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October 16, 2003

Notice of Ex Parte Communication

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

Re: IB Docket No. 01-185; ET Docket No. 95-18

Dear Ms. Dortch:

On October 15, 2003, Jack Goodman, Kelly Williams, Karen Kirsch and Larry Walke of the National Association of Broadcasters (NAB), David Donovan and Victor Tawil of the Association for Maximum Television (MSTV), and Andrew Bator of Tribune Broadcasting met with Bryan Tramont of Chairman Powell's Office, and Bruce Franca, Geraldine Matise, Thomas Derenge and Jamison Prime of the Office of Engineering and Technology, to discuss the above-captioned proceeding.

NAB and MSTV have urged the Commission to implement a 2 GHz transition that will provide a one-phase relocation of Broadcast Auxiliary Services (BAS). Critical to the process is that any Commission approach must preserve existing electronic newsgathering ("ENG") and fixed-link BAS capabilities both during the transition, and following relocation.

Pursuant to the Commission's *Emerging Technologies* (ET Docket No. 92-9) reimbursement policies, broadcasters are entitled to compensation for their actual reasonable costs of replacing BAS equipment to accommodate MSS in the band. The Commission's long-standing policies require that incumbents be made whole -- both technologically and financially -- before the spectrum is transferred to a new entrant.

Therefore, in response to discussions with Commission staff, NAB and MSTV endeavored to determine the costs of implementing the 2 GHz BAS transition. Specifically, the Ad Hoc 2 GHz Reallocation Committee¹ conducted a survey to ascertain the total population of 2 GHz equipment in use at television stations in the United States,

¹ This Committee is a group of individuals interested in the issues associated with the relocation of incumbent broadcasters out of BAS Channels A1 and A2 (1990-2018 MHz and 2018-2025 MHz, respectively). The Committee's membership consists of representatives of broadcast stations, broadcast groups, industry trade organizations, and equipment manufacturers.

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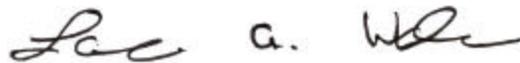
and the costs to convert this equipment to digital operation, and created the attached Report.²

The Report indicates that the average full power television station has approximately six to fourteen 2 GHz transmitters, and four to nine 2 GHz receivers, depending on their market size. Using estimates of equipment replacement costs derived from manufacturers, an overall cost for transitioning 2 GHz ENG services in markets 1-210 to digital operation is projected at approximately \$397 million, and the overall cost of transitioning the entire population of 2 GHz fixed links is projected at approximately \$115 million.³

NAB and MSTV believe that the reported data strengthen our view that a one-phase, fully compensated relocation of BAS is not only technically superior, but also economically reasonable given the considerable impact on the broadcasting industry and the expected value of the spectrum to MSS providers or other new entrants in the 2 GHz frequency band. That type of relocation plan would also be consistent with the Commission's *Emerging Technologies* doctrine.

Please direct any questions concerning this matter to the undersigned.

Respectfully submitted,



Lawrence A. Walke

Attachment

cc: Bryan Tramont
Bruce Franca
Geraldine Matise
Thomas Derenge
Jamison Prime

² We note that the Report was made possible only through the invaluable, and voluntary, contributions of numerous Committee members.

³ Please refer to the Report for further detail on the Committee's methodology for projecting overall costs.

Ad Hoc 2 GHz Reallocation Committee

2003 2 GHz BAS Census & Digital Conversion Cost Estimate

Executive Summary

This report describes the results of survey conducted by the Ad Hoc 2 GHz Reallocation Committee (the “Committee”) to determine the total population of 2 GHz transmitters and receivers in use at television stations in the United States and the cost to convert them to digital operation.¹ The survey referred to by the Committee as the 2003 2 GHz BAS Census (the “Census”), was conducted on-line from September 22 through 30, 2003. 437 full power television stations in Nielson Designated Market Areas (“DMAs”) 1-200 responded to the survey.²

The survey found that the average full power television station has approximately six (6) 2 GHz transmitters and four (4) 2 GHz receivers, with the numbers increasing to an average of fourteen (14) transmitters and nine (9) receivers in the top 10 markets. The survey also found that less than 5% of mobile transmitters of the type used in an Electronic News Gathering (“ENG”) vehicle were found to be digitally capable in DMAs 1-200, with the numbers only modestly increasing to 10% in the top 10 markets.

Using the aforementioned survey data, and by applying industry derived hard and soft cost estimates, an overall cost for transitioning 2 GHz ENG services in DMAs 1-210 to digital operation was projected at approximately \$397 million.³

The digital transition cost for the 655 2 GHz fixed links reported by survey respondents is estimated at \$65 million. The total projected fixed link cost may be at least \$115 million, based on the number of links contained in the FCC Universal Licensing Systems (ULS) database. However, it is believed that this number may underestimate the actual cost because it does not take into account circumstances where a link may need to relocate entirely to another band.

¹ The analysis focuses primarily on the costs associated with ENG equipment changes by local over-the-air broadcast facilities. Other ENG users such as Local Television Transmission Service (LTTS) and Low Power Television Station (LPTV) licensees, television networks, and cable entities responded to the survey. For example while the costs to network owned and operated stations are included in the analysis, the separate costs attributable to the networks themselves may approach \$7-10 million.

² There are actually 210 DMAs, but no responses were received above the 200th DMA.

³ These amounts do not include any costs already incurred by stations prior to the survey.

Introduction

The Ad Hoc 2 GHz Reallocation Committee is a group of individuals interested in the issues associated with the ultimate relocation of incumbent broadcasters out of TV Broadcast Auxiliary Services (“BAS”) Channels A1 and A2 (1,990–2,018 MHz and 2,018–2,025 MHz). These relocations are the result of Commission actions in July 2000 which allocated this spectrum to the Mobile Satellite Service (“MSS”).⁴ The Committee’s membership includes private individuals as well as representatives of broadcast stations, broadcast groups, industry trade organizations, and equipment manufacturers.⁵

The Committee’s primary activity has been to function as a clearinghouse for information about BAS relocation issues. Among the issues discussed by the members of the Committee have been the impact of proposed band plans that involve the use of reduced bandwidth or narrower channels by broadcasters, how television markets transition to such band plans, and the impact of having different band plans in adjacent markets. All these areas of course can be summed into one fundamental goal, ensuring that existing ENG and fixed link capabilities are retained during and after a transition.

