



BOEM Bureau of
Ocean Energy Management

Noise Monitoring and Received Level Target Overview

14 December 2022

Sam Denes | OSW Noise Reduction Workshop Day 2

Wind Farm Acoustic Monitoring

- Three classes of acoustic monitoring
 - Long-term acoustic recording from the lease area
 - Acoustic monitoring for mitigation
 - Sound field verification

Long term:

What do we hear over the course of a few years?

Mitigation:

During pile driving, are there vocal species present?

Verification:

For limited foundations, do the modeled analyses encompass the realized sound fields



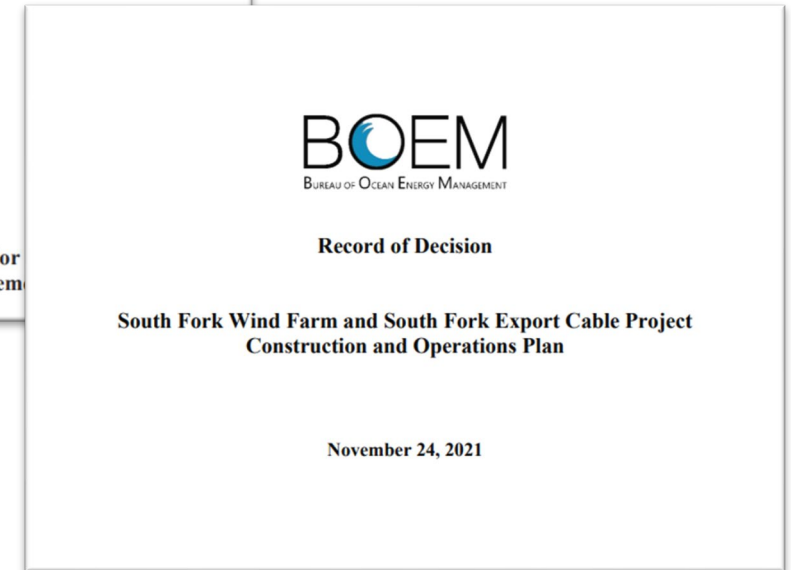
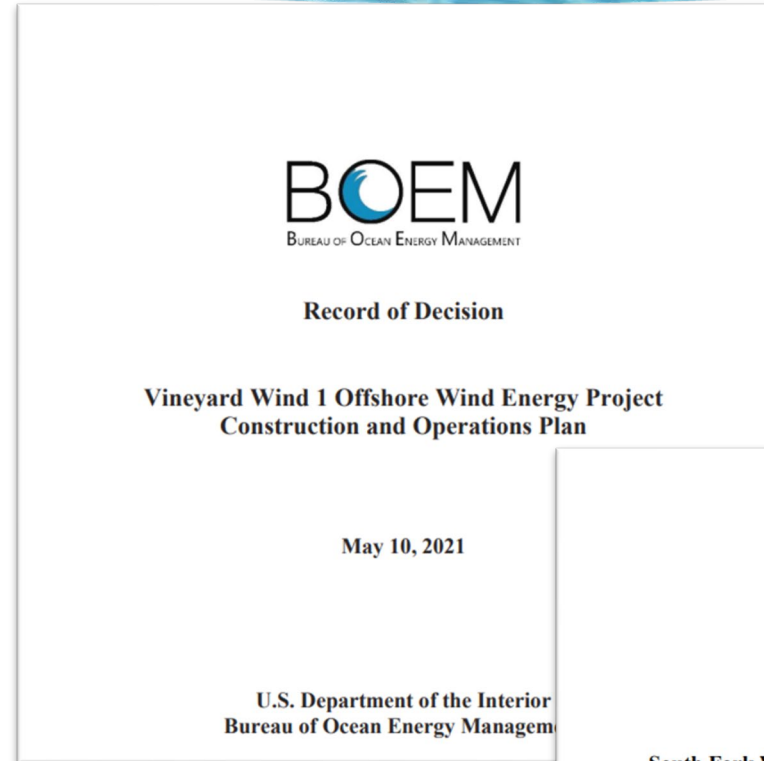
Sound Field Verification Requirements

- Determined on a per-project basis
- Lack of predictability
- Variability is a concern

Proposed Target for Noise Production



- Determine a goal for the level of noise generated during impact pile driving
 - Understandable
 - Meaningful
 - Aspirational
 - Measurable



