

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

In the Matter of )  
)  
Proposed Rules Permitting Antenna Modeling ) MM Docket No. 93-177  
to Verify AM Directional Antenna )  
Performance )

To: Media Bureau

**COMMENTS**

PCIA – The Wireless Infrastructure Association (“PCIA”) respectfully submits these comments concerning a proposal by the AM Directional Antenna Performance Verification Coalition (“AM Coalition”) to revise procedures for assessing the effects of tower construction on AM stations, and to consolidate those procedures under a new Part 17 rule.<sup>1</sup> As the trade association representing the wireless telecommunications infrastructure industry,<sup>2</sup> PCIA and its members have a strong interest in the outcome of this proceeding. PCIA believes the proposed rule offers significant promise, but offers below suggested enhancements to clarify the rule and simplify its application while maintaining the AM Coalition’s goals.

---

<sup>1</sup> See *Public Notice*, “Comment Sought on Proposed Rules Permitting Antenna Modeling to Verify AM Directional Antenna Performance,” MM Docket No. 93-177, DA 07-2143 (May 23, 2007) (“*Public Notice*”); Letter to Marlene H. Dortch, Secretary, FCC from John D. Poutasse, Leventhal Senter & Lerman PLLC, counsel to the AM Coalition, in MM Docket No. 93-177 (May 4, 2007) (“AM Coalition Proposal”). PCIA takes no position on separate proposals by the AM Coalition to change the AM technical rules in Part 73.

<sup>2</sup> PCIA’s members own and manage more than 111,000 towers and antenna facilities across the country that support all types of wireless, broadcasting and telecommunications services. PCIA seeks to facilitate the deployment of widespread dependable communications networks across the country, consistent with the mandate of the Telecommunications Act of 1996.

## INTRODUCTION AND BACKGROUND

The rules of the Federal Communications Commission (“FCC” or “Commission”) currently require that Public Mobile Service (“PMS”), Advanced Wireless Service (“AWS”) and Wireless Communications Service (“WCS”) licensees that construct or modify towers within 1 kilometer (0.6 miles) of a non-directional AM station, or within 3 kilometers (1.9 miles) of a directional AM station, must conduct measurements to determine if the AM station’s antenna pattern would be disturbed by the construction or modification.<sup>3</sup> If so, the licensee must correct the disturbance, typically by installing detuning apparatus.<sup>4</sup> Other rules apply for broadcast station construction near or installation on an AM tower.<sup>5</sup> The Commission’s rules do not contain similarly explicit requirements for other services,<sup>6</sup> which has led to confusion.<sup>7</sup>

In place of the current disparate and service-specific rules, the AM Coalition proposes a single consolidated rule to govern construction near or installation on an AM broadcast system or tower.<sup>8</sup> PCIA supports this goal, which would benefit the public by ensuring consistent protection to AM stations where appropriate, while eliminating the confusion that exists today given the absence of explicit rules across all services.<sup>9</sup> Consolidation of these rules in Part 17

---

<sup>3</sup> See 47 C.F.R. §§ 22.371 (PMS), 27.63 (AWS and WCS).

<sup>4</sup> See *id.*

<sup>5</sup> See 47 C.F.R. § 73.1692.

<sup>6</sup> See, e.g., 47 C.F.R. Part 24 (no explicit rule for PCS), Part 90 (no explicit rule for SMR service). The Commission recently commenced a proceeding seeking comment on whether to add a similar rule for Part 90 licensees. See *Amendment of Part 90 of the Commission’s Rules*, WP Docket No. 07-100, *Notice of Proposed Rulemaking*, FCC 07-85, at ¶ 15 (rel. May 14, 2007) (“*Part 90 NPRM*”) (explaining that “Part 90 . . . lacks provisions for the protection of AM broadcast stations” and seeking comment on “the need for [such] provisions in Part 90”).

<sup>7</sup> See, e.g., *Amendments of Parts 73 and 74 of the Commission’s Rules to Permit Certain Changes in Broadcast Facilities Without a Construction Permit*, 12 FCC Rcd 12371, 12394-95 (1999) (acknowledging the “inconsistent protection to AM radio stations by different services”).

<sup>8</sup> See AM Coalition Proposal at 3.

<sup>9</sup> The Commission also should take this opportunity to clarify whether and to what extent any new rule will apply to AM stations operating under special temporary authority (“STA”).

governing antenna structures also makes good practical sense, as impacts to AM transmissions have more to do with the physical structure rather than the nature of the service provided.<sup>10</sup>

The proposal would also revise the current rules to take into account modern computer modeling techniques. These modern modeling techniques would better limit the need for remedial measures to cases where they are truly necessary, thereby further benefiting the public by freeing up resources for other public uses. However, the proposed rule is more complex and lacks some of the simplicity and clarity of application that characterizes the current rules. Accordingly, PCIA recommends that the proposed rule be simplified or clarified to facilitate ease of use.

