

# Post-Construction Bird and Bat Fatality Monitoring – A Comprehensive Approach



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# Purpose of Monitoring?

1. Regulatory Requirement
  - Impact Assessment
  - Resource/Species Mgt
  - Compliance
2. Research- Cause-Effect
3. Adaptive Management
4. Demonstrate Stewardship
5. Reduce Risk
6. Other – “more data”



# Information Required and/or Collected



- Species Composition
- Abundance – rates, trends, nominal numbers
- Distribution-spatial/temporal
- Behavior or life history
- Other



# Sampling Design Questions



Procedures

Time Period

Intensity

Frequency

Bias Trials

Costs?



## Post-Construction Monitoring Outcomes:



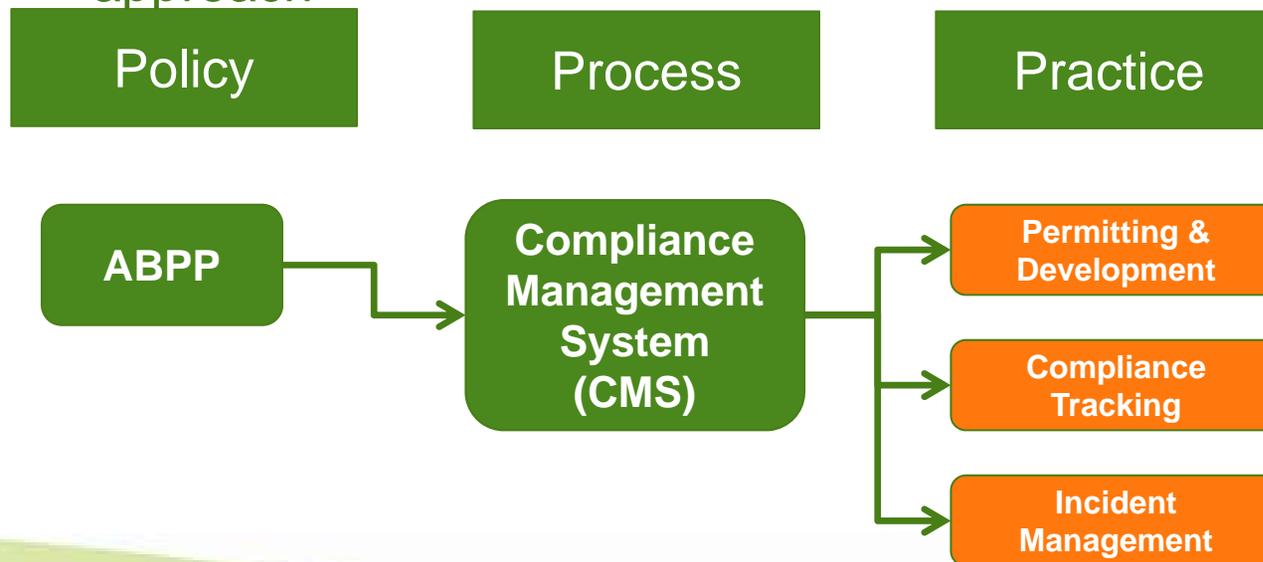
- Short term vs long term
- Fatality rate vs trend
- Inconsistent among states
- “Undefined research”
- Cause/Effect
- More data or right data

How do we resolve?

One Approach: ABPP/CMS/WMRS

# ABPP- A Comprehensive Approach to Implementation

- Wind Industry's first Corporate Avian and Bat Protection Plan
- In collaboration with USFWS , announced October 2008
- APLIC APP guidelines “translation” with FAC Recommendations
- Anticipate revising with “finalized” USFWS Guidelines
- Moving from a “plan” to Corporate policy a with comprehensive approach



