

TOWARD WILDLIFE-FRIENDLY WIND POWER: A FOCUS ON THE GREAT LAKES BASIN

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Conference notes: Thursday, June 29, 2006

Metivier presentation

Rothstein presentation

Manville presentation

Capouillez presentation

Gjessing presentation

Q: When did the state develop guidelines?

A: Vermont already has a wind project. No guidelines at the time. But has been developing guidelines. State has posted draft guidelines for public comment—posted currently.

Q: How does this development impact public investment?

A: Statutory criterion that requires the board to look at whether a development will interfere with public's enjoyment of the property, among other things. Board looked at current public use (mostly hunting, recreation), aesthetics, easement language (in this case, language that prohibited development). It was a location issue.

Nasca presentation

Q: Any mortality studies for projects in NY?

A: Haven't had much success getting existing projects to do this. But we're now negotiating study proposals with Flat Rock (nearly complete).

Panel 1: Frameworks for Permitting Wind Energy Projects

Question 1: What is the regulatory framework for authorizing wind projects? Role of project size, etc.? Open process?

(Graf): No wind-specific process in Michigan. Permit requirements for wetlands, etc. As for the importance of project size?— Major projects have more public notice component, possible public hearing. Minor might just have a small wetland crossing, etc.; no public notice component. State involved in permitting process; local levels involved in zoning issues. How does party get involved? Online application system, posting public notices, etc.

(deWaal Malefyt): No statewide process in New York; permitting at local level. But may trigger state environmental review. Also may need environmental permits (DEC), road permits (DOT), historic permits (parks and historical agency). Would have evidentiary-type hearings.

(Eggen): Indiana: no regulatory framework. Public utilities commission won't regulate wind projects that sell to other power companies, only those that sell directly to consumers. Environmental review only if falls under other concerns (e.g., wetlands). Project size doesn't matter.

(Larkin): state of Illinois has no direct functions or powers. Process: offshore requires DNR permit. DNR can veto a project. Project on land:
- 70% of counties have zoning ordinances. if state has an environmental concern, county must consult with state if within 1.5 mi of municipality
- other 30%: no zoning. only have to consult DNR if project would violate one of 2 statutes

(Siegfried): Ohio power siting board has 7 voting members, including representatives from DNR, Ohio EPA, health and agricultural agencies, and the public. Regulates projects over 50 MW. Public hearing process. All documents on electronic docket system. Public can submit comments to the record.

(Zagar): tribal perspective. Tribes do take a long time to approve things. Internal processes, similar to European process: long-term environmental review. Tribal Environmental Policy Act being drafted now, similar to NEPA. Work with state and federal agencies. Many tribal nations moving along with wind power. Already utilities in NV and AZ on tribal land. State process: 5 MW before kicks into DOC (dept of commerce) process in MN. But realize that working with tribes does add extra layer of review.

(Capouillez): Pennsylvania doesn't have formal permitting process. Other permitting mechanisms which affect the footprint. (regulation 105) streams and wetlands, (regulation 102) roads and sedimentation control. Both mechanisms also look at Threatened & Endangered Species, work with FWS. But PA not aware of project occurring unless it's triggered one of these 2 mechanisms. Local perspective: various ordinances being developed. Some are requiring consultation with Game Commission or DEC. But not consistent state-wise. State has initiated collaboration with agencies and industry to start looking at standardizing regulations, if warranted.

(Hartman): 1995 legislation in Minnesota specifically regulates wind facilities. Projects >5 MW need site permit. have permitted 14-16 projects since then. environmental review built into permit process. MN public utilities commission now oversees this. Typically work with DNR. Expect later this year to raise threshold, maybe let counties deal with projects <25 MW.

Question 2: Are wildlife studies required? Pre-filing with federal agencies? How do you know if applicant has coordinated with fed agencies?

(Graf): Nothing formal, but encourage people to have dialogue. Wildlife studies? Would like to require. 2 proposed projects... don't really have a handle on requiring pre- or post-construction monitoring. Federal? USACE would be involved if offshore in Great Lakes; maybe other agencies if the project involves their jurisdiction

(de Waal Malefyt): Most projects trigger state environmental review. wildlife usually comes up; state wildlife agency makes strong (suggested) recommendations. Unlike FERC, there's no requirement for consultation. But if do trigger federal requirements, consultations are recommended, and any federal consultation letters will be considered in the final assessment

(Eggen): No formal requirement in Indiana.

