

Relocating 2 GHz ENG Operations

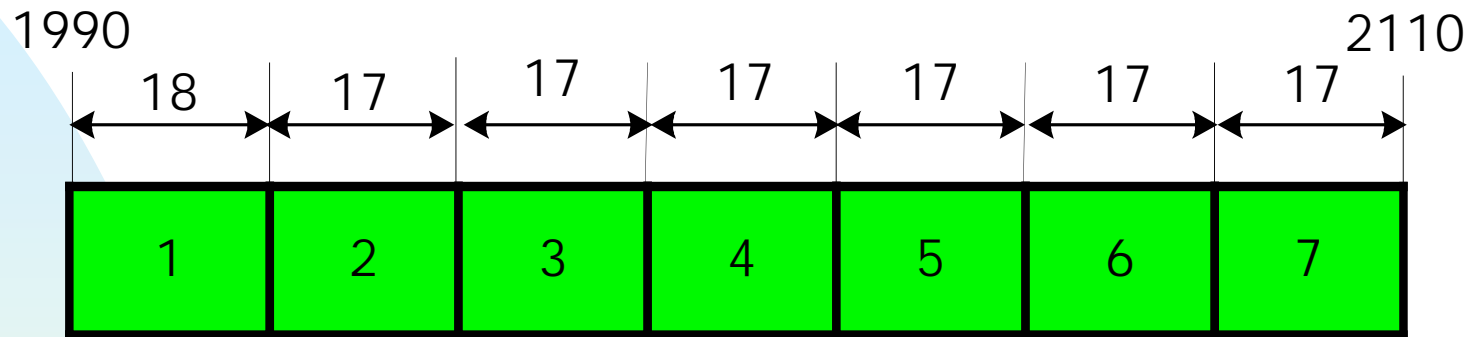


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NAB Science & Technology
WEBE SMPTE Fall Convention
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TOPICS

- Background
 - ◆ Current Band
 - ◆ Regulatory History
- The NEXTEL Report and Order
- Making A Market Transition Plan
- Questions

The Current 2 GHz Band



- Total spectrum: 120 MHz (1990 - 2110 MHz)
- 7 channels, 17 MHz ea. (ch. 1 is 18)
- Highly congested in many markets
- Used for ENG, EFP (sports) and FS Links



Regulatory History

Why is the 2 GHz band changing

- The FCC is shrinking the BAS band to make room for Mobile-Satellite Service (MSS) and Advanced Wireless Services (AWS)

Regulatory History

- FCC began looking at BAS in 1990
- Current proceeding began on January 31, 1995 (ET Docket No. 95-18)
- March 1997 – 1st FCC Report & Order
 - ◆ Gave 70 MHz to MSS (35 in 2 GHz Band)
 - ◆ BAS reduced from 120 MHz to 105 MHz
 - ◆ 2025 MHz to 2130 MHz
 - ◆ Required MSS to pay BAS relocation costs
- Budget Act of '97 changed everything

Regulatory History

- July 2000 – 2nd Report & Order
 - ◆ Allocated 85 MHz to BAS
 - ◆ 2025 MHz – 2110 MHz
 - ◆ Very complex 2-Phase, DMA by DMA transition plan
- BAD PLAN!!
 - ◆ Interference between adjacent markets
 - ◆ Small DMA get stuck w/ 5 channels
- MSS Said “WE WON’T PAY”

