

# Coastal Acoustic Buoy for Offshore Wind (CABOW)

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# Outline

- Current technology (CAB)
- Goals of the CABOW project
- CABOW research plan
- CABOW timelines
- Q&A



# Coastal Acoustic Buoy (CAB)

- Aimed at coastal activities that require marine mammal mitigation using passive acoustics.
- Designed to be deployed by two people from a small vessel to provide flexible deployments & control costs.
- Developed in collaboration with St. Andrews Instrumentation Ltd. (SAIL) and the Applied Physics Laboratory at the University of Washington.



# CAB unit specs

- Buoy Weight: ~110 lbs (50 kg)
- Hydrophone: Reson TC 4014
- Mooring system: 75 lbs pyramid anchor
- Potential tethered depth: 100 m
- Range using radio: up to 6 km
- Range using 3G: dependent on carrier
- DAQ: SAIL 4 channel board
- Sampling rates: 50 to 500 kHz
- Memory storage: 1 TB
- TRL 9
- Longevity: 2-3 weeks in Mitigate mode  
3-4 weeks in Baseline

# Goals for CABOW

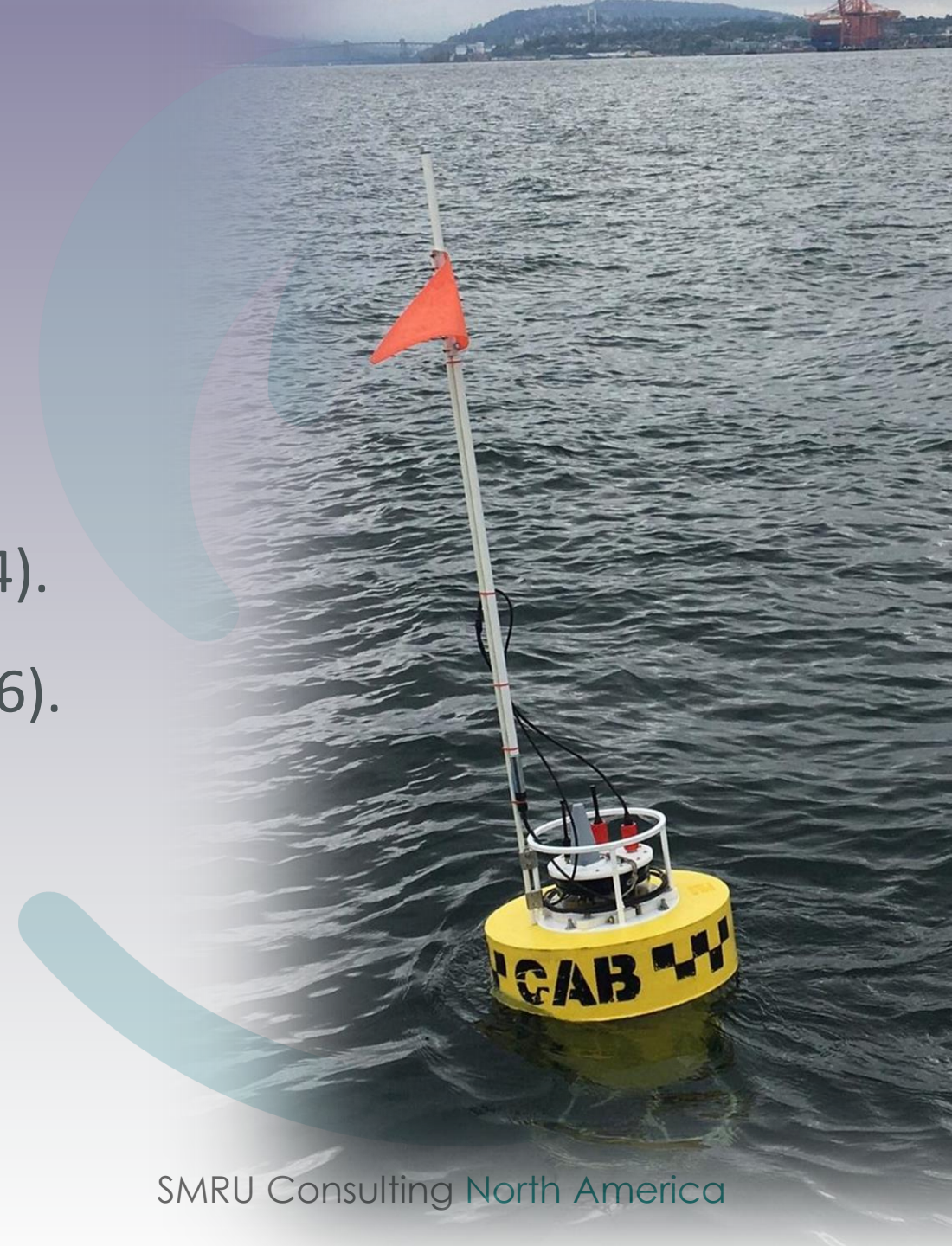
Develop a cost-effective and robust system for monitoring and mitigating U.S. offshore wind construction by:

- Providing a system to efficiently validate acoustic noise modelling at the beginning of offshore wind construction activities.
- Provide a system to monitor exclusion zones for North Atlantic right whales (NARW) during offshore wind construction activities.

# CABOW research plan

The research plan involves the following stages:

1. Lab/Desktop testing and modelling (TRL 4).
2. Field testing and validation in WA (TRL 5-6).
3. Effectiveness Trial in MD (TRL 7).

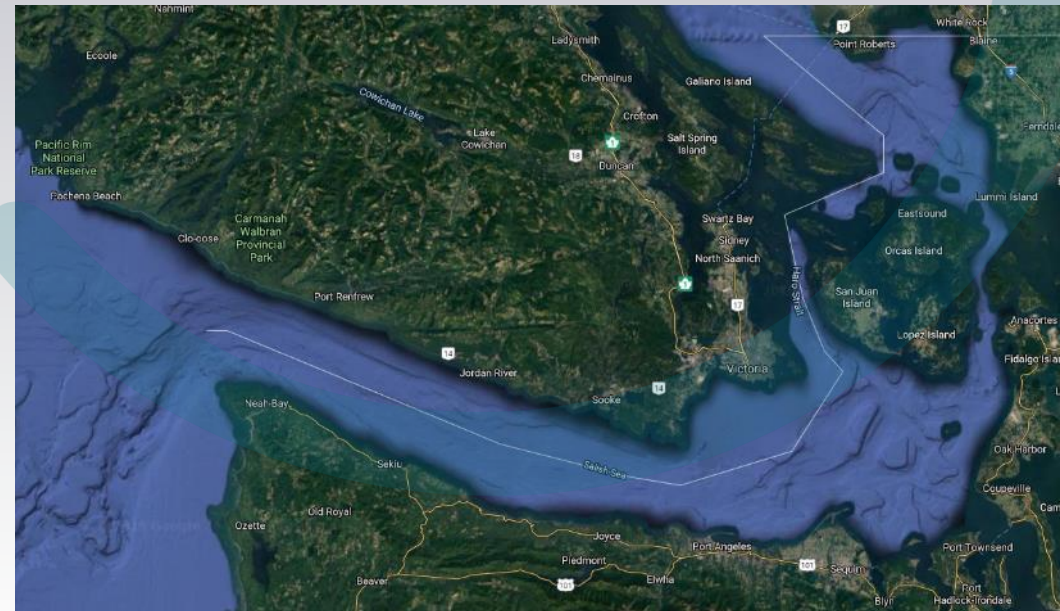


# 1. Lab/Desktop testing & modelling

- Model exclusion zone methods to determine most robust and cost-effective technique.
  - 1 hydrophone vs 3 hydrophones on each buoy.
  - Pressure vs particle motion sensors.
- Identify & test communication systems.
  - Radio (900 MHz), Cellular, Satellite.

## 2. Field testing and validation in WA

- Quantify performance of:
  - NARW call detection range; Precision & Recall for exclusion zone; Data transmission delay/rates; Mooring hold & noise.
- Quantify performance under variable conditions:
  - Wind, waves, currents.
  - Ambient noise, self noise.





### 3. Effectiveness trials in MD

- Quantify performance of the following:
  - NARW call detection range; Precision & Recall for exclusion zone; Data transmission delay/rates; Mooring hold & noise.
- Quantify costs of CABOW system.
- Provide a report/submit a manuscript synthesizing findings.

# CABOW timelines

1. Lab/Desktop testing and modelling: Aug 2019 – Apr 2020
2. Field testing and validation in WA: May 2020 – May 2021
3. Effectiveness Trial in MD: June 2021 – Nov 2021
4. Analysis & Reporting: Dec 2021 – Jul 2022

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