(Larkin): if a protected natural resource is involved, local government must consult DNR. Wildlife studies? Very sparse thus far

(Siegfried): Generally the developer has already met with people to make sure they're picking a good site, before application comes in. Some surveys required pre-construction. Rules don't address post-construction. Wildlife regulations: DNR is a voting member of the power siting board; they also consult closely with FWS most of the time

(Zagar): Kicks into ESA (Endangered Species Act) review, etc., if federally funded lands. Can look up the permit application to see if they've coordinated with state.

(Capouillez): consult the state natural diversity inventory, if in construction phase. Always about resource's location on the ground though... doesn't consider aerial habitat. No other formal process, but if Game Commission sees that incidental take occurs, they can force the issue with federal regulations. PA has good relationship with FWS. Good communication. Share info about whether federal agencies have been contacted. Not a formal mechanism, just good ongoing communication.

(Hartman): Pre-construction consultation is not required. But applicants generally indicate what agencies they've worked with, what opinions they've received. Many include info from MN DNR database, which has info on sensitive species. State has required specific items like bat and bird studies. Some standard language now re: study requirements. But other things also addressed site-by-site, like particular species of concern. Permits are all online, fairly transparent. Permit decision will also consider buffers, telecommunications interference, etc.

Question 3: What factors would be considered in order to authorize a project? Does wildlife get consideration?

(Graf): authority limited to impacts on protected resources (wetlands, fisheries habitat, etc). alternatives analysis. can impacts be avoided by moving, downsizing, etc.?

(de Waal Malefyt): if over 80 MW and goes to utilities commission, must issue certificate that the plant is viable, the service is useful, it's safe, and that environmental impacts have been considered. usually wildlife is considered at local level in EIS.

(Eggen): currently don't require wildlife review as part of utilities commission decision

(Larkin): things are largely voluntary except the two acts he mentioned previously. factors considered? Factoid: state complaints about wind are mainly from people who are upset that they didn't get turbines sited on their property

(Siegfried): facility must represent minimal adverse environmental impact considering technology available and the availability of alternatives

(Zagar): business committee makes final decision, but after environmental review. wildlife does get equal consideration. consider food Native Americans eat. Eagles protected, highly regarded. Tribes look a lot further, really try to respect the environment

(Capouillez): if with regard to terrestrial footprint, PA has good permitting mechanisms that do account for wildlife. But don't have mechanism for cumulative impact. So wildlife issues don't get equal consideration there. Talking with FWS now... got collector's permit, which can help with studying impacts.

(Hartman): Considers wildlife as part of application process. Consult with DNR. DNR will provide info from its Natural Heritage Database. Will let them know what issues must be considered in the application. Very transparent—all available on the web. DNR will try to address issues by survey or study requirements.

Question 4: What are the wind resources in your state? What projects proposed? What land uses for land-based projects?

(Hartman): Many turbines installed already, mostly in southwestern part of MN. Extending to S and SE as technology improves and can take advantage of lesser wind resources. Currently over 800 operating turbines, going back to '94. Mostly agricultural. Some native prairie on upper parts of ridges.

(Graf): All proposals/projects are along the Lake Michigan shoreline, Saginaw Bay, or Upper Peninsula. Upper Peninsula has lots of sensitive resources (sand dunes, etc.). Just 3 operating turbines now. 1 project under construction on agricultural (row crop) land (top of "thumb" on Michigan state map). 21-turbine project proposed along Lake Michigan on agricultural land.

(de Waal Malefyt): Slopes of S side of Mohawk valley. Several in W part of state. Flat Rock area too. Interest in offshore Long Island too. 300 MW capacity now, 200-250 turbines. 5 operating wind farms. 14 projects (1600 MW) in the works. 43 projects in overall queue (over 5000 MW).

(Eggen): no operating projects in Indiana... 2 proposals, but the state's best wind resources are still marginal

(Larkin): Arrowhead site (advanced stage of proposal) 400 MW, 272 turbines, would be largest in N America. Another with 233 turbines. Many other proposed too. Proximity to grid seems important. Moderate winds, but lots of customers (Chicago, etc.). Most are row crop areas, flat with predictable winds, farmers like it. Also proposal for Lake Michigan offshore Chicago, could be controversial (expensive real estate overlooking the lake!). Also a proposal for helical (vertical axis) turbines on big buildings in Chicago—no one has thought of wildlife issues there.