Survey Scope

The 2003 2 GHz Census was conducted in response to discussions with FCC staff members. The intention of the Census, herein referred to as the “Survey,” was to provide the broadcast industry and the FCC more data on the amount of electronic newsgathering and fixed link 2 GHz equipment in use at broadcast stations and how it was used. It was believed such information was essential to properly consider any proposed transition plan for clearing channels 1 and 2 in order to accommodate non-broadcast related users. This information would be used to help determine how much equipment needs replacement at each step in a transition plan, and estimate how much that equipment would cost. It could also be used to help analyze whether operation on differing band plans in adjacent markets was viable.

Members of the Committee developed a Web based survey form and database.⁶ The Web based survey was fielded from September 22nd through the 30th, and the broadcast industry was alerted to its existence through direct email notification from the chairman of the Committee to the engineering managers for over 25 different broadcast groups.⁷ It was also publicized by newsletters and emails from NAB, MSTV, SBE’s Volunteer

⁴ While the FCC’s rules creating the MSS service provide for the reimbursement of incumbent broadcasters for costs associated with the displacement of their 2 GHz operations, it should be noted that the Committee itself does not participate in any negotiation activity with MSS providers or other entities that may eventually use this spectrum, and strictly discourages activity that could be construed as such.

⁵ While many of the individual committee members are also members of the Society of Broadcast Engineers (“SBE”), the SBE’s role in this issue is generally limited to facilitating communications among the Committee’s members and to planning for meeting space.

⁶ A copy of the survey form itself is attached as Appendix A.

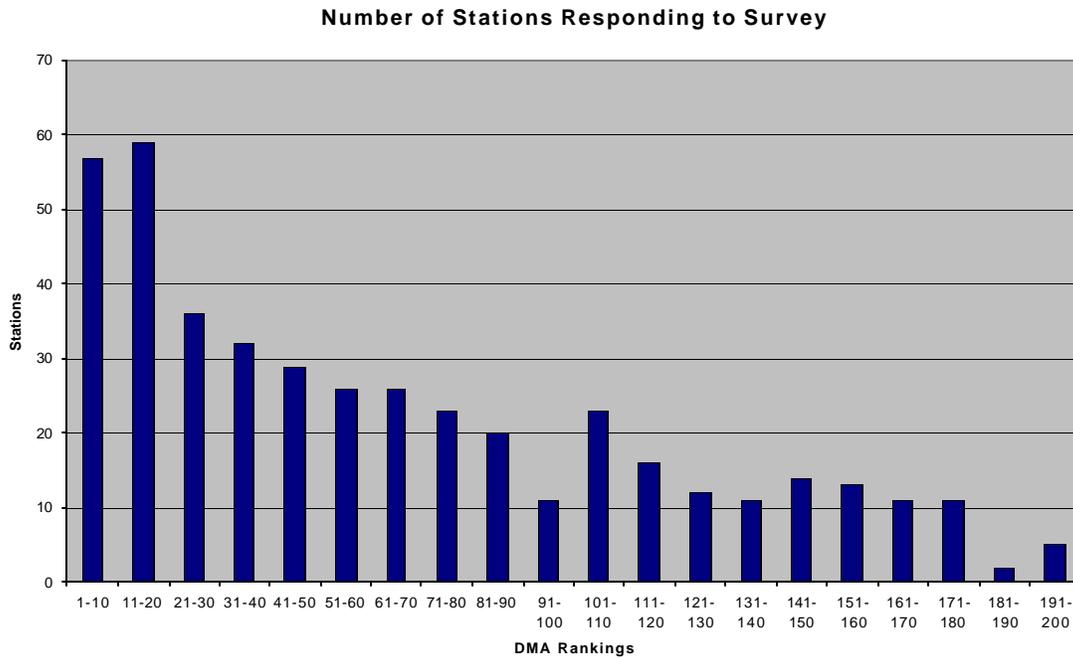
⁷ Stations were also assured that individual station specifics would not be made available to the public.

Frequency Coordinators, and in RF technology newsletters published by *TV Technology* and *Broadcast Engineering* magazines.

Survey Participation

Over 500 responses were received to the Survey. Of these responses 437 were from full power television stations in DMAs 1-200.⁸ The distribution of responses across DMA groupings is illustrated in Figure 1. This response compares to a total number of 1643 full power stations licensed in these DMAs, or roughly a 27% participation rate overall. It must be pointed out that stations responding were by and large those that routinely used 2 GHz, with less than 8% of television station respondents indicating they had no equipment whatsoever.

Figure 1



⁸ The remaining responses represented a mixture of duplicates, state and national networks, cable entities, low power stations, and television stations licensed in Puerto Rico. These responses are not considered in this report, although they are illustrative that there are many other users of the 2 GHz band.