# Policy – ABPP

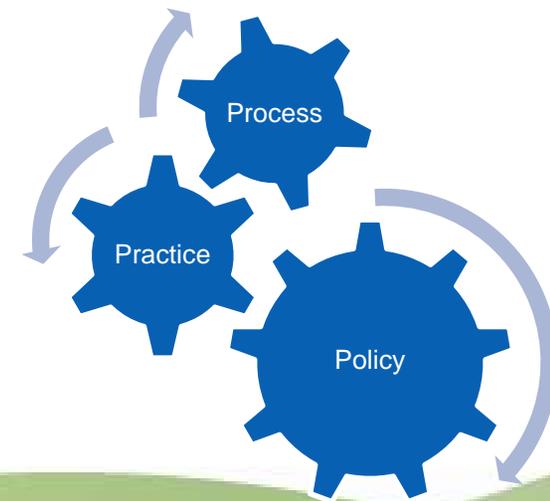


- ABPP Goals
  - *“The goal of the ABPP is to implement a series of best practices for all of Iberdrola Renewables’ US wind activities, in order to operate in an environmentally sustainable manner to avoid or minimize and reduce risk to birds, bats, and their habitats.”*
  - *“Document bird and bat mortalities and injuries at projects and/or structures in order to implement adaptive management actions as necessary.”*

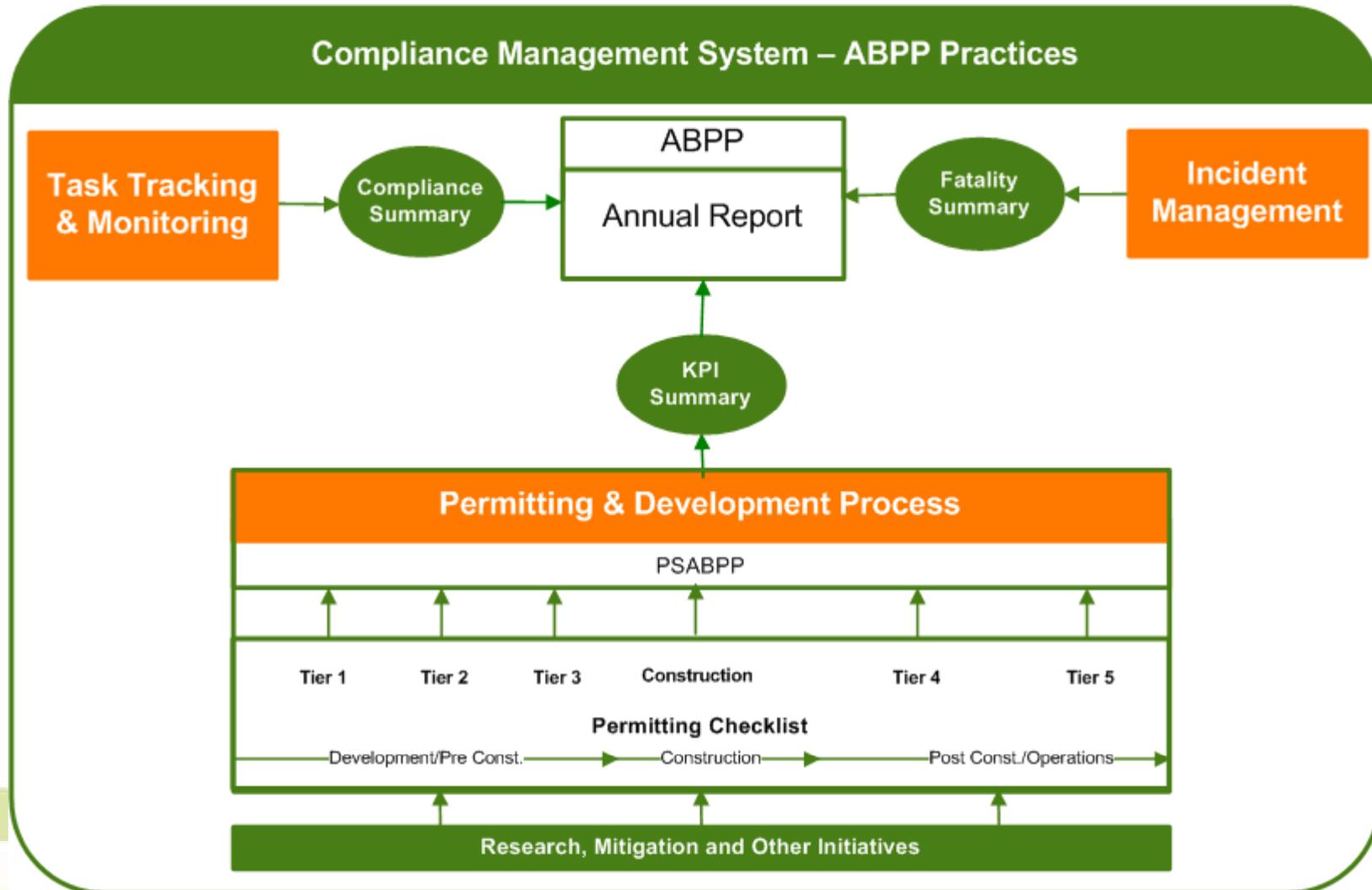
# Process – Compliance Management System (CMS)



