



March 31, 2016

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: In the Matter of Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, GN Docket No. 12-268; Amendment of Parts 15, 73 and 74 of the Commission's Rules to Provide for the Preservation of One Vacant Channel in the UHF Television Band For Use By White Space Devices and Wireless Microphones, MB Docket No. 15-146; Notice of Ex Parte Communication

Dear Ms. Dortch:

On March 25, 2016, just four days before the start of the broadcast spectrum incentive auction, Google submitted a summary of an analysis claiming that the Commission's Google Channel proposal will have only a limited effect on low power television and translator stations.¹ Google's analysis is uninformed, careless and misleading. Its conclusion is thus a work of pure fiction.

The Commission's Google Channel proposal, when coupled with the already damaging effect the auction will have on TV translator and LPTV services, will harm viewers across the country. As NAB details below, as many as **one-quarter of all UHF LPTV and translator stations in the U.S. may be unable to find new UHF channels following the auction.** The significant reduction in available spectrum due to the auction alone will make providing rural and diverse service incredibly challenging. The same is not true for Google's ability to monetize spectrum, as it has numerous opportunities as a result of the Commission already setting aside spectrum for unlicensed use in the guard bands and duplex gap,² as well as

¹ Letter from Austin C. Schlick, Google, Inc. to Marlene H. Dortch, FCC, MB Docket No. 15-146, GN Docket No. 12-268 (March 25, 2016) (Google Letter).

² *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd 6567, ¶¶ 258-278 (2014).

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other Commission proceedings dedicating enormous amounts of spectrum to unlicensed services.³

It is wholly unclear why Google would choose to weigh in on this issue on the eve of the incentive auction. The Commission should be focused squarely on conducting a successful auction and preparing for a post-auction transition that will be unprecedented in its scope and logistical complexity; not on speculative and preferential giveaways to half-trillion dollar companies that have elected not to participate in the auction. To that end, when the Commission first set forth its Google Channel proposal, it took pains to point out that it was proceeding under its general Title III licensing authority, not its repacking authority granted under the Spectrum Act.⁴ Should the Commission move forward with its proposal, it would undoubtedly be acting arbitrarily and capriciously – in addition to undermining the plain language of the Spectrum Act.

The arbitrariness of such a decision would also be apparent given that TV white spaces have failed to yield *any* meaningful advances in six years, despite promises of incredible innovation and billions of dollars of investment and economic activity. There is no compelling reason why the Commission needs to resolve this issue before the auction is completed and the facts concerning final channel assignments and availability are known.

Google's Analysis

In its letter, Google asserts that NAB's predictions concerning the impact of reserving Google Channels at the expense of low power and translator stations are "manifestly implausible." In fact, Google's analysis rests on a fundamental misconception of the goals and operation of the incentive auction.

In the auction, the FCC will have two mechanisms for repurposing spectrum. First, the FCC can accept the bids of participating broadcast television stations to relinquish some or all of their spectrum usage rights. Second, the FCC can repack television stations into a smaller

³ See *Revision of Part 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure Devices in the 5 GHz Band*, First Report and Order, 29 FCC Rcd 4127 (2014); *Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Report and Order and Second Further Notice of Proposed Rulemaking, 30 FCC Rcd 3959 (2015).

⁴ The Spectrum Act provides the FCC with authority to repack television stations only to make spectrum available for the forward auction. Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 125 Stat. 156 § 6403(b)(1) (2012) ("For purposes of making available spectrum to carry out the forward auction under subsection (c)(1) the Commission (A) shall evaluate the broadcast television spectrum (including spectrum made available through the reverse auction under subsection (a)(1)); and (B) may, subject to international coordination with Mexico and Canada (i) make such reassignments of television channels as the Commission considers appropriate; and (ii) reallocate such portions of such spectrum as the Commission determines are available for reallocation.")

portion of the band. In its analysis, Google assumes that the FCC will use the first mechanism in all markets, even where the FCC does not need to accept bids of participating broadcast television stations to clear its desired spectrum target.