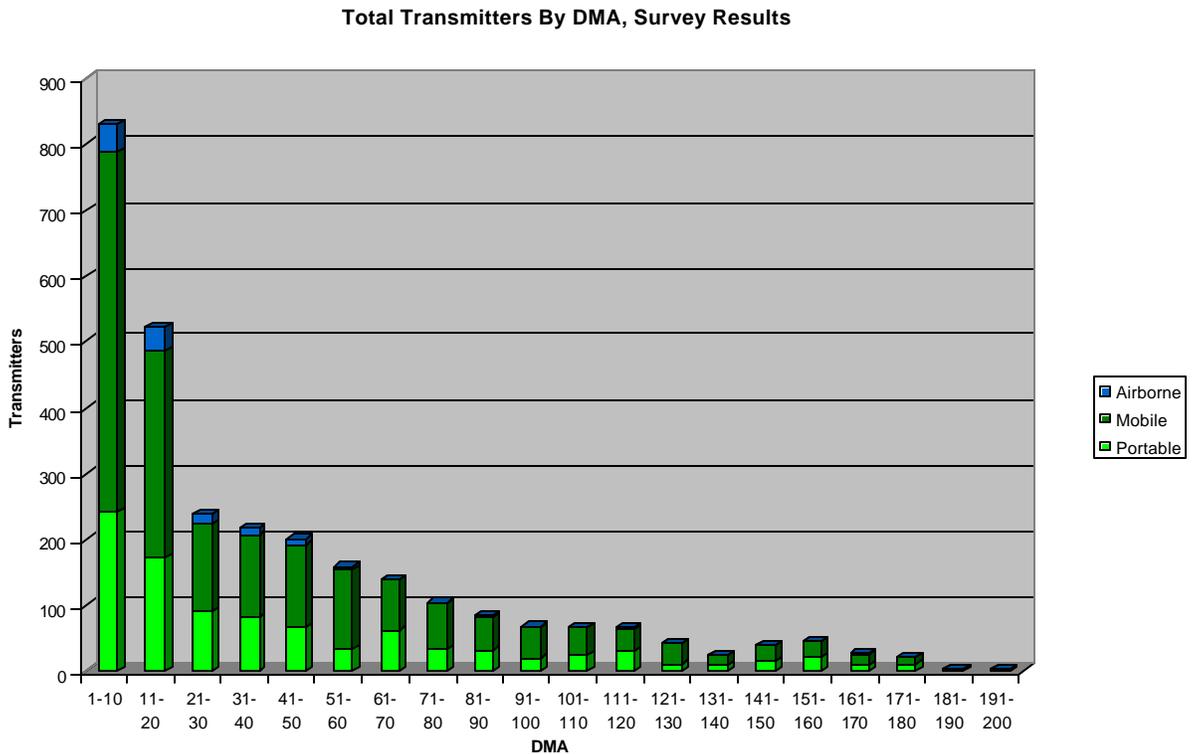
Survey Results, Totals by DMA

The following figures illustrate the inventory of transmitter and receiver types by market grouping, with Figure 2 illustrating the total number of transmitters. Out of all transmitters only 0.5% of portable units, 5% of mobile units, and 8% of airborne units were recorded as being digital already.

Figure 3 illustrates the total number of receivers. Out of all receivers only 0.6% of mobile/portable units, 4.8% of airborne units, and 5.3% of fixed units were recorded as being already digital.

Figure 4 illustrates the total number of fixed or stationary central ENG receive antennas. Out of all antennas only 58% had the agile feed horn capabilities necessary to use polarization diversity bandwidth management techniques. Respondents ranked 23% of sites as easy to access, 42% as moderately accessible, and 35% as difficult to access for modifications necessary to add polarization diversity. Only 12% of respondents were able to respond that they knew their fixed site was already digital.

Figure 2



Ad Hoc 2 GHz Reallocation Committee

Figure 3

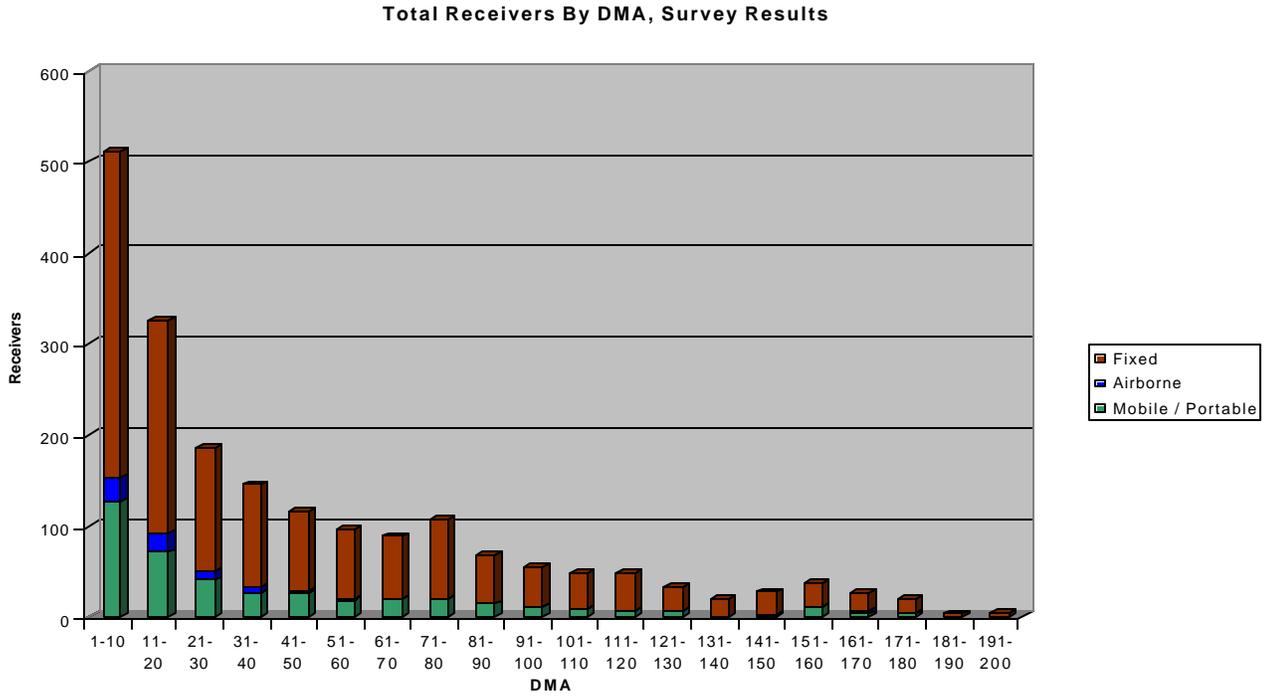
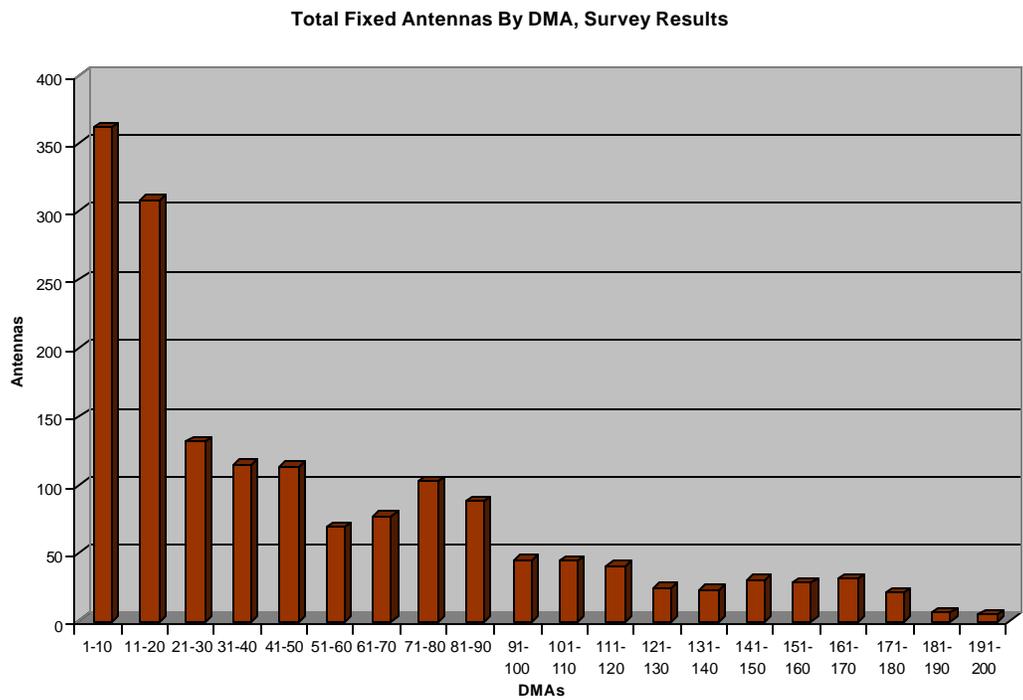