## DISCUSSION

The proposed rule would require licensees proposing construction of or “significant modification” to a tower or support structure in the “immediate vicinity” of an AM antenna system to examine potential effects to the system using a “moment method analysis.” Only if effects are adverse would remedial measures (*i.e.*, detuning) be required. An effects analysis would not be required for modifications that are not significant or construction or alteration that is not in the immediate vicinity of an AM system.<sup>11</sup> PCIA’s concerns relate to the meaning, clarity and/or application of the terms “significant modification,” “immediate vicinity” and “moment method analysis” as used in the proposed rule.

***Significant Modification.*** Subsection (a)(1) of the proposed rule defines “significant modification” as including any change “that would alter the structure’s effective electrical height by 5 degrees or more at the AM station’s carrier frequency, as determined by moment method

---

<sup>10</sup> See *Part 90 NPRM* at ¶ 15 (noting that concern over possible disturbances to AM broadcast station antenna patterns “largely relates to the tower itself”).

<sup>11</sup> See Proposed New Rule Under Part 17: Construction Near or Installation on an AM Broadcast Antenna System or Tower (“Proposed Rule”), *appended to* AM Coalition Proposal.

analysis.”<sup>12</sup> Under the proposed rule, whether a modification is significant is a threshold finding that, if not triggered, means that no further analysis is required. PCIA is concerned that the “effective electrical height” determination is too complex to serve as an practical threshold criterion. As one expert recently explained, “The *effective* electrical height must incorporate the exact construction and characteristics of the specific tower and is therefore a unique evaluation. *Determining effective electrical height can be a time-consuming and costly calculation for a tower company.*”<sup>13</sup>

Instead, the Commission should utilize a clear, absolute value to determine whether a modification is significant. PCIA recommends that a “significant modification” be defined to include any change “that would increase the structure’s physical height by 5 electrical degrees or more.” The proposed 5 degree threshold would allow for the addition to (or removal from) an existing structure of most cellular, PCS or microwave antennas — which because of their size should have virtually no effect on an AM station — without triggering an effects analysis. By contrast, the addition of top-mounted TV or FM antennas, which are typically larger and might change the electrical characteristics of the structure, would be considered significant under the proposed 5 degree threshold.<sup>14</sup>

To further enhance the ease of use of the “significant modification” criterion as a threshold determinant, the rule should incorporate “safe harbor” categories of modifications that are expressly defined as not significant. Such examples should include replacing an antenna

---

<sup>12</sup> See Proposed Rule, Subsection (a)(1)(i). The proposed definition of “significant modification” also includes the addition of antennas or a transmission line to a tower that has been detuned. See *id.*, Subsection (a)(1)(ii).

<sup>13</sup> See Richard P. Biby, P.E., “Part 17 Change Will Affect *You*,” *AGL Magazine*, July 2007, at 35 (“Biby Article”) (emphasis added). Richard Biby is an engineer with 20 years of experience providing AM detuning services to the tower industry. *Id.*

<sup>14</sup> Cf. Biby Article at 35.

with the same type of antenna, as well as replacing an antenna with a similar antenna not more than 50 percent, or 10 feet, larger than the original antenna. The latter is meant to expressly permit the addition or removal of smaller cellular, PCS and microwave-type antennas which would not impact an AM station, while excluding from the safe harbor larger antennas more likely to affect an AM station.

Finally, the safe harbor should include the addition of a properly grounded transmission line. A transmission line should be considered “properly grounded” if it is broken into electrically short sections several times over the length of the tower at segments no longer than 20 degrees between grounds.<sup>15</sup> If a transmission line is properly grounded, it will not cause a significant change in the electrical environment of an AM station, whereas a transmission line grounded at only the top and bottom can be an effective reradiator and therefore affect an AM station.<sup>16</sup>

***Immediate Vicinity.*** Under subsection (a)(2) of the proposed rules, an antenna tower or support structure would be in the “immediate vicinity” of an AM system “if it is greater than 60 electrical degrees in height in the case of a nondirectional antenna, or 45 electrical degrees in height in the case of a directional antenna, at the AM station frequency, and is located at a distance no greater than the lesser of 10 wavelengths or 3 km from any element of an AM directional antenna or less than 1 wavelength from an AM omnidirectional antenna.”<sup>17</sup> Thus, in comparison to existing rules using absolute physical distance to determine whether an effects analysis is required, the proposed definition of “immediate vicinity” is dependent on the

---

<sup>15</sup> See Biby Article at 36.

<sup>16</sup> See *id.*

<sup>17</sup> Proposed Rule, Subsection (a)(2).

operating frequency of the AM station, the electrical height of the tower, and the wavelength distance between the AM station and the tower.