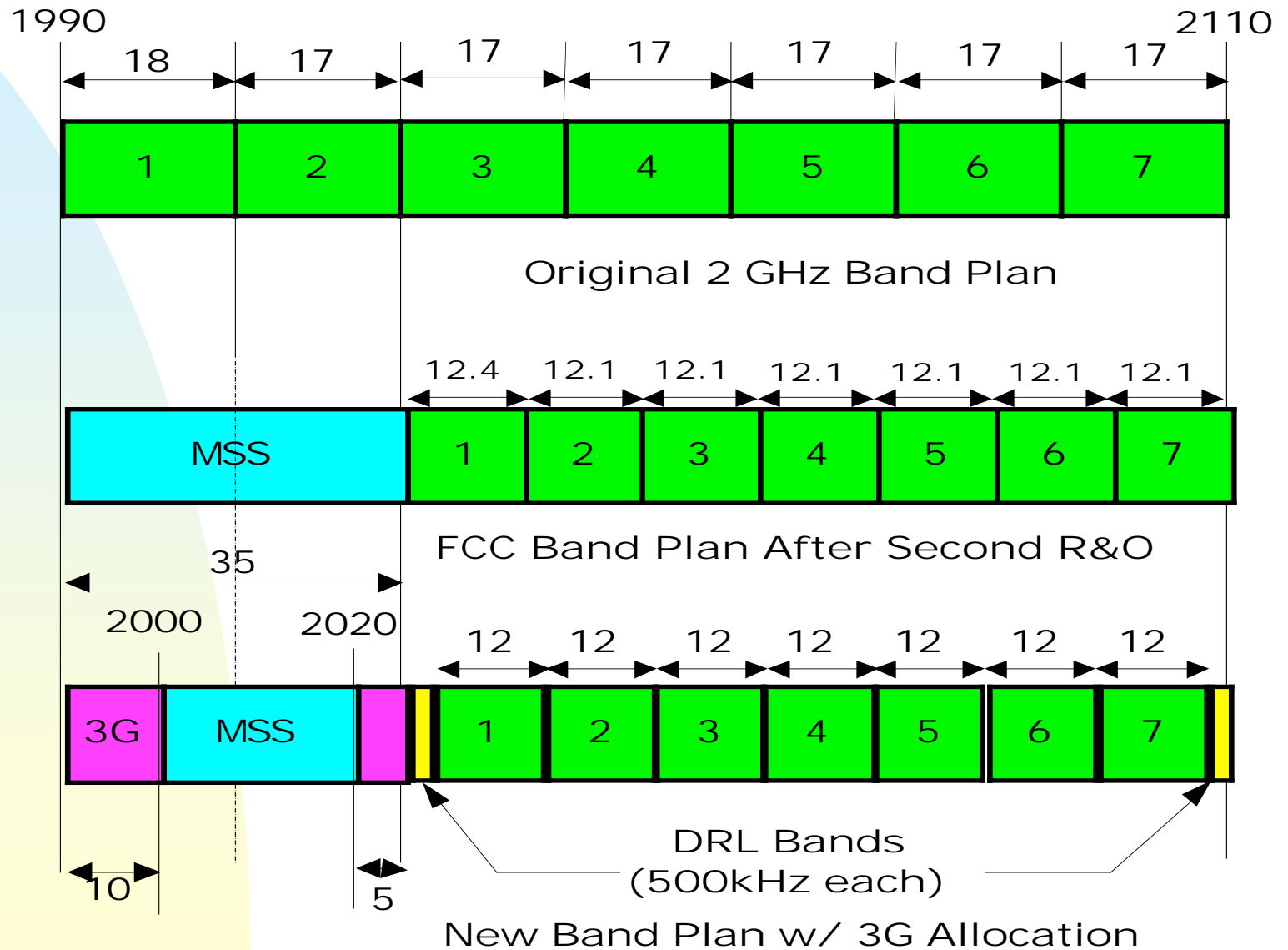
Regulatory History

- *....Meanwhile in another FCC proceeding*
- FCC reallocated 30 MHz of MSS spectrum for Advanced Wireless Services (3G):
- 1990 – 2000 MHz; 2020 – 2025 MHz; and 2165 – 2180 MHz

Regulatory History

- Feb 2003 – 3rd Report & Order
 - ◆ Single phase transition plan, But
 - ◆ Required DMAs above 30 to vacate channels 1 & 2 immediately
 - ◆ Didn't solve adjacent DMA inference problem
 - ◆ Modified the band plan based on a suggestion from SBE

