BOEM

Bureau of Ocean Energy Management

The Future State of the Science: Developing a Common Regional Monitoring Strategy

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Kyle Baker | Wildlife and Offshore Wind Energy Development

Why a common monitoring strategy for protected species?

- Monitor shared issues of interest across all projects
- Cumulative effects
- Population-level effects
- Habitat impacts
- Biodiversity changes
- Adaptive management
- Meet statutory responsibilities and ensure responsible offshore development in the U.S. Atlantic

Indicators of Impacts

ecological shifts

sea temperatures

stress hormones

plankton

body condition

occupancy

bioenergetics

call/click rates

demographics

abundance

Migratory routes

avoidance behavior

What should be monitored?

Development of Strategy Goals

- New Bedford Research Framework Workshop on May 30-31, 2018
- Guide the long-term study of impacts from wind development
- Marine mammals and sea turtles
- Review current knowledge
- Research questions & hypotheses
- Evaluate design and statistical power to test those hypotheses
- Final report expected by end of year

Research Framework Workshop

Short-term Effects Hypotheses (pile driving)

- *Hypothesis 1*: Individuals of [species] are displaced over [distance] for [time period]
- *Hypothesis 2*: Individuals of [species] cease feeding over [distance] for [time]
- *Hypothesis 3*: Individuals of [species] show elevated [stress hormone] over [distance] for [time]
- *Hypothesis 4*: Zooplankton prey change their vertical distribution, density, or patch structure over [distance] for [time]

Research Framework Workshop

Short-term Effects Study Designs

- Movement response
  - Tagging; which species and what type of tags?
- Pseudo-experimental exposure (PEE) studies
  - Individual level; sample size, timing, and regulatory issues
- Aerial Survey
  - Population level, but need lots of flights
- Passive acoustic study
  - Gradient design
- Prey Study
  - Plankton and fish

Research Framework Workshop

Long-term Effects Hypotheses

- Hypothesis 1: Operations have an effect on right whale migration
- Hypothesis 2: Operations have an effect on spatial density around wind farms
- Hypothesis 4: Operations have an effect on the health and reproduction right whales
- Other Questions: Co-occurring ecological shifts (e.g., plankton studies) and Secondary (indirect) effects (e.g., changes in vessel patterns or fishing effort)

Research Framework Workshop

Long-term Effects Study Designs

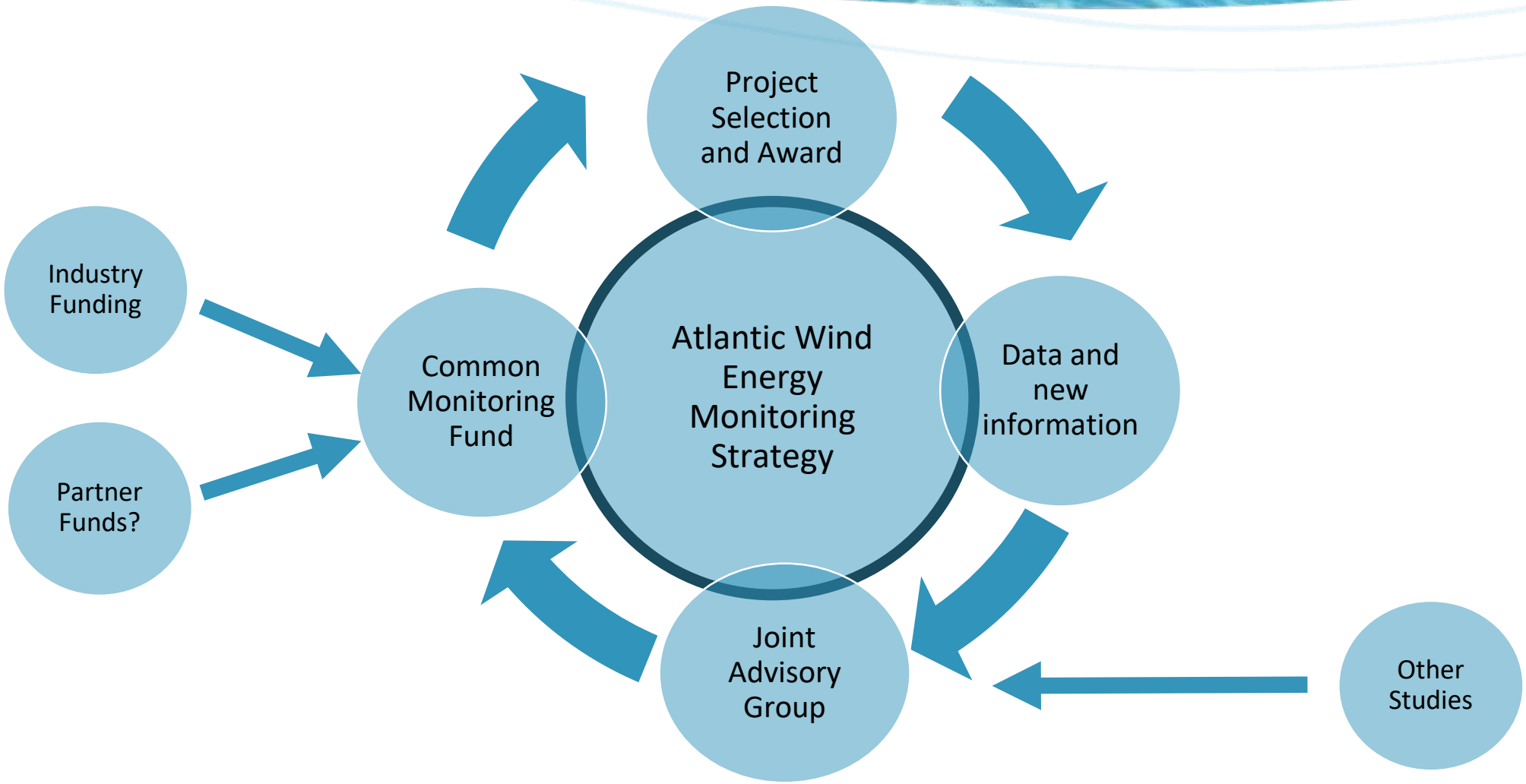
- Acoustic study
- Aerial/shipboard survey
- Individual-based study – tags
- Oceanographic monitoring
- Index sites as proxy – hard to attribute causation
- Develop PCoD model/energetic model/understand inputs

