never be authorized. Put another way, broadcasters are entitled to protection based on the scope of protection afforded by their licenses, not on speculation regarding a future service for which there is not even yet an established standard.

Even if this were not the case, the mobile operations to which SBE refers use the existing channels assigned to broadcasters, which white space devices already must avoid. In addition, white space devices must conform to a stringent out-of-band emission limit mask, limiting the risk of adjacent channel interference. Finally, a personal/portable white space device that is proximate to a mobile television device is likely to be under control of the same individual, even integrated into the device. For example, Dell already has created a laptop computer that uses one of the candidate standards currently under consideration for mobile television, and plans to combine both mobile TV and white space technology into portable devices going forward. As the Commission has

⁶³ See *Second R&O* ¶ 50.

recognized, common ownership or control of consumer devices allows owners to mitigate interference concerns.⁶⁴

VI. CONCLUSION.

Dell and Microsoft fully understand that in bringing consumers new spectrum-based technologies, the Commission must balance the vast benefits of innovation with legitimate concerns of incumbent licensees. By implementing the minor changes outlined in Dell and Microsoft's petition, the Commission's existing rules will achieve a workable balance between these interests. The proposals contained in the petitions addressed in this opposition would, on the other hand, prohibit consumers from using white space devices in large areas of the country, with little if any additional benefit afforded to incumbent licensees. The Commission should therefore reject these petitions as undermining the public interest.

Respectfully submitted,



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May 8, 2009

⁶⁴ See, e.g., *Second R&O* ¶ 126 (noting that “[c]onsumers generally should be able to correct any interference to their own devices by increasing the separation [or] re-orienting the devices”).

* Senior Technology Policy Advisor

CERTIFICATE OF SERVICE

I, Sarah K. Wagner, certify that on this 8th day of May 2009, I have caused a true and correct copy of the foregoing Consolidated Opposition to Petitions for Reconsideration to be served via first class mail, postage paid, upon:

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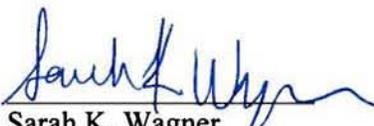
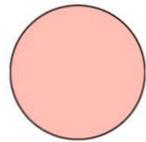
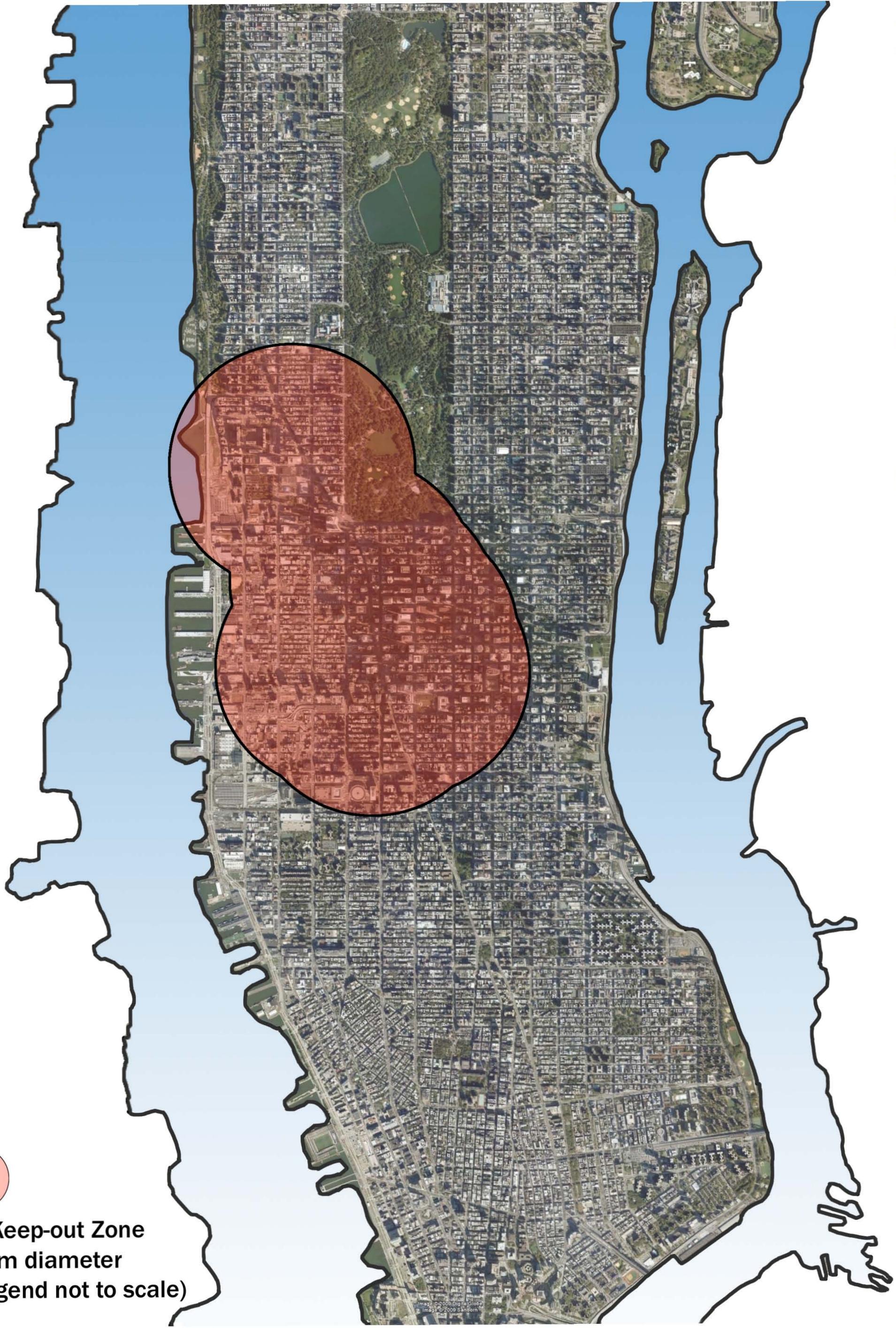