Thus, in describing the methodology for its analysis, Google explains that it selected a random broadcaster participation level from the range of possible participation levels the FCC used in optimization simulations, and designated “a corresponding number of full-power and Class A broadcasters...as having sold their licenses in the reverse auction and, accordingly, to be removed from the post-auction band.”⁵ Google apparently assumed that broadcasters in *all* markets would potentially have their bids accepted at rates between 40 and 70 percent. Thus, Google claims that “substantial participation in the reverse auction could mean that even more channels would remain vacant in rural areas,” assuming that the FCC will accept station bids merely to create vacant channels after the auction.⁶ But the FCC’s auction design provides that a station’s bid will be accepted only if that station *cannot be repacked*.⁷

In fact, what is “manifestly implausible,” as Google puts it, is that the Commission would accept the bids of stations that are unnecessary to reach a spectrum clearing target solely to create vacant channels. Such an approach would threaten the viability of the auction, by requiring the Commission to accept potentially hundreds of unnecessary bids.

Consider, as just one example, Medford, Oregon. In none of the 100 sample repacking scenarios the Commission has released did the Commission need to accept an auction bid from a single television station in this television market to recover either 84 MHz or 120 MHz of spectrum. That is because the Commission will likely be able to recover those amounts simply by repacking the television band in this market and the surrounding areas.

But the fact that there are presently enough vacant channels to repack full power stations does not mean there will be plenty of space for low power and translator stations, particularly if the FCC reserves Google Channels for unlicensed operations. For example, at an 84 MHz clearing target, the Commission will clear spectrum above television channel 37. Today there are 13 stations operating on channels above 37 in the Medford area. There are six vacant channels available below channel 37. Plainly, some low power and translator stations will be displaced as the Commission rearranges the band. Reserving one or more Google Channels in this market will come at the *direct expense* of low power and translator stations desperately seeking channels to stay on the air and continue to serve their existing

⁵ Google Letter, “Simulation Methodology” Attachment at 4.

⁶ Google Letter at 11.

⁷ *Broadcast Incentive Auction Scheduled to Begin on March 29, 2016; Procedures for Competitive Bidding in Auction 1000, Including Initial Clearing Target Determination, Qualifying to Bid, and Bidding in Auctions 1001 (Reverse) and 1002 (Forward)*, Public Notice, 30 FCC Rcd 8975, ¶¶ 123-131 (2015).

viewers. Google cannot explain this away except by assuming the Commission will accept bids solely to create new unlicensed opportunities for Google's benefit.

At bottom, of course, Google's central argument is inherently contradictory. On the one hand, Google claims that the incentive auction will cause a shortage of unlicensed spectrum thus necessitating an additional reserved channel for Google. On the other hand, Google also argues that there will be plenty of spectrum post-auction to accommodate LPTV and translator stations. Both cannot be true.

Google's comprehensive misapprehension of the bedrock principles underlying the auction underscores the foolhardiness of making decisions regarding the post-auction spectrum landscape before the auction is complete. It is possible that there will be plenty of vacant channels in some markets after the auction to accommodate both displaced translators and LPTV stations as well as expanded unlicensed operations. It is certain, however, that in many markets, reserving Google Channels now will have the direct and predictable effect of depriving viewers of existing services.

LPTV and Translator Stations

LPTV stations and TV translators make up the largest number of licensed television facilities in the U.S. This includes 1,822 LPTV stations and 5,426 TV translator stations, accounting for over 70 percent of the total number of all television broadcast facilities.⁸ Of these stations, 5,935 operate on UHF channels. LPTV and translator stations provide a critical information lifeline to rural citizens who are unserved by alternative distribution systems, such as cable television, for news, emergency information and entertainment, as well as providing niche foreign language programming to underserved audiences, particularly the elderly, multilingual and native peoples.

