COMMENTS OF GEOBROADCAST SOLUTIONS LLC

I. INTRODUCTION AND SUMMARY

This proceeding—concerning a proposed rule change to allow radio broadcasters to use their FM boosters to broadcast geo-targeted content during a fraction of the broadcast hour to meet the unique needs of their local community—has already won the support of over 70 parties who both see the benefit of this opportunity and are confident that it can be deployed in a way that enhances (and does not detract from) the experience of radio listeners. Support from so many broadcasters and other members of the industry, especially in these difficult times, evidences the promise that the rule change detailed in our Petition for Rulemaking (“Petition”) holds for many in the radio industry.1

Based on this chorus of support, GeoBroadcast Solutions LLC (“GeoBroadcast”) urges the Commission to move forward with a Notice of Proposed Rulemaking, so that more industry stakeholders can have the opportunity to consider and weigh in on this proposed rule change. In these Comments, we first refresh the key issues in the Petition and then discuss three important

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1 See Petition for Rulemaking, GeoBroadcast Solutions LLC, RM-11854 (March 13, 2020) (hereinafter “Petition”).
topics: (1) how this proposed rule change is technology-neutral; (2) the substantive engineering and consumer analysis behind this proposal; and (3) how this proposed rule change is especially important in the current climate.

II. OVERVIEW OF THE PROPOSED RULE CHANGE

To review the Petition: Our proposed rule change would permit (but would not require) radio broadcasters to deploy technology that would geo-target content to specific portions of their service area during a fraction of the broadcast hour, a concept we refer to as “zoned broadcast coverage.” GeoBroadcast has developed its own zoned broadcast coverage technology, called ZoneCasting™, but as discussed further herein the proposed rule change is not specific to ZoneCasting and would permit other technologies. This geo-targeted content could include news and weather, advertisements (radio being the only mass medium today that does not have the capability to geo-target advertisements) and emergency alerts (discussed further herein). Currently, the FCC’s rules regarding FM broadcast booster stations require a booster to solely repeat the signal of its main station. Our proposal would revise that rule to permit FM broadcast booster stations to originate their own content on a limited basis while continuing to carry a “substantially similar” signal as the main station. In this regard, the proposed rule change would track the rule change that the Commission adopted in the ATSC 3.0 proceeding.2

This rule change would enable stations to use synchronized FM booster radio stations—fill-in facilities that operate on the same frequency as their primary station (i.e., a single frequency network (“SFN”))—to originate localized content and insert it at specific and limited times while otherwise retransmitting the primary station’s signal. The result is geo-targeted

2 See 47 C.F.R. § 73.4801(b)(1) (defining “substantially similar” in the context of ATSC 3.0).
content. A broadcaster would have the option of serving a portion of their service area with specific content, including news, weather, traffic, and advertising, during part of the broadcast hour that the broadcaster knows would be beneficial to its listeners.

It is important to stress four points:

1. FM boosters are on the same channel as their main station, so *this technology does not cause interference to neighboring stations*. As demonstrated by engineering testing that the company conducted with broadcast station partners pursuant to experimental licenses and consumer tests conducted in conjunction with NPR Labs and Towson University, ZoneCasting also does not cause harmful self-interference.\(^3\)

2. Launching this technology only requires the small rule change highlighted above, and *no changes to the Commission’s rules regarding interference or translators are necessary*.

3. The technology does *not require listeners to purchase any new equipment*, since it is both forwards- and backwards-compatible and works with analog and digital radios in homes and cars across the country today. This technology can be readily extended to digital radio broadcasts.

4. The proposed change *does not mandate anything*. It would only give broadcasters *the ability to decide for themselves* whether pursuing geo-targeted content would be valuable for their listeners. Any deployment of technology would be voluntary.

In short, the FCC has the ability to effectuate this change with one edit to one rule. Doing so will

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\(^3\) See *id.* at pp. 9-13, Exhibit C (declaration of Bertram S. Goldman); *see also* Section IV *infra.*
not mandate any changes for broadcasters or impose any costs on consumers, but it has the ability to benefit both.

