Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Effects of Communications Towers on	)	WT Docket No. 03-187
Migratory Birds	)	

COMMENTS OF PCIA

ON

AVATAR ENVIRONMENTAL, LLC REPORT

Jay Kitchen
Connie Durcsak
Andrea Bruns
PCIA
500 Montgomery Street, Suite 700
Alexandria, VA 22324-1561
(703) 535-7500

Edward L. Donohue
Rebecca F. Adams
Holland & Knight, LLP
2099 Pennsylvania Avenue, N.W.
Washington, D.C. 20006
(202) 955-3000

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SUMMARY OF COMMENTS

PCIA is the principle trade association representing the wireless telecommunications and broadcast infrastructure industry. PCIA represents numerous companies that own, manage and develop communications towers and antenna facilities for all types of wireless and broadcast services, throughout the United States. PCIA has participated in the proceedings on the effects of communication towers on migratory birds since their inception, and initiated dialogue with the principles from government agencies, environmental groups and industry well before the Federal Communication Commission ("FCC") Notice of Inquiry was issued on this subject in August 2003. PCIA consistently has taken the position that there is no scientifically reliable data to support the conclusions proposed by environmental groups that towers and antenna support structures are contributing in any significant way to avian mortality.

In September 2004, Avatar Environmental, LLC ("Avatar") released its report commissioned by the FCC on the effect of communication towers on migratory birds (the "Avatar Report"). The Avatar Report provides no new evidence and is in substantial agreement with a previous study issued by Woodlots Alternatives, Inc. ("Woodlots"), which found significant gaps in the scientific data on the relationship between avian mortality and communication towers, and that much is unknown about what might contribute to the incidents of avian mortality. (See copy of Woodlots Report attached as Exhibit A to PCIA's initial comments filed in this proceeding on November 12, 2003.) Nevertheless, Avatar goes on to make recommendations that are unsupported by any scientific literature and even its own report. Consequently, PCIA believes that while some of the Avatar recommendations deserve due consideration, others should be rejected by the FCC. PCIA recommends that the various studies are allowed to be completed, and for the FCC to make such assessments as are warranted by the conclusions of those studies.

I. Background

The FCC issued a Notice of Inquiry ("NOI") on August 20, 2003, on the *Effects of Communications Towers on Migratory Birds* (FCC 03-205) to gather comment and information on a number of issues and questions associated with communications towers and migratory birds. The NOI sought comments that state of the scientific literature, and the great number of variables that might affect incidences of mortality. Comments were filed by hundreds of interested parties on all sides of the discussion. In reviewing the comments, it became readily apparent that there was a great disparity in assessing the scale of the issue.

Consequently, the FCC commissioned Avatar to assess the comments and various studies referenced therein, and make recommendations to the FCC. Avatar specifically limited its inquire to scientific literature and studies and did not take into account the legal or regulatory requirements and procedure necessary to allow for changes in the current regulatory framework. Avatar states that such "regulatory jurisdiction, legal bearing policy or administrative requirements" are beyond its purview. Nevertheless, the statutory authority to initiate such regulatory changes is a critical component of any action proposed by the FCC.

In analyzing the comments and the numerous scientific studies, both peer reviewed and non-peer reviewed, Avatar is in substantial agreement with the Woodlots report, which found scientific literature and studies to be inconclusive on a connection between avian mortality and communication towers. One of Avatar's most significant statements is that "most of the causes and possible solutions for increased avian mortalities associated with communication towers remain(s) speculative." Avatar, 5-1. After its independent review of fifty (50) studies, Avatar concedes that there is "no clear conclusions can be drawn…regarding the importance and effects of lighting color, duration, intensity and type (of lighting). Avatar, 3-46. Similarly, Avatar agrees with Woodlots that there is "insufficient information…available to draw conclusions as to the specific factors associated with siting towers." Avatar, 3-41.

Undaunted by the lack of reliable scientific data or reports to support a determination that location, type, lighting or other attributes of a communication tower may significantly affect the likelihood of migratory bird collisions, Avatar nevertheless asserts that more study is warranted and makes numerous recommendations based on nothing more than speculation. Avatar has not laid a proper foundation for its recommendations, and its conclusions are inadequately supported in its report and the scientific literature.

Both Avatar and Woodlots state that there are a number of current studies being undertaken that may shed more light on the issue. PCIA submits that absent from this process is reliable, scientific data and legal authority requisite for change to the controlling regulatory process. If the current studies produce the kind of reliable data necessary to support consideration of regulatory change, the stakeholders will respond at that time.

In previous comments, PCIA and others from industry raised certain threshold legal questions about the FCC's authority to promulgate regulations as proposed by some of the environmental groups. Summarized below are PCIA's challenge to the authority of the FCC

under National Environmental Policy Act and the Migratory Bird Treaty Act. Also, we address the question of prospective applicability of any change in regulations.

II. NEPA Should Not Apply to Tower Siting Decisions

The owners of individual communications towers, when making decisions as to where to build the communications towers, are not required to comply with the requirements of the National Environmental Policy Act ("NEPA"), 42 U.S.C. §§ 4321 *et. seq.*, unless the occurrence of both of the following events trigger the requirement: (i) the construction constitutes a "major" federal action; and (ii) the tower "significantly affect[s] the quality of the human environment."[1] Business decisions by private companies on appropriate sites for communications towers are neither federal decisions, nor "major" actions, so the first prong of the test is not met. PCIA has fully briefed this issue to the FCC in related proceedings, and those arguments are incorporated herein. *See* Brief of Intervenors CTIA, NAB and PCIA: The Wireless Infrastructure Association in Forest Conservation Council, Inc.; In re Friends of the Earth v. FCC, No. 03-1034 (D.C.Cir., filed April 30, 2003).

