

**PUBLIC SERVICE COMMISSION
OF WEST VIRGINIA
CHARLESTON**

CASE NO. 00-1209-E-CN

BACKBONE MOUNTAIN WINDPOWER, LLC

Application For A Certificate Of Convenience And Necessity
To Construct And Operate A Wholesale Wind Power Generating
Facility And Related Interconnecting Transmission Facilities
In Tucker County, West Virginia

WEST VIRGINIA HIGHLANDS CONSERVANCY

Intervenor's Protest Regarding Application For Certificate Of Convenience
And Necessity, And Request for Expedited Treatment

November 17, 2000

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I. Procedural Background

On August 7, 2000, Backbone Mountain Windpower, LLC (Applicant) filed an application for a certificate of convenience and necessity to construct a wholesale electric wind power generating facility and associated transmission lines in Tucker County, West Virginia. With its application, the Applicant requested expedited treatment and the waiver of certain filing requirements pertaining to the financial condition of the Applicant. On August 7, 2000, the PSC issued an order setting a 30-day deadline for the filing of objections and directed the Executive Director to publish notice of the order.

On September 6, 2000, the West Virginia Highlands Conservancy filed a protest to the application for certificate of convenience and necessity signed by its president, Frank Young, and requested that the PSC prepare an independent environmental assessment of the project on the area surrounding the seven-mile ridge along which the project was proposed to be located.

On September 8, 2000, the PSC staff issued an initial staff memorandum recommending that the PSC retain the matter. Also on September 8, 2000, the staff issued interrogatories and data requests, to which the Applicant responded on September 28, 2000. Also on September 28, 2000, the applicant submitted an August 22, 2000 Risk Assessment for Endangered Species and Birds.

By order dated September 28, 2000, the PSC scheduled two public hearings for October 17, 2000 and October 18, 2000, notice of which was duly published. Numerous parties spoke in favor of the project at the public hearings.

On October 23, 2000, the PSC scheduled the evidentiary hearing in this matter for November 20, 2000, based upon the Applicant's representation that expedition was required.

II. Project Description

As described in the Applicant's submissions to the PSC, this wind power generation project will consist of 60 to 79 turbines ranging in height from 311- 329 feet with blades extending in excess of 100 feet. The turbines will be arrayed in a series of towers along a seven-mile long ridge in Tucker County, West Virginia, approximately 4.5 miles west of the Blackwater Falls State Park and along Route 219, north of Thomas, West Virginia. The project will include transmission lines permitting the parallel series of turbines to connect with an Allegheny Power substation.

In its materials, the Applicant states that the electricity generated by the project will range from 72 MW to 90 MW, depending on the specific model of turbine ultimately selected. This output, the Applicant states, is sufficient electric energy to supply between twenty thousand and twenty-five thousand residences. One hundred percent of the electricity will be sold on a wholesale basis, exempt from regulation.

III. This Case Requires Reasoned Review Without Regard To Illusory Deadlines.

A. Wind Power Tax Credits Have Been Routinely Extended In The Past.

The requirement for expedited treatment of this application is derived entirely from the Applicant's assertion that the investment tax credits for wind power projects offered by the Internal Revenue Code at 26 U.S.C. § 38, under present law, will expire on December 31, 2001. In order to have the project constructed by that date, turbines must arrive at the site in May 2001. To secure the delivery of turbines in May 2001, the Applicant contends that it is compelled to make substantial financial commitments, in the form of deposits on turbine equipment, as early as mid-November 2000.

The PSC should not predicate any truncation of the normal regulatory review on the basis of concerns about the availability of federal tax credits to the Applicant for the simple reason that there is no realistic prospect that those credits will in fact expire on December 31, 2001 or at any other time relevant to the PSC's consideration of this matter.

The credits presently scheduled to expire on December 31, 2001, were formerly scheduled to expire on June 30, 1999. In the course of 1999, the United States Congress passed S. 1792, later incorporated into Public Law 106-170, which, in Title V, § 507, (a) to (c), extended the life of the credits for another two years, through December 31, 2001.