III. THE PROPOSED RULE CHANGE IS TECHNOLOGY NEUTRAL

GeoBroadcast has no exclusive rights to the concept of geo-targeted content. We have proposed this rule change as a technologically neutral way to achieve this good result for broadcasters and their communities. GeoBroadcast is obviously most familiar with its own technology, ZoneCasting (which is trademarked). This is why the Petition discusses the extensive testing we have performed, as those tests utilized the company’s technology. We review this testing in greater detail below. However, the Petition’s proposed rule change speaks to geo-targeted broadcast coverage generically and so ZoneCasting is just one example of a technology that supports zoned broadcast coverage. The proposed rule change would permit other broadcasters, and other broadcast technologists, to use readily-available hardware to geo-target content using SFNs. GeoBroadcast welcomes such initiatives, as they would benefit the industry as a whole.

IV. ENGINEERING AND CONSUMER ANALYSIS SHOWS THE TECHNOLOGY WILL ENHANCE THE EXPERIENCE OF RADIO LISTENERS

ZoneCasting is the product of a decade of development and testing. GeoBroadcast has presented updated data and results of its tests to the NAB Radio Technology Advisory Committee and the industry at large in several recent presentations.\textsuperscript{4} We highlight these tests here.

\textsuperscript{4}See, e.g., Presentation of Bert Goldman at the NAB Show New York in October 2019, attached hereto as Exhibit A.
The company has conducted three engineering tests of ZoneCasting with radio station partners across the country, pursuant to experimental authorizations from the Commission. The first of these tests was in 2010, with KDUT in Randolph, Utah, an area with mountainous terrain. Based upon discussions with the Bureau staff following this initial test, the company next tested ZoneCasting in the flat terrain of Avon Park, Florida on station WWOJ. The company conducted important research between the WWOJ test and its next field test in 2016, including consumer listening tests to ensure that listeners have a seamless experience when transferring between zones. The parameters for ZoneCasting were verified by simulations of transmitted FM signals created at NPR Labs, and these simulation results were then evaluated by a large group of listeners in controlled subjective testing at Towson University. Extensive network design work at NPR Labs was used to identify the power and height for the ZoneCasting boosters and the distance between them under a variety of primary station types and terrain conditions. By using appropriate parameters for each of main transmitter and each of the boosters, harmful interference within the target area of the zone can be effectively eliminated.

In 2016, the company returned to the field and tested ZoneCasting on station WIIL in Union Grove, Wisconsin. This test showed that the transition area—meaning the boundary between the primary station and the booster coverage zones—can be minimized to only a tiny area within a station’s entire coverage area (far below 1%), and for a very limited period of time, such that most listeners would never notice any transition. With WIIL, the transition area was

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5 Reports on each of these three tests were hand-delivered to the Commission, and later publicly filed in the Media Modernization proceeding. See Comments of Shainis & Peltzman, Chartered, MB Docket No. 17-105 at Attachments A-C (filed July 3, 2017).

limited to one-tenth of one percent (0.01%) of WIIL’s entire coverage area. Depending on the design, this could be further reduced.

V. THE TIME IS RIPE FOR COMMISSION ACTION TO ENABLE RADIO BROADCASTERS TO BETTER SERVE THEIR LOCAL COMMUNITY.

Lastly, turning to the industry as a whole, and the public it serves, there has never been a better time for the Commission to enact this rule change and permit this new technology. More than three years ago, the Commission updated the television broadcast standard by adopting ATSC 3.0, which gives TV broadcasters many benefits including the ability to provide geo-targeted content. Frankly, it is time for the Commission to do the same for the radio industry—the only media platform that today lacks the ability to geo-target content.

Zoned broadcast coverage enables the targeting of news content and emergency alerts, both of which can be critical in safety-of-life situations. Radio has always been a leader in this area. So has the FCC. In 2018, the Commission adopted narrower geo-targeting requirements for the Wireless Emergency Alert (“WEA”) system. In April 2020, the Commission issued a Public Notice regarding how enhanced WEA “is available as a tool to provide life-saving information to the public during the coronavirus COVID-19 pandemic.” Like wireless technology, radio is a leading reach platform, and can be a key helper in disseminating emergency messages. This Petition presents a small way for the FCC to further enhance public safety capabilities by permitting radio broadcasters to voluntarily use zoned broadcast coverage,

7 See Petition at 14-15.
a capability that may become more and more important as restrictions on business and travel may vary quickly, and on a locality-to-locality level.