Sarah K. Wagner

Exhibit 1

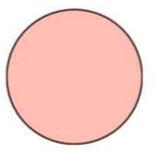


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2km diameter
(legend not to scale)

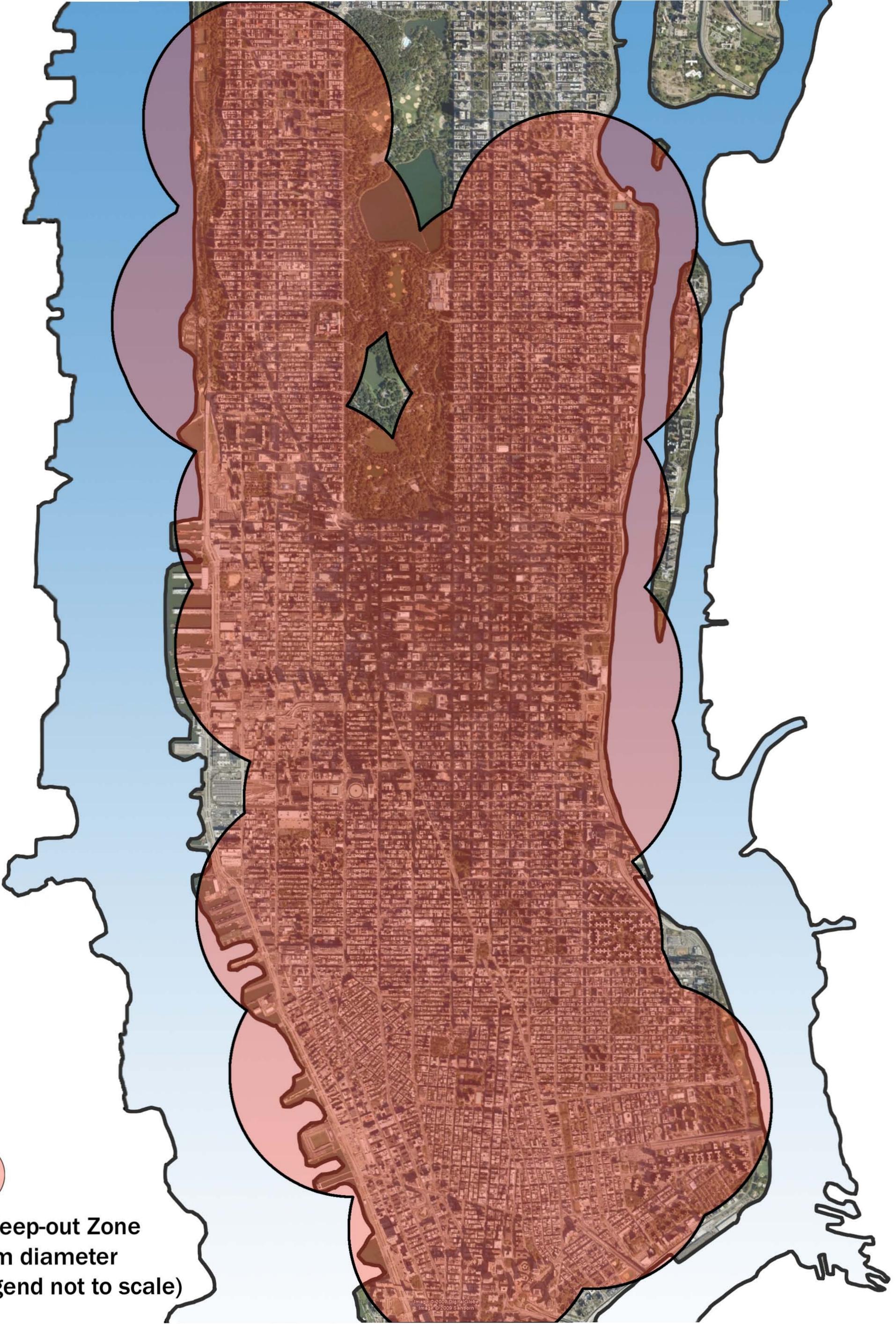


TV White Spaces Potential Keep-out Zones: Theater District (500+ seats)