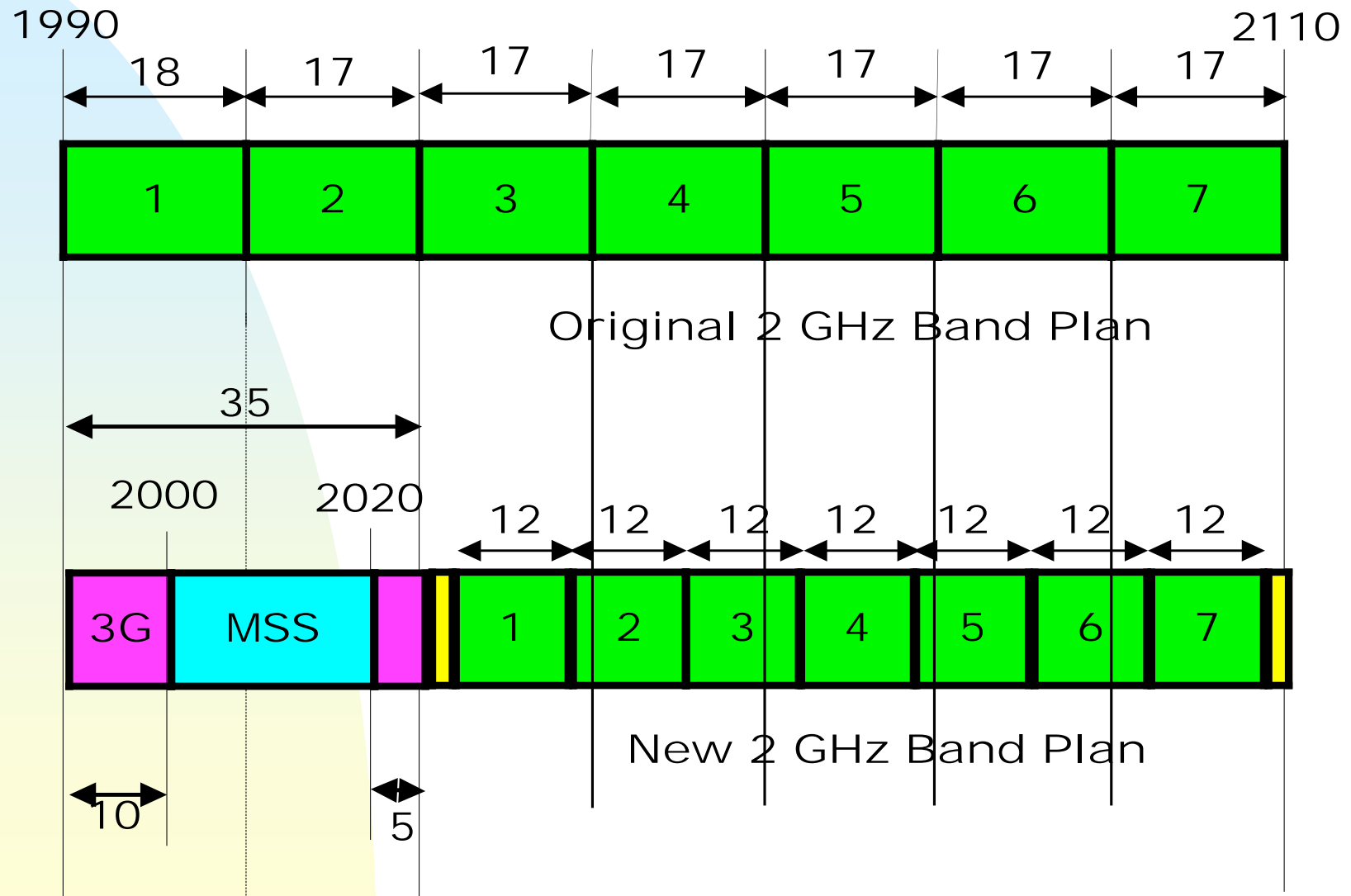
Evolution of The 2 GHz Band



Potential Uses For DRL

- Automatic power control
 - ◆ Return received carrier level (RCL) information
 - ◆ Use minimum necessary TX power to maintain RCL
- Automatic control of coding parameters
 - ◆ Return bit error rate (BER) information
 - ◆ Adjust transmission coding to maintain BER
- Return data and/or IFB
 - ◆ Desired, but power levels, D/U ratios to main channels, and bandwidth may not support

