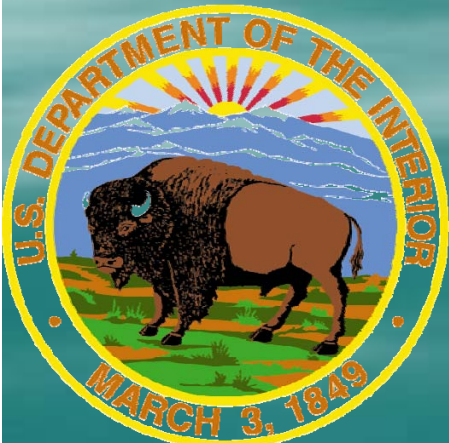
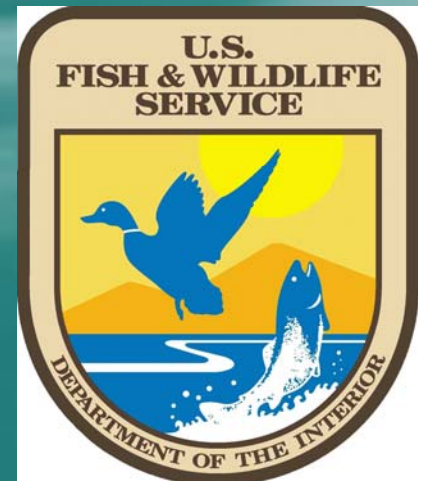


# USFWS INTERIM GUIDELINES TO AVOID AND MINIMIZE WILDLIFE IMPACTS FROM WIND TURBINES



A field perspective



# Presentation to the Wind Turbine Guidelines Federal Advisory Committee

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# Overview

- Description of the guidelines
- Region 5 use of the guidelines
- Guidelines in NY & other states
- Resource issues in Region 5



# Three Parts to the Guidelines

Part 1 – Recommendations on site selection, site development, wildlife studies, turbine design, placement and operation

Part 2 – Potential Impact Index (PII) Protocol

Part 3 – Appendices (8)



# Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines

## Part 1

- Recommends precautionary approach
- Suggests efforts to avoid, minimize and mitigate impacts
- Identifies site evaluation and wildlife study procedures
- Provides project and turbine design recommendations



# Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines

## Part 2

### Team of wildlife professionals

- Use the PII Evaluation System
- Identify and evaluate reference sites
- Evaluate development site(s) and rank according to resources
- Use checklists of physical, biological and ecological resources



# Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines

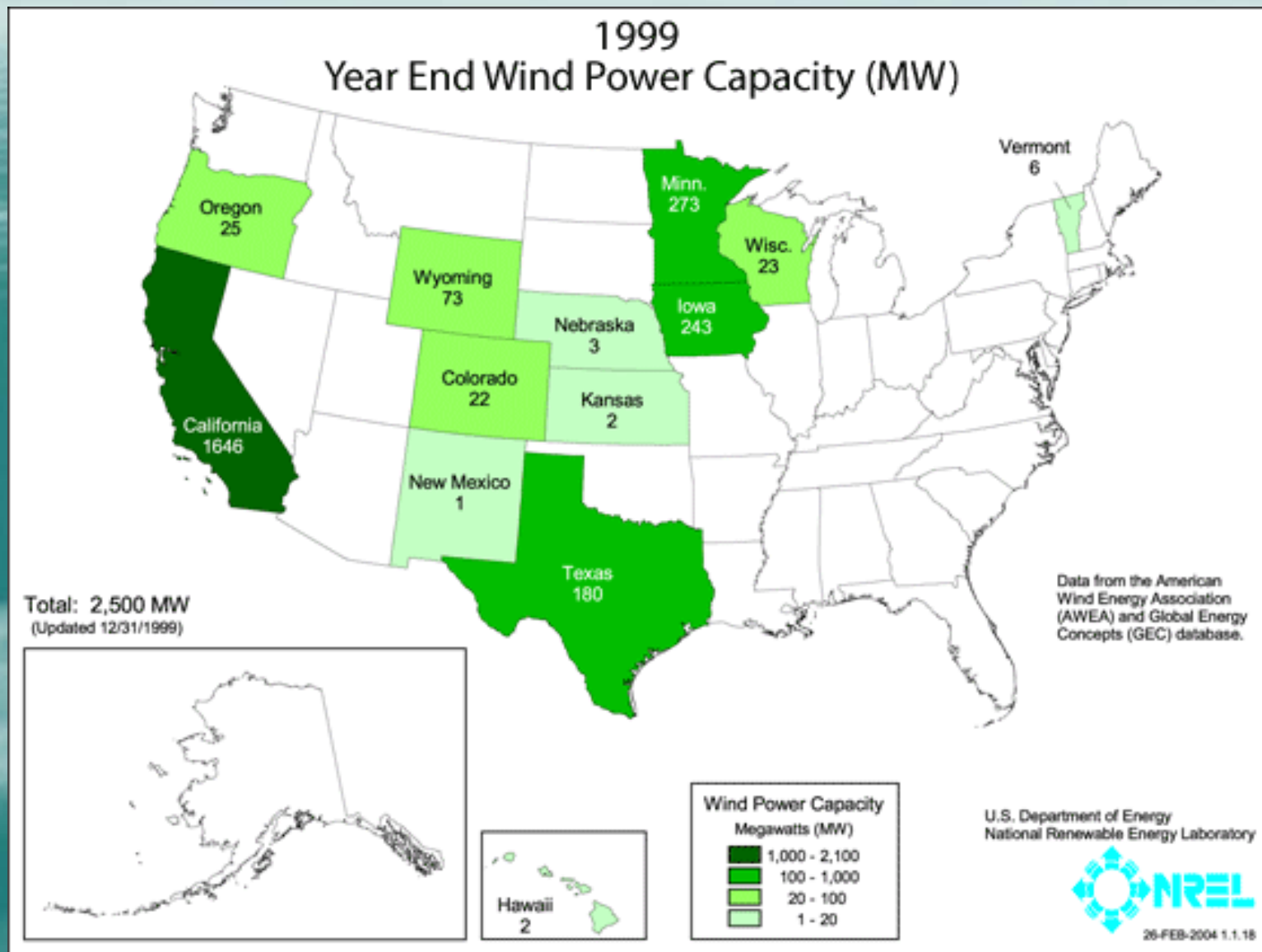
## Part 3

### Appendices

- PII checklist forms and instructions
- Wind energy definitions
- Relevant wildlife laws
- Wildlife/wind power research needs
- Endangered species consultation procedures
- Wind turbine siting on NWR lands
- Impacts of wind turbines on wildlife
- Literature cited