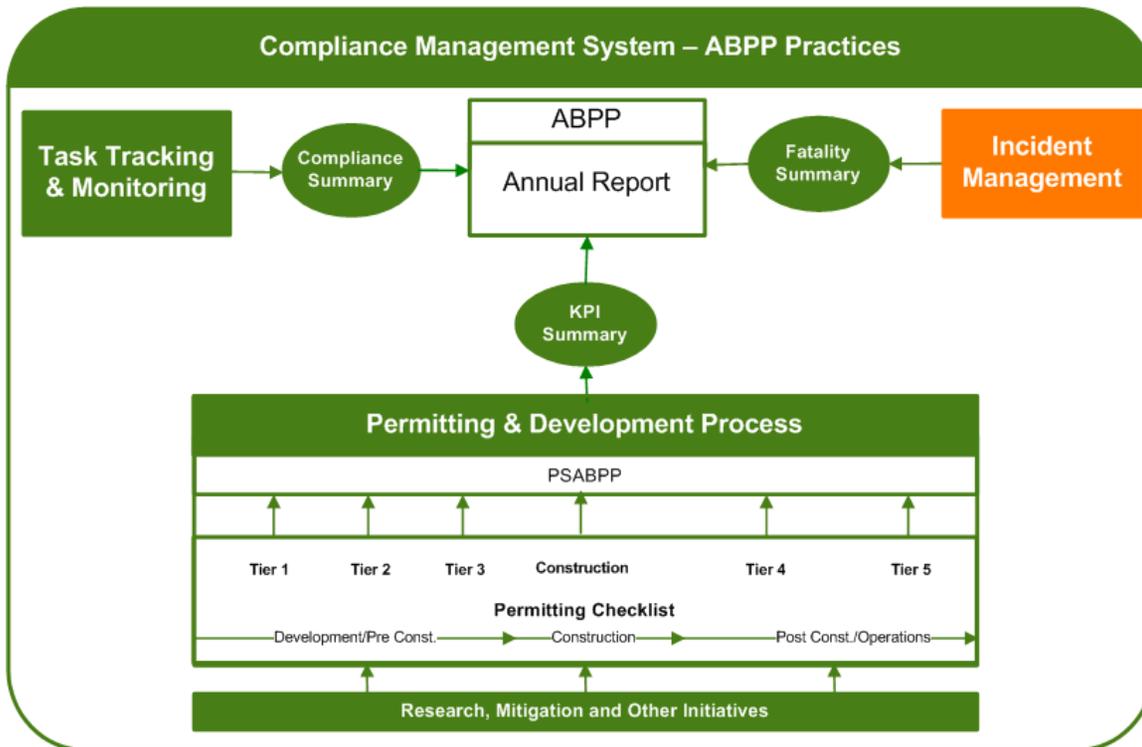
- CMS Definition
  - *The people, processes and tools that IRI employs to administer, schedule, assign, monitor, and report on the ABPP and various wildlife compliance requirements based on regulations, permits, and policy commitments.*
- CMS Goals
  - *Support a “successful” ABPP*
  - *Utilize a web-based solution to manage and report information from implementation of the ABPP*
  - *Align with tiered approach and “Guidelines”*
  - *Integrate with Operation’s infrastructure and practices*



# Practices – ABPP/CMS Components



# Incident Management



- Manages all wildlife (avian/bat) incidents at operating projects
  - Fatality
  - Injury
  - Sighting
  - Nests
- Incorporated into Wildlife Monitoring and Reporting System (WMRS)
- Future voluntary output to USFWS (BIMRS)