Data from COPs

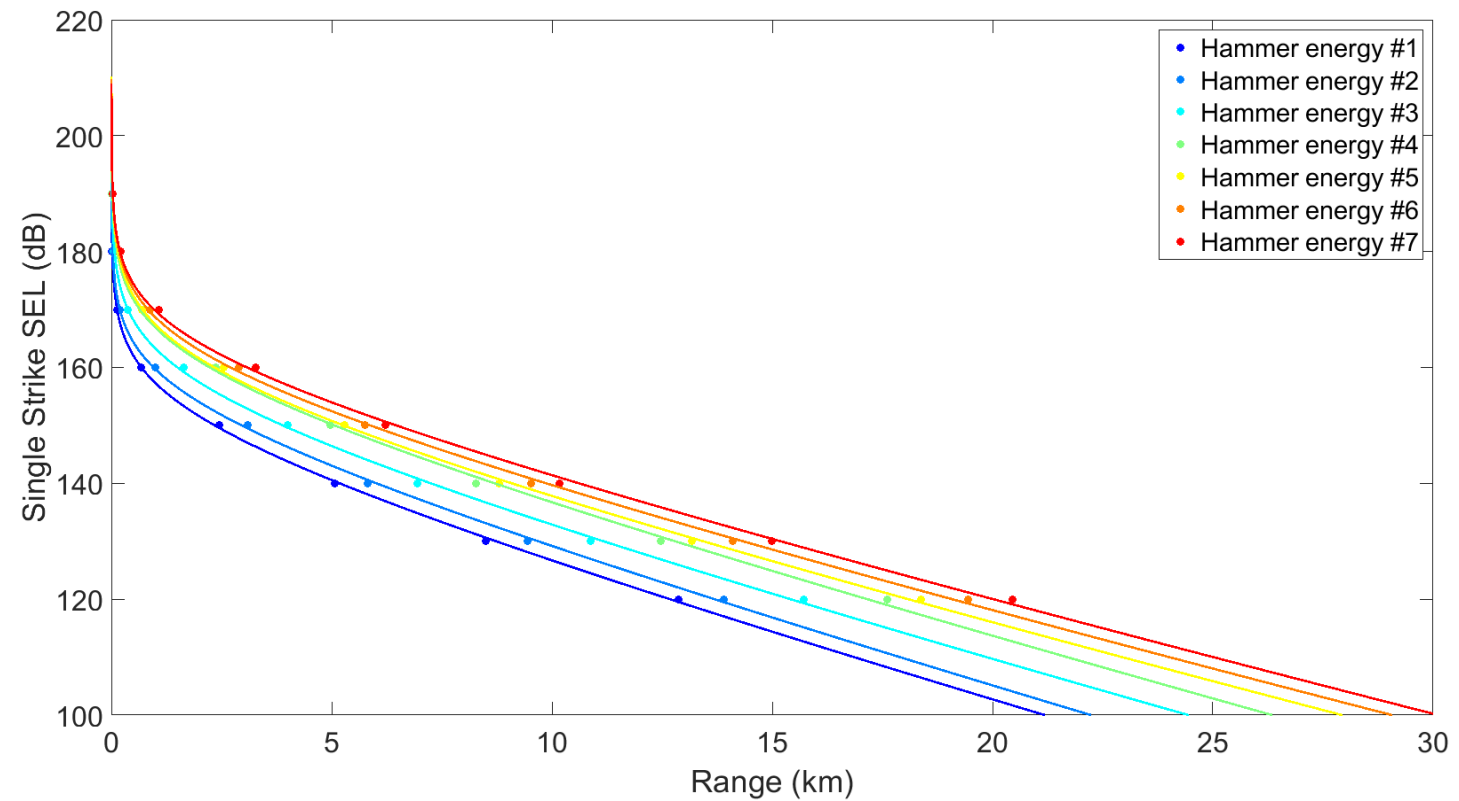
- Factors Influencing Predicted Ranges
 - Pile diameter
 - Hammer size
 - Number of strikes
 - Sediment characteristics
 - Seasonality
 - Modeling conservatism
 - Number of piles
 - Foundation type

Range (km)	Diameter (m)	Hammer (kJ)	Strikes
3.73	11	5500	2125
4.78	9.6	5500	5497
7.47	12.5	6500	15186
8.93	12.5	6500	15186
16.56	11	4000	10846
21.37	16	6600	7000
11.17	16	6600	7000