# Installed Wind Energy Capacity 1999-2007



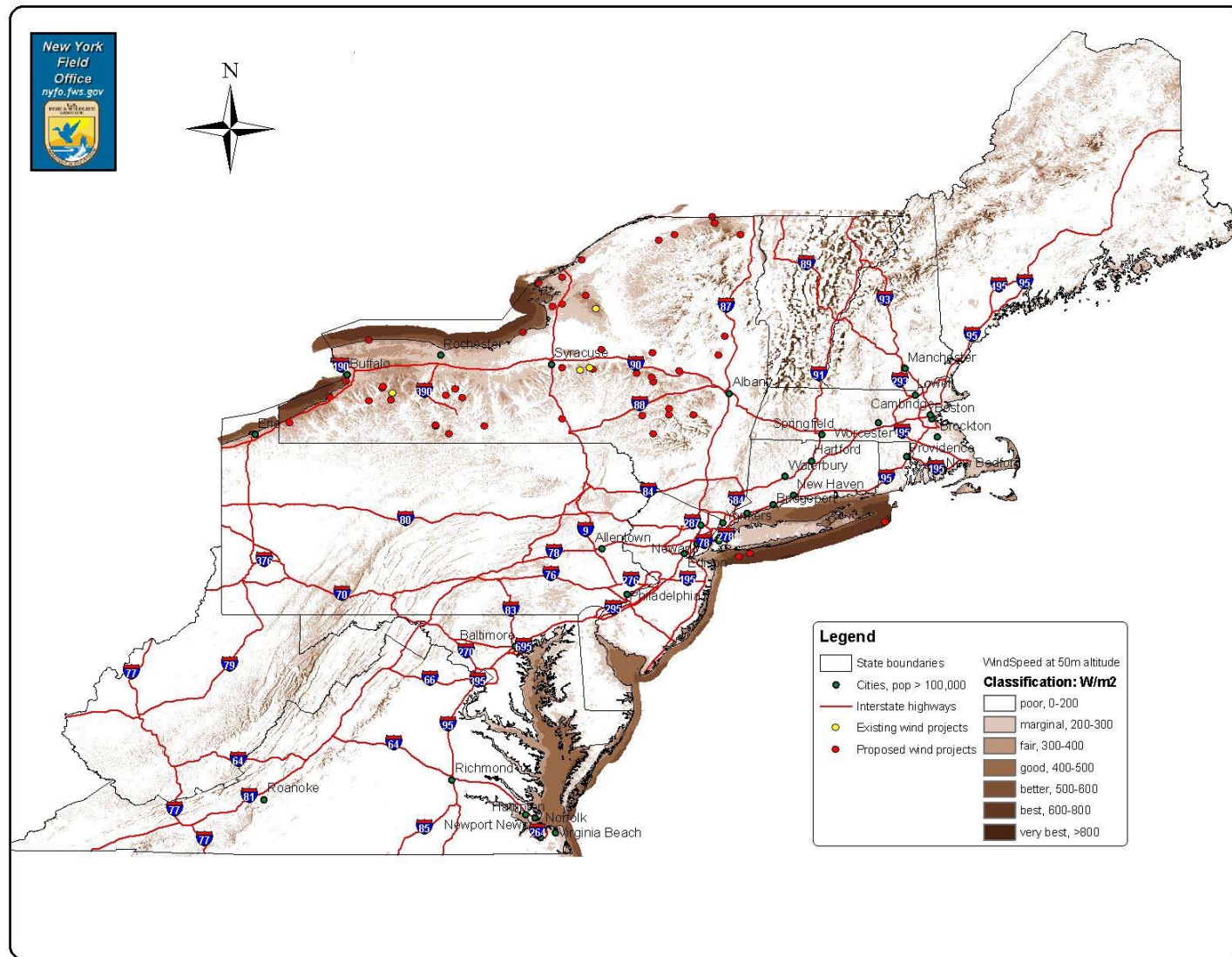


# FWS Region 5

- Maine
- New Hampshire
- Vermont
- Massachusetts
- Connecticut
- Rhode Island
- New York
- Pennsylvania
- New Jersey
- Delaware
- West Virginia
- Virginia



# Wind Resources in Region 5



# State Wind Potential

State	Rank in wind resource	Installed capacity (Mw)
Maine	24	42
New Hampshire	32	1
Massachusetts	29	5
Connecticut	34	0
Vermont	28	6
Rhode Island	34	1
New York	11	425
Pennsylvania	14	294
Delaware	34	0
New Jersey	26	8
West Virginia	20	66
Maryland	34	0
Virginia	40	0

Source: American Wind Energy Association, data as of 1/16/08



# Agency Information Exchange

- Coordination between offices
- Monthly regional meetings
- National meetings
  - Participation by field office biologists
  - Feedback from regional and Washington staff
- Intranet site
- Information from various program areas
  - Division of Migratory Bird Management
  - National Wildlife Refuge System
  - Solicitors Office
  - Washington and regional offices
- State partners, NGOs, citizens
- Industry, consultants
- Other government agencies



# Challenges for Field Offices

- Provide consistent and appropriate recommendations
- Be flexible to suit various situations
- Work with each individual state
- Guidelines and relevant laws



# How are the Guidelines used by Field Offices ?

- Query of R5 offices
- **Questions:**
  - A. Does your office recommend use of the Guidelines?
  - B. If not, why not?
  - C. Does you office reference the Guidelines in correspondence?
  - D. Do others reference the Guidelines?
  - E. Does industry use the Guidelines?
  - F. Should the Guidelines, in some form, be mandatory?



# Field Office Responses



FO/Questions	A	B	C	D	E	F
1	no	n/a	no	yes	no	?
2	yes	-	yes	yes	no	yes
3	yes	-	yes	yes	no	yes
4	yes	-	yes	yes	no	yes
5	yes	-	yes	rarely	no	no
6	yes	-	yes	yes	no	yes

# Field Office Positions

- Most FOs recommend multi-year intervals for pre-construction studies
- One state mentions potential impacts to insects as well as birds and bats
- All FOs mention ESA issues, if appropriate
- Most recommend contacting FWS before proceeding with studies





# FWS Letters

- MBTA
- ESA language
- Fish and Wildlife Coordination Act
- Clean Water Act
- Others depending upon the project
- The need for further coordination



# Example FO Letter

“Although they are voluntary, the Service’s *Interim Guidelines on Avoiding and Minimizing Impacts from Wind Turbines* may be helpful as you evaluate your proposed wind power generation site (<http://www.fws.gov/r9dhcbfa/windenergy>). The guidance contains a pre-development site evaluation and ranking process to assess potential project impacts, as well as recommendations for conducting post-construction monitoring. In Appendices 3 and 5, the guidance also contains more information on applicable laws and permitting.”