The incentive auction will adversely affect LPTV and translator stations in two ways, both of which will lead to a substantial reduction or elimination of these lifeline services across the country. First, the auction ignores LPTV and translator stations, allowing full-power and Class A stations to displace them during the repacking process. Displaced stations will need to seek other channels. Second, all LPTV and translator stations are required to move out of the spectrum reallocated for broadband use, requiring those stations to seek other channels as well. Together, these actions affect UHF LPTV and translator stations by either requiring them to absorb the substantial costs of re-channeling or by forcing them off the air completely.

The reallocation will, by itself, force more than one-half of all UHF LPTV and TV Translator stations to either find a new channel (if one is available) or go off the air if 126 MHz of

⁸ See Broadcast Station Totals as of December 31, 2015 (rel. Jan. 8, 2016), available at: http://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0111/DOC-337189A1.pdf

spectrum is reallocated for broadband. It will also likely force more than one-third of those stations to change channel or go off the air if 84 MHz of spectrum is reallocated.

NAB understands that the FCC is under no obligation to include LPTV and TV Translator stations in the incentive auction and subsequent repack, and NAB appreciates the Commission's commitment to providing engineering assistance (*i.e.*, use of the Commission's repacking software) to identify potential new channels for LPTV and translator stations displaced by the repacking process or "preserved" for unlicensed operations. However, no amount of assistance will create new channels if they have been taken up by repacked full-Power and Class A stations. The Commission's Google Channel proposal will only exacerbate the problem.⁹ This proposal will further reduce the availability of news, information and entertainment to the country's most vulnerable populations.

Loss of LPTV and TV Translator Service to the Public Due to Repacking

Despite repeated calls for the Commission to produce information on how many low power and TV translator stations are likely to be displaced as a result of the incentive auction, the Commission has offered no such analysis. In the absence of the Commission providing much-needed analysis of the impact of the auction on the critical services TV translators and low power TV stations provide, NAB conducted its own robust analysis of the auction's effects on these services and their viewers. Our review of publicly-available Commission data reveals that, even *before* the FCC would follow through on its proposal to give spectrum to Google at the expense of television viewers, roughly one quarter of UHF LPTV and translator stations may be displaced and unable to obtain a replacement channel as a result of the auction. As the remaining LPTV and translator stations struggle to find space in the reduced TV band, they will find that the Commission's proposal only further decimates TV services the Commission had, prior to the auction process, found to be indispensable.

The Commission has downplayed its Google Channel proposal by observing that "multiple vacant channels will still exist in all or most markets" following the auction.¹⁰ Of course, the suggestion that there will be plenty of channels available to accommodate LPTV and translator stations after the auction raises the question as to why it is necessary to reserve

⁹ *Amendment of Parts 15, 73 and 74 of the Commission's Rules to Provide for the Preservation of One Vacant Channel in the UHF Television Band For Use By White Space Devices and Wireless Microphones, Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Notice of Proposed Rulemaking, MB Docket No. 15-146, GN Docket No. 12-268, FCC 15-68 (June 16, 2015) (NPRM).

¹⁰ *Amendment of Parts 15, 73 and 74 of the Commission's Rules to Provide for the Preservation of One Vacant Channel in the UHF Television Band For Use By White Space Devices and Wireless Microphones, Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Notice of Proposed Rulemaking, 30 FCC Rcd 6711, ¶ 11 (2015) (Preservation NPRM)

channels for unlicensed operation in the first instance. Such an appropriation would only be necessary – if at all – if there are not be a sufficient number of channels available.

Moreover, the assertion that there will be “multiple vacant channels . . . in all or most markets” avoids the central problem with the Commission’s proposal. The issue is not whether there will be *some* channels available after the auction, it is whether there will be *enough* channels available to accommodate displaced translator and LPTV stations.

In our prior comments, NAB provided a preliminary estimate that repacking and reserving a channel for unlicensed use as described in the Preservation NPRM would force 856 and 1,121 stations off the air at the 84 and 120 MHz spectrum recovery levels, respectively.¹¹ A more detailed analysis demonstrates that our initial estimates were overly conservative, and understated the impact on viewers who rely on LPTV and translator stations.