Second, even if the first prong of the test could be met, the siting of a communications tower does not have a "significant effect" on the human environment. As the Woodlots Report states, the sources of avian mortality due to human-caused sources is a relatively small percentage of the total bird population, with communications towers being one of the smallest of all factors identified. *See* Woodlots Report, Section 3.1.9 and Figure 1. The Woodlot study indicates that many more birds die from other human sources than communications towers, including cats, hunting pesticides, and collisions with windows, vehicles, and transmission lines. *See* Woodlots Report, Section 3.1.9, figure 3.1. Similarly, the Avatar Report finds that there is not enough evidence to conclude that communications towers are having a significant effect on bird population. *See*, Avatar Report, Section 3.5.4. There is no evidence in the record that avian deaths from communications towers are having a significant effect on migratory bird populations, not to mention the required "significant adverse effect on the human environment." As the Woodlots Report and Avatar Report show, the effects of communications towers on migratory birds do not meet the legal standard for "significance" so as to trigger analysis under NEPA.

III. Any New or Amended Tower Regulations Cannot Be Applied Retroactively

There is no evidence in any of the FCC-commissioned reports to support a recommendation to amend the regulations governing communication towers, such as lighting, marking and structural support requirements. However, in the event the FCC considers pursuing such amendments, any new regulations must apply prospectively only, not retroactively, and to conduct that occurs after the effective date of the regulations. The FCC's authority to adopt retroactive regulations is limited not only by statutory and Administrative Procedure Act ("APA") restrictions, but also by case law limiting an agency's ability to adopt rules with adverse retroactive effect.

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[1] 47 U.S.C. § 4332(C).

The U.S. Supreme Court has explicitly stated that retroactive rulemaking is a disfavored legal concept, which must meet stringent guidelines in order to be upheld. Bowen v. Georgetown Univ. Hosp, 488 U.S. 204, 109 S.Ct. 468, 102 L.Ed.2d 493 (1988). In Bowen, the Court held that specific statutory authorization for retroactive rulemaking is required:

> Retroactivity is not favored in the law. Thus, congressional enactments and administrative rules will not be construed to have retroactive effect unless their language requires this result. By the same principle, a statutory grant of legislative rulemaking authority will not, as a general matter, be understood to encompass the power to promulgate retroactive rules unless that power is conveyed by Congress in express terms. . . . Even where some substantial justification for retroactive rulemaking is presented, courts should be reluctant to find such authority absent an express statutory grant.

Bowen v. Georgetown Univ. Hosp., 109 S.Ct. 468, 471 (1988)(citations omitted).[2]

Like Bowen, the FCC does not have the requisite grant of legislative authority to enact retroactive regulations. Federal courts have examined the FCC's authority to adopt retroactive regulations, and found it lacking. "Federal regulations do not, indeed cannot, apply retroactively unless Congress has authorized that step explicitly" and "[n]o statute authorizes the [FCC] to adopt regulations with retroactive effect." John v. 1-800-FLOWERS.com, Inc., 284 F.3d 807, 810 (7th Cir. 2002*), cert. denied*, 537 U.S. 882 (2002). Additionally, the APA further contemplates that when an agency employs rulemaking procedures, its orders are to have only prospective effect, as it specifically defines a rule as an agency statement of *future* effect.[3]

In order to have retroactive application, any new regulations adopted by the FCC would have to pass the test established by the Supreme Court in Landgrave v. USE Film Products, 511 U.S. 244 (1994). There, the Supreme Court held that a regulation should not apply retroactively if it "would impair rights a party possessed when he acted, increase a party's liability for past conduct, or impose new duties with respect to transactions already completed." Id. at 269-70.

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[2] Justice Scalia, in a concurring opinion, identified another type of retroactivity if a rule changes the legal rights flowing from previous acts -- "unreasonable secondary retroactivity," Bowen at 477. Retroactivity of this sort "makes worthless substantial past investment incurred in reliance upon the prior rule," and the courts may find it "arbitrary or capricious." Id. From this view there are two retroactivity limits: The first is a categorical limit, requiring express congressional authority and applying only in the domain of agency rules. The second limit is more elastic, governing all agency decision-making and involving the sort of balancing of competing values, both legal and economic, that often features in "arbitrary or capricious" analysis and that has historically governed retroactivity considerations in the agency context. *See, e.g.*, Yakima Valley Cablevision v. FCC, 794 F.2d 737, 746 (D.C.Cir.1986) (reviewing courts must determine whether agency has balanced "mischief" of retroactive application of a rule against " salutary effects, if any, of retroactivity"). Any new regulations governing communications towers could not apply retroactively, under either of the tests set forth in the Bowen decision.

[3] A rule is defined by statute as: "an agency statement of general or particular applicability and future effect designed to implement, interpret, or prescribe law or policy . . . and includes the approval or prescription for the future of rates, wages, corporate or financial structures or reorganizations thereof, prices, facilities, appliances, services or allowances thereof or of valuations, costs, or accounting or practices bearing on any of the foregoing." 5 U.S.C. Section 551(4).