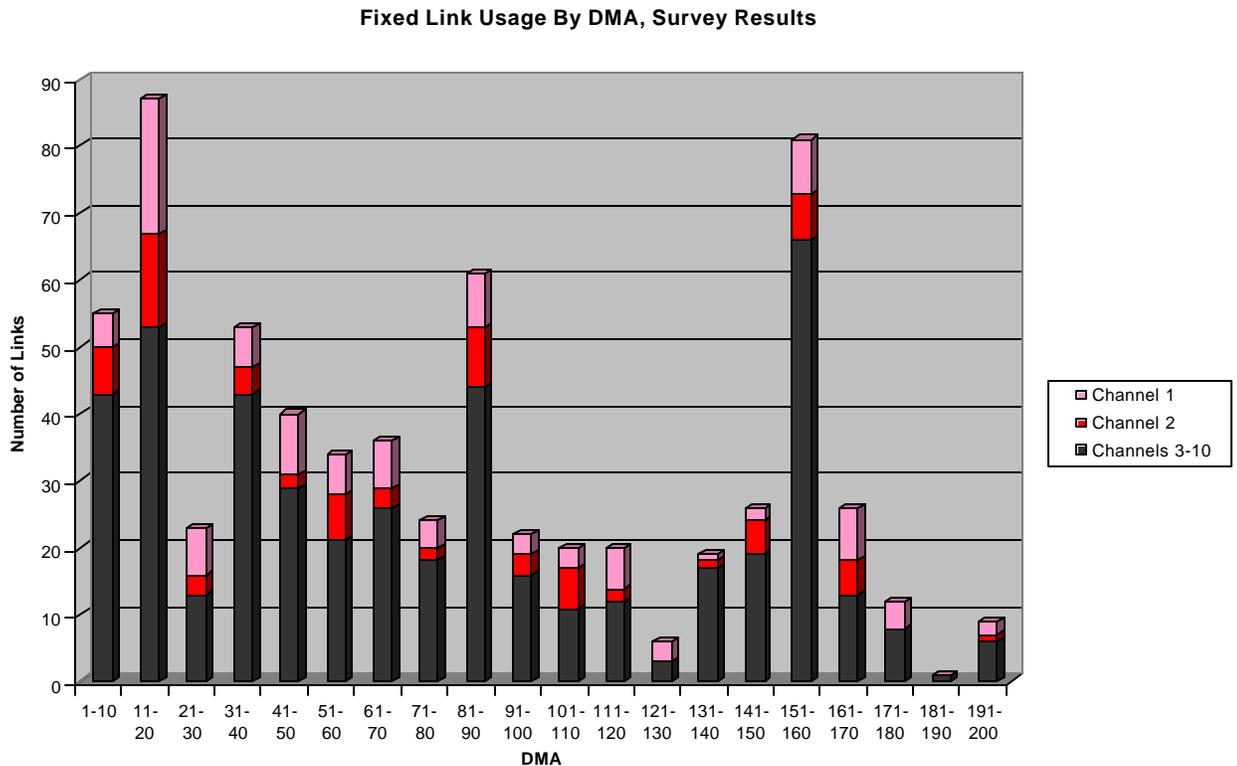
Figure 4



Survey Results, Fixed Link Usage

Figure 5 illustrates the total number of fixed links respondents reported in use illustrated by market grouping and with usage on channels 1 and 2 broken out.⁹

Figure 5



Projection of Survey Results to Total ENG Population at 2 GHz

One of the main factors in determining the total cost of the transition to digital is to estimate the total number of users and hardware operating in the 2 GHz bands. However, since the number of broadcasters operating ENG equipment in each market is different, it is difficult to extrapolate the total number of ENG users in the 2 GHz band from the total number of broadcasters in all 200 markets. A different criterion had to be used. The new criterion used below is based on the number of licensees in a market that originate local news. Specifically, it is assumed that a licensee that originates local news in a given market will require ENG equipment.

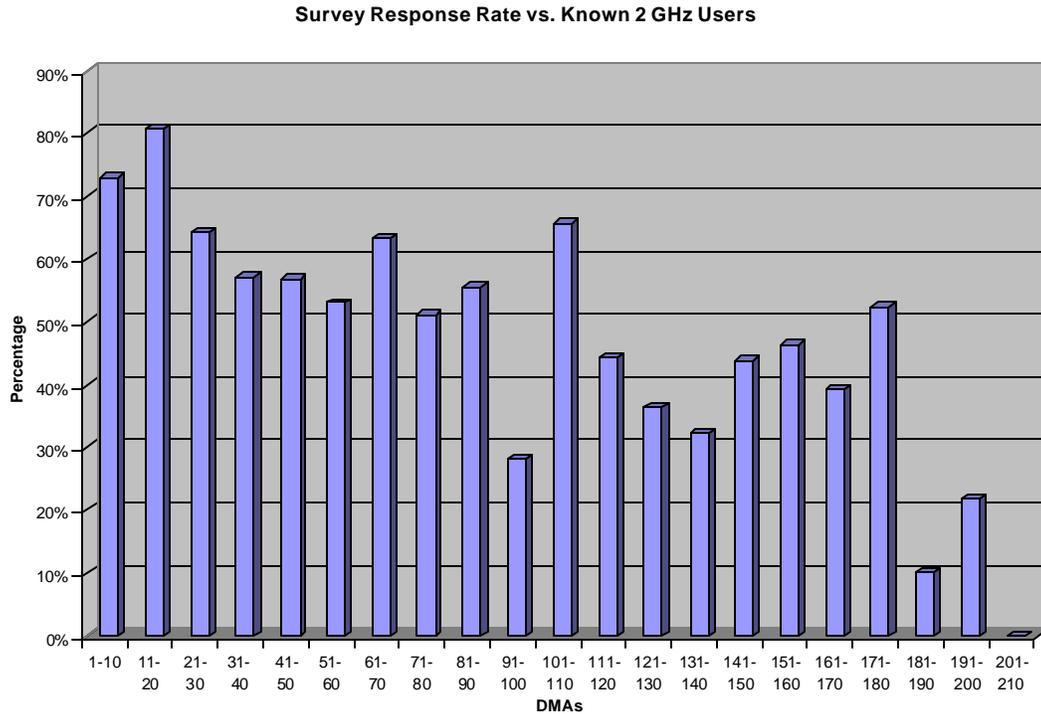
The projections of the total transmitter and receiver population use a database that contains the number of licensees that originate local news for the 210 markets.¹⁰ The

⁹ Variance in markets 151-160 reflects a multi-station multi-hop distribution system in one market.