Taking the Commission’s June 2014 repacking simulations as a baseline, NAB conducted an analysis of impacts at both available spectrum clearing targets. This examination revealed that about **one-quarter of all UHF LPTV and translator stations in the U.S. may be unable to find new UHF channels**. The exact number of stations forced off the air will depend on how much spectrum is reallocated during the incentive auction process and other factors, but our analysis was conducted in two different ways with little variation in the result. One method of analysis used a graphical repacking algorithm that attempted to “fit” the coverage contour of each LPTV and TV Translator station displaced by repacking between the coverage contours of the repacked Class A and full-service television stations in each FCC profile. We then examined the tentatively selected channels using the Commission’s *TVStudy* software for prohibited interference to Class A and full-power stations. We ignored adjacent channel interference among LPTV and translator stations to ensure a conservative result. The results presented here are based on this method. A second analysis used a discrete repacking algorithm that excluded LPTV and translator stations based on whether a channel was available at the centroid of each 2x2 kilometer cell. The two methods produced results that were in close agreement.

The map of Figure 1 shows the locations of the **1,469** LPTV and translator stations – about one-quarter of the total number of UHF LPTV and translators¹² – that would be displaced based on the FCC’s Profile 52 repacking scenario (120 MHz). The stations shown are displaced solely as a result of the repacking process and do not include the additional stations that would be lost to reserving channels for unlicensed use.

¹¹ Comments of the National Association of Broadcasters, 10 GN Docket No. 12-268, MB Docket No. 15-146 (Sept. 30, 2015.) NAB’s estimate was 509 stations being forced off the air due to repacking alone (at 84 MHz spectrum recovery) and over 688 stations forced off due to repacking alone (at 120 MHz spectrum recovery).

¹² 1,469 stations displaced out of the 5,935 UHF LPTV and TV Translator stations considered.

