Briefing on the Avian Power-Line Interaction Committee (APLIC) Model and Avian Protection Plans (APP) to the NWCC Wildlife Workgroup
October 29th, 2007

Briefing Summary

On October 29th, Jim Lindsay, FPL; Jim Burruss, PacifiCorp; and Al Manville, U.S. Fish & Wildlife Service (Service) briefed the Wildlife Workgroup and interested parties on the Avian Power-Line Interaction Committee (APLIC) and Service jointly prepared 2005 Avian Protection Plan Guidelines and considerations for adapting those guidelines for use in development of Avian Protection Plans (APP's) for wind turbines. They also discussed the possible use of information contained in the 2006 *Suggested Practices for Avian Protection on Power Lines* or a new document that could be produced specifically for commercial wind development.

Al Manville provided a brief history of electrocution and collision problems, beginning with the first documented collision with a telegraph line in 1876, the first reported eagle electrocution on a transmission line in 1922, and highlights of important reports and publications through 1981. In 1983, USFWS, National Audubon Society (NAS), and industry representatives began the Ad Hoc Crane Study group to develop solutions to Whooping Crane power line collisions. Meanwhile, several editions of *Suggested Practices* for reducing electrocutions at power lines were published during this period. APLIC was formally created in 1989, then consisting of 9 Investor Owned Utilities (IOU's), 3 universities, NAS and USFWS. In 1994, APLIC released *Mitigating Bird Collisions with Power Lines*, a publication which is currently undergoing revisions to incorporate information on activities and studies since its first release and APLIC released *Suggested Practices for Raptor Protection on Power Lines* in 1996, a definitive electrocution avoidance document, reprinted in Spanish in 2000. In 2000, the North American Falconers Association released the instructional video, *"Raptors at Risk,"* documenting electrocutions and suggesting inexpensive electrocution minimization techniques. Early in the decade, APLIC and the Service began teaching "short courses" to train utility employees, resource agencies and others, how to make electric utilities bird-friendly. By 2002, the concept of an Avian Protection Plan had evolved and the USFWS wanted APPs to be developed as a term and condition of a required Memoranda of Understanding (MOU). The move, however, was to develop a national MOU template containing APP guidelines, not to develop voluntary APP guidance. In 2002, Xcel Energy signed an MOU with the USFWS Denver Region that contained an APP designed to protect birds from electrocutions. While MOUs have generally been accepted protocols for agreement between USFWS and industry – whether voluntary or court-ordered – they were viewed by many within the industry as restrictive and very time-consuming for the Service to develop and oversee. Although not directly involved in the MOU process, APLIC expressed considerable concern with the national MOU and recommended development of APP guidelines in lieu of a national MOU template. In 2003 with an agreement between APLIC and USFWS –the then-APLIC chair, Jim Burruss, vice-chair Jim Lindsay and past chair Dan Pearson worked to expand the concept of APP Guidelines to cover a much more extensive 12-step set of recommendations with each utility developing its own utility-specific voluntary APP in coordination with USFWS. The

template for APP Guidelines was released in April 2005, and an updated *Suggested Practices for Avian Protection on Power Lines* was released in late 2006, expanded to include all birds, not just raptors. The 2006 *Suggested Practices* is currently being translated into Spanish for release at the 4th International Partners in Flight meeting in 2008.

Jim Burruss then provided an overview of the 12 principles contained in the APP guidelines, and Jim Lindsay commented on possible application of each principle to wind towers (Jim Lindsay comments in italics). Available at www.aplic.org and www.fws.gov, the APP guidelines contain 12 principles which are intended to help utilities manage avian and power line issues. According to these guidelines, APP's should include:

1) A corporate policy statement that identifies commitments, is endorsed by the management, and that provides employees with guidance on expectations and accountability. *This is generic to an electric utility or a wind energy facility. This is a broad based commitment statement from senior management.*
2) Training of all appropriate personnel on reporting, planning, and management procedures, and the involvement in APLIC-provided training. There is also a need to develop an external network where regulators and utilizes can talk about associated issues and exchange best management practices. *This is another generic component that could relate to wind. FPL and PacifiCorp provide training on environmental compliance to all employees. Utility staff get more training.*
3) Recognition of and compliance with all required permits on a county, state, or federal level. It should include expectations and regulations associated with the permits such as a reporting mechanism and schedule. *For wind energy, this could be very detailed – including county AND state siting guidelines (e.g. Washington State).*
4) A commitment that all new and retrofitted facilities will meet or exceed APLIC recommendations in their construction standards.
5) Established best management procedures and associated training for field personnel. While this can be addressed in the permits, this component is intended to address problem nests. Training should include clarification between active and non-active nests, procedures for assuring that nests don't cause outages, fires, or safety risks. Training should provide familiarity with tools that should be used to manage nests. *For a wind energy APP, nest management would be a minimal component. It would possibly address "wireside" or substation components.*
6) An avian reporting system/mortality tracking system. This is a backbone of an APP. It is an internal reporting system showing where unexplained outages occur. The level of detail collected from utility to utility. USFWS also has an online reporting system. It also includes a [typically annual] reporting system which is usually required by permits anyway. *This component is not so analogous to the wind industry. FPL Energy has a wildlife response reporting system, but only internally. Staff are, however, committed to a project lifetime monitoring and reporting policy.*
7) A risk assessment methodology identifying areas of greatest risk to migratory birds and assessing other site data. PacifiCorp, in particular, has over 45,000 miles of transmission lines covering a huge array of geographical and wildlife areas. This methodology quickly decreases required efforts in determining which areas, seasons, or structures pose higher risks. *Risk assessment methodology addresses pre-construction avian and wildlife monitoring.*
8) Mortality reduction measures (possibly stemming from risk assessment findings). This includes retro-fitting a structure or providing wire coverings to make wires safer

for raptors and other avian species. *There are not so many options for wind energy organizations as for a utility – once it's up, it's up. Perhaps adaptive management options can be included here, or perhaps micro-siting as determined by risk assessment.*