(Siegfried): OH resources look better now than originally thought. Most close to lake, plus a few other pockets. No applications have come in yet, but it's a 50 MW threshold. Currently 4 turbines in the state that he knows of, just over 7 MW. Land use: mostly agricultural; farmers have actually provided a lot of the momentum.

(Zagar): 50 m anemometer towers on reservation, decent winds, could have 5 MW project soon. several nations working on it, including White Earth. May also have project on Lake Superior at some point. Land use: mostly forested in N and NE MN.

(Capouillez): most PA wind resources in forested habitat on ridgeline of Allegheny Front. Not aware of any proposed for Lake Erie. 169 MW online. proposed 2000 MW (42 projects).

AUDIENCE QUESTIONS:

Q: (Gannon): heard suggestions that we should do a pilot project, maybe offshore where we still have so many lingering questions. what would you think about this? send out requests for proposals?

A: (de Waal Malefyt): leave this to the next governor of NY!

Q: (Gauthreaux): if you lose ridgeline habitat, shouldn't you replace with other ridgeline land?

A: (Capouillez): We look at habitat suitability index. To PA Game Commission, valley is more unique and of higher value in some cases.

Panel 2: Agency Preparedness

Question 1: Is your agency's involvement required by state statute? Role in wind power? What about consultation roles?

(Graf): MI DEQ involved only where there's a regulated resource (Great Lakes, sand dunes, wetlands). These roles are authorized by statute. consultation role only if direct impact on regulated resources, which means DEQ would also review the application

(Nasca): Environmental Review statute in NY, for which DEC is typically an involved agency. local communities taking the lead, but typically deferring to DEC on wildlife issues. that's good because it forces the developer to talk to DEC. Most proposals have come before DEC re: pre-construction survey design. good relationship with FWS in Cortland. also with USACE. For Flat Rock, worked with USACE to get post-construction requirements added

(Eggen): no specifics. Indiana DNR will work with applicants to give a heads-up on concerns, but it's voluntary. Will work with FWS, etc. re: NEPA stuff, etc.

(Larkin): IL DNR has no direct responsibilities. Its position is largely limited to persuasion, etc. Consultation within a loosely organized group within DNR when these issues come up, but not a formal consultation process

(Schladweiler): no overall statute in MN. DNR only has a hold on plants over 5 MW. Can give environmental recommendations. roughly 1000 turbines out there now. example of the limited reach of DNR's oversight: good-sized plant came online last fall, but each turbine owned by a separate landowner LLC, which gets them under the 5 MW threshold of Power Plant Siting Act. Even above 5 MW, it's just a recommendation, unless ESA involved (or other protected lands).

(Zagar) statutes if federally funded lands. bound by tribal council: development review committee reviews every project on reservation. consultation roles: they consult with every agency: DNR, FERC, etc.

(Sanders): OH DNR working actively with FWS through the Ohio Wind Working Group. 50 MW threshold; DNR involved in approving projects. 2 other areas: (1) DNR responsible for managing submerged lands for the public, so would consider fish/wildlife, recreation, etc., before give offshore permit. (2) Their Division of Wildlife can step in *after* something is killed... have developed draft monitoring guidance. Encourage developers to work with DNR ahead of time, providing map of good sites, etc.

(Capouillez): PA unique because different agencies cover different resources. Fish and Boat commission handles all aquatic resources. DCNR handles plants, state forests (controls 2.6 million acres). Game commission controls 1.4 million acres, covers birds and mammals. US Forest Service controls national forest land in PA. everything in private sector just comes under consultation role unless it triggers state action because of protected resources or takings, etc.

Question 2: What wildlife resources are of concern in your state? Does your agency have a process and/or guidelines for wind power?

(Graf): If involved in any offshore permitting, there's a bottomland lease issue. DEQ would have a good handle on pre-and post-construction monitoring if a bottomland lease is involved. No guidelines now. but working with energy staff to come up with guidelines or at least a list of things for developer to address

(Nasca): Environmental Review process. working on developing guidelines. meeting coming up in August. fear though—already 22+ projects moving fwd; they've already met with DEC and know what DEC wants. So is it too little too late to start guidance now? DEC does have clear permitting and leasing authority offshore.