The Adjacent Market Problem





Problem with MSS

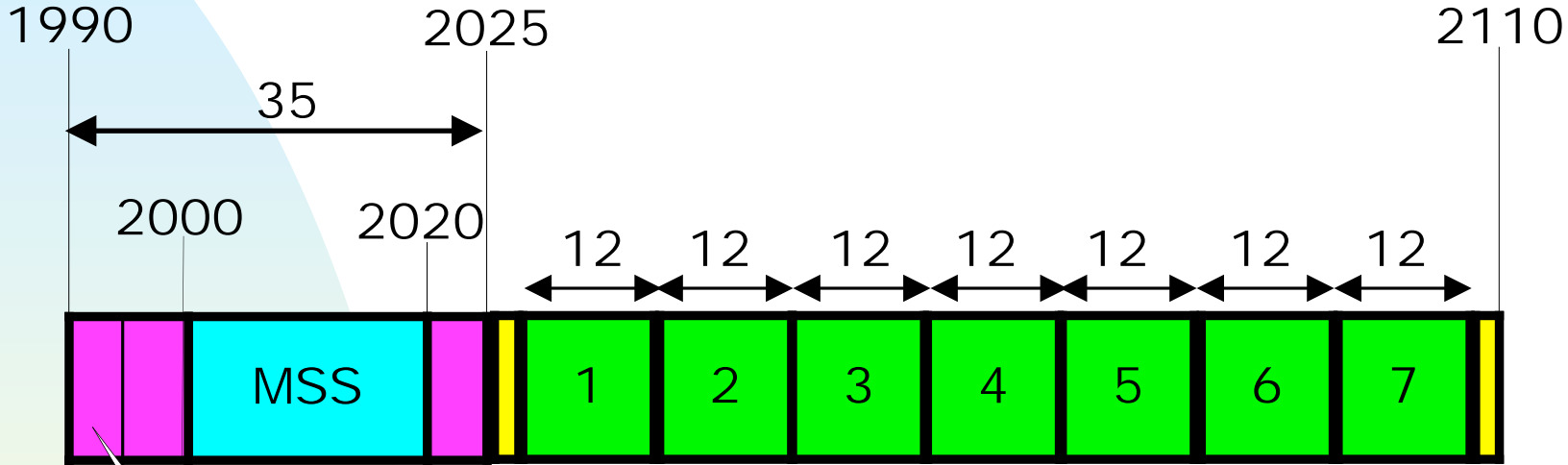
- Claimed they could not afford the cost to relocate BAS all at once
- Never initiated negotiations with BAS licensees
- Relocation stalled again



NEXTEL

- Proposed solution to interference problems in the 800MHz band
- Approached broadcasters about helping with the 2 GHz relocation problem. If...
- We would support Nextel getting "1.9 GHz" spectrum

The New 2 GHz Band



NEXTEL
1990-1995 MHz

New Band Plan w/ 3G Allocation

500 KHz DRL Bands



The NEXTEL R&O

- FCC released the Nextel R&O on August 4, 2004
- Must pay to fix interference problems in the 800 MHz band & give up 4.5 MHz of spectrum
- Nextel gets 10 MHz of nationwide spectrum in the 1.9 MHz band
 - ◆ 5 MHz at 1910-1915 MHz
 - ◆ 5 MHz at 1990-1995 MHz



The NEXTEL R&O

- In order to gain access to the 1990-1995 MHz spectrum Nextel must:
 - ◆ Pay entire cost to relocate BAS licensees out of 1990 – 2025 MHz band
 - ◆ Complete BAS relocation with 30 months after the effective date of the R&O