There is not now nor has there ever been any opposition to the extension of wind power tax credits. To the contrary, there is every reason to expect that the Congress will in the future, as it has in the past, simply "move the goal posts" routinely every time they are approached.

B. Tax Credit Legislation Counsels Against Truncation of PSC Review

However, the 1999 wind power tax credit legislation is instructive to the precise issue before this commission in ways contrary to that suggested by the Applicant. Specifically, in the course of extending the wind power tax credit, the U. S. Congress explicitly admonished state agencies **NOT** to subordinate environmental concerns to promotion of wind power generation, and expressly identified the potential for adverse avian impact as the item of concern.

In Conference Report 106-478 accompanying the 1999 legislation to extend the wind power tax credit, the U. S. Senate committee revising the tax legislation acknowledged the possible conflict between the desire for increased wind power and adverse environmental impacts.

With this extension and expansion of the section 45 production credit, the Committee emphasizes its commitment to encouraging new, environmentally friendly technologies for the production of electricity. However, the Committee observes that there are many different policies that help promote a better environment for future generations to enjoy. Sometimes these other policies may conflict with the goals promoted by the section 45 production credit.

Conference Report 106-478 (emphasis added).

The Conference Report stated as follows:

For example in certain areas of the western United States, construction of wind turbines may pose a hazard to the endangered California condor. Even when creating more environmentally friendly electric power, qualified facilities can diminish our future by their encroachment on delicate habitats. The Committee strongly encourages Federal, State, and local officials to be cognizant of such concerns for the environment and ecosystems when approving the siting of facilities that qualify for the section 45 production credit.

Conference Report 106-478 (emphasis added).

In short, the U. S. Congress has balanced its concern with the development of alternative energy sources with a concern for preservation of environmental values already in place. So should this commission.

C. Subsequent Events Reinforce The Future For Wind Power Tax Credits.

Also germane to any assessment of the probability that tax credits would actually be allowed to expire at the end of 2001 is the fact that crude oil prices have tripled in value since the 1999 legislation from \$10 per barrel to in excess of \$30 per barrel. The increased cost of crude oil, which has translated into an extraordinary run up in the price of motor gasoline, has reinvigorated the market for alternative energy projects of all kinds. The Applicant acknowledges the great expansion of wind projects in the last 18 months. Plainly, the objective incentives for efforts to diversify and domesticate U. S. energy supplies has greatly increased since the time of the latest extension of federal tax credits.

In short, there is no basis in the federal tax code, or any plausible amendments to it, which dictate that the PSC's decision in this matter should be expedited at the expense of environmental concerns. To the contrary, to the extent that federal tax legislation speaks to the matter, and it does, it strongly endorses the position advocated by the West Virginia Highlands Conservancy here – that the PSC scrutinize carefully any proposal to ensure that environmental values and safeguards are incorporated into any alternative wind power projects.

D. No Urgency Can Exist As A Result of Financial Risks Already Undertaken

In its submissions to the PSC, the Applicant states that significant deposits need to be made by mid-November 2000 in order to secure the delivery of turbines in May 2001 which may be installed before the December 31, 2001 expiration of tax credits. Apart from the fact that those tax credits will not expire, for the reasons stated in the preceding section, the PSC should not alter its consideration of the application in any respect for financial commitments already made by the Applicant.

Although the Applicant has been relieved of the burden of disclosing its financial condition, it requires no special skill to recognize that the proposed project requires substantial financial resources. The project has a capital cost of between \$70,000,000 and \$90,000,000, some \$20,000,000 of which will be in local civil construction. And, if the "mid-November" deposit date is accurate, the incremental funds needed to secure turbines before May 2001 (as a means of meeting a non-existent deadline for expiration of tax credits) have already been expended.

The Applicant in this proceeding has made its financial commitments to date with its eyes open. Those eye-open commitments provide no basis for asking the PSC to close their own eyes to relevant environmental concerns.