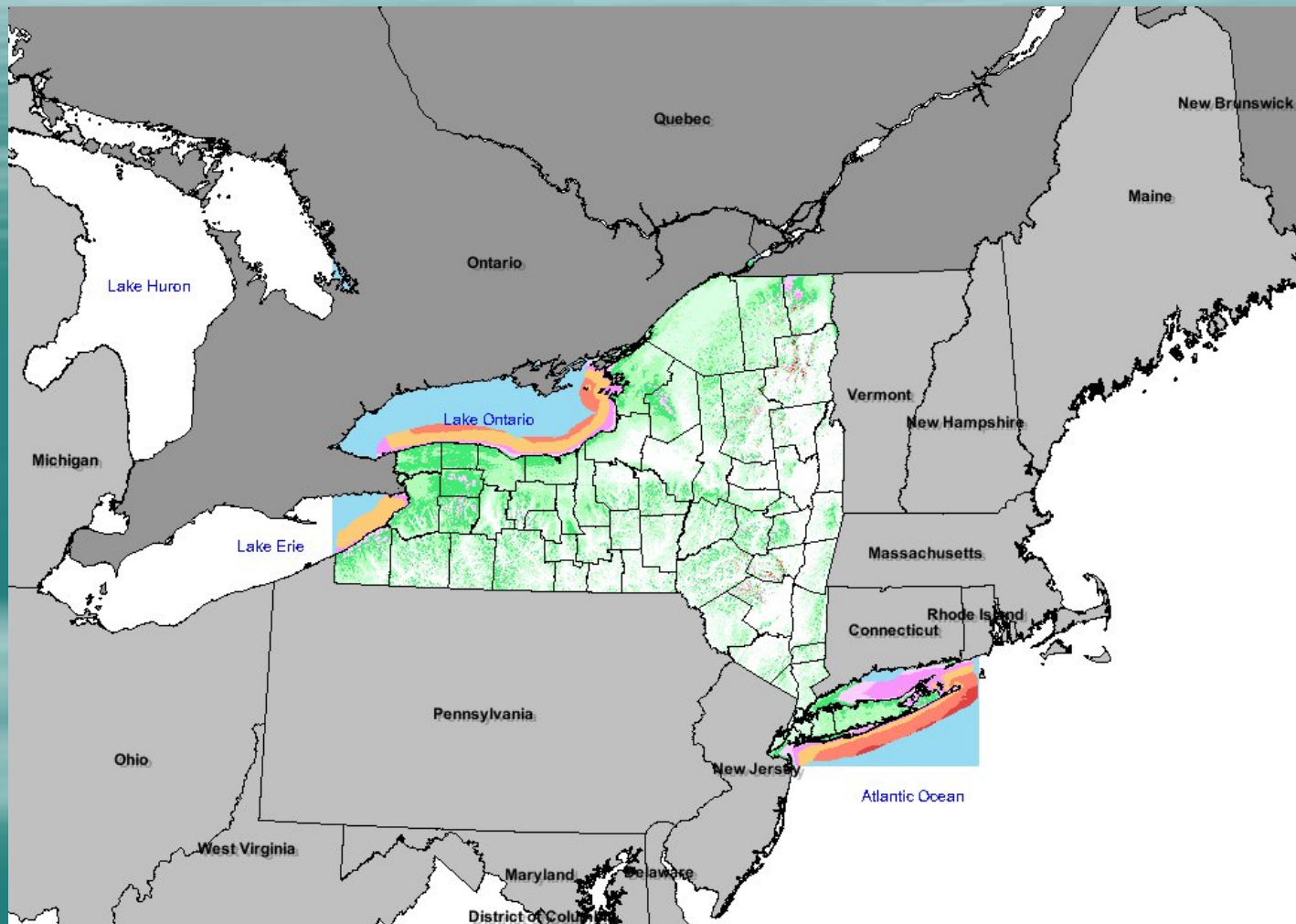


# Wildlife Guidelines in Region 5 States

STATE	GUIDELINES	Planned
Maine	Yes	
New Hampshire	No	Yes
Massachusetts	No	
Connecticut	No	
Vermont	No	Yes
Rhode Island	No	
New York	Yes	
Pennsylvania	Yes	
New Jersey	No	
Delaware	No	Yes
West Virginia	No	
Maryland	No	Yes
Virginia	No	