While PCIA understands the proposed rule is designed to allow for more accurate assessments of when an effects analyses is needed, it is facially more complex than the current protocol and could raise concerns for regulatory managers about its ease of application. PCIA raised these concerns at an informal presentation by representatives of the AM Coalition, where it was explained that charts are available which can greatly simplify application of the “immediate vicinity” analysis, and that utilization of the charts requires minimal training. A sample such chart provided to PCIA is attached.<sup>18</sup> PCIA suggests that consideration be given to including a similar chart in the proposed rule or a note to the rule, or that it be made available on the FCC’s website or other public forum, and that training seminars be offered should the rule be adopted to familiarize the public and in-house regulatory managers with how to readily apply the new requirement.

***Moment method analysis.*** Subsection (a)(3) of the proposed rule states that licensees proposing to construct or significantly modify an antenna tower or support structure in the immediate vicinity of an AM system “shall examine the potential effects thereof using a moment method analysis,” which “shall consist of a model of the AM antenna together with the potential reradiating antenna tower or support structure in a lossless environment.”<sup>19</sup> Based on the results, the rule defines whether any effects are adverse,<sup>20</sup> in which case remedial measures (installation

---

<sup>18</sup> The attached chart is for representation purposes only and does not include all AM frequencies. The chart would be approximately five times longer in its full format.

<sup>19</sup> Proposed Rule, Subsection (a)(3).

<sup>20</sup> See Proposed Rule, Subsection (a)(3)(i)-(ii), (4).

and maintenance of detuning apparatus) are necessary to protect the AM station.<sup>21</sup> The proposed rules does not, however, otherwise define the “moment method” analysis.

While the *Public Notice* indicates that computer programs to predict antenna performance are generically referred to as “moment method” or “NEC” programs based on the Numerical Electromagnetics Code developed at Lawrence Livermore Laboratory in Livermore, California,<sup>22</sup> additional clarification is needed. Because the proposed rule does not define the analysis or set forth the underlying assumptions, it is subject to inconsistent application. The proposal of the AM Coalition offers an opportunity to clarify the responsibilities and obligations of parties on both sides and resolve any foreseeable potential for confusion or controversy in advance. Accordingly, PCIA suggests that an industry coalition be formed to agree to and craft a best practices document. The purpose of the best practices document would be to outline the details of the “moment method” analysis to be applied, and the assumptions to be used, as a matter of industry process and practice.

---

<sup>21</sup> See Proposed Rule, Subsection (a)(4).

<sup>22</sup> See *Public Notice* at 1 n.2.

## CONCLUSION

PCIA generally supports the proposal of the AM Coalition and its goals to clarify the obligations of all parties and more accurately predict whether or not there is a need for remedial measures to protect AM stations. The FCC should adopt the proposal with the enhancements described above to better clarify or simply the rule while still achieving these public policy goals.

Respectfully submitted,

PCIA – THE WIRELESS  
INFRASTRUCTURE ASSOCIATION

By: /s/ Anne M. Perkins  
Michael Fitch  
President and CEO  
Anne M. Perkins  
Director,  
Government and Public Affairs  
500 Montgomery Street, Suite 700  
Alexandria, VA 22314  
Tel: (800) 759-0300  
Fax: (703) 836-1608  
[www.pcia.com](http://www.pcia.com)

July 23, 2007

## ATTACHMENT

<b>AM Freq (kHz)</b>	<b>Wavelength (M)</b>	<b>Wavelength x 10 (kM)</b>	<b>60 EI Deg Ht (ft)</b>	<b>45 EI Deg Ht (ft)</b>
540	555.56	5.56	304	228
550	545.45	5.45	298	224
600	500.00	5.00	273	205
650	461.54	4.62	252	189
700	428.57	4.29	234	176
750	400.00	4.00	219	164
800	375.00	3.75	205	154
850	352.94	3.53	193	145
900	333.33	3.33	182	137
950	315.79	3.16	173	129
1000	300.00	3.00	164	123
1050	285.71	2.86	156	117
1100	272.73	2.73	149	112
1150	260.87	2.61	143	107
1200	250.00	2.50	137	103
1250	240.00	2.40	131	98
1300	230.77	2.31	126	95
1350	222.22	2.22	121	91
1400	214.29	2.14	117	88
1450	206.90	2.07	113	85
1500	200.00	2.00	109	82
1550	193.55	1.94	106	79
1600	187.50	1.88	103	77
1650	181.82	1.82	99	75
1700	176.47	1.76	96	72
1750	171.43	1.71	94	70

Example: A tower is in the “immediate vicinity” of an AM directional station operating on 700 kHz if it is (1) within 4.29 kilometers of the AM station and (2) is 176 feet or higher. Thus, a tower that is further than 4.29 kilometers, or less than 176 feet in height, is not considered to be in the immediate vicinity of an AM directional station operating on 700 kHz, and thus no further analysis would be required.