The NEXTEL R&O

- BAS relocation to be done in two stages:
 - ◆ Stage One - relocations made within eighteen months after the effective date of the R&O
 - ◆ Stage Two - relocations made within thirty months after the effective date of the R&O
 - ◆ File w/ FCC a plan for the Stage One relocations w/in 30 days of R&O effective date
- NAB, MSTV and SBE have begun working with Nextel to develop a structure for a workable BAS relocation plan



The NEXTEL R&O

- Nextel complete negotiations with BAS licensees for stage one relocations by May 31, 2005
- March 31, 2006 for stage two relocations



Other NEXTEL Obligations

- Nextel must provide BAS incumbents with “comparable” facilities
 - ◆ BAS not entitled to better facilities, although FCC recognizes that new BAS equipment will be digital
- Relocation costs includes: engineering, equipment, site work and other costs incumbents incur



Market Transition Plan

- FCC requires that all BAS licensees in a market must adopt the same channel plan and coordinate their relocation date



Market Transition Plan

- Broadcasters may negotiate collectively for relocation, including compensation issues
 - ◆ This is particularly true if joint negotiations would be more efficient
- Incumbents may not use joint negotiations to obtain more favorable compensation than could be obtained independently (antitrust)



Market Transition Plan

- First Step
 - ◆ Station (or group) level assessment
- Second Step
 - ◆ Develop a transition plan for your market



Information that Stations Should Collect (Assessment)

- FCC authorizations (licenses)
 - ◆ 2 GHz FCC call signs
- Equipment inventory
 - ◆ What you own
 - ◆ Replacement requirements
- Examine all 2 GHz systems including fixed links

Sample Inventory

Station	Location/Use	Item Type	Manufacturer	Model Name	Model #
	KU Truck	Antenna	MRC		900810
	KU Truck	Transmitter	MRC	2T2WB / PA2WB	
	KU Truck	Line			
	Needham Rcv.	Antenna	NSI	23SQ4Q	
	Needham Rcv.	Receiver	Nucomm	20CR4-01-1BGH	
		Line			
	OFC RCV.	Antenna	NSI		23CRS2Q-1
	OFC RCV.	Antenna	NSI		23CRS2Q-1
	OFC RCV.	Receiver	MRC	CodeRunner	CR4
		Line			
	Portable	Transmitter	BMS	BMT-2GP	
	STL	Antenna		Dual Golden Rod	
		Line			
	STL	Transmitter	MRC	2T10WB	
		Line			
	VAN #1	Antenna	NSI	230R20	
	VAN #1	Transmitter	Nucomm	2025PT3-12	23MMPT3-LO2-1V
	VAN #1	Line			
		Line			
	VAN #2	Antenna	NSI	935-51445-377	2/7/13FA20

Issues for Fixed Links

- Stay on the same channel? If not,
- Is there another 2 GHz channel available for FS in you market?
- Move to another BAS band?



How Much Time Will It Take?

- Check with manufacturers for delivery dates
- How much down time can you afford for each unit
- Scheduling tower crews (coordinate with others in the market)

Creating a Market Transition Plan

- Requires cooperation of all stations in a market
 - ◆ Chief Engineers
 - ◆ News Directors
 - ◆ Upper Management

Creating a Market Transition Plan

- Schedule a Meeting of All 2 GHz Users As Soon As Possible to Begin a Dialog
- SBE is helping to coordinate