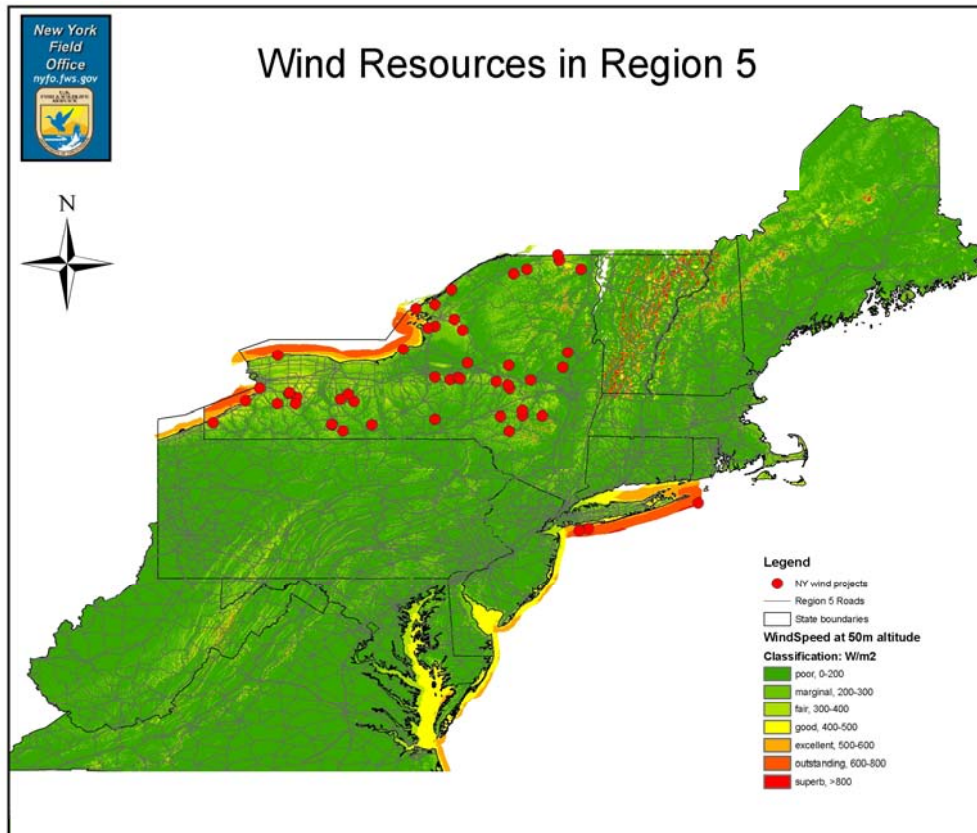
# New York Wind Resources



Source: AWS True Wind



# NY Wind Projects



## NY DATA

Overall US rank in installed capacity: **11**

Overall US rank in wind potential capacity: **15**

Power of projects under construction: **282 Mw**

Power capacity of 6 existing projects: **425 Mw**

Source: American Wind Energy Association, data as of 1/16/08



# How the FWS Guidelines are Viewed in New York

- Local officials
  - Depends upon knowledge of issues
  - Position on wind energy
  - Not used as a default
- Citizens
  - What can you do to stop this project?
  - Genuine concern about wildlife



# How the FWS Guidelines are Viewed in New York (cont.)

- NGOs
  - Most support use of the Guidelines
  - Local chapters of one organization in NE urged National office to support Guidelines
  - HMANA, Audubon, TWS
- Industry
  - Generally does not support Guidelines
  - However, some individual companies agree to implement portions - lighting and guy wires
  - Some suggest a red-yellow-green classification of projects to provide predictability



# NYS DEC Guidelines

- Highlights of state guidelines
  - Result of meeting with industry, FWS, experts
  - Recommend pre and post construction studies
  - Do not reference or cite FWS guidelines
  - Currently accepting comments