9) Avian enhancement options including utility efforts to increase populations or habitat. There is a need to be proactive rather than merely reactive. For utilities, this includes habitat management or providing alternative nest structures. *This may be where the Mitigation Toolbox, developed by the NWCC, http://www.nationalwind.org/publications/wildlife/Mitigation_Toolbox.pdf, could be utilized.*
10) Quality control plans for reviewing and updating practices. As with any program, re-evaluations are necessary to ensure that training is useful and provide for management and employee buy-in. *The wind industry has moved forward very quickly in acquiring new knowledge. Regular reviews of an APP will surely result in enhanced reliability and decreased avian mortality.*
11) Public awareness plans for educating the public on avian and power line issues as well as utility efforts to mitigate problems. *Pre- and post-construction outreach is also vital to the wind industry.*
12) Plans to utilize key internal and external resources such as state and federal agencies, engineers and biologists, etc. Not every utility has biologists on staff. Many are small organization utilizing consultants. An APP should assist utilities in acquiring necessary information from organizations like APLIC, EEI, RUS, NRECA, CEC, EPRI and IEEE.

Jim Burruss explained that APP's result in four major benefits:

1) Reduction in avian mortality
2) Improved service
3) Positive public response
4) The ability to work collaboratively in response to problems

At this point, the briefing was opened to questions.

One caller asked whether the APP framework provides industry with some sort of protection against takes. If not, what does industry gain from developing and implementing an APP?

Al Manville responded that there is not unrestricted protection, but by partnering with USFWS and making a good faith effort to minimize impact, a utility enables USFWS agents to use their investigative and prosecutorial discretion, focusing their efforts on those agencies/individuals/entities that blatantly violate the law. It is in the best interest of proponent to work with USFWS and minimize impact. If a proponent is asked to work with USFWS & says no, an accidental take could result in very negative consequences. General feedback from those who have developed APPs so far has been very positive.

Jim Burruss concurred that there is no provision or allowance for "take" under the Migratory Bird Treaty Act, but prosecutorial discretion is a key feature. When a utility works with the Service's Office of Law Enforcement and makes a real effort, it likely will not be prosecuted, according to Jim's experience.

Jim Lindsay said that an APP is a commitment to the Service and public rather than a document that sits on the shelf. Through the development of an APP and collaboration with local Ecological Services Field Offices, a utility can develop a positive relationship with authorities and demonstrate a desire to cooperate and collaborate – all of which make it easier for the authorities to exercise prosecutorial discretion.

Another caller asked whether feedback from the program indicates the effectiveness of APP's in avoiding mortalities.

Jim Lindsay responded that the APP process is only 2 years old. Part of the concept is to address problem areas. By default, success may be difficult to measure, but through implementation, a utility should see improvement.

Jim Burruss said that, if a utility takes the "kill a bird, fix a pole" approach, it will not see much efficiency. But by looking at the response more holistically, a utility can predict based on the singular occurrence other possible risks. By taking a corrective approach to all potential risks, a utility can see a change.

A caller asked how APLIC guidance might be applied to wind. The wind industry is often asked to "be in compliance with APLIC guidelines" – what does that mean.

Jim Lindsay responded that the terminology is problematic because APLIC guidelines provide suggestions rather than regulations. However, the APP is a framework for how a company will deal with reducing avian mortality and wildlife mortality. The 2006 *Suggested Practices* manual offers information on how to do that, specifically relating to electrocutions and delivery equipment.

Al Manville recommended using these suggested guidelines to minimize impacts.

A caller asked whether the wind industry could develop APP's for regions rather than each wind facility.

Jim Lindsay responded that a regional plan could give overarching guidance with standard equipment and standard siting guidelines, but each wind facility will need to develop some specific plans for the specific site. Preconstruction risk assessment needs, post construction fatality reduction measures, and species will differ. All require a tailored APP.

A participant asked whether the APP model can be applied prior to construction.

Jim Lindsay responded with an analogy to the FPL plan, which has 3 components. The first assesses risk and determines how to construct new service. The second addresses energized equipment that has caused an electrocution. The third is voluntary use of risk assessment methodology to identify particular areas of risk. It enables the company to identify hot spots and risky equipment, which has led the company to make a voluntary commitment to retrofit troublesome equipment.

While the wind industry should not be "shoehorned" into the APP process, Jim said that this concept can be considered by the Wind Turbine Federal Advisory Committee Act in making recommendations to the Service for revising the USFWS interim guidelines.

Al Manville stated that when the APP process evolved it was considering only existing transmission and distribution lines. However, there are opportunities for the wind industry to use this in a pre-construction mode, even when merely assessing sites. It would involve understanding permit requirements and what resources are available. It is a new process, but it has lots of utility for the wind industry.
At this point, the time allotted for the briefing expired. Below please find the remaining questions posed electronically during the webcast. The speakers responded via email to these questions.

Question: What inexpensive mitigation measures were requested?

- ***Al Manville Answer:*** energized jumper covers, bushing covers, conductor insulating covers, insulated fused cutouts, insulated lighting arresters, perch guards, etc. -- inexpensive tools used to reduce the likelihood of a phase-to-phase or phase-to-ground electrocution. For collision avoidance, use of swan and bird-flight diverters, marker balls, and flappers may be recommended, often to deal with specific avian-power line issues such as Whooping Crane and Spectacled Eider wire collision avoidance.
- ***Jim Burruss Answer***. I believe the "*Raptors at Risk*" video mentions that most power poles can be made safe for raptors for a few hundred dollars. They are assuming that by installing a triangular shaped perch discourager it will solve the issue and risk. The current *Suggested Practices 2006* discourages the use of "triangles" and provides information on why they are not effective and suggest the use of coverings or spacing by reframing or new construction design.