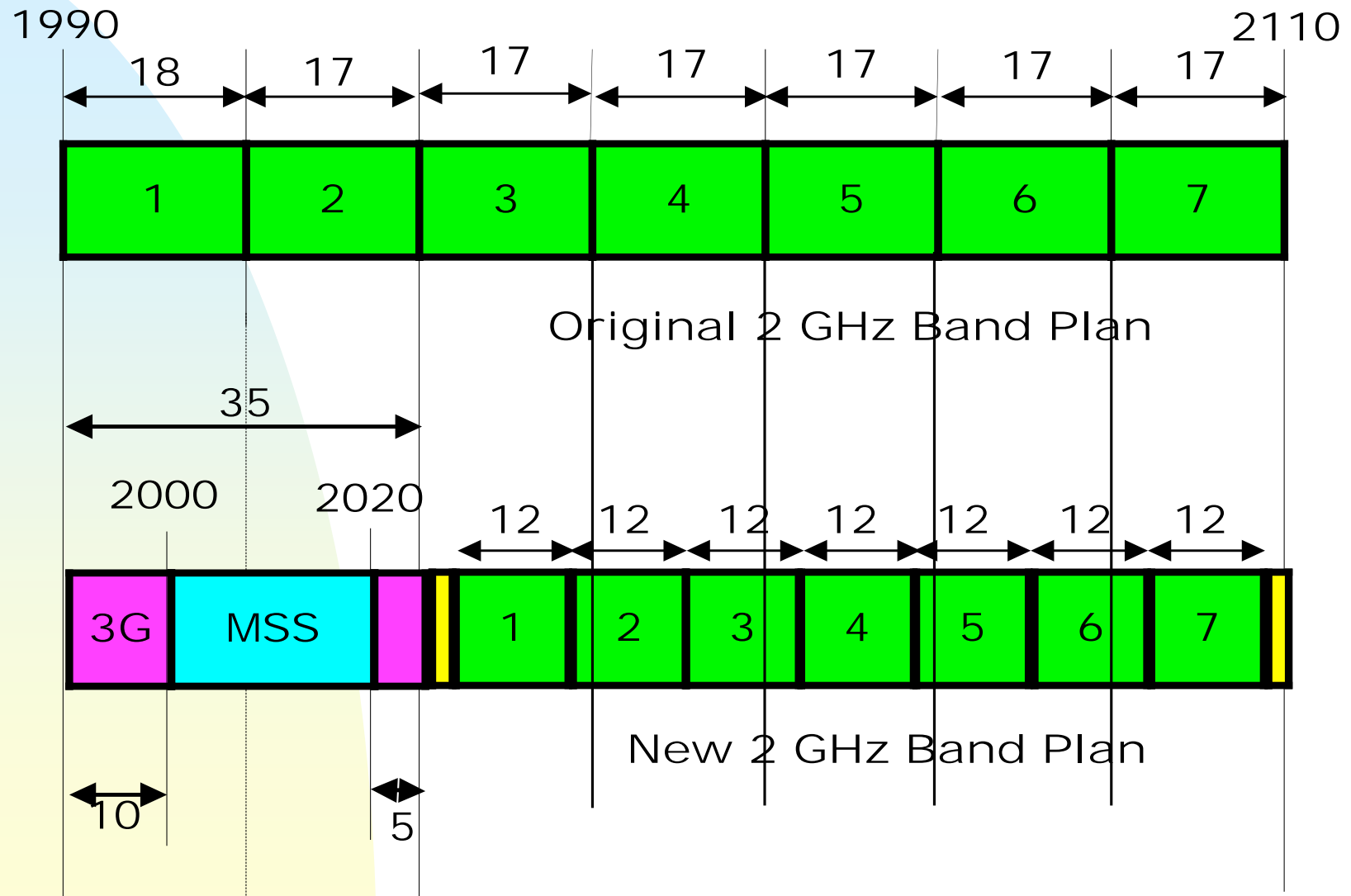
Creating a Market Transition Plan

- Who Are the Users in Your Market
 - ◆ Primary and secondary users of each channel
 - ◆ Special events uses (e.g. NFL) that require special “coordination plans”
 - ◆ Identify and notify any 2 GHz users in your market other than TV stations

Creating a Market Transition Plan

- Consider Other Markets
 - ◆ Is your market adjacent to a market with different channel plan
 - ✦ List other market where users operate occasionally for special events
 - ✦ Include a list of channels in those market's that have been coordinated for use in the past

The Adjacent Market Problem





Bottom Line

- Bring All Information About Their BAS Operations to the Table
- Create a Logistical Transition Plan That Works for Your Market
- Be Ready to Negotiate



