SINCLAIR BROADCAST GROUP

January 27, 2010

VIA ELECTRONIC FILING

Ms. Marlene H. Dortch
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: NBP Public Notice #30
Letter Reply Comments of Sinclair Broadcast Group, Inc.
GN Docket Nos. 09-47, 09-51 and 09-137

Dear Ms. Dortch:

Sinclair Broadcast Group, Inc. ("Sinclair") submits these reply comments in response to the FCC's NBP Public Notice #30, released on January 13, 2010 in the dockets listed in the caption above.[1] In these comments Sinclair addresses, in particular, a proposal to reclaim television broadcast spectrum by transitioning all television stations to a Single Frequency Network ("SFN") architecture[2], referred to by ATSC as a Distributed Transmission System ("DTS"). As a strong proponent for (C)OFDM[3] more than a decade ago, Sinclair is certainly aware of SFN attributes that have the potential to offer specific advantages in various cases. However, ATSC was not originally designed or intended to operate in an SFN environment, and the available data regarding DTS suggests that it simply is not as well suited for similar deployments[4]. Accordingly, before giving serious consideration to transitioning the television broadcast service yet again, the FCC should work with industry and other interested parties to determine whether DTS is even viable in the way CTIA AND CEA envision, and if so, what the true costs of transition and operation would be. The FCC should fund this testing with an assembled "blue ribbon panel" of experts chosen jointly with or by broadcasters to drive the effort.

The Broadband Task Force staff must recognize that the record in these dockets is far too large to permit any individual or company to reply to even a small portion of the many thousands of comments, ex parte communications, blog posts, staff workshop records and other documents, especially in the short time allotted. The task of replying is more difficult because, in Sinclair's view, the FCC has not

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[1] *Public Notice, Reply Comments Sought in Support of National Broadband Plan, NBP Public Notice #30*, GN Docket Nos. 09-47, 51 and 137, DA 10-61 (rel. Jan, 13, 2010) ("*Public Notice*").
[2] "SFN" is a term typically used in reference to (C)OFDM network deployments.
[3] (Coded) Orthogonal Frequency-Division Multiplexing, a specific modulation technique
[4] This is due largely to the specific performance driven differences in the instantiation of the ATSC 8-VSB single-carrier system versus various (C)OFDM multi-carrier systems purposely designed for such deployments.

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clearly defined its end objectives in this proceeding, which substantially overlaps with many ongoing FCC rulemaking proceedings, even while bringing many dozens of "new" issues to the forefront of public debate. Obviously, the comments will inform the FCC's National Broadband Plan, but the extent to which this record may lead to adoption of new rules, practices or policies without a full and independent development of appropriate notice and comment records is unclear. Although Sinclair has some concerns about the process of developing the National Broadband Plan, we support the Broadband Task Force's willingness to re-think approaches to communications regulation that in most cases are products of the last century's societal needs and technical capabilities.

The questions posed by the FCC, and the thousands of inputs from various parties provide the basis for a useful reexamination of FCC policies and regulations. They also suggest that the National Broadband Plan will encompass a very broad scope. However broad the scope, the core of the plan should acknowledge that our national broadband infrastructure must rely on a variety of "bearer layers" – physical infrastructure including fiber, cable, copper wire, wireless RF, and others and supporting software, systems, and other resources. Public statements by Broadband Task Force staff and other FCC officials also suggest that the National Broadband Plan will, perhaps explicitly, make a number of "value judgments" as to the most appropriate underlying technologies and infrastructure for various data transport requirements. Sinclair's reply comments will focus on a relatively small part of one such data transport mechanism, though one which has garnered perhaps a disproportionate amount of attention late in the process of developing the National Broadband Plan: spectrum for wireless broadband generally and for mobile broadband in particular.

Several commenters have asserted that the spectrum in a variety of frequency bands is underutilized and that this spectrum, if reclaimed and reallocated for wireless broadband use, would foster a transformational expansion of wireless broadband. The record reflects a view by some commenters that allocation of vast additional bands of spectrum for mobile broadband should be the central focus of the National Broadband Plan. It is worth emphasizing that ideas which continue to equate broadband with mobile (broadband = mobile) are counterproductive, because consumers, businesses and other institutions have a much wider variety of broadband needs. The fabric of a National Broadband Plan will encompass wireless, but bandwidth capacities envisioned by many (including the ultra-high bandwidth links needed to provide high quality video and other data-intensive services to more than 100 million homes, businesses and public institutions) will define the physical infrastructure needs, and the varied and distributed requirements will unquestionably rely more on fiber, cable, copper and other bearer layers fashioned as a quilt with the material and thread being pieced together from all available and suitable resources.