The adoption of new regulations to existing towers would retroactively and improperly change the FCC's rules. Should the new rules impose new duties with respect to completed transactions, or increase a party's liability for past conduct, the rule would be invalid as being retroactive.[4]

IV. MBTA Does Not Apply to Indirect, Unintentional Takings

As fully briefed by PCIA in previous submissions to the FCC, the Migratory Bird Treaty Act ("MBTA") does not apply to the FCC. *See* 16 USCA §§ 703, *et seq*. Consequently, the FCC is not required to consider MBTA issues during its approval of communication towers. Even assuming, *arguendo*, that the MBTA is applicable,[5] any avian deaths caused by collisions with communication towers would be indirect and unintentional, and therefore would not constitute a violation of the MBTA. In Newton County Wildlife Ass'n v. United States Forest Service, 113 F.3d 110 (8th Cir. 1997), the Eighth Circuit held that section 703 does not prohibit "conduct, such as timber harvesting, that indirectly results in the death of migratory birds." *Id.* at 114. The court's specific findings that indirect, unintentional actions are not a violation of MBTA is applicable equally to communication towers.

Initially, we note that MBTA's plain language prohibits certain conduct directed at migratory birds– to "pursue, hunt, take, capture, kill, possess," and so forth. The government argues that the statute imposes "strict liability" on violators, except for felony violations, which under a recent amendment must be done "knowingly." Strict liability may be appropriate when dealing with hunters and poachers, whose deliberate actions directly lead to death of protected birds. But it would stretch this 1918 statute far beyond the bounds of reason to construe it as an absolute criminal prohibition on conduct, such as timber harvesting, that indirectly results in the death of migratory birds. Thus, we agree with the Ninth Circuit that the terms "take" and "kill" in section 703 mean "physical conduct of the sort engaged in by hunters and poachers, conduct which was undoubtedly a concern at the time of the statute's enactment in 1918." Seattle Audubon Soc'y v. Evans, 952 F.2d 297, 302 (9th Cir.1991*); accord* Mahler v. United States Forest Serv., 927 F. 1559, 1573-74 (S.D.Ind.1996); Citizens Interested in Bull Run, Inc. v. Edrington, 781 F.Supp. 1502, 1509-10 (D.Or.1991).

Environmental groups have taken the position that any killing, even an unintentional one, is subject to prosecution under this law. As Cingular and SBC pointed out in earlier comments,

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[4] *See,* Bell Atlantic Tel Co's v FCC, 79 F.3d 1195 (D.C. Cir. 1996)(rules not retroactive because the adjustments affected only future rates; the rules did not increase liability for past transactions, nor regulate past transactions); Chadmoore Communications, Inc. v FCC, 113 F.3d 235 (D.C. Cir. 1997)(the new rule was not retroactive because applicant's liability for past conduct was not increased, nor new duties imposed on it with respect to completed transactions, and FCC decision did not impair any rights, since as an applicant, it had no vested rights.); DirecTV Inc v. FCC, 100 F.3d 816 (D.C. Cir. 1997)(FCC decision was prospective only).

[5] The Circuits are split on whether the MBTA applies to federal agencies. The Eighth and Eleventh Circuits have held that the MBTA does not apply to federal agencies, and therefore, agencies had no obligations to uphold the MBTA. Newton County Wildlife Ass'n v. United States Forest Service, 113 F.3d 110 (8th Cir.1997), Sierra Club v. Martin, *supra.* In Humane Society v. Glickman, 217 F.3d 882 (D.C. Cir. 2000), the Court of Appeals for the District of Columbia held that federal agencies are subject to the prohibition and can be subject to suit under the Administrative Procedure Act (APA) for MBTA violations.

the foolishness of this argument is that such an interpretation would make criminals out of millions of automobile drivers, cat owners and homeowners with picture windows, all of which pose an equal potential to lead to the incidental death of birds. *See* Cingular/SBC Reply Comments at 7. Therefore, regardless of whether the FCC must undertake some sort of analysis under the MBTA, the fact that communications towers do not directly lead to avian death means that the MBTA would never apply to the scope of activities that the FCC is considering.

V. Avatar Conclusions and Recommendations

The Avatar report contains a number of conclusions and makes 12 short-term and 5 long-term recommendations. Avatar concedes that while "most of the causes and possible solutions for the increased avian mortalities associated with communication structures remains speculative, a few conclusions have been advanced with some degree of confidence within the scientific community." Avatar 5-1. Even with this caveat, some of the conclusions posited by Avatar are inconsistent with its own report and the literature and studies discussed within.

Woodlots was asked to provide its assessment of the Avatar Report, and specifically requested to address the recommendations and conclusions. A copy of this report is attached as Exhibit A. Some of the more pertinent issues and concerns raised by Woodlots and PCIA are discussed below.

A. Guyed Towers

With regard to guyed towers, the Avatar report states that "no specific studies comparing avian collisions with guyed towers to self-supporting structures were found as part of this review." Avatar 3-35. Avatar goes on to say that "intuitively" it believes that there must be a greater incidence of avian mortality at guyed towers, but that it found no studies to support this supposition. Avatar concludes, however, that "[t]owers with guy wires are at higher risk than self-supporting towers." Avatar 5-1. Woodlots states that this conclusion "does not follow the discussion in the (Avatar) report." PCIA agrees.