COVID-19 will also have an impact on our nation’s businesses, with those driven by advertising revenue—such as radio—among the first to feel strain.10 During the 2008 recession, radio revenue decreased significantly, and did not bounce back: In the 2003-2007 period, annual local radio ad revenue exceed $17 billion; in 2008 this dropped to $16 billion and has continued in a pattern of decline. BIA Advisory Services estimates that as a result of the COVID-19 pandemic, 2020 local radio ad revenue will further decline to $11.4 billion.11 It is too early to know what the current climate will bring, but the Commission should do what it can to support the financial health and longevity of the industries it regulates.

This capability is also suited to benefit small businesses looking to reach a local audience, who are similarly in need of support. As referenced in our Petition, advertisers increasingly seek the capability to geo-target their advertisements, a functionality that they can take advantage of on every mass medium today except for radio. In a February 2020 study by BIA Advisory Services and Advertiser Perceptions, more than 90 percent of local retailers indicated that they would spend more on broadcast radio advertising if zoned advertising were available, and two-thirds of national advertisers indicated their interested in zoned broadcast coverage, with nearly half saying they expect to put more ad dollars into radio to support it.12


12 BIA Advisory Services and Advertiser Perceptions, ZoneCasting: Main Street and Madison Avenue Survey, see Petition at Exhibit B.
Despite the changes of the last two short months, radio broadcasters are still highly likely to see benefits from being able to offer advertisers the geo-targeting they so clearly want, particularly if we continue to be in a period where people stay close to home, patronizing their local businesses. The FCC can help support the radio broadcast industry and the communities it serves by permitting radio broadcasters to decide for themselves whether zoned broadcast coverage would benefit their service area.

* * *

Adopting the proposed rule change and permitting stations to deploy zoned broadcast coverage on a voluntary basis will provide consumers with substantial listening and public safety benefits, and may also help broadcasters with their finances at a time when that is sorely needed. Acting now will allow stations to bring these benefits to their communities as soon as possible. We urge the FCC to promptly issue a Notice of Proposed Rulemaking on this issue.

Respectfully submitted,

/s/
Gerard J. Waldron
Hannah Lepow
Counsel for GeoBroadcast Solutions, LLC

May 4, 2020
MaxxCasting™ ZoneCasting™
Advanced Single Frequency Networks

2019 New York NAB Convention
What We’ll Discuss

• Who is GeoBroadcast Solutions (GBS)?
• R & D of FM SFN Design how it relates to Next Gen TV
• Introduction to Maxxcasting, how it works
• Example of FM and TV Next Gen SFN design in real world
• Examples of Maxxcasting systems on-air in Boston, San Diego
• Introduction to Zonecasting, geo-targeted SFN
• Regulatory environment, SFN and geo-targeted SFN, TV & FM
About GeoBroadcast Solutions

- GeoBroadcast Solutions (GBS) formed in 2011 to develop the **ZoneCasting™** Geo-Targeting platform (Geo-Fencing audio delivery)
- Petition for Proposed Rule Making is at the FCC which would allow full time Geo-Targeted separation of the MAIN audio channel of an FM radio station to its listeners
- Out of this development effort came **MaxxCasting™**, which increases signal quality, PPM watermark decoding, and allows Geo-Targeting of **radio screen advertising**
MaxxCasting™

What is it?

• The system deploys booster cell sites within the broadcaster’s legal service area

• Sites are single frequency network (SFN) transmitters that broadcast in a simulcast (synchronized) manner – Seamless transition

• Patented design of the system is such that the radio signal coverage and quality is greatly improved, resulting in higher listening, vastly improved Nielsen PPM decoding, higher ratings and revenue

• Allows geographic targeting of RDS radio screen messaging and some HD channels TODAY providing additional revenue opportunities
Obstacles to Overcome

1. There was virtually no objective criteria to determine how much self-interference would be tolerable to listeners.
2. In order to determine exact C/I ratios very exact propagation modeling would be needed.
3. In order to synchronize the SFN “Nodes”, equipment was needed to exactly match and delay the program material.
4. Antennas needed to be designed to minimize delay spread based upon testing results.
1- Develop Objective Criteria for Design

GBS Commissioned:
Largest FM simulcast listening study on record by NPR Labs / Towson University

Listeners evaluated what would cause them to tune out
- 533 samples/19k data points, 80 listeners
- Mono and stereo modes
- Speech, music, voiceover
- Time delay between signals
- RF ratios between signals