Question: What kind of monitoring/feedback mechanism is used to measure compliance with the guidelines?

- ***Al Manville Answer:*** Where Federal permits are required and issued (e.g., Special Purpose, Scientific Collecting, etc.), there is an annual reporting requirement to the USFWS permit's coordinator who issued the permit. In addition, a permit may have other specific conditions that are required. This helps to track bird injuries and deaths, getting a better handle regarding cumulative impacts. For mortality reporting, see the response to the next question. For companies using voluntary measures for reducing electrocutions and wire collisions, validating whether the tools/techniques are working would require some degree of monitoring by the company or its consultant. However, some companies such as PacifiCorp and consulting firm EDM International conduct systematic line surveys to assess electrocution and collision mortality (see *Suggested Practices* 2006 for specific details). Where compliance is court-ordered, Law Enforcement will likely perform their own monitoring to see if an entity is in compliance with the required use of deterrents/mitigation measures. Where a study is ongoing (e.g., Audubon Natl. Wildlife Refuge transmission corridor), monitoring during the field season may be conducted on a daily basis.

- ***Jim Lindsay Answer:*** Internal QA/QC and Agency oversight. Florida Power & Light Co. conducts internal environmental self audits. The FP&L Co. APP will be the subject of a self audit on some frequency.
- ***Jim Burruss Answer***: Most utilities that develop and implement APPs include a monitoring or auditing component in their program. It is in their best interest to insure compliance with their APP. There is generally some public and agency input during the development of the APP that ultimately results in oversight from those same groups after the APP has been implemented. PacifiCorp's APP for the Klamath Falls area includes a schedule for conducting risk assessment surveys of its lines, identification of high risk poles and remedial action plan for the identified poles, implementation of remedial action plan and then a follow-up survey several years later on a portion of the corrected poles to insure appropriate remedial actions were taken and efforts were effective.

Question: What is the URL for the Service's on-line reporting system? And for Jim Lindsay, How is an avian reporting system for wind different from electric utilities' reporting system?

- ***Al Manville Answer:*** The Service is currently working with > 30 IOUs, coops, and Federal electric utilities to report avian mortalities from collisions and electrocutions on a company-by-company basis. The reporting system is confidential and requires an account and password entry to use it. Contact Jill Birchell, Office of Law Enforcement, jill_birchell@fws.gov, 703/358-1949, for the specific details regarding the reporting system and access to it.

  Email from Jill Birchell, U.S. Fish & Wildlife Service:

  The URL for the Service's electronic bird reporting system for electric utilities is https://birdreport.fws.gov/. Entities interested in seeing how it works are welcome to contact me for a test account password. Though it is set up specifically to allow electric utilities to report bird incidents and relevant information associated with electrocution and collision events occurring on electric power equipment and lines, it would be fairly easy from a technical standpoint to add a subsystem collecting information specific to bird (and possibly bat) events on wind turbines. However, we have not made a policy decision to expand use of the system for that purpose. The reason is essentially because our system is set up not merely as a data collection and retrieval system; its primary purpose is to further communication and collaborative efforts between electric utilities and the Service by capturing incident-specific information and retrofit actions. It most importantly provides a mechanism for dialogue between utilities and Service personnel regarding how to best address bird issues and ultimately work towards elimination of bird incidents to the maximum extent possible. We are just not there yet with wind turbines, as realistic post-construction retrofit actions don't exist. As Al emphasized, it's all about siting.

  Having said that, I would like to invite any forward thinking, conservation-minded wind generation company who is truly interested in reducing their impacts to wildlife to the maximum extent possible, to step up and help us get to the point where is makes sense to include reporting as part of an A&BPP (Avian and Bat Protection Plan) for wind. This would require consulting early and effectively with the Service on siting and impact minimization, following state-of-the art-industry standards for avoiding bird and bat interactions on wind turbines, and monitoring and reporting, as well as potential (feasible and practical) mitigation. As all involved are aware, this is a crucial time in the wind generation realm to maximize our collaboration. We welcome any ideas **and** suggestions on this potential.
- ***Jim Lindsay Answer***: The FPL Energy Wildlife Response and Reporting System is an internal data base maintained for all FPL Energy wind facilities. It is not data derived from a rigorous, statistically based mortality study, but rather incidental data generated from wildlife mortality searched during the course of routine maintenance

activities at our facilities. It is designed to capture any large scale mortality events, and to properly respond to injured wildlife. If there are any formal, permit driven mortality studies underway at an FPL Energy facility, these mortalities are also included in our internal data base. A reporting system for an electric utility is as much internal as external. FP&L Co. has thousands of line function personnel that deal with wildlife related incidents in the field. Often, these incidents result in power outages and equipment damage that must be responded to. In addition, equipment that causes electrocutions or collisions can be modified to pose less risk to birds. Without a reporting system, it is difficult to ensure that this occurs. Also, there are annual reporting requirements as conditions of state and federal carcass salvage permits.

Question: Are on-site personnel evaluated for their effectiveness in detecting dead animals - to correct for that source of bias?