B. Tower Height

Avatar states as a conclusion that "[A]ll things being equal, taller towers with lights tend to represent more of a hazard to birds than shorter unlit towers." Avatar, 5-1. Yet, within the text, Avatar concedes that this conclusion is far from certain based upon the existing scientific literature. The following quote is illustrative:

> *[E]xisting data are not sufficient to draw direct conclusions between tower height and migratory bird collisions.* The critical threshold for tower height has not been definitively determined relative to bird collisions. Although some assumptions have been made on tower height effects, additional information is warranted."

Avatar, 3-36 (emphasis added).

On the issue of lighting and types of lighting, Avatar states that "no firm conclusions can be drawn, based on the existing literature, regarding the importance and effects of lighting color, duration, intensity and type (e.g. incandescent, strobe, neon or laser)".

If, as Avatar states, the data is insufficient to draw conclusions between tower height and lighting, and bird collisions, there is no support for its conclusion that taller towers "tend to represent more of a hazard." Woodlots assessment is that the conclusions found in Section 5.1 of the Avatar report "appear generally speculative and . . . largely unsupported by the earlier analysis, or by the current state of much of the scientific literature." Woodlots, page 6. PCIA agrees.

C. Avatar's Short-Term Recommendations

1. Research Oversight. Continue participation in the Communication Tower Working Group (CTWG) and provide comments where appropriate on proposed research projects. Specifically FCC should support the existing Research Subcommittee of the CWTG that would focus on developing information important in understanding the factors contributing to bird collisions.

- PCIA agrees that the FCC should continue to participate in the CTWG and to support the Research Subcommittee's efforts to gather information. PCIA does not agree the FCC should engage in, or fund original research on avian mortality. There is large body of literature based upon numerous studies, as well as additional studies underway that address the issue. To the extent additional research is deemed necessary, PCIA believes that it must be handled by a qualified, independent expert. Further, the CTWG should not be developing mitigation measures unless and until it can be demonstrated that towers have a significant effect on migratory bird populations. The FCC's participation in the CTWG should be to insure that any changes to the existing regulatory framework be based upon scientific data and following meaningful dialogue with the stakeholders.

2. Standardized Methods and Metrics. Initiate a dialog to identify the most appropriate approach and mechanism to develop standardized methods and metrics for data collection and monitoring. Produce a comprehensive guidance document with input from applicable research entities and telecommunication industry.

- PCIA agrees that the existing methodologies for studying avian mortality are sorely lacking in standardized measurement tools. The FCC's role in this process should be to ensure that the measurements are not skewed, or result driven.

3. Study Biases. Develop a statement for the need of standardizing monitoring methods to account for the four primary study biases (Scavenger/Predator Removal Bias, Crippling Bias, Searcher Efficiency Bias, and Habitat Bias).

- PCIA agrees that bias within the various studies should be addressed and hopefully accounted for in reporting.

4. Tower Lighting. Support and encourage continued research on tower lighting and how it relates to avian vision.

- PCIA agrees with the findings of Avatar that there is insufficient evidence to support a conclusion that lighted towers, or any particular type of lighting, has a direct relationship to avian mortality ("no clear conclusions can be drawn, based on the existing literature regarding the importance and effects of lighting color, duration, intensity and type (e.g. incandescent, strobe, neon or laser) and bird attraction") Avatar 3-46. Given the singular importance of lighting to aviation safety, PCIA urges the FCC to proceed with caution before reaching any conclusions on any relationship between lighting and avian mortality.

5. Species Differences and Susceptibility to Tower Collisions. Provide guidance on compiling data into family or bird group behavior differences that may identify why some species are more susceptible to collisions and how losses of certain species could be reduced.

- PCIA agrees that the FCC should participate in the process, and provide the guidance as recommended. The costs associated with these studies must also be a consideration. Avatar carefully reviewed 50 studies, and having reached a preliminary conclusion that more, and perhaps much more research is necessary. The funding for all this research is not discussed. In making such recommendation, Avatar was critical of some aspects of the survey provided by PCIA. Our survey, while limited to those members who responded (percentage), yielded findings that the incidences of avian mortality are decidedly limited. PCIA does not agree that the FCC should engage in additional research, nor should the communication industry be asked to provide funding.

7. Monitoring Migration Patterns. Support the development of standardized methods to monitor migration patterns pertaining to birds at greatest risk of tower collision.

- PCIA agrees that that the FCC should participate in efforts to achieve standardization in this area of research.

8. Avoidance Behavior. Recommend that, during tower monitoring studies, information be collected not only on mortality but also abundance and behavioral avoidance exhibited by birds.

- PCIA agrees that the FCC should participate in this research and information gathering recommended by Avatar. Along with seeking standardization of research tools and metrics as discussed above, we agree that such information as may be available about behavioral avoidance should be gathered and analyzed. PCIA notes the six (6) studies currently underway in various locations and of varying duration, as possible sources of information.

9. Biological Scoping. Develop a specific set of FCC National Environmental Policy Act (NEPA) biological scoping issues and revise the environmental assessment checklist.

- PCIA believes that the scientific literature as it stands does not support a change in the NEPA checklist. There are far too many unknowns as the Avatar report concedes. At present, NEPA review requires that an applicant provide an Environmental Assessment ("EA") whenever a tower may have a "significant environmental effect" on a threatened or endangered species. Any required EA would have to address impact on "natural migration paths for birds" pursuant to Section 1.1311(b). The process currently in place addresses the need.