All combined to determine “Keep On” score

Standards for acceptable interference thresholds
2- Signal Analysis, Propagation Modeling

- Worldcast FM MC5 lab quality modulation analyzer with Golden Ear™

- GBS proprietary design modeling. Runs on the ATDI ICS TELECOM PLATFORM, the leading industry tool for radio network planning and spectrum engineering
2- Propagation Modeling

- Typical propagation predictions are not accurate enough.
- Drive test correlated and corrected models are key
  - ATDI ICS Telecom Propagation Software
  - Model ITU 525/526 with Deygout diffraction

Drive Test Correlation (Audemat MC) with ATDI Model
Signal Analysis

• Watermarking (PPM) is affected by Signal Quality
  • A PPM signal, sent by the encoder in a poor RF environment (low level, multipath, interference) often does not get decoded by the Portable People Meter (PPM)
  • “If the PPMs aren’t decoding, you might as well be off the air”

• Measurement- Telos developed the Voltair processor and the TVC15 Watermark Analyzer & Monitor to improve & monitor the Neilson encoding
3- Synchronization

- IP Connectivity with Dynamic Stream Splicing
- Precise Duplication of Composite FM Waveform
  - Modulation
  - Waveform
  - Stereo phase
- Synchrocast™ Time delay within 1µsec
4- MaxxCasting™ Highly Directional Antennas

Minimized Delay Spread
MaxxCasting™

- Cumulus WXLO-FM
- 37 kW Class B station 40 miles west of Boston
  - A “Worcester” market station (#121)- Now in Boston (#10)
  - Radio Screen Geo-Targeting (today)
  - Audio Geo-Targeting candidate (tomorrow)

Example Deployment

BEFORE

AFTER (1M POPs ADDED)
RF Signal level is typically the most important component of audio quality.

If there isn’t enough signal then watermarks can’t be decoded, and there are no ratings!

We process the audio signal thru a TVC-15 Watermark Analyzer for PPM decoding improvements.
“Anytime that a station can go up in both cume and share, that is a good win. WXLO Cume is up almost 15% from January, in their target demo of W 25-54. It’s also up over 20% in share. Looking at W 35-54, the cume is up a modest 8%, but the share is up a whopping 53% from January. More people in their target are listening for more time.” *
Example San Francisco FM Coverage With SFN, East Bay
Example San Francisco ATSC 3.0 Coverage

Source, NAB "Next Generation Television (ATSC 3.0) Station Transition Guide"
Example San Francisco ATSC 3.0 Coverage With SFN

Source, NAB “Next Generation Television (ATSC 3.0) Station Transition Guide”
MaxxCasting™  Summary for Broadcast Radio

• Deployed and Available Today
  • Increases signal quality and power, PPM watermark decoding
  • Allows Geo-Targeting of RBDS ON-SCREEN advertising

• GBS licenses technologies to broadcasters

• GBS provides turn-key network deployment
  • Initial Measurement and Design
  • Site Identification, Acquisition, Construction, Project Management
  • FCC Licensing
  • Final System Measurement, Optimization, and On-Going Maintenance

• Potential to share network elements which lowers broadcaster costs
Geo Broadcast Solutions

ZoneCasting™
Geo-Targeted SFN
ZoneCasting™

How it Works

• A network “cluster” of synchronous SFN boosters originate programming separately from the primary station
  • This is transmitted in a geographical area called a “Zone”
  • Inside the Zone it is conceptually similar to a MaxxCasting™ System

• By broadcasting different programming, a Zone allows for Geo-Targeted content delivery to listeners
  • Also called Geo-Fencing in the mobile world.....We call it ZoneCasting™

• Typically Geo-Targeting is active during commercial advertising or content delivery to targeted listeners, at specific times
  • Multiple Zones =multiple spots delivered simultaneously=more revenue $

• When ZoneCasting™ is not active some of the boosters go into MaxxCasting™ mode, with all the associated benefits (coverage etc.)
ZoneCasting™ Why is it Important?