- ***Al Manville Answer:*** At the present time, the Avian Protection Plan Guidelines have only been available since April 2005, so the specifics of doing studies assessing carcass searcher efficiency and scavenger/predator efficiency/removal studies have not yet been fully developed for the electric utility industry through the APPs. However, biases have certainly been addressed in past and ongoing studies (see *Suggested Practices* 2006). While there currently is no *Metrics and Methods* document like that for the wind generation industry that calls for bias correction, bias corrections have been addressed in some of the studies cited in the *Suggested Practices* 2006 document. It is assumed that as APPs are developed and mortality monitoring becomes a much greater effort (right now slightly > than by 30 companies), bias correction factors used in research studies at wind facilities, communication towers, and buildings will almost certainly also be applied to studies on power distribution and transmission lines as a standard operating procedure where scientific validity is an important issue. Because of the sheer magnitude of the miles of power distribution (millions) and transmission lines (>0.5 M miles), simply monitoring a small faction of a utility's lines is a challenge as is.
- ***Jim Lindsay Answer:*** Other than routine, annual training of wind energy facility maintenance personnel on WRRS procedures, no formal scavenger or searcher bias trials are conducted as part of this internal reporting system.
  Jim Burruss Answer: PacifiCorp employees are required to report any dead protected birds found around, under or within its generation, distribution or transmission facilities. Most reports are a direct result of response to outages, facilities inspections or maintenance activities. Employee training is provided to assist them in identification of protected avian species and reporting procedures. There is no formal evaluation of their reporting or search effectiveness. Avian risk assessment surveys done in identified high risk areas are done on entire lines and circuits. These are conducted by trained biologists and are a pole by pole search.

Question: Al, What do you envision as a process that the Service would follow to acknowledge or endorse an APP developed by a wind energy company, prior to some general APP guidelines?

- ***Al Manville Answer:*** In a public meeting of the Avian Power Line Interaction Committee last week (10/03/07) in North Carolina, specifically in regard to

proposed regulations for take permits under the Bald and Golden Eagle Protection Act, I indicated that where "take" is unavoidable, where "take" is associated with otherwise legal activities, and Service-approved best management practices/best available technologies are fully implemented by (in this case) an electric utility, that there would likely be a limited number of Bald and Golden Eagle "takes" allowed. But this limited take would be specifically under a Service-reviewed and approved APP that included an implementation schedule, monitoring and reporting requirements, and likely other conditions. Since this BGEPA take regulation will not be finalized until at least September 2008, this is still in the development stage. However, this regulation does not address MBTA "takes," or ESA S. 10 "taking permits" which would need to be further discussed and agreed upon in regard to the development of a specific APP. As has previously been indicated by the Service in many instances (including in our interim voluntary wind turbine guidance), our Special Agents will use their investigative and prosecutorial discretion in addressing "take" issues. The key, then, would be a wind company's willingness to work collaboratively with the Service from the get-go in the development of an APP.

Question: Are there reporting requirements for fatalities? Is the on-line system required? Is it public information?

- ***Al Manville Answer:*** Permits (mentioned above) have annual reporting requirements. The on-line system that our Office of Law Enforcement has developed is voluntary and some electric utility information is confidential. We believe detailed information from the FWS bird injury and mortality reporting system for electric utilities is exempt from FOIA requests under several listed FOIA exemptions. However, system-wide statistics with number of incidents, species of birds involved, and types of incident (electrocution/collision) has been made available to the public on the website. We hope that sharing summary information with the public will satisfy their interests.
- ***Jim Lindsay Answer:*** Facility reporting requirements are project specific, usually driven by a permit condition, a Memorandum of Understanding, or some legally binding document as part of the development process. There are notifications requirements as part of the ESA and the BGEPA. The USFWS online reporting system is voluntary and secure.
- ***Jim Burruss Answer:*** Annual reporting is generally a condition of a state or federally issued permit allowing a utility to temporarily posses a protected migratory bird for salvage or disposal purposes. Conditions in the permit may require reporting of any mortality or take include eggs and young associated with destroyed nests or attempted nest relocations.

Question: Are there monitoring requirements for collisions in general? Do the companies have permits to handle the fatalities?

- ***Al Manville Answer:*** See my response above in regard to both collision and electrocution monitoring. Where possession becomes an issue, a company/consultant/entity must have a valid permit to posses a migratory bird, its parts, nest or eggs (e.g., Special Purpose, Depredation, Scientific Collection, etc.).
- ***Jim Lindsay Answer:*** No. Most electric utilities have some form of permit (Special Purpose, Scientific Collection, Carcass Salvage permits, etc.) that allows them to

legally "posses" migratory birds. This is due to the fact that utility personnel routinely have to physically remove carcasses from energized equipment to perform repairs, or handle injured wildlife in order to transport or contain for rehabilitation purposes.

- ***Jim Burruss Answer:*** PacifiCorp's permits cover fatalities associated with electrocutions, collisions or problem nests.

Question: Other than BFD's, what else is done for reducing collisions? Is siting – micro-siting a part of APP?

- ***Al Manville Answer:*** Use of tools and techniques that make both distribution and transmission lines more visible to birds represent efforts used to avoid bird collisions. This may include such things as tree wire (thicker, plastic-coated wire) for energized or ground wires, change in wire location that may be proving highly injurious to birds (e.g., waterfowl crossing b/w feeding and roosting ponds across several parallel power transmission lines), and simply avoiding sites where lines are being proposed for placement that are deemed too risky (e.g., next to wetlands). Siting, including micro-siting, should certainly be part of a utility/wind-specific APP. Since site location is so critical, that goes without saying.

  Jim Lindsay Answer: There is a wide variety of line marking devices including Bird Flight Diverters that are routinely used by the electric utility industry to make overhead lines more visible to birds. In addition, siting, and micro siting are critical components of developing overhead electric utility structures that minimize impacts to avian populations.
- ***Jim Burruss Answer:*** Collision risks can be mitigated by marking of specific spans where there have been documented collisions or risk assessment studies conducted. Route selection and siting evaluations are important to minimize risks in situations where a new line is proposed to cross rivers, wetland or known migration corridors. Line structure design may also reduce risk by reducing the number of wires (I.e structure at river crossing is designed to place more wires in a horizontal plane).