The record contains a number of substantive and thought provoking proposals, and some of these proposals may suit the national broadband goals the FCC defines. One such proposal was submitted jointly by CTIA and the Consumer Electronics Association.[5] There are many assertions and facts that clearly need addressing or lack full understanding,[6] but a specific focus on the SFN (perhaps more appropriately DTS) nature of their proposal needs to be highlighted. CTIA and CEA assert that between 100 and 180 MHz of spectrum can be reallocated from broadcast television by transitioning broadcasting to a low power service. According to CTIA and CEA, their low power Single Frequency Network ("SFN") plan would improve broadcast service while allowing mobile broadband services to flourish with the reallocated spectrum. The costs of transitioning all broadcast stations from high power, tall tower architecture to a low power, multi-site architecture would be modest, according to the proposal, and would readily be paid by auction winners in order to clear the spectrum. CTIA and CEA also argue that the ATSC digital television broadcast standard can be made to work in a nationally deployed SFN architecture.

Sinclair acknowledges that in some circumstances and for some purposes a Single Frequency Network can be a preferred approach for providing broadcast television services. However, Sinclair has grave concerns about the CTIA and CEA proposal for a variety of reasons, unless the FCC is also willing to consider changing the U.S. broadcast standard in total.

Sinclair does not oppose rational and well-reasoned efforts to "free up" spectrum for new services, especially if spectrum can be reallocated without diminishing existing services. However, Sinclair believes the FCC must avoid being swayed by "leap of faith" judgments that are based on conjecture and a very small body of anecdotal evidence. Several aspects of the CTIA and CEA comments seem to leap to conclusions and claims that have never been fully verified for ATSC 8-VSB modulation and DTS. However, the CTIA and CEA comments indirectly underscore clear advantages for (C)OFDM based SFN techniques used in similar distributed applications and other broadcast standards used in other countries (including CMMB, DVB-T/H, ISDB-T, SBTVD/ISDB-Tb, T-DMB, and others).

Most specific and to the point, one of many keys to success in all countries that have adopted a (C)OFDM version of modulation is the ability to provide an adjustable guard band that allows for many echoes to add coherently and thus improve the signal-to-noise ("SNR") ratio in a properly designed system. This allows

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[5] *See* CTIA-CEA White Paper Proposal: Exploring A Path For Next Gen Television And Next Gen Wireless Broadband Spectrum, GN Docket No. 09-47, GN Docket No. 09-51, GN Docket No. 09-137 (filed Dec. 22, 2009) ("CTIA-CEA Comments"); *see also*, COMMENTS OF CTIA – THE WIRELESS ASSOCIATION® ON NBP PUBLIC NOTICE #26, USES OF SPECTRUM, filed December 22, 2009.

[6] For example, the assertion of adjacent channel allocations and separations found on pages 7 and 8 of the CTIA-CEA Comments are easily disputed by a cursory look at adjacencies that exist in the Washington/Baltimore markets

the constructive tailoring of overlapping coverage contours. In contrast, 8-VSB requires a complex equalizer that under the best of circumstances can only attenuate the echoes (in addition to echoes generated within the environment due to reflections and scattering sources, introduced largely in this example by the adjacent synchronized transmission sources) into added noise, and further, adds processing noise. In the worst case, such an equalizer cannot attenuate multiple and dynamic echoes that result from a distributed broadcast transmission system, in which case reception is not possible. In either case, the desired SNR of overlapping 8-VSB signals is always degraded whereas the SNR of overlapping (C)OFDM signals is enhanced.