E. Relevant Avian Studies Are Not Now Available

According to the materials submitted by the Applicant, the need for both fall and spring migratory bird studies were specifically indicated by the U. S. Fish and Wildlife Service in their letter dated February 24, 2000. The West Virginia Highlands Conservancy is under the impression from discussions with the Applicant that the fall study is underway presently. The record is presently silent as to the plans to conduct a spring migratory bird study.

In this regard, it is imperative that the PSC understand the communications from relevant regulatory agencies which are included in the Applicant's materials. Prominent among those materials is a letter from the Natural Heritage Program of the West Virginia Division of Natural Resources. That letter states that the DNR

possesses "no evidence" of the presence of rare, threatened or endangered species in the project area.

This statement is **NOT** an indication that the project may go forward without environmental impact; it is merely a reflection of the limits on the ability of a lightly funded state agency to conduct comprehensive wildlife studies with regard to all parts of the state. As to the threatened and endangered species, the Applicant has completed a study. However, all of the information pertaining to rare birds is from areas adjacent to the project area, not the project area itself. Further, the Applicant has done no breeding bird study.

As noted above, the letter of the U. S. Fish and Wildlife Service recommends the Applicant conduct both fall and spring migration studies. The Applicant has only committed to perform a fall study, which is not now available. No spring migratory study is contemplated, and the applicant proposes to commence construction in May 2001.

The West Virginia Highlands Conservancy has not had the opportunity to conduct any independent avian study. But the Conservancy cautions the PSC from accepting at face value the Applicant's representations that the avian impacts acknowledged to date in the wind power industry have been minimal or localized to the large Altmont, California project. Information readily available strongly suggests that the problem is not localized in California nor is it minimal in character. Specifically, Cornell studies underway at the present time have identified significant bird kills in New York. A recent internet discussion of the Cornell study is appended to this submission. <http://www.denverpost.com/news/news1112a.htm>.

Finally, the Commission must consider how the avian impact will be monitored *after* any certificate is issued. The project is located on private land and, although it is located close to Rt. 219, plainly the ridges will not be visible from public property. What if the parsimonious studies completed to date are wrong (or the project is constructed without conducting the spring migration study indicated as necessary by the Fish & Wildlife Division)?

How will the public know that birds are being destroyed? Will the Applicant grant Intervenor a license to enter the property to observe migrating or breeding birds interaction with the towers? Or will the public and the Commission be totally dependent on the Applicant to spontaneously come forward with information that their \$70,000,000 to \$90,000,000 investment is killing birds in a volume that, if known in advance, would have canceled the project?

F. Absent Relevant Avian Studies, The Applicant Proceeds At Its Own Risk

Although the Applicant has acknowledged, implicitly at least, that further study is required, the assumption to date has been that the project would go forward under any circumstances and that, in the event subsequent studies showed a threatened bird population, the Applicant would "deal with it."

That is an inversion of the regulatory procedure. The decision to go forward with the project must be made on the basis of information in hand. If the Applicant proceeds with construction without studies in hand which justify that decision, conflicting evidence at a later time must dictate that the project come to a halt.

The Applicant cannot be allowed to whip-saw the Commission by generating an expedited hearing process, based upon an illusory tax credit deadline, and then come back to the Commission later (if adverse environmental effects are documented) and claim that they will suffer unfair economic loss from construction costs expended, and deposits made, before the information was available.

The Applicant must protect itself by deferring action now if the record does not support the proposed project. And it is the position of the West Virginia Highlands Conservancy, on the information available to date, that the project is not supported because necessary environmental studies have not been completed, and possibly

will not even be commenced, before construction begins.

G. Nighttime Lighting Requirements Will Compromise Environmental Values

The Applicant acknowledges that the southern-most array of electric turbines will be visible for approximately 5 miles, an area which encompasses the Blackwater Falls State Park lodge. From that vantage point, as many as 20 turbines will be visible, as they will be lighted with one or more lights. As matters stand, the Applicant cannot advise the PSC or the West Virginia Highlands Conservancy of the specific lighting to be used.