Ad Hoc 2 GHz Reallocation Committee

database was obtained from a report submitted to the FCC in the summer of 2003 by Economist Incorporated in the ownership proceedings.¹¹ These response rates by market grouping percentages are shown in Figure 6.¹² These percentages were then used to project the total number of transmitters and receivers in all markets. These projections are illustrated in Figures 7 and 8 respectively.

Figure 6



¹⁰ No responses were received for markets 201-210. Because it is known there are 18 stations providing news coverage in those markets, the proportions for the previous market grouping were carried over.

¹¹ MB Docket 02-277, MM Docket 01-235, MM Docket 01-317 MM Docket 00-244, MM Docket 03-130.

¹² The all market overall response rate vs. known 2 GHz users was 52.5%.

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Figure 7

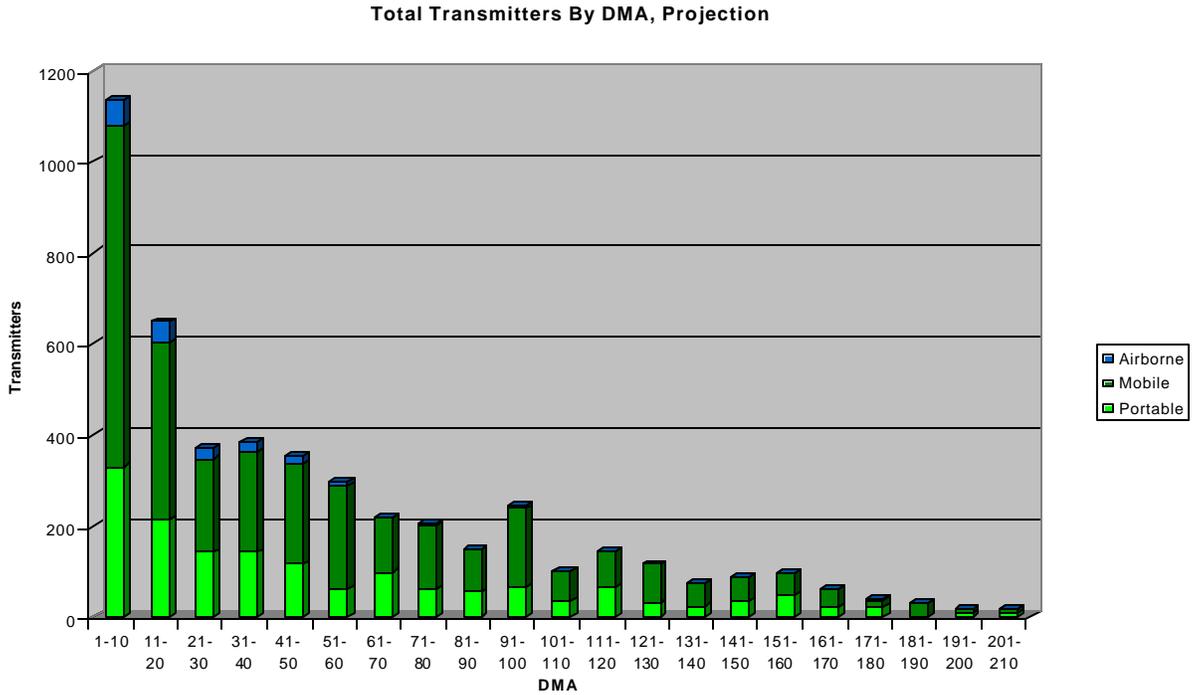
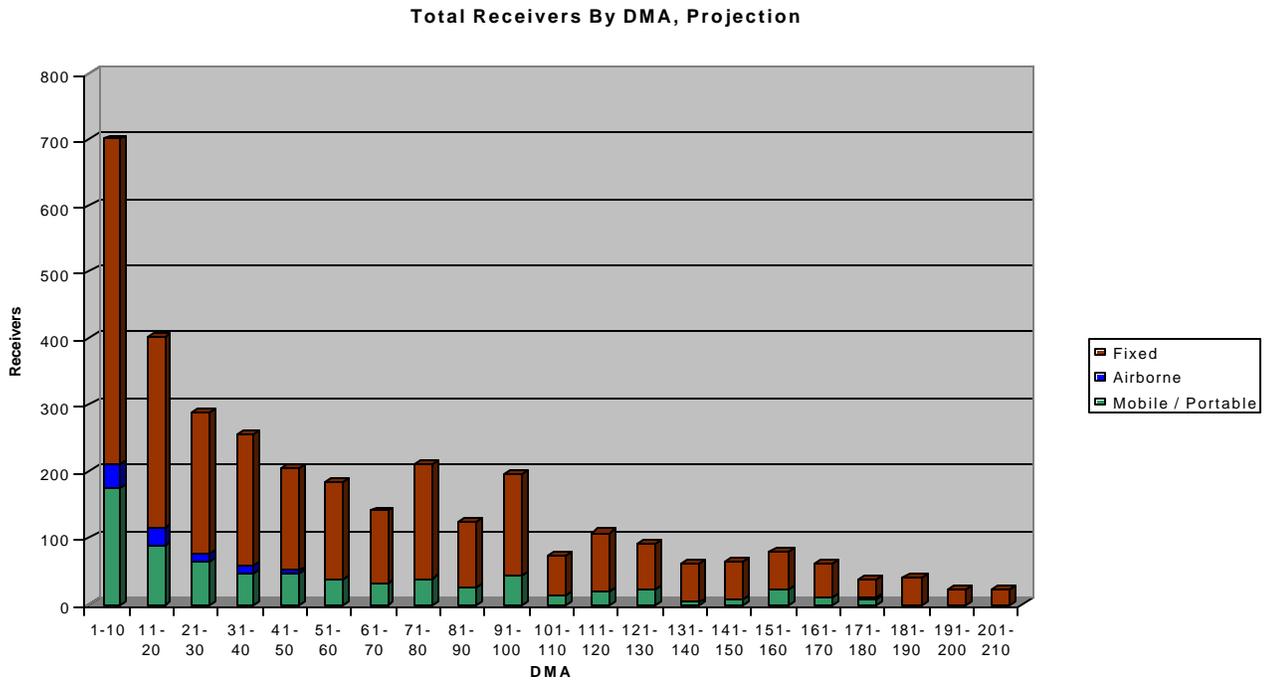


Figure 8



Survey Results, Projected Digital Equipment Costs by DMA

Ad Hoc 2 GHz Reallocation Committee

Estimates of replacement digital equipment and on-tower antenna modification costs were developed by manufacturer and broadcaster representatives within the Committee. These cost estimates are illustrated in Table 1. Soft and indirect cost percentages reflecting areas such as administrative expense, engineering costs, tax, incidental equipment requirements, etc. were also developed by Committee members, and are illustrated in Table 2.¹³ The projected total numbers of transmitters, receivers, and antennas were then multiplied by these estimates and percentages.