CTIA and CEA acknowledge that synchronization and exact timing of multiple transmission sources would be required to deploy a market-wide broadcast DTS. These alone represent nontrivial efforts, and solutions have not been fully worked out, and many other obstacles would have to be overcome including development and deployment of the infrastructure to support the needs for the high data rate transport stream payloads with exacting needs. As noted, even if these obstacles are overcome, overlapping signals are not additive – they at best attenuate as additional noise. DTS may not be the spectrally efficient way to provide 8-VSB broadcast services.

Additionally, Sinclair is concerned that CTIA and CEA have presented such “leaps of faith” and assumptions to the FCC as if they are facts and common knowledge. Lacking true and verifiable support of the CTIA and CEA arguments, many hold a strong belief (because there exists no body of evidence to the contrary) that the primary areas where ATSC 8-VSB SFNs may work without inflicting harmful self-interference is in “shadowed” areas or at the fringe where the primary signal is weak (for example -30dB relative to the desired transmitter). In these cases there exists a small body of evidence that suggests no synchronization is even necessary, but there is lacking a meaningful and statistically valid means for verification. Experts in the field of television broadcasting have said that claims of improvements due to "more uniform field" in ATSC-DTS systems are simply false when fields from two DTS transmitters overlap.

Yes, in a DTS environment a broadcaster could improve service in one area by creating self-interference to another, much larger area, but is that is unlikely to be an attractive outcome for anyone. In the proposal put forward by CTIA and CEA it would appear that someone must pick the winners and losers - “cherry pick” the affected communities. Clearly, if the FCC is to rely at all on the prospect of successful ATSC-DTS deployments as a way to recapture spectrum for mobile broadband, it must have a much more detailed understanding of the technical feasibility of the proposal and the tradeoffs involved. The broadcast industry – and the consumers they serve – cannot be expected to invest in another transition unless and until the new model has been fully vetted and grounded in well-established facts.

Use of the ATSC-adopted DTS standard (A/110) for an overlay such as proposed by CTIA and CEA, without the impartial validation by joint FCC and industry activities, could alienate mass audiences from OTA broadcasting. Only a collaborative effort by affected parties, including MSTV, NAB, ATSC and the FCC, along with individual broadcasters and others representing the interests of consumers, offers the potential to determine whether ATSC-SFN service is practical. As noted, the available evidence strongly suggests that it is not practical. Although some aspects of the CTIA/CEA proposal may warrant further study, ATSC-SFN simply is not a general panacea for DTV reception woes. A complete rewrite of the table of channel allotments or even assignment of a new ATSC-SFN overlay would most certainly backfire unless substantial diligence is first applied to determining whether such a system will work at all.

There are many ways to develop and improve industry understanding of the likely real-world performance of the architecture proposed by CTIA and CEA. Monte-Carlo simulation tests using multiple synchronized emission systems could be one way to begin, but they would be a starting point only. Field tests and related activities must be performed. This is an activity that the FCC, including especially the OET and its resources, should be able to undertake with the broadcast and related industries. Only if the results of such initial tests are far more encouraging that current information would suggest should the FCC give serious consideration to forcing broadcast television to transition to an ATSC-SFN architecture.

Moreover, the FCC and affected industries must develop a far more accurate and granular projection of the likely costs of transitioning to a SFN architecture and of the incremental costs of operating that very different infrastructure. The FCC should fund the necessary testing to be performed by a blue ribbon panel of experts chosen jointly, with broadcasters driving the effort. The projections shown in the CTIA/CEA proposal reflect a substantial misunderstanding of the practical obstacle of deploying and operating such networks, even if they can be made to work at all. The transition costs are likely to be an order of magnitude greater than the CTIA-CEA projections, and the costs may be far higher yet. The incremental operating costs are likely to double the net cost of the transition. Since the net value of any reallocation must be discounted by the real costs of the transition, all parties share a common interest in arriving at the most accurate cost estimates.

Finally, as Sinclair has repeatedly stressed, receiver and receive antennae performance standards are essential to a robust, consumer-friendly OTA broadcast service. No amount of engineering on the transmit side, whether high power, DTS, or a hybrid, can fully compensate for poor receiver performance.

Although Sinclair does not believe those who predict a shortage of spectrum for wireless broadband have provided any meaningful justification for those predictions, we welcome the FCC's efforts to understand more about how television

broadcasting is evolving and what steps the FCC can take to improve the broadcast television experience for American consumers.

Respectfully submitted,

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