However, the lights used may very significantly affect the nocturnal viewshed from Blackwater Falls State Park. The Conservancy sponsors nighttime outings to the park for the express purpose of viewing astronomical objects. The letter of David Saville, Outings Coordinator of the Conservancy, attached to this Protest, describes the 3-day outings in 1998 and 1999 which attracted 100 and 200 attendees, respectively, to the Blackwater Falls State Park

Nor is it controlling that there was "no significant opposition" to the project based on viewshed issues at two public hearings held in Tucker County. The acting Chief of W. Va. State Parks Section of the WV Division of Natural Resources advised the WV Highlands Conservancy, only one week before the PSC's scheduled evidentiary hearing, that he had been looking for an opportunity to address the issue of nocturnal effects of the wind turbine lighting to the relevant regulatory agency. But since the only public notices of opportunities for public comments had been through a small newspaper in Tucker County, the Parks Chief, officed in Charleston, assumed that the time for public comments wasn't yet at hand. Alerted by the WV Highlands Conservancy, the Parks Chief, has since forwarded a letter of concern about nocturnal visual impacts to the Commission's Executive Secretary.

The accelerated pace of the PSC in considering the application for this project – predicated on the illusory expectation of expiring tax credits, may well have resulted in other potentially impacted organizations and individuals having insufficient notice of the process to express their considerable interests relating to the proposed project.

In the Conservancy's view, the viewshed issue is not "arbitrary" in nature, nor is resolution of this issue "best left to the public citizens who live in the affected area." The Blackwater Falls State Park is a resource of all of the citizens of this state, and remains the state's leading tourist attraction.

Blackwater Falls Park users are not predominantly, nor even very casually, residents of the region. They are, by their very definition and respective destinations, tourists and vacationers, transit outdoor recreationalists, nature seekers and members of organizations, like the West Virginia Highlands Conservancy, who desperately seek to enjoy the few precious natural areas remaining, including naturally dark skies suitable for star watching and night hiking opportunities, as currently exist at Blackwater Falls State Park, but which are threatened by this project unless effective modifications are assured.

The very nature of Park users is such that leaving the visual impact of wind towers and turbines up to citizens who live in the affected area is directly in contrast to the interests of the State Park users, virtually all of whom do not live "in the affected area" and whom, by and large, won't even know about the proposed project until they come once again to the area in late 2001 or 2002 to enjoy nature and are overwhelmed by seven miles of football field length tall towers and turbines along a mountain ridge, with flashing beacon lights outshining the sunset and the planets and stars on the western horizon as viewed from Blackwater Park lodge, Lindy Point Overlook and other nearby developed viewing sites.

The effects of nighttime lighting extend to other public lands, particularly the Monongahela National Forest, and the Big Run Bog National Natural Landmark managed by the National Park Service. These natural

treasures owned by the people of West Virginia and the nation deserve special consideration. They have scenic and recreational value which will be undermined (the Monongahela comes right up to the edge of the windmill site) and harbor endangered and unique flora and fauna which travel on and off public lands and may be hurt by the construction of this wind power operation.

High mountain streams that originate on the windmill site flow through the Monongahela and down into Blackwater Canyon to the Blackwater River. This unique high mountain ecosystem is a remnant of the Ice Age, preserved in Appalachia, and is irreplaceable. People come here for the peace and quiet, the remote wilderness experience and not to visit an industrial site. Development of this industrial site will hurt future natural resource based tourism in Tucker County.

On the present record it is impossible to determine that this nighttime viewing will not be interfered with by the as yet unspecified lighting on the Applicant's turbines. The lighting employed will apparently also affect the degree to which the towers attract nocturnally migrating birds. In light of this concern, the Conservancy requests that the PSC require the Applicant, at a minimum, to disclose the proposed lighting at the earliest possible time, and that it conduct an appropriate demonstration of the proposed lights for viewing by the PSC and the Conservancy, all prior to the issuance of a certificate of convenience and necessity.

H. The Project Externalizes Energy Benefits and Internalizes Environmental Costs.

The Applicant's project will generate sufficient energy to provide electricity for twenty thousand to twenty-five thousand homes. However, according to the Applicant's submission, one of the most promising market opportunities represented by the project is the opportunity to sell into the North East power grid, outside of the state. The ideal market opportunity for the project developers would be to find a one-time purchaser of all of their electrical energy for the expected life of the project.