# Differences between Federal and NY State Guidelines

Recommendation	New York State	USFWS
Site selection screening	No	Yes
Study details	Yes	No
Pre construction studies	1 year	1+ years
Post construction studies	3 years	3 years



# Resource Issues in Region 5 - Birds

- Nocturnal migrants
- High passage rates compared to west
- Grassland and forest species displacement
- Potential impacts to species of concern



# The Bat - Wind Turbine Issue

In 2003 1,400–4,000 bats killed at the Mountaineer Wind Energy Center in West Virginia

**Bats appear attracted to turbines but why?**

**Acoustic response ?**

**Visual response ?**

**Potential roosts ?**

**Food source ?**



**No one has yet answered this question**



# Resource Issues in Region 5 - Bats

- High bat mortality during migration
- Projects being proposed near hibernacula
- White nose syndrome



# Bat Fatalities by Species and Region

Table 1. Species composition<sup>1</sup> of annual bat fatalities reported for wind energy facilities in the United States, modified from Johnson (2005)

Species <sup>2</sup>	Pacific Northwest	Rocky Mountains	South-Central	Upper Midwest	East	Total
Hoary bat	153 (49.8%)	155 (89.1%)	10 (9.0%)	309 (59.1%)	396 (28.9%)	1023 (41.1%)
Eastern red bat	–	–	3 (2.7%)	106 (20.3%)	471 (34.4%)	580 (23.3%)
Western red bat	4 (1.3%)	–	–	–	–	4 (0.2%)
Seminole bat	–	–	–	–	1 (0.1%)	1 (0.1%)
Silver-haired bat	94 (30.6%)	7 (4.1%)	1 (0.9%)	35 (6.7%)	72 (5.2%)	209 (8.4%)
Eastern pipistrelle	–	–	1 (0.9%)	7 (1.3%)	253 (18.5%)	261 (10.5%)
Little brown myotis	2 (0.7%)	6 (3.5%)	–	17 (3.3%)	120 (8.7%)	145 (5.8%)
Northern long-eared myotis	–	–	–	–	8 (0.6%)	8 (0.4%)
Big brown bat	2 (0.7%)	2 (1.1%)	1 (0.9%)	19 (3.6%)	35 (2.5%)	59 (2.4%)
Brazilian free-tailed bat	48 (15.6%)	–	95 (85.5%)	–	–	143 (5.7%)
Unknown	4 (1.3%)	4 (2.2%)	–	30 (5.7)	15 (1.1%)	53 (2.1%)
<b>Total</b>	<b>307</b>	<b>174</b>	<b>111</b>	<b>523</b>	<b>1371</b>	<b>2486</b>

<sup>1</sup>Pacific Northwest data are from one wind energy facility in CA, three in eastern OR, and one in WA; Rocky Mountain data are from one facility in WY and one in CO; Upper Midwest data are from one facility in MN, one in WI, and one in IA; South-Central data are from one facility in OK; East data are from one facility in PA, one in WV, and one in TN.

<sup>2</sup>One confirmed anecdotal observation of a western long-eared myotis (*Myotis evotis*) has been reported in CA, but is not included in this table.



# Estimated US Average Bat Mortality

Region	# studies	#/turbine/yr	#/MW/yr
Northwest	5	1.9	1.6
Rocky Mountains	2	1.2	1.9
Upper Midwest	5	3.3	4.2
East	4	46.3	32.0
<hr/>			
Overall	12	3.4	4.6

Source: G. Johnson, 2005.



# Direct, Indirect and Cumulative Effects

- Direct habitat loss
- Habitat fragmentation
- Habitat modification
- Indirect effect of human disturbance
- Collision mortality with turbines
- Cumulative impact from projected number of turbines, all anthropogenic sources (pesticides, pets) and natural mortality



# Summary

- Most Region 5 staff are recommending or referencing the guidelines (or parts of it)
- The interim, voluntary guidelines are not being used by industry
- Some states are developing their own guidelines but consistency is an issue
- The wind industry continues to grow but wildlife data are still lacking





# Summary

## Take home message:

- The industry is growing at a rapid rate
- Information about wildlife resources is often vague or lacking
- Decision makers need data to formulate informed decisions
- Everyone is looking for a predictable process in which to work (industry, decision makers, agency staff)
- FWS Guidelines are needed by agency staff so that effective recommendations can be implemented