## Key Output

- Fatality Summary

# Incident Management: Fatality Summary



## Post-Construction Fatality Surveys Wildlife Monitoring & Reporting System (WMRS)

### Baseline Monitoring

- Regulatory/Voluntary (Policy)
- Short-term, intensive surveys
- Standardized carcass searches and bias trials
- Rates (fatalities /MW/yr) w/ CI
- Trained biologists
- \$\$\$
- 23 projects in '09-'10

### Operational Monitoring

- Voluntary (Policy)
- Long-term (5-yr increments) monitoring
- Structured observations with digital (GPS/Camera/PDA) recorder
- Trends- Numbers/Species Richness
- Trained Operations personnel(EC) with support network
- \$
- 29 projects with over 19 ECs starting in 2011

# Operational Monitoring



*“Goal is to implement a valid method for measuring long-term operational impacts to birds and bats from a wind energy facility”*



# WMRS – Ops Monitoring (Voluntary)



## Incidental Observations

- All personnel during normal work
- Project – wide



## Turbine Checks

- EHS Coordinator
- Pad searches during monthly SPCC checks



## EC Inspections

- Environmental Coordinator (EC)
- Transects (access roads/pads) weekly/seasonal (Spring and Fall)



# Operations Monitoring Outcomes



- Trends in species composition and mortality levels
- Estimation of the probability of detecting large events
- Implication of impact
- On-site environmental support

# Recommendations for Post-Construction Operational Monitoring



- Know your purpose
  - Integration with operations
  - Comprehensive approach
- Sampling effort/Design
- Testing/Auditing/Training
  - Integration with operations

## Conclusions

- Monitoring value
- Standardized protocols
- Transparency w/o retribution (AWWI-RIS)
- Collaboration (AWWI/NWCC/Today)





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## Acknowledgments

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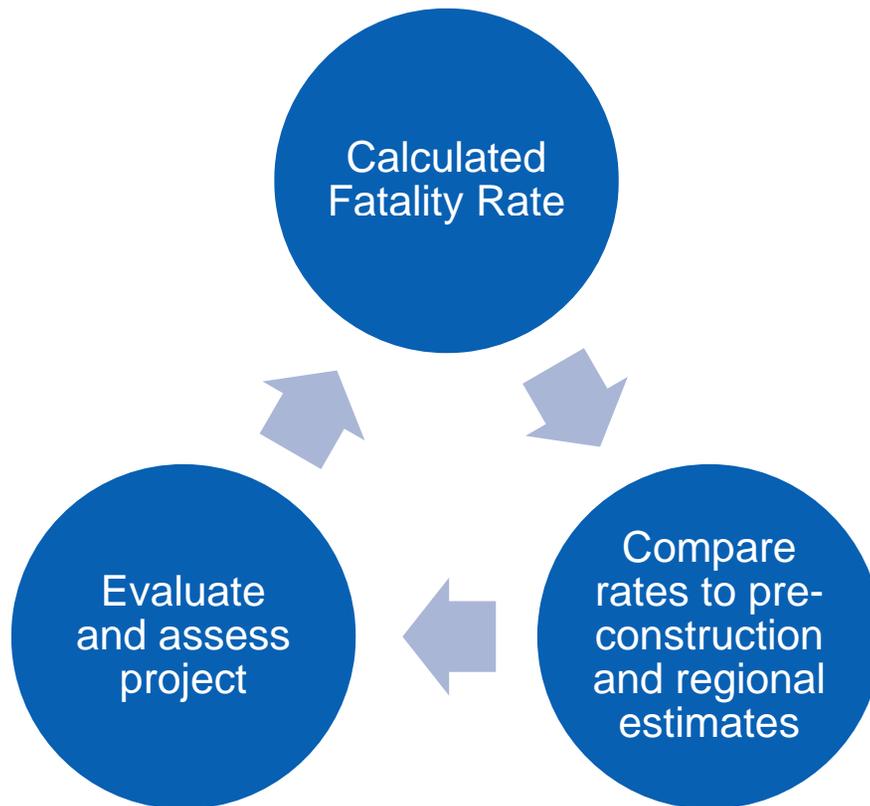
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Nadine May