Should this ideal marketing opportunity be realized, not one watt of the electricity generated by the Applicant's project will be sold, for the entire twenty year life of the project, to energy users inside of the state of West Virginia. Not a single light bulb in the State of West Virginia will be converted from coal-powered to wind-powered energy as a consequence of this project.

By contrast, all of the adverse environmental impacts will be absorbed locally, in the single most environmentally sensitive area of the state. At the time this project is proposed, fully ninety percent of the air pollution in the greater Kanawha Valley is generated by a single source -- the John Amos coal-fired power plant in Winfield, West Virginia. The Applicant's project may demonstrate the viability of wind power to potential investors. The Applicant's project will add to the total national energy supply and, to that extent, potentially displace energy generation capacity which would have been supplied by less environmentally friendly sources. But nothing in this project will speed by a single day the conversion of the John Amos plant from coal to an alternative fuel, or offer the consumers of the state, in the Kanawha Valley or elsewhere, an alternative to coal-fired, environmentally destructive, legacy power generation facilities.

These facts are not alone dispositive of the application or the advisability of wind power generally. However, the enthusiasm with which we embrace wind power as an alternative to conventional fuels must be tempered by an eyes-open recognition of who receives the energy benefits of the project and who absorbs the environmental costs.

As envisioned by the Applicants, the allocation of those benefits and costs conforms exactly with the colonial economic model of the coal industry, the energy source which preceded it, viz., the environmental costs of the energy generation are internalized, while the economic and environmental benefits are externalized. To be sure, after the eight month construction project is completed, the positive employment impact is projected at seven jobs.

The Conservancy does not minimize the importance of seven substantial jobs for Tucker County. However, this positive economic impact must be realistically weighed against potentially significant environmental costs. Tucker County's economy depends on tourism greatly, and losses to that tourism as a result of environmental damage would more than offset the economic benefit of seven operations jobs generated by the wind power project itself. Anticipated increases in tourism to view the wind power project itself will not materialize if the project in fact has an adverse avian impact.

IV. Need for Independent PSC Office of Environmental Assessment.

The West Virginia Highlands Conservancy strongly suggests that the PSC take substantial affirmative steps to create an internal capacity to conduct meaningful, independent reviews of environmental studies commissioned by applicants. As the process of restructuring the electric utility industry proceeds, there will be increasing numbers of applications of a wide range of energy generation projects from different energy sources. None of these will be free of environmental impact; all will require analysis. Among other things, the PSC will be expected to advise consumers of the relative environmental benefits and costs of the array of choices soon to be presented to them.

The PSC should not put itself in the position of merely passing on, without critical analysis, applicants' representations. Nor realistically can the PSC count on public interest organizations, such as the Intervenor in this proceeding, to undertake those reviews. The reviews are expensive, and necessary environmental expertise is finite. The WVHC does not have the financial resources to commission study after study after study. And allowing the applicants, with funds available from the electric utility industry generally, to routinely hire all available local expertise will, over time, compromise the independence of even the limited local expertise that exists.

The alternative is to hire competent staff to review the projects. Additionally, as a part of the application process, the PSC could require the applicants to reimburse the commission for PSC expenditures in hiring outside experts. The present situation -- PSC dependence on applicant funded studies, and the limited financial ability of non-profit environmental organizations -- will disserve the public interest.

In the present case, Curry & Kerlinger, the Applicant's "independent" avian expert, is listed as part of "a core group of industry ... consultants" managed by Atlantic Renewable Energy Corporation, the owner of 100 % of Backbone Windpower, LLC, the Applicant.. See: http://www.atlantic-renewable.com/management_introduction.htm appended as an endnote to this submission.

And while Paul Kerlinger is the author of the reports to this Commission, his named partner in Curry & Kerlinger, Mr. Richard Curry was a principal in U. S. Windpower, Inc., a former promoter of two prior wind power projects in this state which were rejected, including a 1992 project in Tucker County rejected because of avian impact, and a 1994-95 project in Greenbrier County which apparently lacked financial resources to go forward.