• Builds upon the Maxxcasting platform to add zoned, geo-targeted programming

• With advent of Next Gen TV, Radio is the now the ONLY mass medium WITHOUT the ability to Geo-Target content

• Geo-Targeted content is increasingly valued by consumers AND advertisers AND would be for radio broadcasters if it were available

• Recent research October 2018 clearly shows this
  • What does it mean to be local? Radio’s big new opportunity*
  • Opportunity Assessment for Local Radio Stations with Zoned Broadcast Coverage*

* Additional information upon request
Edison Research Study 2018

How much do you agree/disagree...

"You would pay more attention to ads on the radio if they were for business or products in your local area."

Strongly Agree/Agree: 77%
Edison Research Study 2018

Strongly Agree/Agree: 72%

How much do you agree/disagree...

"You would listen to AM/FM radio more if the information/commercials were better targeted to your local area."
ZoneCasting™ Uses for Zonecasting

• Geo-Targeted advertising
• Geo Targeted traffic, weather, or news
• Geo Targeted political messaging
• Emergency information specific to targeted area
• Targeted alternate language programming
• Targeted programming to sporting event (stadium)
ZoneCasting™  Concept- Zones New York
Zone Creation Example- Manhattan

• To illustrate what “could” be done, a zone is created in Manhattan using WPLJ with small transition areas
  • Very difficult design situation with high height/power from main
  • Not meant to be practical, only Proof of Concept

• WPLJ (Empire State Building) is used
  • WPLJ Channel: 238B 95.5 MHz
  • Effective Radiated Power: 6.7 kW
  • Antenna Center HAG: 407 m
  • 3D High-Resolution Building Data (1 meter)
1 meter Cartographic Dataset of Manhattan Island, New York required for this example (70 km² of Manhattan)
A single 10 km coverage radius analysis from WPLJ results in 31 Billion path calculations
WPLJ split into 2 Zones along 59th St
Transition example 18 sites / 38 transmitters
Transition example at The Plaza
Transition example at Columbus Circle
ZoneCasting

• GBS Performed 3 field tests under FCC special authorizations
  • In a variety of environments Salt Lake City (KDUT in 2010), Sebring, Florida (WWOJ in 2011), Milwaukee in (WIIL in 2017)
  • Milwaukee design deployed and **commercially operational in France 2017**
• Technically patented and proven architecture
  • FM design parameters verified by NPR Labs & Towson University
• A very simple change in current FCC rules is needed [74.1231 (i)]
  • GBS has Petition for Rulemaking RM-11659; the FCC has not yet acted.

TV Can do zoned SFN now, more feasible under ATSC 3.0
The Transition Area comprises 0.16% of the WIIL Service Contour land area.
ZoneCasting™ Audio Transition Area

- Most asked technical question: How to avoid interference?
- IF a station is in ZoneCasting Geo-Targeted mode (predict avg 2-3 min per hour) AND
- IF a receiver is on that frequency AND
- IF that receiver passes thru the border between zones
- THEN
  - The audio changes from one sound source to another (quickly- in a few seconds)
  - Geo uses advanced cellular planning tools with very high resolution cartography (terrain, buildings, etc.) and automobile traffic information to minimize transition areas so listeners wont notice
- Statistically under 1% of station listeners will hear transition from main to zoned area
- Mobile TV using Next Gen Zoned SFN will have similar transitions
The 107.7 in France

• 107.7 is the only single frequency assigned for the same program category. Reserved in the past to the Army, the government decided, in 1991, to release it to allow the radios highway of to develop.

• Each radio has its own identity, its own organization of traffic information and how to treat it. In addition, each gives more or less importance to the news of the road and drivers, the promotion of the territories they cross. Their musical program is not the same either.
The 107.7 in France

- the 107.7 MHz frequency is dedicated for Traffic and operated by different highway operators. When not broadcasting traffic it has music, news, and other programming that vary by region.
- Over 1,100 transmitters (one every 8-10 kilometers on average) are set up to broadcast the radio on a single frequency
- Have started to Geo-Target Traffic audio updates using the Milwaukee ZoneCasting design in 2017

A Border Site divides the Zones
Example: A13 Autoroute Paris to Caen
Example: A13 Autoroute Paris to Caen

Transition Area
Different Audio Content
Approx. 20-70 meters
OR <1-2 seconds @ 130 KMPH
With ZoneCasting, stations can sell more inventory to (and with pricing flexibility) to smaller advertisers who cannot afford radio stations’ full footprint but place a high value on the ability to geotarget. Zoned advertising gives local radio a new value proposition to better compete with cable, outdoor, newspaper and soon local TV stations.
ZoneCasting™ Multi Channel Traffic Solution For Next Gen TV Geotargeted SFN
ATSC 3.0 signals will be able to deliver software updates for electronic control systems and firmware downloads for navigation devices. Geo-located applications will include real-time weather services and traffic reports, targeted emergency alerts, and targeted ads.
Radio Industry’s Current Path- Declining!