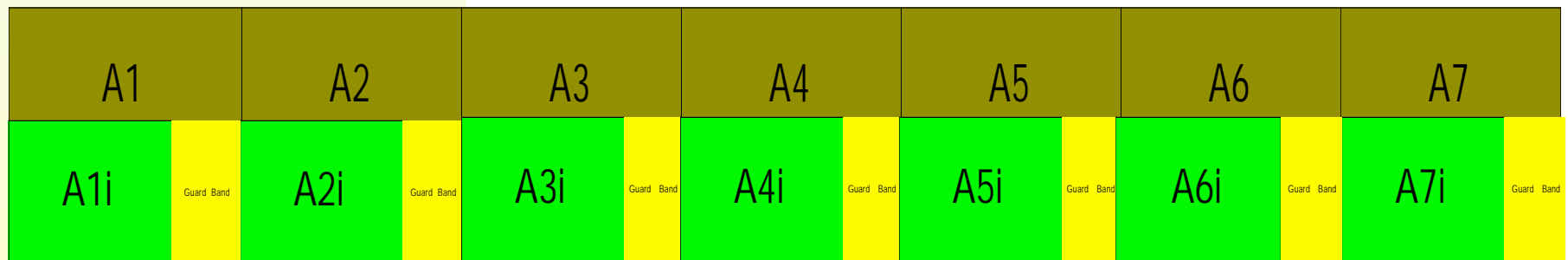
2 GHz Ad Hoc Committee

- Individual broadcast stations
- Broadcast groups
- Industry trade associations
 - ◆ NAB, MSTV, SBE*
- Equipment manufacturers
- Private individuals

* 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.

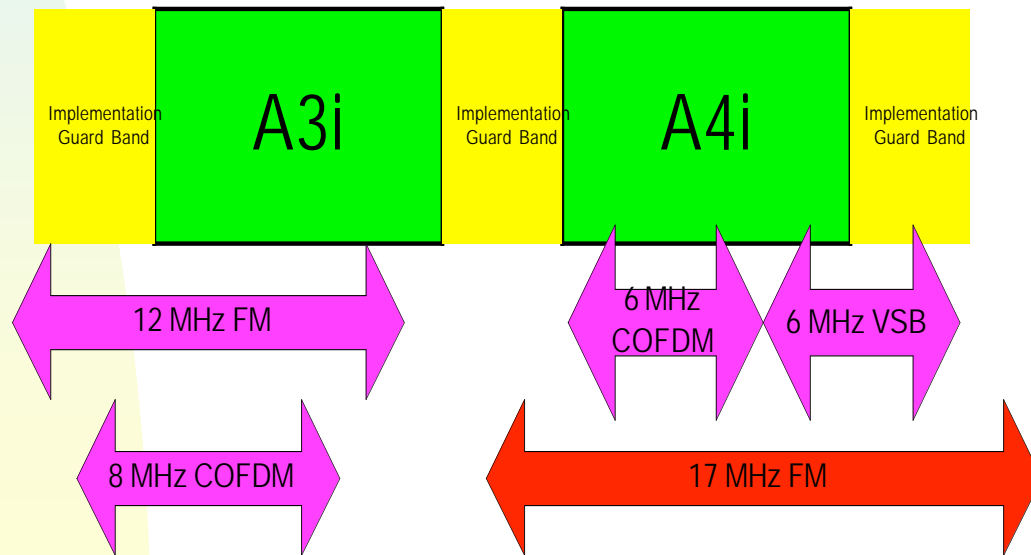
Ad Hoc Proposed Migration Plan Implementation Step 1

- 12 MHz Operation in 17 MHz Band Plan
 - ◆ Center frequencies are the same
 - ◆ Minimizes interference during transition period
 - ◆ A market or region completes transition to narrower channel use by date certain