Figure 9 illustrates the costs across market groupings to transition 2 GHz transmitters to digital operation, with the total cost across all DMAs approaching \$254 million.¹⁴ Figure 10 illustrates the costs across market groupings to transition 2 GHz receivers to digital operation with the total cost across all DMAs a little more than \$53 million.¹⁵ Figure 11 illustrates the total costs across market groupings to transition ENG transmitters, receivers and antennas to digital operation and including the overhead expenses illustrated in Table 2. Total aggregate cost across all DMAs is approximately \$397 million.¹⁶

Table 1

Description	List Price
Fixed Site Antenna Modification Costs - Easy Site	1,500
Fixed Site Antenna Modification Costs - Moderate Site	4,000
Fixed Site Antenna Modification Costs - Hard Site	6,000
Fixed Site Feed Assembly Replacement (2/7GHz, Quad Pol, LNA byps)	12,600
High Power Digital Capable 2 GHz TX	16,500
COFDM Encoder/Modulator	39,600
Fixed Analog/Digital 2GHz Rx (w/ FM Demod)	11,300
Portable 2GHz Analog/Digital Rx w/ COFDM Rx	15,300
COFDM Decoder/Demod	5,000

¹³ It should be noted that costs for installation of spectrum monitoring equipment, replacement helicopter tracking systems, and creation of an audio mix-minus to handle digital microwave link latency were deemed too difficult to directly estimate, and so an allowance was included in this percentage. However, these costs can run as much as \$500,000 to \$700,000 at a large television station depending on existing infrastructure.

¹⁴ These amounts do not include any costs already incurred by stations prior to the survey.

¹⁵ These amounts do not include any costs already incurred by stations prior to the survey.

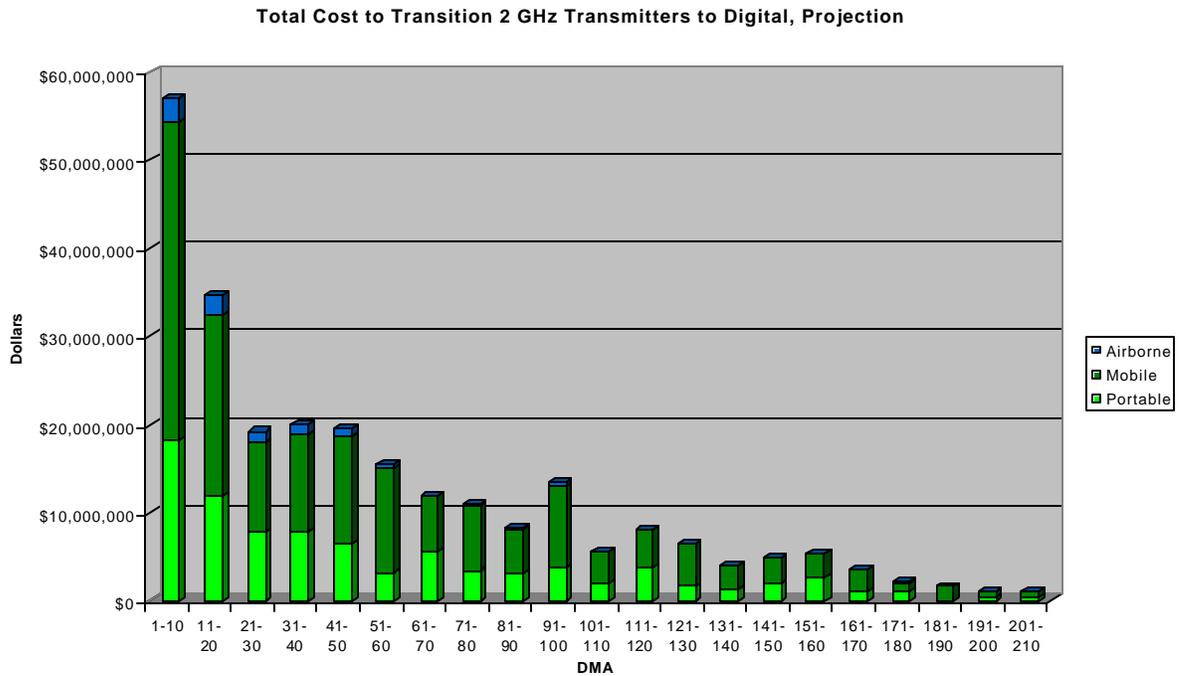
¹⁶ These amounts do not include any costs already incurred by stations prior to the survey.

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Table 2

Other Costs	
Engineering	2%
FCC License Application Preparation & Filing	2%
Administrative/Shipping	2%
Remote Control Systems	3%
Audio Mix-Minus	2%
Non-tower Installation	3%
Tax	6%
Total	20%

