



August 4, 2016

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

Re: Media Bureau Seeks Comment on Joint Petition for Rulemaking of America's Public Television Stations, the AWARN Alliance, the Consumer Technology Association, and the National Association of Broadcasters Seeking To Authorize Permissive Use of the "Next Generation TV" Broadcast Television Standard, GN Docket No. 16-142; Notice of Ex Parte Communication

Dear Ms. Dortch:

On August 2, 2016, Patrick Butler of America's Public Television Stations, Brian Markwalter of the Consumer Technology Association, and Alison Neplokh, Bruce Franca, Patrick McFadden and the undersigned of the National Association of Broadcasters met with FCC staff from the Media Bureau, Office of Engineering and Technology, and International Bureau. A complete list of meeting attendees is set forth below. During this meeting the parties discussed the attached presentation regarding their recent joint petition asking the Commission to approve broadcasters' voluntary use of the Next Generation TV broadcast standard.¹

The benefits of Next Generation TV for consumers are myriad. The new transmission standard has the potential to dramatically enhance the viewing experience, providing stunning pictures and immersive audio, robust signaling, expanded diverse programming opportunities, enhanced emergency alerting capability and innovative new service offerings. Before broadcasters can invest in their facilities to provide viewers with these services, they need the Commission's permission to use a new transmission standard. We are committed to providing the Commission with the information it needs to continue to move expeditiously in this proceeding.

¹ America's Public Television Stations, AWARN Alliance, Consumer Technology Association, National Association of Broadcasters Joint Petition for Rulemaking, GN Docket No. 16-142 (April 13, 2016) (Petition).

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Inter-Service Interference

In their petition for rulemaking asking the Commission to approve the Next Generation TV standard, petitioners submitted a report from Meintel, Sgrignoli, & Wallace demonstrating that the interference potential of a Next Generation TV signal is likely to be no greater than that of an ATSC 1.0 signal.² In its reply comments, CTIA expressed concern about the interference impact that ATSC 3 technology could have on wireless operations in the 600 MHz band.³

CTIA's concerns are unfounded. All digital communications systems, including ATSC 1.0, ATSC 3.0 and wireless LTE, incorporate signal processing techniques so that the signals transmitted have the properties of random noise. This processing helps maximize the capacity of the transmission channel and thus the spectral efficiency of the transmission.⁴ Because these systems are all noise-like, the co-channel interference potential of each is very similar under the same conditions, and there should be very little variation in interference potential between, for example, between ATSC 1.0 and ATSC 3.0 signals.

Further testing is unlikely to provide useful results. First, the Commission does not know what technology wireless carriers will actually deploy in the 600 MHz band. While they may currently plan to deploy LTE, those plans may change and, in any event, there is no single LTE standard to test against. Second, the Commission, in adopting a variable band plan, did not conduct any testing of ATSC 1.0 transmitters into LTE receivers (or any testing of unlicensed TV White Spaces operations into LTE receivers). Given that there is no technical reason to believe that ATSC 3.0 creates a higher risk of potential inter-service interference, there is no reason for the Commission to reverse course now.

Upgrade Costs and Repacking Funds

Upgrading to Next Generation TV will generally require an investment in a station's transmission facilities, but the investment required will vary greatly depending on what individual stations choose to do. For those stations that are subject to repacking following the successful conclusion of the broadcast spectrum incentive auction, much of the transmission equipment the station will need to move to a new channel is technology neutral, and there should be little or no difference in cost to acquire equipment that is capable of being upgraded to Next Generation TV.

² America's Public Television Stations, AWARN Alliance, Consumer Technology Association, National Association of Broadcasters Joint Petition for Rulemaking, GN Docket No. 16-142 (April 13, 2016), Appendix B (MSW Report).

³ Reply Comments of CTIA at 5-6, GN Docket No. 16-142 (June 27, 2016).

⁴ W.H. Tranter, "Coding for Error Detection and Correction," in K. Feher, Digital Communications, Englewood Cliffs, NJ: Prentice-Hall, 1983.