(Eggen): The few areas of good wind in Indiana also happen to be big bird areas. Environmental review is voluntary now. Hope to start on guidelines soon.

(Larkin): Several species of concern (gave list of examples). Has already described agency process.

(Schladweiler): Most development taking place in SW part of MN. Think we're approaching the point where cumulative effects may happen. Buffalo Ridge had bird and bat studies. Old turbines (shorter, smaller) killed only 3 bats per turbine. But if have 1000 turbines, could get cumulative. And concern that newer turbines could be different. Buffalo Ridge: also saw depression of breeding birds nearby. Another issue: a lot of native prairie pasture: concern in general for rare prairie community, also prairie butterfly. And concern about more power lines being installed. Not much thought about long-term transmission needs. Have seen proliferation of smaller distribution lines. 3 major transmission projects in the works now, but the utilities should've thought of this years ago. Note: more 250 turbines will be built there this summer.

(Zagar) agree, need to look at cumulative effects

(Sanders): don't rule out fisheries, but key issues of concern = wintering waterfowl, migratory birds (including on stop-over), raptors, and habitat fragmentation. Division of Wildlife has developed monitoring guidelines; called "draft," but evolving document. Also have 3 mi buffer on coast, 1 mi buffer on large riparian corridors, 5 mi buffer on bald eagle nests, also consider Indiana Bats. Ohio's natural heritage database—many environmental review processes require applicant to review this.

(Capouillez): concern about birds, bats, and also cumulative impacts on terrestrial wildlife... changes to predation, rodent populations, etc. Normally see these in NEPA process, but don't have this for wind yet. Process has been described previously; the state deals with things if review is triggered, or if proposed for state land, etc.

Question 3: Does your agency's staff have adequate experience/training to handle wind projects? Ratio of projects to staff?

(Graf): no; only one person, dealing only with offshore

(Nasca): still have more to learn; 3 people with 20-30 projects total

(Eggen): no; 0 people and 0 projects

(Larkin): no; no people devoted to wind

(Schladweiler): it's all been on-the-job training. ¼ of a full time employee

(Zagar): working ½ time this yr, full time next yr on renewables (about ¼ of which is wind)

(Sanders): yes, 0-0.2 full time employees

(Capouillez): no, 1.4 full time employees

Question 4: What do you need?

[Graf] lots of info gaps. particularly site-specific. how to we get info? do we have regulatory authority? do we want to pursue legislation to require something? probably look at this for offshore, because public trust. lots of info needs. know what others have faced... try to learn from others' experiences

[Nasca] every developer says "nobody else asks us to do this: NY is more expensive than any other state." what it means is that if the energy demand is there, even without incentives, developers will come even if resource is marginal. So rather than have NY be the only one, want to see if can develop some general minimum standards to apply throughout the Northeast/Great Lakes region. So developers know what to expect. Tried to get Northeast states to set the bar, like to continue to work towards that. Also they're generating a lot of data... does anyone know what to do with it? let's collect *for a purpose*.

[Eggen] don't see any statutory changes ahead in Indiana. Would like to see more guidance from federal level. IN willing to work through NEPA process. Learning as we look at these projects. would be nice to see full summary of known data, so other states can catch up quickly.

[Larkin] From DNR perspective: no official comment. Speaking as an individual: why should one animal dominate discussion? interrupting migration pathways is analogous to punching a hole in a pipeline. Should be motivated by biological concerns. Need broad view.

[Schladweiler] need to see political will at governor's office and DNR. Need more personnel on the issue. let's find out exactly where we have turbines—get exact locations in GIS layer. always need more money. would like better federal-state coordination.

[Zagar] agree—need more money. chasing grants. USDA, DOE, etc: maybe find a pilot grant? Then tag money onto projects that come through, just like there is for any building permit. have

each project pay into study fund. like to see GPS coordinates as part of permitting process, so locations can be evaluated

[Sanders] speaking as an individual: it's time to have small demonstration projects where we can actually collect data. 2-4 turbines, 2-3 yrs pre-construction data, then 2-3 yrs post-construction. also look at ways to reduce mortality. lots of good suggestions. Need to try to work together.