Exhibit 2



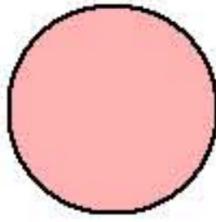
= Keep-out Zone
2km diameter
(legend not to scale)



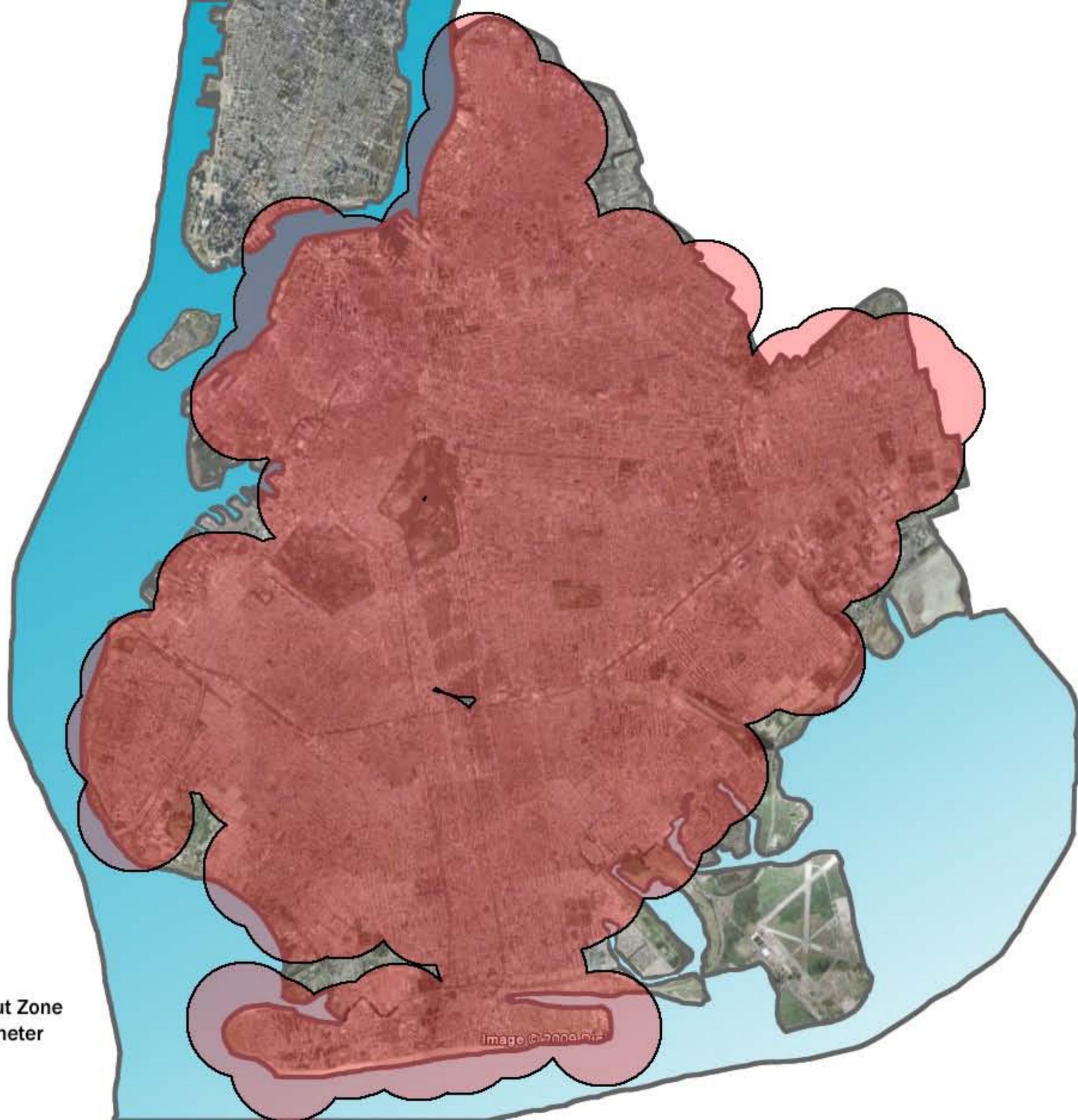
TV White Spaces Potential Keep-out Zones: Manhattan

Image © 2009 DigitalGlobe
Image © 2009 Sanborn

Exhibit 3



= Keep-out Zone
2km diameter
(to scale)



TV White Spaces Potential Keep-out Zones: Brooklyn

Exhibit 4

TV White Spaces Potential Keep-out Zones: San Francisco