There may be cost differences in some categories of equipment, possibly including filters and exciters. While we do not anticipate that these cost differences will be significant, broadcasters are fully committed to working with the Commission and equipment manufacturers to catalog cost differences to ensure that repacking costs are not increased by the deployment of the Next Generation TV standard.

While there should be no impact on the repacking fund caused by performing the upgrade to Next Generation TV at the same time as the post-auction repacking transition, the benefits of synchronizing these two efforts will be felt by consumers and stations alike in terms of avoided disruption and confusion.

The Availability of Next Generation TV Receivers

Commission staff inquired when Next Generation TV receivers might become available and how much those receivers will cost. The timing of availability will depend primarily on how quickly the Commission moves to authorize the use of the Next Generation TV standard. Consumer equipment manufacturers are unlikely to begin including Next Generation TV receivers in consumer equipment until the Commission allows the voluntary use of the standard and there is something for those receivers to receive. That said, prototype ATSC 3.0 consumer receivers have already been demonstrated publicly, and South Korea's decision to adopt the ATSC 3.0 standard should help speed the deployment of receivers in commercial equipment.⁵ Cost figures are not yet available, but we anticipate that costs will fall over time as the standard becomes more widely used and consumer demand spurs broader manufacture of Next Generation TV receivers.

Experimental Authorizations and Testing

Commission staff also inquired whether experimental authorizations testing the Next Generation TV standard are providing further information. As the Commission knows, there are a number of ongoing experiments. Results from these experiments have been positive, and broadcasters are eager to move forward with deployment of the Next Generation TV standard.

Scope of the Petition

The petition for rulemaking asks the Commission to approve the transmission "bootstrap" and the out-of-band emission mask. The bootstrap defines the broadcaster's transmission and allows receivers to decode the broadcaster's signal. The advantage of this limited request is that it will allow broadcasters and consumer electronics manufacturers to

⁵ Deborah D. McAdams, "Report: South Korea Adopts ATSC 3.0" (July 27, 2016) available at: <http://www.tvtechnology.com/atsc3/0031/report-south-korea-adopts-atsc-30/279108>.

innovate and make improvements to their service without needing to seek further FCC approval.

The defining characteristic of the Next Generation TV deployment the petition contemplates is that it will be a voluntary, market-based deployment where consumers, not regulators, will dictate the pace of the transition. The Commission should not micromanage the services that broadcasters choose to offer; nor should it seek to micromanage the transition itself by imposing new requirements on broadcasters as they seek to improve their service.

Broadcasters are prepared to invest in their future to provide exciting new capabilities for viewers in a free, over-the-air signal. The Commission can set the stage for the future of television by continuing to move expeditiously in this proceeding, and seeking to issue a Notice of Proposed Rulemaking by October 1, 2016.

Respectfully Submitted,

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

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

cc: Meeting Attendees

FCC Meeting Attendees

Evan Baranoff
Michelle Carey
Mark J. Colombo
Martin Doczkat
John Gabrysch
Ann Gallagher
Walter Johnston
Junie Khang
Bill Lake
Kim Matthews
Sean Mirzadegan
Evan Morris
Barbara Pavon
Samuel Weber
John Wong
Sean Yun



Next Generation TV

August 2, 2016

Ready to Move Forward

- Broadcasters, broadcast equipment manufacturers, and the consumer equipment industry are ready to move forward
- Broadcasters are prepared to make significant investments to improve service to viewers
- We need the FCC's permission to do this

Benefits to Consumers

- Enhanced viewing experience
 - Improved picture
 - More immersive audio
 - Innovative new features, such as interactive services
- New programming opportunities
- Improved emergency alerts

Next Gen Deployment

- How will deployment affect consumers?
- Consider four groups:

ATSC 1.0
receiver,
no Internet
access

ATSC 3.0
receiver,
no Internet
access

ATSC 1.0
receiver,
Internet
access

ATSC 3.0
receiver,
Internet
access

Next Gen Deployment

	What does a viewer get without additional equipment?	What does a viewer need to receive ATSC 3.0 signal?	Advantages of ATSC 3.0 for viewer
ATSC 1.0 without Internet	ATSC 1.0 signal	Dongle or stand-alone receiver	With additional equipment – higher quality picture, more localized content, better accessibility options, advanced alerting
ATSC 1.0 with Internet	ATSC 1.0 signal, possibly over-the-top services	Dongle, stand-alone receiver, or home gateway	Above plus integration with Internet data for richer viewing experience and interactive services
ATSC 3.0 without Internet	ATSC 3.0 signal and ATSC 1.0 simulcast	Nothing	Higher quality picture, more localized content, better accessibility options, advanced alerting
ATSC 3.0 with Internet	ATSC 3.0 signal and ATSC 1.0 simulcast, possible additional services	Nothing	Above plus integration with Internet data for richer viewing experience and interactive services

Managing the Transition

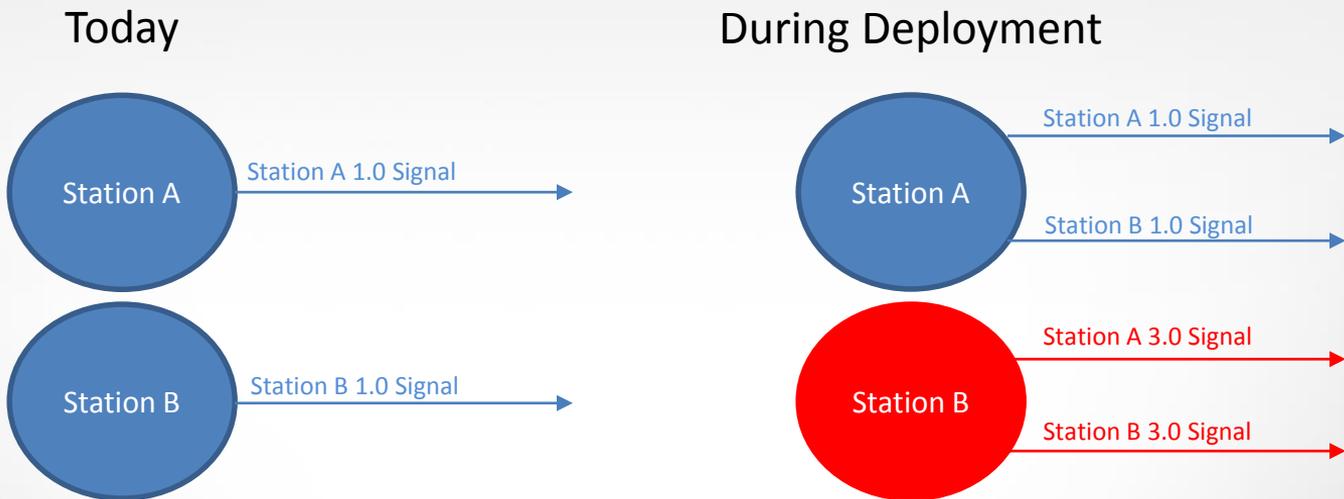
- How many stations can simulcast on a single ATSC 1.0 stick?
 - Broadcasters highly incented to maintain highest signal quality possible
 - Depends on exact resolution and programming
 - Potential for three 720 signals or two 1080 signals
 - Technology is continuing to evolve and may allow improvements

Managing the Transition

- How many stations can simulcast on a single ATSC 3.0 stick?
 - 3.0 will allow broadcasters to do more with existing spectrum
 - More HD streams
 - UHD video
 - Mobile reception
 - Additional services
 - This is why broadcasters are willing to invest in upgrade and shoulder complex transition

Managing the Transition

- How does must-carry work?



- Station A's primary stream is A's 1.0 signal – entitled to carriage
- Station B's primary stream is B's 3.0 signal – but the obligation to carry can be satisfied by carrying the 1.0 stream on Station A's facilities