[Capouillez] speaking as an individual: developers want to know what the state can offer to help them gather info. what grants? what can resource agencies offer to help solve problems? be clear about what they're asking for. We don't even know who's in charge on federal level—FWS? Studies might be redundant, not synchronized, not shared, not know what to do with info. That's a waste of time.

Q: (Czarnecki, audience): PA natural heritage program has a screening tool. PA has GIS layers. if any permit required in PA, applicant goes to database, see if they have any "hits." Then it goes to the appropriate agency, depending on which type of animal. if we look at that, we know a lot about what's in the water and on land, but **we should add a migratory component to natural heritage database, especially if it is to be used as permit screening tool.**

(Larkin): Agree. Need to expand notion of habitat extending upwards.

Comment (Kunz): How we collect data. Most is kept in files, not shared. This is redundant—which is partly OK because some things are site-specific. But still, **data need to be collected with goals. specific questions need to be asked. need hypothesis-driven research, not disorganized data collection.**

Comment (Francis): Pilot project will have small sample size. Don't do this... there are already real projects being built, with more turbines. Use *these* to get the data we want.

Panel 3: Non-Governmental Perspectives

Question 1: Reflect on institutional frameworks and agency preparedness:

(Tuttle): Agree that states are woefully unprepared. Too little funding. And funds not being used efficiently. Focused entirely on how to get permit, not how to solve problem or how to monitor long-term so we really know the impact. Think companies are probably frustrated with having to spend most of their money on the permit too. Problem crosses state and national boundaries—serious concern. Shouldn't similar agencies get together to share ideas? Need research strategy. **Need to clearly ID problems we need to solve, what research to do, how to make research credible. Requires interstate collaboration.**

Need long-term studies on cumulative impact. No credible data, so ends up with lawyers arguing without data to support either side. Worry about consequences of ruining green image of wind power, plus hurting wildlife. if we don't start working together, we'll spend endless time and money. **Need to standardize pre- and post-construction studies so the results are meaningful.**

(Ockene): Would love to see wildlife more protected. States aren't prepared, spotty coverage re: bird and bat protection. **Need broader federal perspective. FWS is obvious candidate to bring this perspective, perhaps through guidelines. FWS can also serve as central data collection agency.** FWS could exercise more authority in this realm, especially because it has a "stick"—the threat of enforcement. Migratory Bird Treaty Act (MBTA) is a strict liability statute, so any one bird constitutes a violation. Unfortunate that FWS didn't enforce MBTA at Altamont. – Little incentive for industry to take this seriously.

(Fry): trying to protect and restore bird populations. Agriculture is a huge source of bird losses. Highways have huge impact (fragmentation, etc.). Other energy sources are so much worse for birds than wind—toxic emissions, greenhouse gases, things that affect fish (entrainment in cooling water; mercury). At Altamont, figuring out now how to address concerns. No adequate overall planning process, and if adverse impacts, no obvious way to drive mitigation. **Need federal nexus. Need adequate pre-construction studies. These have been poor predictors, so need to minimize impacts in site selection and design (height of turbines, etc.), then need post-construction monitoring, then mitigate for impacts.**

(Ewert): Nature Conservancy works collaboratively. Good point about singling out wind energy. Likes the UK guidelines; should apply here, not just for wind, but for all energy. That framework also eliminates some of the procedural uncertainty. The problems here are bigger than just one state. So frameworks need to cover many jurisdictions.

Example: forest industry, forest certification programs. These have clear guidelines.

Process/chain of custody-type analysis. Trade-offs become easier. Level playing field, fair to everyone. Takes advantage of market influences too (e.g., Home Depot only buys certified lumber).

Urge collective work to take place. Recognize there are trade-offs. Legislative issue: 2-yr tax credit is constraint, this sounds too constraining.

Likes the UK idea of setting up research fund.

(Toavs) Whole Foods environmental affairs: Whole Foods made pledge to purchase wind energy credits to offset company-wide energy usage. Trying to make a statement. would like to see wind energy maintain and improve its "green-ness." Lots of info needed, lots of collaboration called for.

(1) We're here to collaborate. As large purchaser, Whole Foods has leverage—can they get access to turbine sites? Including the ones being built as a result of Whole Foods' purchase? Interested in making these sites available for post-construction research. So offering a set of sites for research.

(2) EPA Green Power Partnership: has several other big companies making wind purchases.