10. U.S. Fish and Wildlife Service (USFWS) Interim Guidelines. Review the USFWS' tower siting guidelines to eliminate confusion regarding some of the recommendations based on this technical review.

- In previous comments, PCIA and others from the industry raised several legal questions and logistical concerns we have about the USFWS Guidelines. PCIA and the industry vehemently oppose adoption of the Guidelines as mandatory, as suggested by some of the environmental groups. Further, we noted numerous inconsistencies and other problems associated with the USFWS Guidelines. PCIA and others have challenged the application of these guidelines and the degree to which they are "voluntary" in certain circumstances. However, to the extent that the USFWS and the FCC will look to the Guidelines as guides, at a minimum, they should be amended and made consistent and should reflect the input and involvement of the tower industry. Avatar has pointed out just a few of the inconsistencies in its report. Finally, PCIA requests that the industry share a lead role in the drafting of any guidelines.

D. Avatar's Long Term Recommendations

Avatar has also provided five long-term recommendations, the details of which are quite limited, and no prioritization is given. In order, these are:

1. Review On-Going Studies. Review the results of on-going studies and incorporate relevant results and conclusions into review of FCC tower applications. These studies, the results of which should become available over the next 12 to 36 months, include:

- Michigan State Police Tower Study
- Clear Channel of Northern Colorado Tower Study
- Coconino and Prescott National Forest Tower Study
- Philadelphia Tower Study
- Mobile Lighting Study
- U.S. Coast Guard "Rescue 21" Study

2. Produce Study Guidance Document. From the communication and coordination efforts with applicable research entities and telecommunications industry to develop standardized methods and metrics for data collection and monitoring (Short term Priority Recommendation 2), produce a comprehensive guidance document with input from applicable research entities and telecommunication industry.

3. Conduct Avian Vision Research. Conduct avian vision research, initially through laboratory-controlled studies and then through field applications.

4. Develop Tower Siting Ecological Parameters. Develop appropriate criteria or ecological parameters to be used in communication tower siting. Similar approaches to that used for wind turbines should be examined for potential applicability and adaptation for communication tower sites.

5. Modify USFWS' Wind Turbine Evaluation Tool. Modify the USFWS' Potential Impact Index (PII), developed to evaluate the ecological value of wind turbine locations, or develop a similar process for analyzing project siting for telecommunication towers.

PCIA agrees that the studies currently underway in Michigan and elsewhere should be followed, and the results of such studies incorporated into the dialogue. Notably, the Michigan study, which is a two year study of a total 24 towers, should provide insight into the effects of tower height, lighting and guy wires. The Michigan study is limited in its geographical area, but has the benefit of a rather large number of towers and four seasons in duration. We also note the Coconino and Prescott National Forest study, which should provide good information on shorter and unlit towers. In large part, the towers owned and operated by PCIA's members fall within this category of structures (less than 199 feet in height).

The Avatar proposal to conduct research into avian vision, through laboratory-controlled studies and then filed applications, is not particularly well defined. Avatar devotes one small paragraph to this subject, the sum of which is that not much is known about "how a bird's perception may be directly associated with collision risks at communication towers." In recommending commencement of a research project, the scope and the funding of which is entirely unknown, Avatar has not given enough on which to comment.

It has been suggested that the telecommunication industry provide the funding for research such as suggested here. PCIA has addressed that proposal in earlier comments, and those will not be repeated here. Suffice to say that PCIA does not believe that industry should underwrite research on mere speculations offered by Avatar in support of this recommendation.

VI Conclusion

Consistent with the position taken in comments and reply comments to the NOI, PCIA believes that the existing, scientific research is inconclusive as to whether communication structures have a significant effect on avian mortality. Woodlots estimate is that "avian mortality attributable to towers would be approximately 0.42 percent of human-caused mortality and only 0.05 percent of total bird populations". The causes of bird collisions with towers are largely unknown, and conclusions based upon hundreds of studies remain speculative. To consider changes in the existing regulatory framework based upon this state of knowledge would be ill-advised and without the requisite legal support.

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Technical Comment on *Notice of Inquiry Comment Review, Avian/Communication Tower Collisions, Final* (Avatar et al. 2004)

February 2005

Prepared for:

CTIA - The Wireless Association
The National Association of Broadcasters
PCIA - The Wireless Infrastructure Association

Prepared by:

Woodlot Alternatives, Inc.
30 Park Drive
Topsham, Maine
(207) 729-1199

Technical Comment on *Notice of Inquiry Comment Review, Avian/Communication Tower Collisions, Final* (Avatar et al. 2004)

Response comments are presented in the same order as offered in the Avatar et al. (2004) report.

I. Overarching Comments

Avatar et al. (2004) (hereinafter referred to as Avatar) used similar methods as Woodlot to assemble and review pertinent literature on avian and telecommunication tower collisions. Avatar placed emphasis on many of the same reports as Woodlot, particularly those that had undergone a peer review and were published in scientific journals. The manner in which the data were presented and discussed was also very similar to the Woodlot report. Most importantly, many of the same overriding conclusions reached by Woodlot concerning the current state of knowledge were shared by Avatar following their analysis:

"There are no studies to date that demonstrate an unambiguous relationship between avian collisions with telecommunication towers and population decline of migratory bird species." (Avatar 5-2).