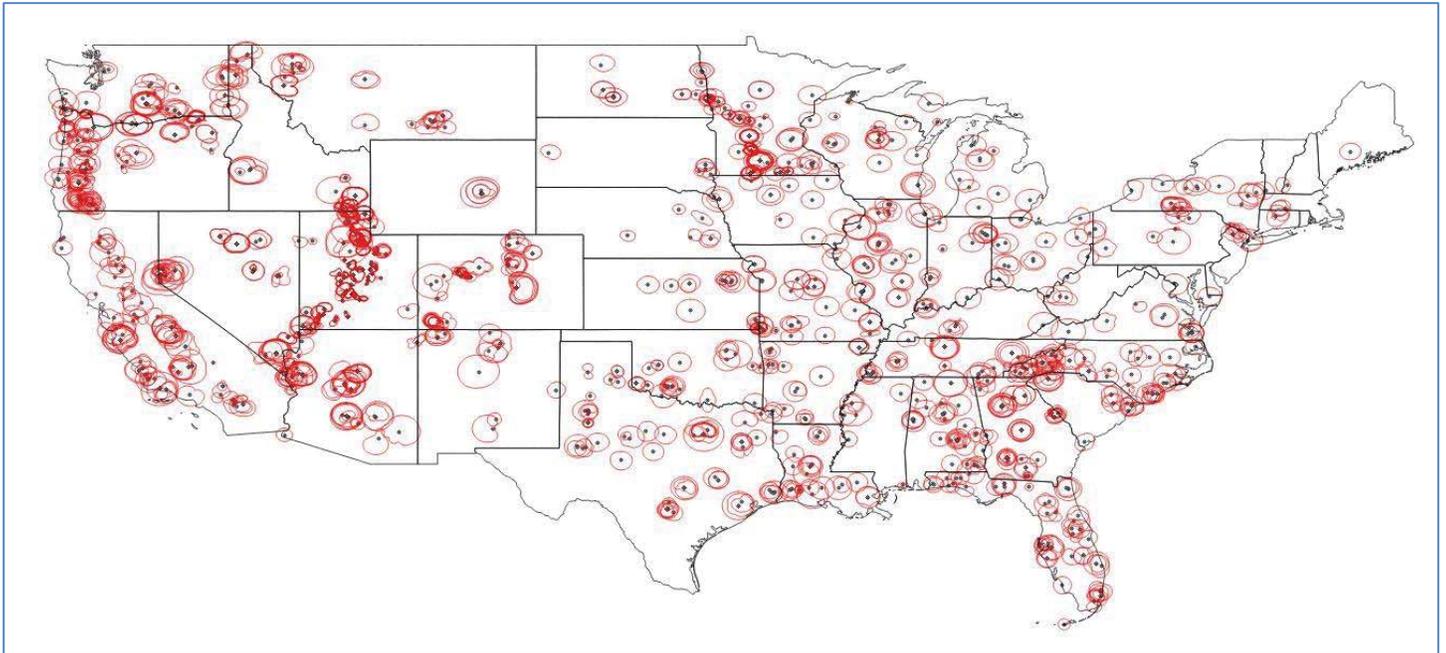


Figure 1. Map of displaced LPTV and TV Translator stations due to repacking only (120 MHz Spectrum Recovery).

Because most translators require both an input and an output channel, even this figure understates the impact of repacking. As the National Translator Association succinctly points out, “there are two channels which are the lifeblood of any TV translator station; these are the input channel from the supplying station and the output channel of the translator station. Loss of either channel to the translator station is tantamount to the death of the translator station.”¹³ Our analysis considers only the output channels of each translator station. Many rural translator stations are part of multi-hop networks that not only rebroadcast signals to their immediate community, but also serve as a link in a “chain” that carries the signal to the next translator and its community. Consequently, the displacement of one translator in the network will result in an inability to provide service to each of the communities that follow in the translator “chain.” Additionally, many LPTV and translator stations rely on one or more UHF translator relay stations¹⁴ to link them to their originating station. Because these relay stations are also subject to displacement by the auction and reallocation, loss of a channel further up the chain or used by a relay station also eliminates one or more LPTV or translator stations.

Most significantly, NAB’s analysis underpredicts impacts in the Canadian and Mexican border areas because we did not consider Canadian or Mexican television operations. These

¹³ Comments of the National Translator Association, 4, GN Docket No. 12-268, MB Docket No. 15-146 (Aug. 3, 2015)

¹⁴ 47 CFR §74.601

omissions were required because the underlying FCC data did not include those operations and the recent memoranda of understanding with the Canadian and Mexican governments would have changed many or most of the foreign associated channel assignments.

Broken down by state, the number of displaced UHF translators are tabulated in Table 1. Some states are disproportionately affected. Thirteen states lose more than 50 LPTV or translator stations or more than one-half of the total number of UHF translator stations: Alabama, Arizona, California, Colorado, Florida, Kentucky, Minnesota, Nevada, Oregon, South Carolina, Tennessee, Texas, and Utah (highlighted in red).

State	Displaced
AK	2
AL	33
AR	20
AZ	55
CA	84
CO	61
DC	1
FL	58
GA	43
HI	2
IA	17
ID	50
IL	27
IN	17
KS	15
KY	6

State	Displaced
LA	26
MA	2
ME	1
MI	11
MN	83
MO	35
MS	8
MT	25
NC	50
ND	26
NE	6
NH	1
NJ	1
NM	17
NV	52
NY	24

State	Displaced
OH	14
OK	25
OR	105
PA	8
SC	15
SD	8
TN	25
TX	62
UT	271
VA	10
VT	1
WA	35
WI	20
WV	5
WY	6

Table 1. LPTV and TV Translator stations displaced due to repacking only (120 MHz Spectrum Recovery).

The map of Figure 2 shows the locations and protected service contours of the **935** LPTV and translator stations that would be displaced based on the FCC’s Profile 65 repacking scenario (84 MHz). The translators are displaced solely as a result of the repacking process and do not include the additional stations lost to reserving channels for unlicensed use.