Briefing on the Avian Power-Line Interaction Committee (APLIC) Model and Avian Protection Plans (APP) to the NWCC Wildlife Workgroup
October 29th, 2007

Briefing Summary

On October 29th, Jim Lindsay, FPL; Jim Burruss, PacifiCorp; and Al Manville, U.S. Fish & Wildlife Service (Service) briefed the Wildlife Workgroup and interested parties on the Avian Power-Line Interaction Committee (APLIC) and Service jointly prepared 2005 Avian Protection Plan Guidelines and considerations for adapting those guidelines for use in development of Avian Protection Plans (APP's) for wind turbines. They also discussed the possible use of information contained in the 2006 *Suggested Practices for Avian Protection on Power Lines* or a new document that could be produced specifically for commercial wind development.

Al Manville provided a brief history of electrocution and collision problems, beginning with the first documented collision with a telegraph line in 1876, the first reported eagle electrocution on a transmission line in 1922, and highlights of important reports and publications through 1981. In 1983, USFWS, National Audubon Society (NAS), and industry representatives began the Ad Hoc Crane Study group to develop solutions to Whooping Crane power line collisions. Meanwhile, several editions of *Suggested Practices* for reducing electrocutions at power lines were published during this period. APLIC was formally created in 1989, then consisting of 9 Investor Owned Utilities (IOU's), 3 universities, NAS and USFWS. In 1994, APLIC released *Mitigating Bird Collisions with Power Lines*, a publication which is currently undergoing revisions to incorporate information on activities and studies since its first release and APLIC released *Suggested Practices for Raptor Protection on Power Lines* in 1996, a definitive electrocution avoidance document, reprinted in Spanish in 2000. In 2000, the North American Falconers Association released the instructional video, *"Raptors at Risk,"* documenting electrocutions and suggesting inexpensive electrocution minimization techniques. Early in the decade, APLIC and the Service began teaching "short courses" to train utility employees, resource agencies and others, how to make electric utilities bird-friendly. By 2002, the concept of an Avian Protection Plan had evolved and the USFWS wanted APPs to be developed as a term and condition of a required Memoranda of Understanding (MOU). The move, however, was to develop a national MOU template containing APP guidelines, not to develop voluntary APP guidance. In 2002, Xcel Energy signed an MOU with the USFWS Denver Region that contained an APP designed to protect birds from electrocutions. While MOUs have generally been accepted protocols for agreement between USFWS and industry – whether voluntary or court-ordered – they were viewed by many within the industry as restrictive and very time-consuming for the Service to develop and oversee. Although not directly involved in the MOU process, APLIC expressed considerable concern with the national MOU and recommended development of APP guidelines in lieu of a national MOU template. In 2003 with an agreement between APLIC and USFWS –the then-APLIC chair, Jim Burruss, vice-chair Jim Lindsay and past chair Dan Pearson worked to expand the concept of APP Guidelines to cover a much more extensive 12-step set of recommendations with each utility developing its own utility-specific voluntary APP in coordination with USFWS. The

template for APP Guidelines was released in April 2005, and an updated *Suggested Practices for Avian Protection on Power Lines* was released in late 2006, expanded to include all birds, not just raptors. The 2006 *Suggested Practices* is currently being translated into Spanish for release at the 4th International Partners in Flight meeting in 2008.

Jim Burruss then provided an overview of the 12 principles contained in the APP guidelines, and Jim Lindsay commented on possible application of each principle to wind towers (Jim Lindsay comments in italics). Available at www.aplic.org and www.fws.gov, the APP guidelines contain 12 principles which are intended to help utilities manage avian and power line issues. According to these guidelines, APP's should include:

1) A corporate policy statement that identifies commitments, is endorsed by the management, and that provides employees with guidance on expectations and accountability. *This is generic to an electric utility or a wind energy facility. This is a broad based commitment statement from senior management.*
2) Training of all appropriate personnel on reporting, planning, and management procedures, and the involvement in APLIC-provided training. There is also a need to develop an external network where regulators and utilizes can talk about associated issues and exchange best management practices. *This is another generic component that could relate to wind. FPL and PacifiCorp provide training on environmental compliance to all employees. Utility staff get more training.*
3) Recognition of and compliance with all required permits on a county, state, or federal level. It should include expectations and regulations associated with the permits such as a reporting mechanism and schedule. *For wind energy, this could be very detailed – including county AND state siting guidelines (e.g. Washington State).*
4) A commitment that all new and retrofitted facilities will meet or exceed APLIC recommendations in their construction standards.
5) Established best management procedures and associated training for field personnel. While this can be addressed in the permits, this component is intended to address problem nests. Training should include clarification between active and non-active nests, procedures for assuring that nests don't cause outages, fires, or safety risks. Training should provide familiarity with tools that should be used to manage nests. *For a wind energy APP, nest management would be a minimal component. It would possibly address "wireside" or substation components.*
6) An avian reporting system/mortality tracking system. This is a backbone of an APP. It is an internal reporting system showing where unexplained outages occur. The level of detail collected from utility to utility. USFWS also has an online reporting system. It also includes a [typically annual] reporting system which is usually required by permits anyway. *This component is not so analogous to the wind industry. FPL Energy has a wildlife response reporting system, but only internally. Staff are, however, committed to a project lifetime monitoring and reporting policy.*
7) A risk assessment methodology identifying areas of greatest risk to migratory birds and assessing other site data. PacifiCorp, in particular, has over 45,000 miles of transmission lines covering a huge array of geographical and wildlife areas. This methodology quickly decreases required efforts in determining which areas, seasons, or structures pose higher risks. *Risk assessment methodology addresses pre-construction avian and wildlife monitoring.*
8) Mortality reduction measures (possibly stemming from risk assessment findings). This includes retro-fitting a structure or providing wire coverings to make wires safer

for raptors and other avian species. *There are not so many options for wind energy organizations as for a utility – once it's up, it's up. Perhaps adaptive management options can be included here, or perhaps micro-siting as determined by risk assessment.*