"More research is warranted in order to identify specific causes and possible solutions to this problem." (Avatar 5-2).

Conclusions reached in Avatar Section 5.1 appear generally speculative and distinct from the main body of the report, as they are largely unsupported by the earlier analysis, or by the current state of much of the scientific literature. Specific inconsistencies and commentary conflicts include statements pertaining to tower height and lighting, as well as the use of guyed and self-supporting towers. In consideration of the variety of study needs, it is premature to recommend and implement certain guidelines until definitive research has been conducted and peer-reviewed.

II. Specific Comments

A. Technical Approach Used

Avatar literature review methods mirrored those used by Woodlot; that is, Avatar screened and classified avian studies based on whether the information was published in a peer-reviewed journal or in another type of manuscript likely with less scientific review. Studies that were published in peer-reviewed journals were awarded more weight and the results deemed more credible. This approach is commonly employed in scientific studies and agrees with the methods and assumptions that Woodlot used as well. Similarly, Avatar identified key attributes from each study, which they used to evaluate the worth of each study in the development of comments. This process and the specific attributes that were reviewed are in concordance with Woodlot's study to a great extent. Additional similarities between the methods used by Avatar and Woodlot include the use of data forms to summarize information, use of a majority of the same studies, and the presentation of the results.

B. Representative Studies Used to Develop Report

Avatar performed an independent literature review and from that selected 50 studies for use in reviewing comments prepared regarding the Federal Communications Commission (FCC) Notice of

Inquiry (NOI). Sixty-four percent of these studies were also used by Woodlot in the development of their comments. Much of the discussion presented in Section 3 of the Avatar report reiterates the findings of the Woodlot report, as recognized by the authors (page 3-3, *"Many of the following discussion topics summarized to address the NOI comments parallel the Woodlot information…*"). In Table 3 of the Avatar report, thirty studies are presented representing significant bird mortality events over the last 50 years. The Woodlot report similarly considered 20 of these 30 studies. It is likely that had there been a greater amount of time to prepare the initial response to the FCC NOI, there would have been even a greater degree of overlap between studies used both by Woodlot and Avatar.

Avatar also presents an important point in this section where they mention that *"noting the absence of mortalities may be as important as noting the presence of large numbers of bird mortalities."* They cite a report prepared by Stoddard (1962) when making this point, and mention its potential usefulness in considering designs that minimize risk of collision.

C. Specific Factors Affecting Bird Collisions

Overall, the information presented and the conclusions reached in the Avatar and Woodlot reports regarding specific factors affecting bird collisions were in agreement.

Migration Patterns and Seasonality & Bird Behavior – Much of the same information and findings regarding how migration patterns, seasonality, and bird behavior have affected incidences of bird collisions with towers were presented in both the Avatar and Woodlot reports. As noted in both reports, additional information is needed to develop better correlations between seasonal migration patterns and specific factors causing tower collisions.

Tower Height and Configuration – Both the Avatar and Woodlot reports state that there are insufficient data to draw substantive conclusions between tower height and migratory bird collisions, particularly the critical height threshold below which little mortality would be expected to occur.

Tower Siting – The Avatar reports states *"insufficient information is available to draw conclusions as to the specific factors associated with siting towers."* (Avatar, 3-41). This statement supports comments prepared by Woodlot.

Tower Lighting – Much of the same discussion is presented in both the Avatar and Woodlot reports regarding lighting and its affects on migratory birds. After presenting information from both published and unpublished sources, the same conclusions are presented: *"no clear conclusions can be drawn...regarding the importance and effects of lighting color, duration, intensity, and type…Additional research is needed…"* (Avatar, 3-46).

Weather – As with the other major NOI topics discussed above, there was a great degree of similarity between the Avatar and Woodlot reports regarding the influence of weather on bird collisions with towers. Both reports cited studies indicating increased rates of collisions associated with cloudy and windy weather. Avatar concluded that *"Additional information is needed on weather patterns relative to bird movement and other conditions that may contribute to increasing or decreasing risk of bird collisions."* (Avatar, 3-52).

D. Current Research Efforts

The Avatar report presents brief summaries of six recent or ongoing studies that are investigating the effects of guy wires, different types of lighting, scavenger removal, weather, tower height, bird behavior, and collision deterrents. These projects are located in Michigan, Colorado, Arizona, Pennsylvania, and two or more other locations that were not specifically mentioned. Information on the objectives of each project, the investigators, and location are very briefly presented. There is little or no detail on study design, so it is difficult to determine how robust each effort is, and whether information collected can be tested for statistical significance or answer any of the NOI questions. For these reasons, it is uncertain how useful these efforts will be in providing findings that can be used in design and siting of new towers.

E. Biological Significance

Avatar presents a discussion of Biological Significance in Section 3.5 of their report. They state that biological significance is a reflection of both the *"magnitude of the biological effect and the importance of the biological effect."* They further state "*biologically significant mortality is any mortality that is of sufficient magnitude and importance that it causes the viability of a particular population or species to be affected."* and *"the development of predictive impacts is simply not adequately developed to draw specific conclusions on the effects to migratory bird populations as a whole and possibly to a specific species."* (Avatar, 3-66).