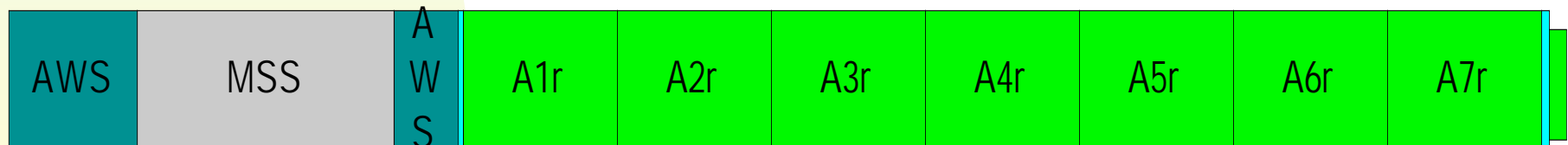
Ad Hoc Migration Plan Implementation Step 1

- 12 MHz Operation in 17 MHz Band Plan
 - ◆ Benefit: Mix of modes is possible
 - ✦ Digital operation necessary for comparable performance



Ad Hoc Migration Plan Implementation Step 2

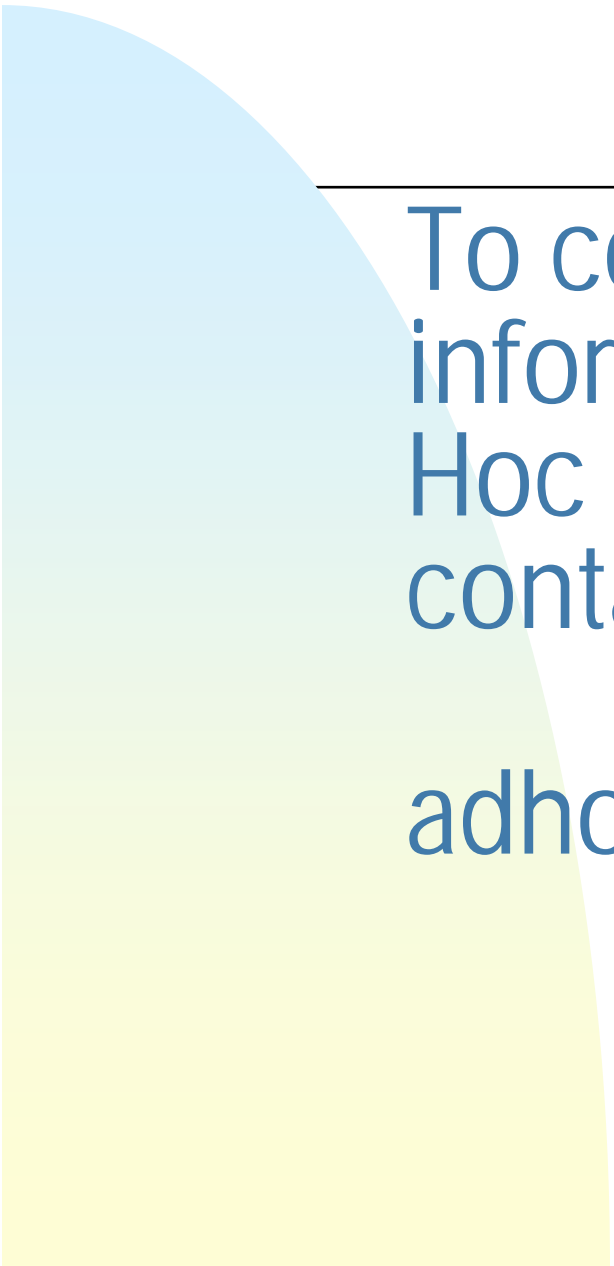
- 12 MHz Operation in 12 MHz Band Plan
 - ◆ Market or region transitions to narrow channels on date certain
 - ◆ Licensees can choose analog or digital
 - ✦ Digital necessary for comparable performance
 - Adjacent channel FM operation subject to interference
 - ✦ Digital takes priority





Benefits of Ad Hoc Migration Plan

- Analog can backup digital during transition
 - ◆ May work when digital fails due to the cliff effect
- Licensees determine when to transition as long as completed by the chosen “date certain”
- Maintains parity between broadcasters in a market or region



To comment, for more
information, or to join the Ad
Hoc Committee please
contact:

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Thank You