“Radio's revenue continues a slow decline through 2023.”

“BIA's forecast model uses a variety of inputs but ultimately assumes no disruptive innovations will occur in local radio that could move the revenue needle in a material way. On the digital side, this means steady but slow growth in radio station and personality sites and apps but nothing particularly innovative.”

Radio is the now the **ONLY** mass medium **WITHOUT** the ability to Geo-Target content
ZoneCasting™

- Radio is missing out on the $65 Billion Location Targeted Media segment
- ZoneCasting™ has regulatory awareness. The Broadcaster community is being educated and needs to support the cause
- One simple rule change: to permit booster radio sites to originate their own programming, separate from the main station [74.1231 (i)]
  - GBS has Petition for Rulemaking RM-11659; the FCC has not yet acted.
  - No changes or waiver to FCC’s interference rules required, only program content
- ZoneCasting™ is like TV’s new ATSC 3.0 for radio:
  - Voluntary deployment
  - Hyper-localized content to different areas in stations service contour
## BIA Model for Industry Impact of Zoned Radio Advertising

<table>
<thead>
<tr>
<th>Model Parameters</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017 Total Over-the-Air Adv. Revs. (000s)</td>
<td>$6,603,425</td>
</tr>
<tr>
<td>% of Stations Zone Advertising in Multi-State/Multi CBSA Markets</td>
<td>35%</td>
</tr>
<tr>
<td>% of Market Revs. Attributable to the Zone Advertising Stations</td>
<td>70%</td>
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<tr>
<td>% of Stations Zone Advertising in Other Top 25 Ranked Markets</td>
<td>40%</td>
</tr>
<tr>
<td>% of Market Revs. Attributable to the Zone Advertising Stations in Other Top 25 Ranked Markets</td>
<td>80%</td>
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<tr>
<td>% of Spots that are Zone Advertised</td>
<td>30%</td>
</tr>
<tr>
<td>% Premium for Zone Advertising</td>
<td>50%</td>
</tr>
<tr>
<td>Additional Revenue (000s)</td>
<td>$751,165</td>
</tr>
</tbody>
</table>

Source: BIA Advisory Services, November 2018

**Example Revenue model if Radio to Geo-Target with ZoneCasting**
ZoneCasting™ Radio Geo-Targeting Evolution

**MaxxCasting™**
- Screen Geo-Targeting RDS and HD
- Availability: TODAY

**ZoneCasting™**
- Audio Geo-Targeting
- Availability: 6-12 Months
- Regulatory Approval

**Hybrid Radio**
- IP Very Localized Geo-Targeting
- DTS Connected Car
- Availability: Requires New Receivers

www.geobroadcastsolutions.com
# Comparison

## Zonecasting vs Next Gen (ATSC 3.0) SFN

<table>
<thead>
<tr>
<th></th>
<th>Zonecasting</th>
<th>Next Gen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improves Coverage</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Allows Geo-Targeted Advertising</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Potential for Revenue Growth</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Allows Geo-Targeted Emergency info</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Use is entirely Voluntary</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Transition Areas Between Zones</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Billing, Traffic and Operational Ready</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Allowed Under FCC Rules</td>
<td>NO</td>
<td>YES</td>
</tr>
</tbody>
</table>

FCC has embraced Geo-Targeted SFN For Television
NOT FOR RADIO
Call to Action for Geo-Targeting

- GeoBroadcast has retained legal firm Covington
  - ATSC 3.0 Regulatory Approval, Pearl TV
  - Supporting drafting of letters to the FCC
- Ongoing Dialog with the Chairman’s office, Media Bureau, and NAB
- GeoBroadcast in process of aggregating support of broadcasters, advertisers, legislators to advance message with the FCC and garner support for minor rule change
- Objective to give Radio equality with TV on Geo-Targeting capability
- Further info on FCC PRM or how you can help, contact hwells@geobroadcastsolutions.com
THANK YOU