Section 3.1 of the Woodlot report presents a discussion on known sources of avian mortality in comparison to that believed to be caused by communication towers. References for each of the studies cited are included as a brief assessment of data variability and uncertainty. The Avatar report does not present any information to refute the data presented in Section 3.1 of Woodlot's report, but they indicate that biological significance needs to be better defined, and that it is difficult to show population-level effects from a particular stressor (i.e., towers).

As described in the Woodlot report, it is important to consider the potential effects that human-caused mortality may have on the stability of bird populations. There is, however, no evidence in the literature to date indicating that communications towers are having a statistically significant or *"biologically significant"* impact on migratory bird populations. This point is reiterated in Section 5.1 of the Avatar report where it is stated *"There are no studies to date that demonstrate an unambiguous relationship between avian collisions with communication towers and population decline of migratory bird species."*

Each individual source of mortality mentioned in the Woodlot report represents a relatively small percentage of the total North American bird population. In fact, communications towers are one of the smallest of all the mortality factors identified. Adding together the most likely estimates of annual bird mortality due to the major human-caused components yields a total annual mortality estimate of about 950 million, with lower and upper estimates ranging from between 381 million to 2.3 billion deaths per year. Using the 1975 American Ornithologists' Union estimates of total bird population, these numbers represent a potential mortality estimate of about six percent. Accordingly, the avian mortality attributable to towers would be approximately 0.42 percent of human-caused mortality and only 0.05 percent of total bird populations (based on an estimated bird population of 10 billion birds). The Woodlot report also mentions that because so little is known

about the overall bird population in the United States, caution should be employed when assessing the potential impact of human-caused mortality sources on bird populations.

F. Data Needs and Mitigation Methods

In Section 4 of the Avatar report, a number of data needs are presented, which would aid in establishing a relationship between specific tower features and the cause of avian collisions. The development of standardized methods for documenting and reporting avian collisions and mortality factors is an obvious need as pointed out in both the Avatar and Woodlot reports. This standardization is needed to allow comparisons between towers so that causes of collisions can be correlated with specific siting, design, and operation features. Once specific causes are identified, appropriate mitigation measures can be developed, tested, and implemented. As pointed out in the Woodlot and Avatar reports, more research is needed to identify causal effects.

Also included in Section 4 of the Avatar report are discussions of methods available to monitor avian collisions including radar, acoustic sensors, and strike indicators. Radar data can show patterns of bird movement spatially and temporally across the landscape; therefore, it is a predictor of the potential for collision. It is not a definitive tool, however, for collecting data on bird behavior at tower sites. For instance, radar may show large numbers of avian targets moving through an area, yet by itself, it will not show levels of collisions or mortality. Acoustical monitoring similarly is valuable as a coarse measurement tool, but does not generate tower-specific collision data. Bird strike indicators allow the detection of bird strikes on guy wires but probably not on towers themselves. They also do not on their own correlate collisions with mortality (i.e., not all collisions kill). Additionally, it is uncertain how well they will work on guy wires, particularly near where the wires are attached to the tower or the ground, where vibrations are of a smaller magnitude.

Section 4 of the Avatar report also presents comments on study biases that are common to most collision studies. Many of these points were gleaned from the peer-reviewed studies presented earlier in the Avatar report, as well as in the Woodlot report. These biases should be addressed in current and future studies of tower collisions and arise from: 1) scavenger/predator removal rates, 2) crippling (versus kill) rates, 3) searcher efficiency, and 4) habitat. Each of these biases varies seasonally and from site to site, and is dependent upon individual tower and local landscape features.

Additional research needs presented in Section 4 of the Avatar report include topics associated with avian vision and the effects of several different methods of marking guy wires. An enhanced understanding of bird vision should provide opportunities for designing mitigation measures both from design and operation standpoints. Though the effects of markers have been tested on power lines with varying levels of success, no specific methods have been used on telecommunication guy wires. Because none of these methods have yet to be used, they should be considered experimental. Though incorporated in other sections of the report, other data needs not referenced in Section 5.1 include: 1) effects and importance of various types of lights, including their color, duration, and intensity, 2) understanding observations of decreasing bird mortality over time with increasing tower numbers, (Avatar, 3-15), and tower siting (Avatar, 3-41).

G. Conclusions and Recommendations

Section 5.1 – Conclusions

Section 5.1 of the Avatar report presents a series of conclusions, which they regard as speculative, but *"advanced with some degree of confidence within the scientific community."* (Avatar, 5-1). These conclusions are in large part only restated findings from peer-reviewed and other reports, including the Woodlot report. Despite their acknowledged speculative nature, conclusions reached by Avatar in Section 5.1 remain largely unsupported in the preceding sections of the report. Following are brief illustrations of these inconsistencies:

- *The largest bird kills tend to occur on nights with low visibility conditions, especially fog, low cloud ceiling, or other overcast conditions.*

In Section 3.3.7, Avatar presents several studies that relate weather effects to mortality events at communication towers, even stating that a particularly strong correlation appears to exist between nights in autumn with lower cloud ceilings. Although the section mentions there is likely a connection between weather and collision events, the Section concludes "the extent or degree of this association and how other factors may influence mortality rates are essentially unknown."