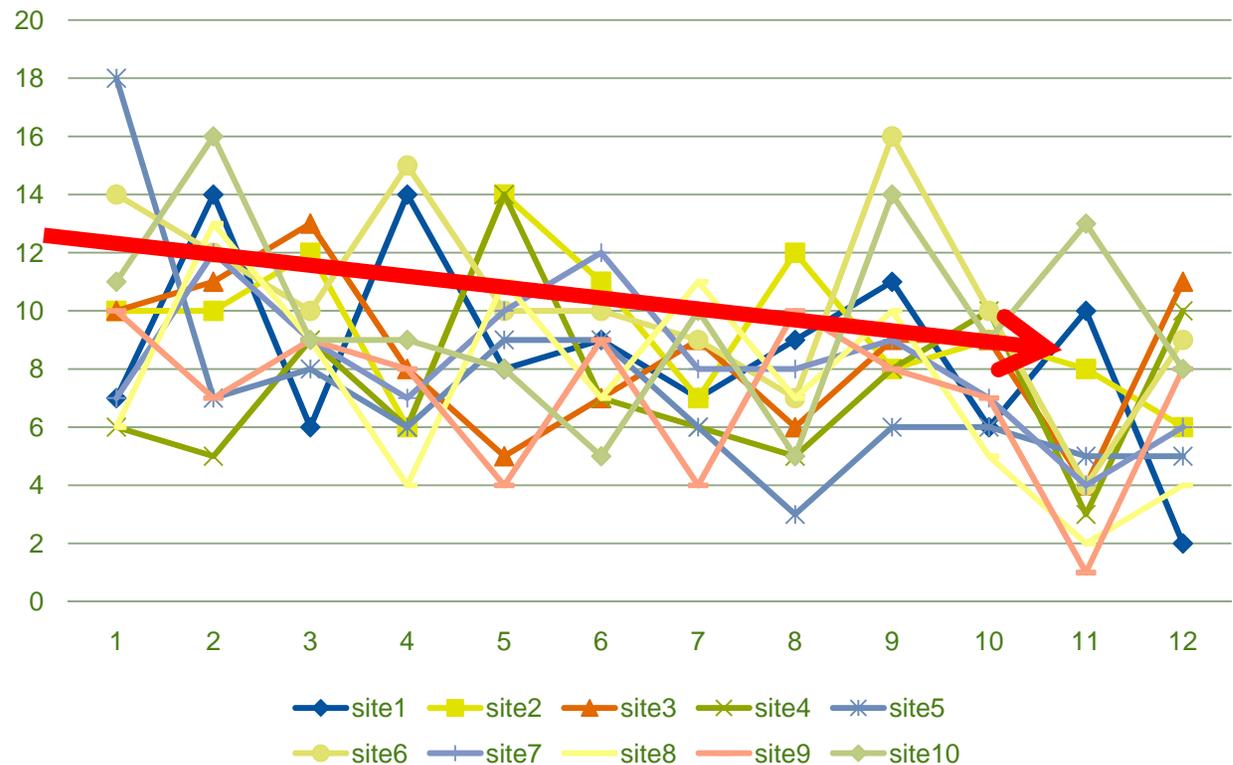
# Baseline Monitoring Outcomes



# Hypothetical Trend Analysis

- 9 out of 10 show declining numbers
- Average slope is negative and significantly different than 0
- 1 out of 10 is stat. significant
- Regional data suggests: increasing or stable numbers

## Bird Mortality Trend Data



# Example



Site	# Events	# Years Sampled	# Turbines	Prob of Detecting an Event
Site 1	0	10	300	0.2
Site 2	0	10	100	0.1
Site 3	0	10	50	0.3
Site 4	1	10	100	0.5
Site 5	0	10	50	0.6
Site 6	0	10	25	0.1
Site 7	0	10	200	0.2
site 8	0	10	20	0.4
Site 9	0	10	40	0.3
Site 10	0	10	100	0.5
Average	0.1	10	98.5	0.32

**Estimate Prob of an Event occurring per 100 turbines per year - 0.03**