9) Avian enhancement options including utility efforts to increase populations or habitat. There is a need to be proactive rather than merely reactive. For utilities, this includes habitat management or providing alternative nest structures. *This may be where the Mitigation Toolbox, developed by the NWCC, http://www.nationalwind.org/publications/wildlife/Mitigation_Toolbox.pdf, could be utilized.*
10) Quality control plans for reviewing and updating practices. As with any program, re-evaluations are necessary to ensure that training is useful and provide for management and employee buy-in. *The wind industry has moved forward very quickly in acquiring new knowledge. Regular reviews of an APP will surely result in enhanced reliability and decreased avian mortality.*
11) Public awareness plans for educating the public on avian and power line issues as well as utility efforts to mitigate problems. *Pre- and post-construction outreach is also vital to the wind industry.*
12) Plans to utilize key internal and external resources such as state and federal agencies, engineers and biologists, etc. Not every utility has biologists on staff. Many are small organization utilizing consultants. An APP should assist utilities in acquiring necessary information from organizations like APLIC, EEI, RUS, NRECA, CEC, EPRI and IEEE.

Jim Burruss explained that APP's result in four major benefits:

1) Reduction in avian mortality
2) Improved service
3) Positive public response
4) The ability to work collaboratively in response to problems

At this point, the briefing was opened to questions.

One caller asked whether the APP framework provides industry with some sort of protection against takes. If not, what does industry gain from developing and implementing an APP?

Al Manville responded that there is not unrestricted protection, but by partnering with USFWS and making a good faith effort to minimize impact, a utility enables USFWS agents to use their investigative and prosecutorial discretion, focusing their efforts on those agencies/individuals/entities that blatantly violate the law. It is in the best interest of proponent to work with USFWS and minimize impact. If a proponent is asked to work with USFWS & says no, an accidental take could result in very negative consequences. General feedback from those who have developed APPs so far has been very positive.

Jim Burruss concurred that there is no provision or allowance for "take" under the Migratory Bird Treaty Act, but prosecutorial discretion is a key feature. When a utility works with the Service's Office of Law Enforcement and makes a real effort, it likely will not be prosecuted, according to Jim's experience.

Jim Lindsay said that an APP is a commitment to the Service and public rather than a document that sits on the shelf. Through the development of an APP and collaboration with local Ecological Services Field Offices, a utility can develop a positive relationship with authorities and demonstrate a desire to cooperate and collaborate – all of which make it easier for the authorities to exercise prosecutorial discretion.

Another caller asked whether feedback from the program indicates the effectiveness of APP's in avoiding mortalities.

Jim Lindsay responded that the APP process is only 2 years old. Part of the concept is to address problem areas. By default, success may be difficult to measure, but through implementation, a utility should see improvement.

Jim Burruss said that, if a utility takes the "kill a bird, fix a pole" approach, it will not see much efficiency. But by looking at the response more holistically, a utility can predict based on the singular occurrence other possible risks. By taking a corrective approach to all potential risks, a utility can see a change.

A caller asked how APLIC guidance might be applied to wind. The wind industry is often asked to "be in compliance with APLIC guidelines" – what does that mean.

Jim Lindsay responded that the terminology is problematic because APLIC guidelines provide suggestions rather than regulations. However, the APP is a framework for how a company will deal with reducing avian mortality and wildlife mortality. The 2006 *Suggested Practices* manual offers information on how to do that, specifically relating to electrocutions and delivery equipment.

Al Manville recommended using these suggested guidelines to minimize impacts.

A caller asked whether the wind industry could develop APP's for regions rather than each wind facility.

Jim Lindsay responded that a regional plan could give overarching guidance with standard equipment and standard siting guidelines, but each wind facility will need to develop some specific plans for the specific site. Preconstruction risk assessment needs, post construction fatality reduction measures, and species will differ. All require a tailored APP.

A participant asked whether the APP model can be applied prior to construction.

Jim Lindsay responded with an analogy to the FPL plan, which has 3 components. The first assesses risk and determines how to construct new service. The second addresses energized equipment that has caused an electrocution. The third is voluntary use of risk assessment methodology to identify particular areas of risk. It enables the company to identify hot spots and risky equipment, which has led the company to make a voluntary commitment to retrofit troublesome equipment.

While the wind industry should not be "shoehorned" into the APP process, Jim said that this concept can be considered by the Wind Turbine Federal Advisory Committee Act in making recommendations to the Service for revising the USFWS interim guidelines.

Al Manville stated that when the APP process evolved it was considering only existing transmission and distribution lines. However, there are opportunities for the wind industry to use this in a pre-construction mode, even when merely assessing sites. It would involve understanding permit requirements and what resources are available. It is a new process, but it has lots of utility for the wind industry.
At this point, the time allotted for the briefing expired. Below please find the remaining questions posed electronically during the webcast. The speakers responded via email to these questions.

Question: What inexpensive mitigation measures were requested?

- ***Al Manville Answer:*** energized jumper covers, bushing covers, conductor insulating covers, insulated fused cutouts, insulated lighting arresters, perch guards, etc. -- inexpensive tools used to reduce the likelihood of a phase-to-phase or phase-to-ground electrocution. For collision avoidance, use of swan and bird-flight diverters, marker balls, and flappers may be recommended, often to deal with specific avian-power line issues such as Whooping Crane and Spectacled Eider wire collision avoidance.
- ***Jim Burruss Answer***. I believe the "*Raptors at Risk*" video mentions that most power poles can be made safe for raptors for a few hundred dollars. They are assuming that by installing a triangular shaped perch discourager it will solve the issue and risk. The current *Suggested Practices 2006* discourages the use of "triangles" and provides information on why they are not effective and suggest the use of coverings or spacing by reframing or new construction design.