Figure 9



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Figure 10

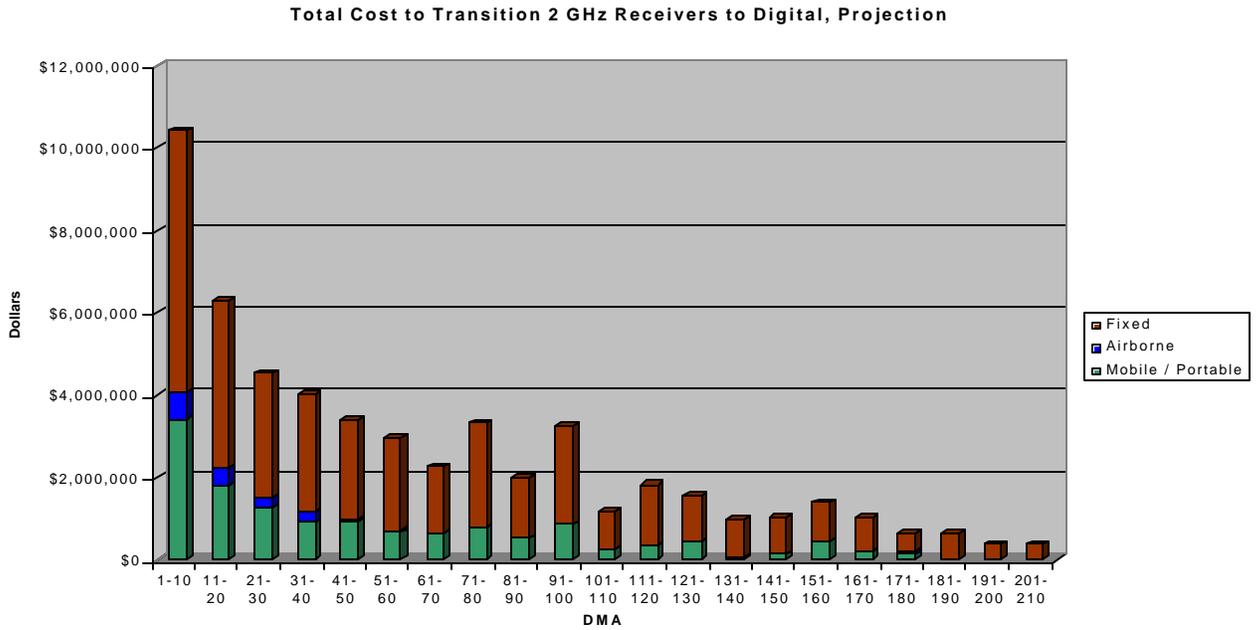
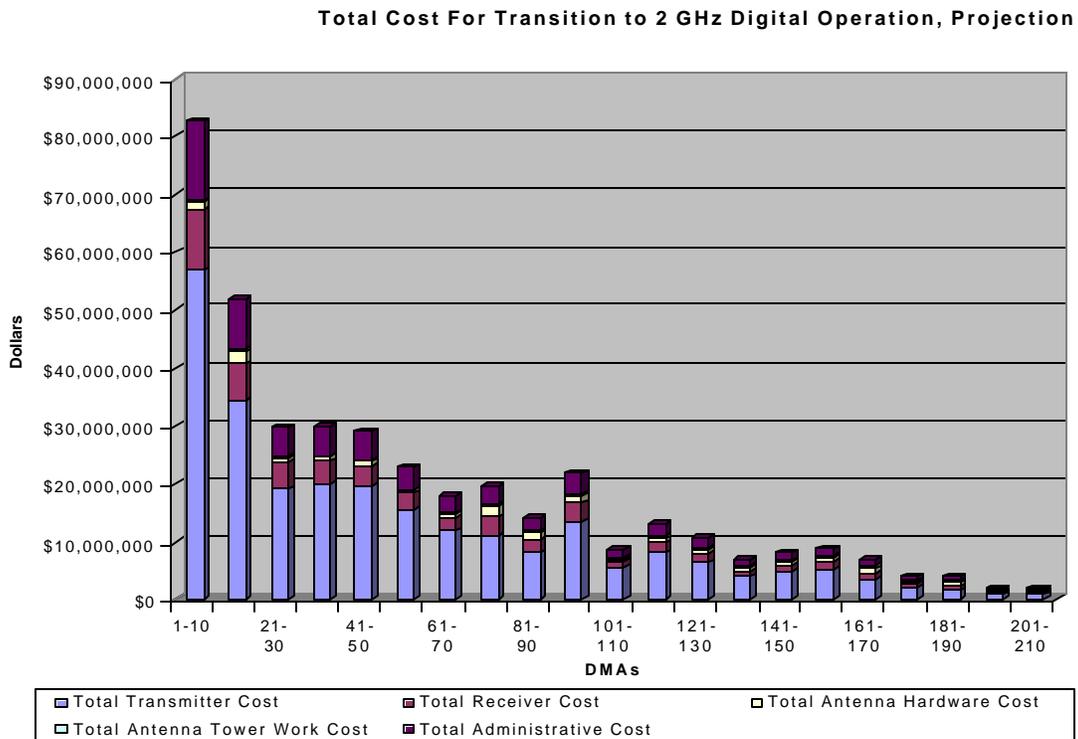


Figure 11



Survey Results, Fixed Link Digital Equipment Costs by DMA

Figure 12 illustrates the total costs across DMAs 1-200 to transition the fixed links identified by the survey respondents to digital operation. The estimated per link cost is approximately \$100,000. This represents the cost of a transmitter and receiver for a dual thread (redundant) RF “protected” system, but with only a single set of COFDM modulators and demodulators. This cost does not include the alteration of antenna systems, relocation to other bands, or other soft costs listed in Table 2. The total estimated cost to migrate the 655 fixed links reported by the survey respondents to digital operation using the above criteria is approximately \$65 million.¹⁷

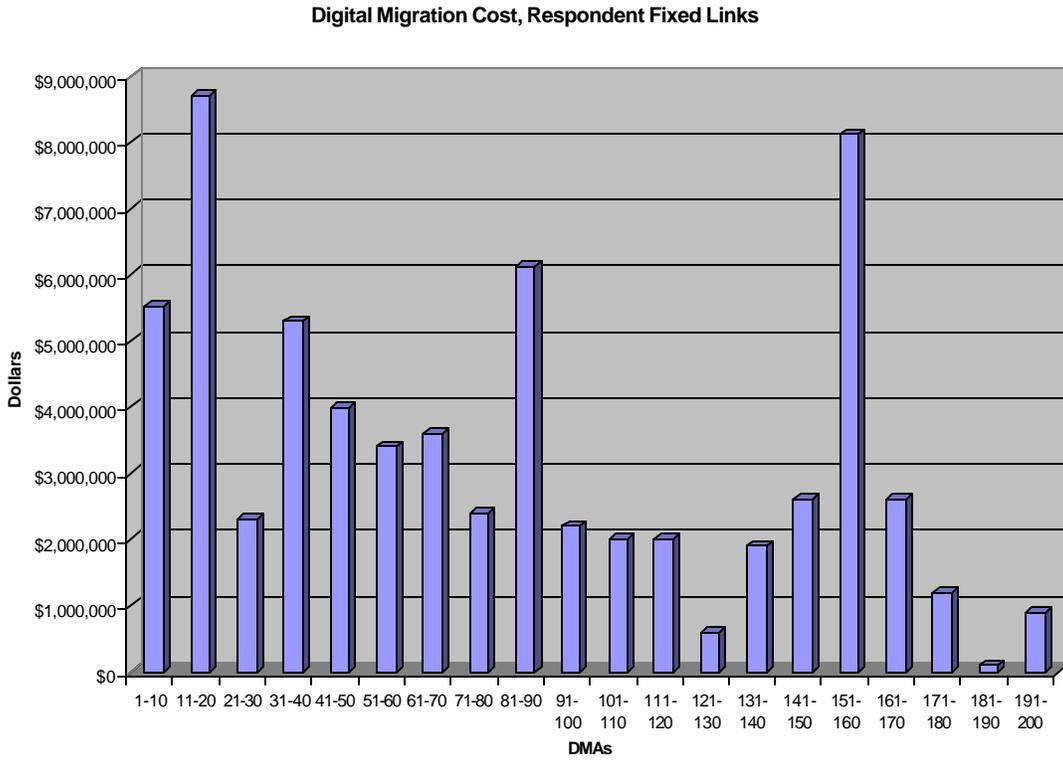
In order to project to the total cost for all fixed links in the 2 GHz band a different methodology must be used than the one employed to project the total cost for ENG, since there is no correlation between fixed links and TV stations that do news. An examination of the Commission’s Universal Licensing Systems (ULS) database reveals that there are 1150 fixed links licensed as Studio Transmitter Links, Intercity Relays or Booster Relays versus the 655 reported by respondents. Using that higher tally and the aforementioned price per link the projected cost to transition fixed links is \$115 million. However, it is believed that that this is an under estimation. There are many factors that must be considered for fixed links in the 2 GHz band. For example, links on channels 1 and 2 may have to move to another band completely (e.g. the 7 or 13 GHz band) because it may be impossible to coordinate and “clear” a new 2 GHz link in many major markets due to congestion.¹⁸ Each fixed link must be evaluated individually.