V. Conclusion

The PSC should not issue any expedited certificate based upon the anticipated expiration of federal tax credits in December 2001. All available evidence and experience strongly suggests that such credits will continue indefinitely. Further, the PSC should compel the Applicant to complete the spring migration study

recommended by the Fish and Wildlife Division, and to study the impact on breeding birds.

Finally, as the PSC approaches the development of a restructured electric utility industry, it should recognize that it can only execute its regulatory duty professionally by developing a credible internal environmental assessment capacity and/or requiring the applicant to fund truly independent studies conducted by experts hired by, and under the direction of, the PSC.

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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing Comments on Staff Memorandum and Protest of Application were mailed to the persons listed below at the addresses indicated on this __ day of November, 2000:

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Technology a towering obstacle for birds

By [Michael Booth](#) Denver Post Staff Writer

Nov. 12, 2000 - Bill Evans sits alone in his New York office and listens to tapes that break his heart.

The tapes are recordings from microphones the ornithologist placed at a Nebraska radio tower. Through his headphones, he hears songbirds flying by on foggy nights. They circle the tower for hours. They call to each other in confusion and distress. And then, one by one, the blue-winged teals and the larkspurs and the warblers hit the tower and guy wires with a thump that makes Evans wince inside his headphones. When they fall hundreds of feet to the fields below, he hears another distant thud.

And when Evans and his Cornell students walk underneath upstate New York towers after overcast nights, there on the ground are crushed tanagers and pulverized ovenbirds. Sometimes, on foggy mornings, birds come crashing down around them. The worst ones are the birds only half-dead. "It's just really tragic when there are whole organisms that have just not adapted to these new structures," Evans said. "You're out there and you see it, and it just gets you the fuel to work on the problem."

From Cornell to the Rocky Mountains and from Florida to federal agencies, massive bird kills at tall towers are motivating action and collaboration among researchers, law enforcement specialists and communications-industry engineers. Their work is spurred by the thousands of new towers going up as part of the worldwide boom in cellphones and digital signals, which promises to add more barriers to the obstacle course that migration paths have become.

Such concerns have already forced change in Colorado. Public Service officials cooperated with wildlife biologists to cull locations for the energy company's wind farm before it settled at Ponnequin, near the Wyoming border. Colorado Division of Wildlife Field Manager Jerry Craig flew in a helicopter over six sites with energy consultants, seeking out steep ridgelines and raptor playgrounds that could turn wind farms into bird killers.

"I turned thumbs down on two sites because of golden eagles nesting, and I figured at least the youngsters might get into trouble; two others were near prairie chicken habitat," Craig said. But such extraordinary care remains a rarity. The U.S. Fish and Wildlife Service estimates communications towers and power generators kill at least 4 million to 5 million migratory birds a year. Researchers say at least 5,000 towers

measuring 200 feet or higher will be built this year, growing at a rate of 6 to 8 percent a year, and adding quickly to the 70,000 towers that already exist.

The television industry also plans to add 1,000 so-called megatowers for upgraded digital transmission in the next three years, further alarming bird biologists. "We're fearful if something isn't done to reverse the trends, the next step is listing some of the birds under the Endangered Species Act, and that's a train wreck we're trying to avoid," said Al Manville of the U.S. Fish and Wildlife Service's migratory bird section in Washington, D.C.

The act has the potential to bring tower construction to a halt and force major changes in growing industries like cellular phones, power generation and Internet traffic. So far, though, it is local zoning rather than wildlife issues that govern the towers. The Colorado Division of Wildlife doesn't always get the heads-up it received from Public Service.

In the meantime, the number of Colorado towers counted by federal agencies grew from 549 to 681 in the last year. The television industry is fighting with Lookout Mountain residents in Jefferson County over a proposed super tower in the area's already bristling antenna farm; the battle so far is over visual pollution, but birds would be a factor at those towers as well.