- *All other things being equal, taller towers with lights tend to represent more of a hazard to birds than shorter, unlit towers.*

The conclusion presented in Section 5-1 does not follow the discussion in the body of the text. Tower height and lighting are discussed in separate sections of the report, and the discussion in each section culminated in statements that more research is required before any conclusions can be drawn. For example:

"Existing data are not sufficient to draw direct conclusions between tower height and migratory bird collisions. The critical threshold for tower height has not been definitively determined relative to bird collision risks. Although some assumptions have been made on tower height effects, additional information is warranted." (Avatar, 3-36)

"No clear conclusions can be drawn, based on the existing literature, regarding the importance and effects of lighting color, duration, intensity, and type (e.g., incandescent, strobe, neon, or laser), and bird attraction. Additional research is needed on the types of lights in conjunction with other factors that increase or decrease the risk of bird collisions with communication towers." (Avatar, 3-46)

"No firm conclusions can be drawn based on the existing literature regarding the importance and effects of lighting color, duration, intensity, and type (e.g., incandescent, strobe, neon, or laser) on bird attraction, although as discussed earlier in this section, inferences can be drawn on different lighting regimes. Additional research is needed on the types of lights in conjunction with other factors that increase or decrease the risk of bird collisions with communication towers." (Avatar, 3-47)

"Woodlot...stated that insufficient published information exists on different lighting regimes to draw comparisons or clear conclusions." (Avatar, 3-48)

"There is presently only a single study demonstrating a greater proportion of bird attraction to red flashing incandescent lights than to white strobes (Gauthreaux and Belser 2000)...Although there is strong evidence to support light as an attractant during inclement weather, there is still much speculation regarding light type, color, intensity, and duration. This is universally acknowledged as being a key research need." (Avatar, 3-48)

- *Towers with guy wires are at higher risk than self-supporting towers.*

Again, the conclusion in 5-1 does not follow the discussion presented in the body of the report. Examples of these inconsistencies are as follows:

"Intuitively, one would assume that towers with an array of guyed wires would present a greater collision hazard or risk to migrating birds than self-supporting structures. No specific studies comparing avian collisions with guyed towers to self-supporting structures were found as part of this review." (Avatar, 3-35)

"No specific studies comparing avian collisions with guyed towers to self-supporting structures are known to occur." (Avatar, 3-36)

"Woodlot also commented that no observable trend could be presented on guy wires as a factor. This is because the literature had limited information on the presence of guy wires, although it is likely that most tall towers reporting mortality were guyed." (Avatar, 3-38)[1]

- *Two collision mechanisms appear to be a factor in bird collision: 1) blind collision and 2) illuminated sphere of influence.*

Although the report references several studies that document birds flying around illuminated towers during inclement weather, nowhere in the report is there discussion about these two specific means of collision, and neither is mentioned by name in the text of the report.

One conclusion presented in the Avatar report that is not in complete agreement with the Woodlot report states that the potential exists for biologically significant mortality due to towers. However, there is ambiguity between how biological significance is defined and then applied. This ambiguity renders the development of conclusions challenging and adds uncertainty to the finding.

In summary, Woodlot agrees in general with many of the statements and findings developed in the preceding Sections 1 through 4 of the Avatar analysis in that there remain many gaps in the current understanding of the definitive causes of avian mortality related to communication towers. However, conclusions reached in Section 5.1 appear generally speculative and distinct from the main body of the report, as they are largely unsupported by the earlier analysis, or by the current state of much of the scientific literature.

[1] Of 170 incidental reports cited in the original Woodlot analysis, 32 (18%) reported the presence of guy wires.

Section 5.2 - Recommendations

Avatar states that there is substantial uncertainty regarding the magnitude of bird collisions and causative factors in the Recommendations section of the report. The type and level of uncertainty is in large part due both to incomplete knowledge and variability. To decrease the amount of uncertainty, they provide a number of short- and long-term recommendations for developing tower design, siting, and operation guidance, which can then be used to decrease the incidence of avian collisions. Two tables are presented with recommendations, the second of which contains a prioritized list of short-term recommendations.

The first priority recommendation is that the FCC continue to participate in the Communication Tower Work Group, and that they review and use ongoing research on how to minimize the incidence of avian collision. This recommendation, as well as the next nine, are intuitive and merely reiterate part of the FCC's responsibilities. Short-term priorities two through ten address specific aspects of research or research methods, which can be used to better design, site, and operate telecommunication towers. These recommendations include developing standardized data collection and monitoring methods, and continuing research on tower lighting, avian vision, bird behavior around towers, migration, and means of mitigating mass mortality events. These recommendations are in line with developing tower management guidelines based on good science.

The priority eleven short-term recommendation concerns the National Environmental Policy Act (NEPA), in particular revising biological scoping issues and the environmental assessment checklist to better reflect issues associated with avian collisions and communication towers. This recommendation may not change the NEPA process or outline, but it could result in a more focused review of potential issues. This may result in a more efficient review process, although the opposite effect could also occur, particularly if reviewers are not satisfied with the type and level of information provided in the NEPA package.

The last priority recommendation is to readdress the U.S. Fish and Wildlife Service *Interim Guidelines for Recommendations on Tower Siting, Construction, Operation, and Decommissioning*. Specific recommendations are to eliminate some of the contradictions contained in the current guidelines and to obtain definitive recommendations on design, siting and operation before specific recommendations are made. It will certainly be beneficial to eliminate contradictions and to base guidelines on study results that were properly designed and conducted. Until definitive research has been conducted and peer-reviewed, it is premature to recommend and implement certain guidelines.