Existing Data

- Predicted noise levels in COPs
- Measured levels from construction of existing windfarms
 - US
 - Europe
- Mitigation effectiveness
- Identify goals
 - Determine what we want



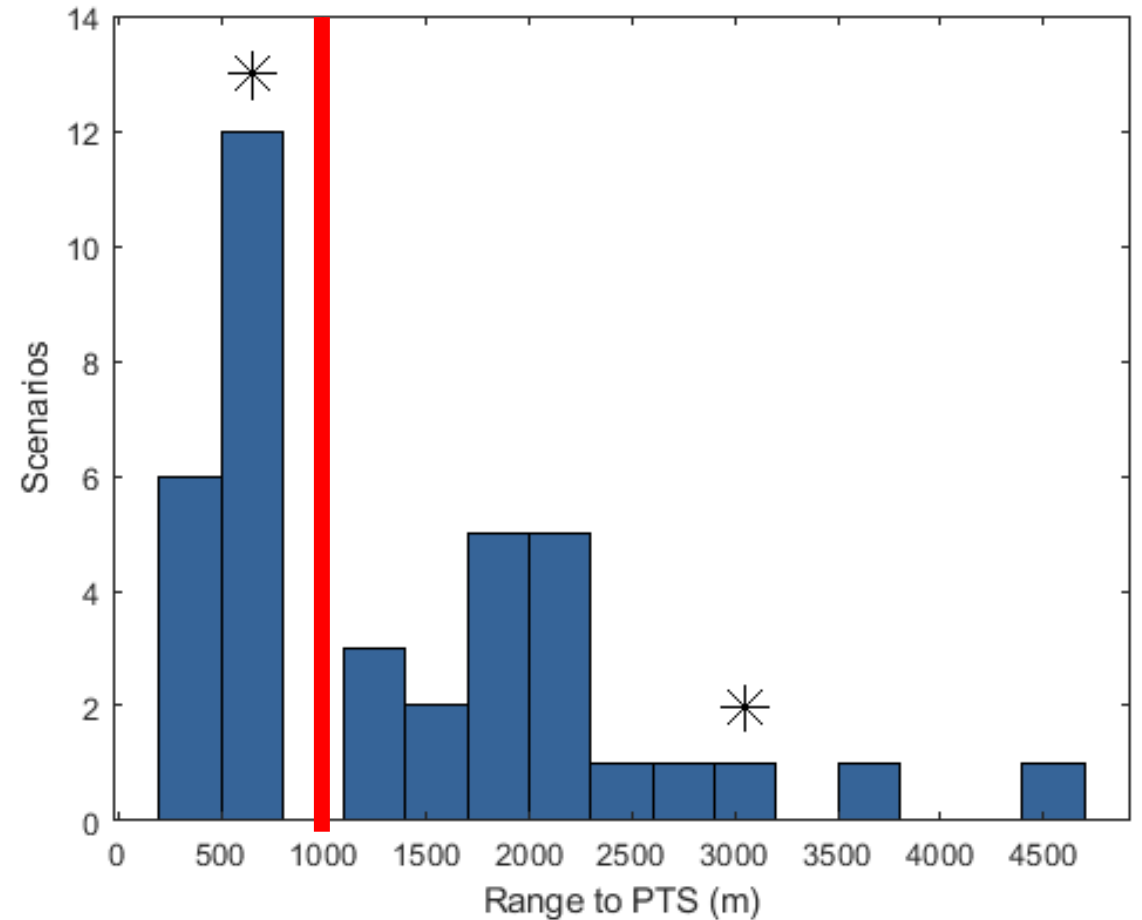
Understandable & Meaningful

- Difficult for hammer operators to determine if number of takes will be exceeded
- European operators use feedback from acoustic recorders
- Predictable expectations across proposed actions
- Selection of target to reduce the effects of greatest concern



Aspirational & Measurable

- Consider criteria of interest
 - Cumulative SEL for LF cetaceans
 - Peak SPL for HF cetaceans
- Determine range to threshold that would reduce impacts relative to COPs
- Based on acoustic measurements
 - Explicitly does not consider animal movement
- Set target:
 - Received level at 1 km below Level A criteria



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Sam Denes | samuel.denes@boem.gov | 703-787-1645