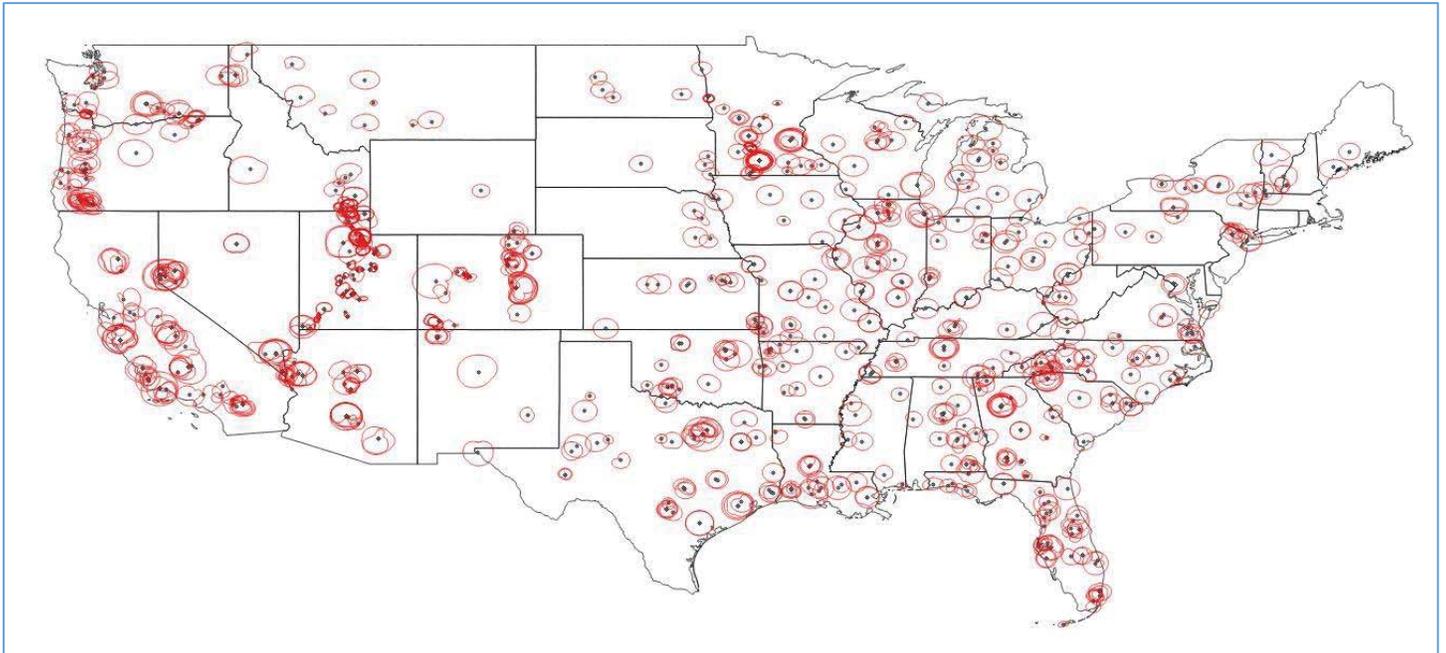


Figure 2. Map of displaced LPTV and TV Translator stations due to repacking only (84 MHz Spectrum Recovery).

Broken down by state, the number of UHF LPTV and translator stations that would be displaced is shown in Table 2. Some states are disproportionately affected. Kentucky and Utah would lose more than 50 LPTV or TV Translator stations or more than one-half of the total number of UHF translator stations.

State	Displaced
AK	2
AL	19
AR	17
AZ	28
CA	57
CO	46
DC	2
FL	46
GA	28
HI	3
IA	8
ID	31
IL	26
IN	12
KS	13
KY	9

State	Displaced
LA	19
MA	1
ME	2
MI	15
MN	47
MO	21
MS	7
MT	8
NC	28
ND	10
NE	5
NH	2
NJ	1
NM	6
NV	23
NY	18

State	Displaced
OH	12
OK	18
OR	51
PA	4
SC	13
SD	5
TN	17
TX	49
UT	152
VA	9
VT	3
WA	18
WI	13
WV	8
WY	3

Table 2. Displaced LPTV and TV Translator stations listed by state due to repacking only (84 MHz Spectrum Recovery).