Question: What kind of monitoring/feedback mechanism is used to measure compliance with the guidelines?

- ***Al Manville Answer:*** Where Federal permits are required and issued (e.g., Special Purpose, Scientific Collecting, etc.), there is an annual reporting requirement to the USFWS permit's coordinator who issued the permit. In addition, a permit may have other specific conditions that are required. This helps to track bird injuries and deaths, getting a better handle regarding cumulative impacts. For mortality reporting, see the response to the next question. For companies using voluntary measures for reducing electrocutions and wire collisions, validating whether the tools/techniques are working would require some degree of monitoring by the company or its consultant. However, some companies such as PacifiCorp and consulting firm EDM International conduct systematic line surveys to assess electrocution and collision mortality (see *Suggested Practices* 2006 for specific details). Where compliance is court-ordered, Law Enforcement will likely perform their own monitoring to see if an entity is in compliance with the required use of deterrents/mitigation measures. Where a study is ongoing (e.g., Audubon Natl. Wildlife Refuge transmission corridor), monitoring during the field season may be conducted on a daily basis.

- ***Jim Lindsay Answer:*** Internal QA/QC and Agency oversight. Florida Power & Light Co. conducts internal environmental self audits. The FP&L Co. APP will be the subject of a self audit on some frequency.
- ***Jim Burruss Answer***: Most utilities that develop and implement APPs include a monitoring or auditing component in their program. It is in their best interest to insure compliance with their APP. There is generally some public and agency input during the development of the APP that ultimately results in oversight from those same groups after the APP has been implemented. PacifiCorp's APP for the Klamath Falls area includes a schedule for conducting risk assessment surveys of its lines, identification of high risk poles and remedial action plan for the identified poles, implementation of remedial action plan and then a follow-up survey several years later on a portion of the corrected poles to insure appropriate remedial actions were taken and efforts were effective.

Question: What is the URL for the Service's on-line reporting system? And for Jim Lindsay, How is an avian reporting system for wind different from electric utilities' reporting system?

- ***Al Manville Answer:*** The Service is currently working with > 30 IOUs, coops, and Federal electric utilities to report avian mortalities from collisions and electrocutions on a company-by-company basis. The reporting system is confidential and requires an account and password entry to use it. Contact Jill Birchell, Office of Law Enforcement, jill_birchell@fws.gov, 703/358-1949, for the specific details regarding the reporting system and access to it.

  Email from Jill Birchell, U.S. Fish & Wildlife Service:

  The URL for the Service's electronic bird reporting system for electric utilities is https://birdreport.fws.gov/. Entities interested in seeing how it works are welcome to contact me for a test account password. Though it is set up specifically to allow electric utilities to report bird incidents and relevant information associated with electrocution and collision events occurring on electric power equipment and lines, it would be fairly easy from a technical standpoint to add a subsystem collecting information specific to bird (and possibly bat) events on wind turbines. However, we have not made a policy decision to expand use of the system for that purpose. The reason is essentially because our system is set up not merely as a data collection and retrieval system; its primary purpose is to further communication and collaborative efforts between electric utilities and the Service by capturing incident-specific information and retrofit actions. It most importantly provides a mechanism for dialogue between utilities and Service personnel regarding how to best address bird issues and ultimately work towards elimination of bird incidents to the maximum extent possible. We are just not there yet with wind turbines, as realistic post-construction retrofit actions don't exist. As Al emphasized, it's all about siting.

  Having said that, I would like to invite any forward thinking, conservation-minded wind generation company who is truly interested in reducing their impacts to wildlife to the maximum extent possible, to step up and help us get to the point where is makes sense to include reporting as part of an A&BPP (Avian and Bat Protection Plan) for wind. This would require consulting early and effectively with the Service on siting and impact minimization, following state-of-the art-industry standards for avoiding bird and bat interactions on wind turbines, and monitoring and reporting, as well as potential (feasible and practical) mitigation. As all involved are aware, this is a crucial time in the wind generation realm to maximize our collaboration. We welcome any ideas **and** suggestions on this potential.
- ***Jim Lindsay Answer***: The FPL Energy Wildlife Response and Reporting System is an internal data base maintained for all FPL Energy wind facilities. It is not data derived from a rigorous, statistically based mortality study, but rather incidental data generated from wildlife mortality searched during the course of routine maintenance

activities at our facilities. It is designed to capture any large scale mortality events, and to properly respond to injured wildlife. If there are any formal, permit driven mortality studies underway at an FPL Energy facility, these mortalities are also included in our internal data base. A reporting system for an electric utility is as much internal as external. FP&L Co. has thousands of line function personnel that deal with wildlife related incidents in the field. Often, these incidents result in power outages and equipment damage that must be responded to. In addition, equipment that causes electrocutions or collisions can be modified to pose less risk to birds. Without a reporting system, it is difficult to ensure that this occurs. Also, there are annual reporting requirements as conditions of state and federal carcass salvage permits.

Question: Are on-site personnel evaluated for their effectiveness in detecting dead animals - to correct for that source of bias?