Monitoring Strategy Components

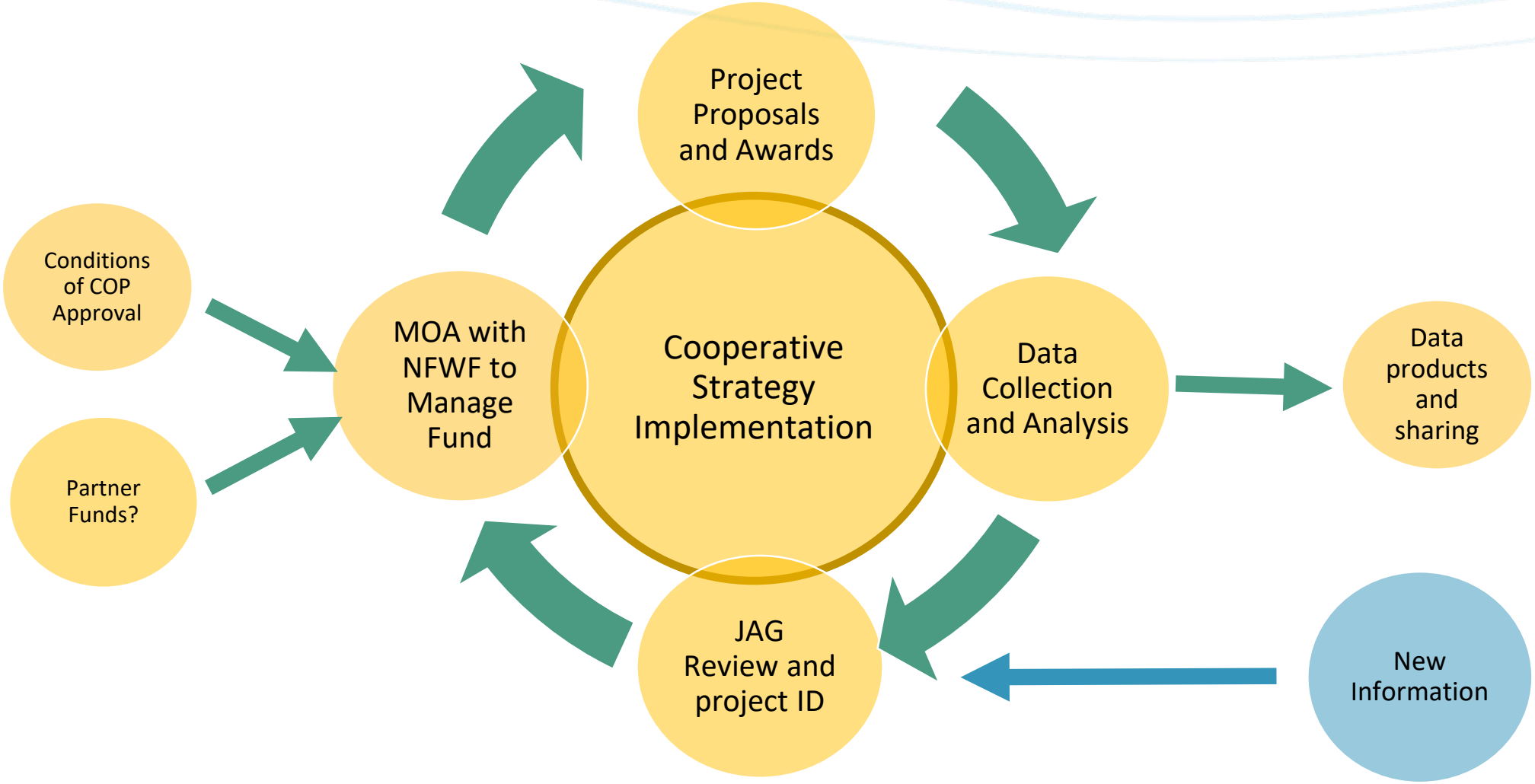
Components of a Common Strategy

- Final Strategy Document
- Costs and Funding sources
- Project management
- Joint Advisory Group to identify common projects
- Coordination, collaboration, and dissemination

Strategy Implementation



DRAFT Strategy Implementation



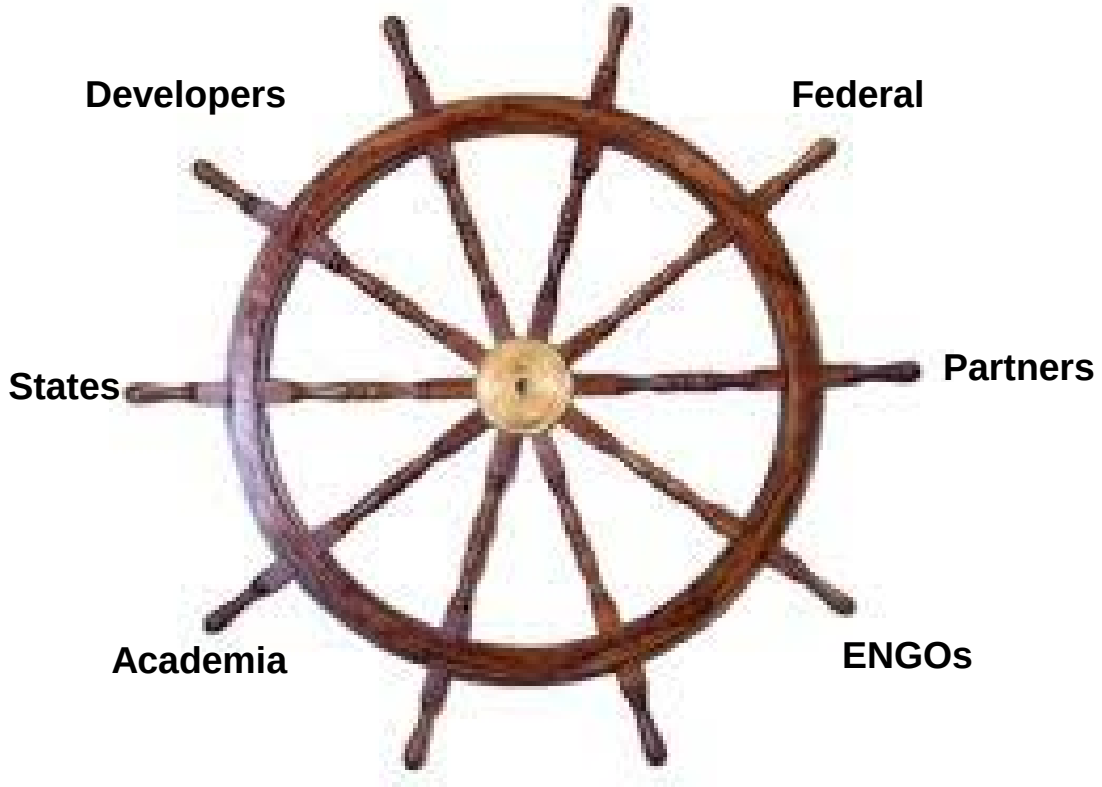
What are the next steps?

Finalize a Common Regional Strategy

- Purpose and goals
- Authorities an funding source
- Scale and time frame
- Costs
- Project management
- Data sharing

Stand up a Joint Advisory Group

- Stand up a JAG
- Establish roles and expectations
- Review Final Research Framework Workshop report
- Identify projects for RFPs
- Periodic review and funding cycle



Implementation Mechanisms

- Based on a final strategy, evaluate equitable cost sharing
- Establish funding mechanisms (voluntary, CoA, one-time vs. annual)
- Establish agreement for fund/project management with NFWF
- Convene a strategy meeting with partners (JAG, NFWF, Developers)

Other Background Planning

Guidance, Standards, Communication

- Standards
  - Units, Formats, Reporting
  - PAM best practices (e.g., measurements of pile driving noise)
- Coordination and Communication
  - Other monitoring efforts
  - Animal telemetry network (https://atn.ioos.us/)
  - Field updates
  - Web products

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