(3) Green “E” logo = green energy certification. Could tie this certification to participation in research... maybe use as incentive.

(Rackstraw): Agree that a lot of current pre-construction research spending isn't effective. From business point of view, it's frustrating to expect to spend \$1 million on pre-construction studies, just to get permits. One good thing in Europe = substantial public funding of research. DOE had program that was phased out, but DOE still knows it's an industry priority. But still tough to get money. **Opportunity to have interstate coordinating body that can pull together research and set agenda for what to do next.** States and FWS should put together a credible entity like this, with some industry involvement too. Model: public fund that developers could apply for funding from. Developer pays back the grant if project successful. Much easier to pay for research with post-financing money, not pre-financing money. This reduces risk and accelerates timetable. Key is to coordinate with somebody. Revolving fund... could even charge developers a premium to maintain the fund.

Also think we need to move toward adaptive management. Every site could have impacts—what if it's a migration fluke that happens once every 50 yrs? Maybe could install radar on site to trigger shut down. Or could predict conditions of greatest risk (weather, season, etc.). If build into plan, then at least the developer has some certainty; they know about how much time to expect to not be operational, and can make business plan accordingly. Business can deal with known exposures/risks. Doesn't like unknown risks.

(Warman): Context: he works on global warming. Wind power changes habitat locally. Global warming changes habitat globally—an urgent problem. energy conservation is important, but so is renewable energy. we need more wind energy.

Need to approach wind with attitude towards facilitating expansion of wind energy. Wildlife preservation community can't become a hindrance.

Still, need to be sensitive to wildlife. Nature Conservancy map = good example. **GIS is good solution. Should rapidly map those areas where we know wind energy is inappropriate, as well as areas where we're pretty sure wind energy is fine (highly degraded land, like row crop land). Should make the map available to the wind industry to reduce some of their uncertainty.**

Need to be more comfortable with higher level of uncertainty. Can't eliminate risk to wildlife. We don't have the time to wait for science to catch up. So how do we minimize risk? ID low-risk and high-risk areas, as noted above. And also ID factors that might modify risk—other factors, like fields gleaned by geese in winter.

Provide incentives to steer industry towards landscapes that are more appropriate. Big incentive = streamlined process for projects on low risk lands.

We'd all like to know more about post-construction mortality studies. Should offer existing projects safe harbor protection in return for allowing us to do mortality studies.

Comment: (Dave Stout): FWS working on GIS system: <http://ecos.fws.gov> Invite people to look at it, provide feedback to dave_stout@fws.gov.

(Ewert): worked on Lake Erie project to map bird stopover sites. Now working on other places. But it's still just ground-level stuff. Don't have air column or offshore info.

Q: (NWF person in audience): What about adaptive management? What kinds of technological innovations are out there? How can we engage industry in sharing this info?

(Tuttle): right now engaging industry in testing deterrents, plus measuring effects of operational changes like changing cut-in speeds at sensitive times, etc.
Agree with Tim's safe harbor idea. But realize that migratory birds and bats still fly over degraded areas... need to think about that.

(Fry): We know a lot about protecting waterfowl (managed as game birds). **We need a federal nexus for regulation.** FERC and DOE could do it, but choosing not to. FWS doesn't have enough regulatory authority. Maybe best bet is to push FERC to do it.

(Rackstraw): But how could FERC regulate wind like this if they don't do the same for coal, etc.
Re: technology: industry very interested in Ed Arnett's work on deterrents. Also interested in idea of studying feathering. This could be sped up even more. Safe harbor protection is key—need operators to be willing to take the risk that study might find a dead Indiana bat, e.g.
- have done some work with painted blades, doesn't seem like it'll work
- but in general, good to keep working on new techniques

Q: (Hoar): We won't solve global warming problem by growing renewables on top of current fossil fuels. Tim—do you propose rolling back fossil fuels and replacing with more renewables?

(Warman):

- 1) one key is conservation
- 2) need variety of fuel sources. solar, biomass, wind. challenge: just not enough land available to replace all fossil fuel use with current renewables. so for foreseeable future, need fossil fuels still. so it's important to develop cleaner fossil fuel technologies

(Ockene): Now is the time to make sure we're doing it right. Don't rush to develop wind before we really have all the data. Need to know cumulative impact, which could be disastrous in some cases (especially to bats in some regions)