- ***Al Manville Answer:*** At the present time, the Avian Protection Plan Guidelines have only been available since April 2005, so the specifics of doing studies assessing carcass searcher efficiency and scavenger/predator efficiency/removal studies have not yet been fully developed for the electric utility industry through the APPs. However, biases have certainly been addressed in past and ongoing studies (see *Suggested Practices* 2006). While there currently is no *Metrics and Methods* document like that for the wind generation industry that calls for bias correction, bias corrections have been addressed in some of the studies cited in the *Suggested Practices* 2006 document. It is assumed that as APPs are developed and mortality monitoring becomes a much greater effort (right now slightly > than by 30 companies), bias correction factors used in research studies at wind facilities, communication towers, and buildings will almost certainly also be applied to studies on power distribution and transmission lines as a standard operating procedure where scientific validity is an important issue. Because of the sheer magnitude of the miles of power distribution (millions) and transmission lines (>0.5 M miles), simply monitoring a small faction of a utility's lines is a challenge as is.
- ***Jim Lindsay Answer:*** Other than routine, annual training of wind energy facility maintenance personnel on WRRS procedures, no formal scavenger or searcher bias trials are conducted as part of this internal reporting system.
  Jim Burruss Answer: PacifiCorp employees are required to report any dead protected birds found around, under or within its generation, distribution or transmission facilities. Most reports are a direct result of response to outages, facilities inspections or maintenance activities. Employee training is provided to assist them in identification of protected avian species and reporting procedures. There is no formal evaluation of their reporting or search effectiveness. Avian risk assessment surveys done in identified high risk areas are done on entire lines and circuits. These are conducted by trained biologists and are a pole by pole search.

Question: Al, What do you envision as a process that the Service would follow to acknowledge or endorse an APP developed by a wind energy company, prior to some general APP guidelines?

- ***Al Manville Answer:*** In a public meeting of the Avian Power Line Interaction Committee last week (10/03/07) in North Carolina, specifically in regard to

proposed regulations for take permits under the Bald and Golden Eagle Protection Act, I indicated that where "take" is unavoidable, where "take" is associated with otherwise legal activities, and Service-approved best management practices/best available technologies are fully implemented by (in this case) an electric utility, that there would likely be a limited number of Bald and Golden Eagle "takes" allowed. But this limited take would be specifically under a Service-reviewed and approved APP that included an implementation schedule, monitoring and reporting requirements, and likely other conditions. Since this BGEPA take regulation will not be finalized until at least September 2008, this is still in the development stage. However, this regulation does not address MBTA "takes," or ESA S. 10 "taking permits" which would need to be further discussed and agreed upon in regard to the development of a specific APP. As has previously been indicated by the Service in many instances (including in our interim voluntary wind turbine guidance), our Special Agents will use their investigative and prosecutorial discretion in addressing "take" issues. The key, then, would be a wind company's willingness to work collaboratively with the Service from the get-go in the development of an APP.

Question: Are there reporting requirements for fatalities? Is the on-line system required? Is it public information?

- ***Al Manville Answer:*** Permits (mentioned above) have annual reporting requirements. The on-line system that our Office of Law Enforcement has developed is voluntary and some electric utility information is confidential. We believe detailed information from the FWS bird injury and mortality reporting system for electric utilities is exempt from FOIA requests under several listed FOIA exemptions. However, system-wide statistics with number of incidents, species of birds involved, and types of incident (electrocution/collision) has been made available to the public on the website. We hope that sharing summary information with the public will satisfy their interests.
- ***Jim Lindsay Answer:*** Facility reporting requirements are project specific, usually driven by a permit condition, a Memorandum of Understanding, or some legally binding document as part of the development process. There are notifications requirements as part of the ESA and the BGEPA. The USFWS online reporting system is voluntary and secure.
- ***Jim Burruss Answer:*** Annual reporting is generally a condition of a state or federally issued permit allowing a utility to temporarily posses a protected migratory bird for salvage or disposal purposes. Conditions in the permit may require reporting of any mortality or take include eggs and young associated with destroyed nests or attempted nest relocations.

Question: Are there monitoring requirements for collisions in general? Do the companies have permits to handle the fatalities?

- ***Al Manville Answer:*** See my response above in regard to both collision and electrocution monitoring. Where possession becomes an issue, a company/consultant/entity must have a valid permit to posses a migratory bird, its parts, nest or eggs (e.g., Special Purpose, Depredation, Scientific Collection, etc.).
- ***Jim Lindsay Answer:*** No. Most electric utilities have some form of permit (Special Purpose, Scientific Collection, Carcass Salvage permits, etc.) that allows them to

legally "posses" migratory birds. This is due to the fact that utility personnel routinely have to physically remove carcasses from energized equipment to perform repairs, or handle injured wildlife in order to transport or contain for rehabilitation purposes.

- ***Jim Burruss Answer:*** PacifiCorp's permits cover fatalities associated with electrocutions, collisions or problem nests.

Question: Other than BFD's, what else is done for reducing collisions? Is siting – micro-siting a part of APP?

- ***Al Manville Answer:*** Use of tools and techniques that make both distribution and transmission lines more visible to birds represent efforts used to avoid bird collisions. This may include such things as tree wire (thicker, plastic-coated wire) for energized or ground wires, change in wire location that may be proving highly injurious to birds (e.g., waterfowl crossing b/w feeding and roosting ponds across several parallel power transmission lines), and simply avoiding sites where lines are being proposed for placement that are deemed too risky (e.g., next to wetlands). Siting, including micro-siting, should certainly be part of a utility/wind-specific APP. Since site location is so critical, that goes without saying.

  Jim Lindsay Answer: There is a wide variety of line marking devices including Bird Flight Diverters that are routinely used by the electric utility industry to make overhead lines more visible to birds. In addition, siting, and micro siting are critical components of developing overhead electric utility structures that minimize impacts to avian populations.
- ***Jim Burruss Answer:*** Collision risks can be mitigated by marking of specific spans where there have been documented collisions or risk assessment studies conducted. Route selection and siting evaluations are important to minimize risks in situations where a new line is proposed to cross rivers, wetland or known migration corridors. Line structure design may also reduce risk by reducing the number of wires (I.e structure at river crossing is designed to place more wires in a horizontal plane).