¹⁷ These amounts do not include any costs already incurred by stations prior to the survey.

¹⁸ Note that ET Docket 00-258 proposes to move 11 Department of Defense uplinks into the 2 GHz band which may make finding an in band replacement channel even more difficult.

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Figure 12



2003 2 GHz BAS Census

PLEASE NOTE: All responses are to be considered confidential and will be aggregated with other responses in your market to calculate an estimated transition cost. Answering this questionnaire will NOT commit either your facility or MSS to compensation or anything else. It will simply be used to generate the broadcast industry's best estimate on the costs and logistics involved in implementing a transition.

Contact information: Please Note, ALL fields in this block of data are REQUIRED

Station Call Sign:	<input type="text"/>	Contact Name:	<input type="text"/>
Nielsen Market No.:	<input type="text"/>	Contact Phone:	<input type="text"/>
License type:	<input type="text" value="---"/>	Contact E-mail:	<input type="text"/>
FCC Facility ID:	<input type="text"/>		

Can we contact you for more information if needed? : Yes No

Please select the 2GHz channel(s) you primarily use during 2 GHz operations:

Primary/Home

Secondary

Tertiary

Please select your use of split or offset channel operations during ENG operations:

Infrequently - Only as Situation Warrants Frequently - Part of Daily Operations Never

Please note the Audio Subcarriers you use in ENG operations:

1st Subcarrier: MHz
Use:

2nd Subcarrier: MHz
Use:

3rd Subcarrier: MHz
Use:

Equipment Quantities	Band Capabilities (List Quantity of each Type by Age)						Digital Capabilities (List Quantity of each Type)			
	2/2.5 GHz Only		<u>Dual Band</u>		<u>Tri Band</u>		<u>Digital</u>	<u>Digital Ready</u>	<u>Analog: Band Plan Selectable</u>	<u>Analog: Fixed Plan or Legacy</u>
	0-3 Years	3+ Years	0-3 Years	3+ Years	0-3 Years	3+ Years				
ENG Transmitters										
Mobile	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Portable	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Aerial-Helicopter	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
ENG Receivers										
Site Receivers	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Mobile/Portable	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Aerial-Helicopter	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
2 GHz Antennas	Quantity		<u>Antenna LNA Age</u>		<u>Digital Ready Antenna/LNA</u>		Antenna Access			
	Fixed Polarity	Polarity Agile	0-3 Years	3+ Years	Yes	Unknown	<u>Easy</u>	<u>Moderate</u>	<u>Difficult</u>	
Fixed/Tower Site	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
Portable	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>				

Fixed Links:

Operating Frequencies (List quantity of each):

Ch 1	Ch 2	Ch 3	Ch 4	Ch 5	Ch 6	Ch 7	Ch 8	Ch 9	Ch 10
<input type="text"/>									

Call Signs:



Additional Comments (Optional):



ERROR OVERRIDE: *Would you like to submit this data and ignore all errors? Selecting YES will immediately submit your data to the database without ANY opportunity to correct errors.* Yes No

Submit Form

Reset Form

Definitions:

Digital: A transmitter or receiver that is already capable of operating digitally and can be re-channeled with a minimal amount of manufacturer's assistance.

Digital Ready: a transmitter or receiver that is capable of operating digitally by adding an OFDM Modulator or Demodulator and an MPEG coder or decoder to the existing radio. The radio **MUST** also be capable of changing channel center frequencies easily - preferably without manufacturer's assistance.

Analog; Bandplan Selectable: A transmitter or receiver that is not capable of passing a digital signal but can be moved to a newer channel plan. These radios usually have frequency synthesizers and can be re-channeled with a minimal amount of manufacturer's assistance.

Analog; Fixed Plan or Legacy : A transmitter or receiver that operates on a fixed bandplan, usually crystal controlled, and cannot be moved to a different channel plan without extensive manufacturer's help.

Multiband, Dualband, Triband: A transmitter or receiver that operates in more than a single band; for example 2/6 GHz, 2/6/13 GHz, 2/13 GHz, etc. To be included in this count, one of the bands the radio is capable of operating in MUST be 2 GHz. For this questionnaire, DO NOT consider 2/2.5 GHz radios to be multiband.

Antenna/LNA Age: Grouped by age, list the number of 2 GHz antennas/LNAs you have in your system. This total should equal the sum of the Fixed Polarity and Polarity agile antennas

Digital Ready Antenna/LNA: Enter the number of 2 GHz antennas/LNAs you have in your system that are capable of passing a digital signal. Things to consider include, but are not limited to, LNA signal compression, downconverter phase stability, etc. This total should equal the sum of the Fixed Polarity and Polarity agile antennas

Antenna Access: Easy: An antenna site that is easily accessible and does not require tower riggers to replace an antenna or LNA that is incapable of passing a digital signal. An example of this would be an ENG antenna mounted on the roof of a building or truck and can be worked on without requiring a helicopter or tower riggers.

Antenna Access: Moderate: An antenna site that is accessible and may or may not require tower riggers to replace an antenna or LNA that is incapable of passing a digital signal. An example of this would be an ENG antenna mounted on a tower up to 500 feet tall and can be worked on without requiring a helicopter.

Antenna Access: Difficult: An antenna site that is extremely difficult to get to or would require a significant investment in tower riggers time to replace an antenna or LNA that is incapable of passing a digital signal. An example of this would be an ENG antenna mounted to the top of a 500 foot or taller tower or requires a helicopter to access the site or antenna.