One major catalyst for the quickening negotiations between industry and bird researchers was a massive bird kill just over the Kansas border from Colorado in 1998. A flock of Lapland Longspurs flew through a January storm of fog and snow, got confused by the light on a 420-foot communications tower, and hit the tower. By morning, between 5,000 and 10,000 birds lay dead at the base.

"Some of the birds hit the ground with enough force to impale themselves on the stubble of crops in the field," said Cynthia Melcher, former editor of the Journal of the Colorado Field Ornithologists.

Only a few towers across the country are scouted daily by bird researchers, but the stories from those few are equally horrifying. A 1,000-foot tower in Eau Claire, Wis., killed more than 121,000 birds of 123 species over 37 years. At the same tower, birders checking the base found more than 1,000 carcasses on 24 mornings.

During one April night in central Florida two years ago, a local bird group logged 131 dead blackthroated blue warblers, 108 blackpoll warblers, 35 American redstarts, 21 ovenbirds, nine blackand-white warblers, six northern parulas and five Cape May warblers.

Tower builders and operators, who call estimates of 5,000 new towers this year conservative, say they want to cooperate on bird research but must balance it with human demands. People hate the flashing white strobe lights on the horizon that might deter birds better than the more common pulsating red lights do, said Rebecca De Moss, national compliance director for industry leader American Tower Corp. in Florida.

Nor have ornithologists pinpointed exactly why birds die at towers, she said. "There's

a lot of conjecture here that can't be supported by science at this point," De Moss said. "It's a fast-paced industry. We don't have time for four- to five-year studies." Tall electronics towers, of course, are not the only things that kill songbirds.

A Wisconsin study estimated domestic cats kill roughly 39 million birds a year in the rural areas of that state alone. Collisions with building windows are impossible to count accurately but may range between 97 million and 970 million birds a year, according to ornithological journals. Pesticides may kill another 65 million. Birders have persuaded some city building owners to turn off lights at night to reduce bird kills. But ownership of 100 million or so structures in North America is impossible to organize.

Federal agencies now talk about towers because they can influence their design and lighting if research points to a clear solution. Tower ownership is concentrated, they have to be licensed by the Federal Communications Commission and recorded by the Federal Aviation Administration, and the Migratory Bird Treaty Act gives the U.S. Fish and Wildlife Service its "marching orders" to address the problem, Manville said.

"And we feel the solutions may be fairly simple," Manville said. "We're anxious to get moving. It's kind of neat - a year ago the industry wouldn't even acknowledge it. Now they are really taking over in helping us solve it."

Evans and other researchers now have the go-ahead from the industry and government "working group" in Washington, D.C., to start thinking up solutions. They start with what they know: Massive bird kills happen most often in overcast weather. As they do with pilots, cloudy skies block birds' use of natural navigation techniques, from basic sightlines to celestial reckoning.

From that point, researchers believe one of two things happen. First, birds see the pulsating light at the top of a tall tower and think that might be something to navigate by, and come closer. Second, some scientists believe the light reflecting off the fog creates a kind of warmth and comfort zone for birds, who fly around in circles inside the influence of the light and are reluctant to fly away again into the surrounding darkness.

Birds attracted to the towers either run into the tower itself, or hit guy wires that are even harder to see. Migrating birds already tired from long travel may also linger and fall to the ground from sheer exhaustion, injuring themselves on impact.

Evans wants to experiment with the duration of the pulse on towers where lights flash on and off. Stretching out the "off" phase may help birds realize the tower is an artificial structure they should avoid. Other scientists want to try different colors, thinking red lights might disrupt a bird's magnetic compass while a white or strobe light does not.

Eventually, Evans and other scientists hope they will be able to approach a cellular or TV tower without cringing in anticipation of what they might find. Evans has his own cellular phone and loves the technology, but doesn't think it's worth the price of what he and his students saw and heard at the bottom of the New York towers.

"Just driving into the parking lot, we picked up 20 birds on the pavement," he said.

"And we could hear the birds flying overhead, calling in confusion. Then we heard a smack, and this black-throated green warbler landed 6 feet from my friend. Then a red-eyed vireo came down. One of those birds coming down from 1,000 feet really hits a parking lot quite hard."