FCC Claims of Minimal Disruption Are Incorrect

The FCC’s repeated assurances that LPTV displacements will be few and rare are simply not supported by the facts. The impacts to viewers, particularly in rural America, will be enormous.

NAB’s prior comments in this proceeding highlighted some specific locations where viewers would be disenfranchised, including the State of Utah, the Smokey Mountain region of North Carolina and Tennessee, and the States of New Mexico and Nevada.¹⁵ This updated analysis reveals other areas of harmful impact. For example, dozens of small towns dot the land along the Columbia and Willamette Rivers in Oregon. Many of these towns are sequestered in deep valleys, which block TV reception from full-power stations located in large cities. Examination of the maps of Figures 1 and 2 shows that those areas will be particularly hard hit by repacking. The tables above illustrate that LPTV stations and translators serving all 50 states and the District of Columbia will be displaced by repacking.

¹⁵ Reply Comments of the National Association of Broadcasters, 5-6 GN Docket No. 12-268, MB Docket No. 15-146 (Oct. 30, 2015); Letter from Rick Kaplan to Marlene H. Dortch, GN Docket No. 12-268, MB Docket No. 15-146 (Jan. 15, 2016).

Additional Loss of Service Due to Reserving Channels for Unlicensed Use

The Preservation NPRM attempts to minimize the impact of reserving channels for unlicensed use, stating “the vast majority of the population across the country would have at least two vacant channels available [and] the impact of our proposal would be to reduce by one the total number of vacant channels.”¹⁶ This misses the point that having one or two channels available in most locations is insufficient to accommodate displaced LPTV and translator stations. Clearly, the harm taking one or more channels away from LPTV and translator stations and reserving them unlicensed use will only exacerbate this harm. The Commission’s suggestion that LPTV and translator stations share channels with other stations will result in reductions of service and quality but, even more importantly, is completely meaningless if there are no channels available to share, as shown in our studies. Further, many LPTV and translator stations are already sharing channels.

Given that **one-quarter** of low power television stations may be forced off the air due to the repack, each additional channel reserved for unlicensed use has an outsized impact on the diversity of voices available to viewers. The Commission’s proposal will force a substantial number of additional stations off the air. Our analysis underscores the potentially devastating impact of the proposal on television viewers, particularly those living in rural America.

Conclusion

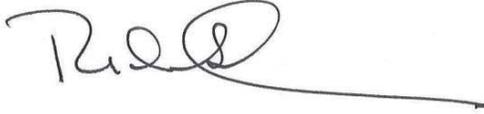
Unlicensed operations have access to spectrum in multiple alternative bands, and, in those bands, unlicensed services have flourished *despite* having to protect all licensed operations. On the other hand, LPTV and translators have no alternative spectrum available to continue providing their broadcast television services to viewers. Still, the Commission is proposing to invert the core principles of unlicensed operations and require licensed services to protect unlicensed services. Google’s claim that the Commission can do this without disrupting services on which viewers presently rely is pure fiction.

The Commission should not rely solely on untested assumptions regarding the amount of available spectrum in various markets following the auction. Policies impacting hundreds of thousands of viewers should be based on facts, not on unrealistic and unsupported speculation that is contradicted by both logic and technical analysis. At the very least, the Commission should not take steps to deprive viewers of existing television services based on the promise of unlicensed services that may never be deployed in many areas without a more complete understanding of the facts. The Commission should resolve this proceeding only after the auction, when the Commission has a clearer picture of the number of

¹⁶ Preservation NPRM at ¶ 11.

channels available in different markets and the potential effects on viewers of designating certain channels as off limits for displaced television stations.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Rick Kaplan", with a long horizontal line extending to the right.

Rick Kaplan
General Counsel and Executive Vice President,
Legal and Regulatory Affairs
National Association of Broadcasters