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Data Transferability Process for Marine Renewable Energy

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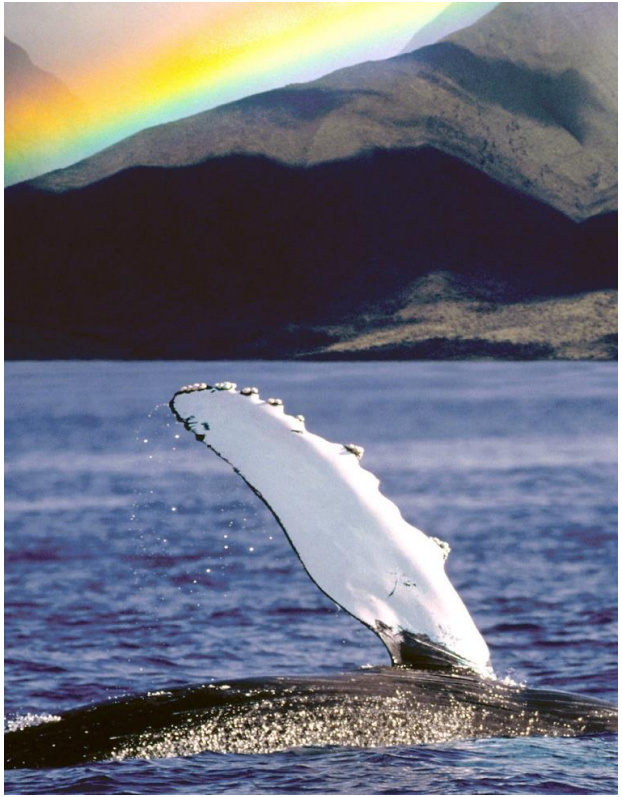
Webinar for MRE Regulators
August 16, 2018
Online

OES OCEAN ENERGY SYSTEMS

ANNEX IV

U.S. DEPARTMENT OF ENERGY
Energy Efficiency & Renewable Energy

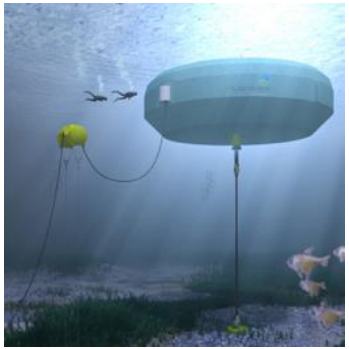
Today's Webinar



- Introductions
  - Purpose of the webinar
  - Introduction to the topic
- Working with regulators
- Data Transferability Process
  - Framework and MRE Project Archetypes
  - Best Management Practices (BMPs)
  - Implementation Plan
- Next steps

Barriers to Permitting

- MRE industry perceptions
- Our perceptions of the regulatory community
- Annex IV working to bridge these gaps
  - 2018 theme: Data Transferability and Collection Consistency
- Learning as we go…


Data Transferability and Environmental Interactions

- Data Transferability
  - Using data from an already permitted/consented MRE project or analogous industry to be “transferred” to inform potential environmental effects and consenting for a future MRE project.
- What do we mean by “**data**”?
  - We really mean data and information:

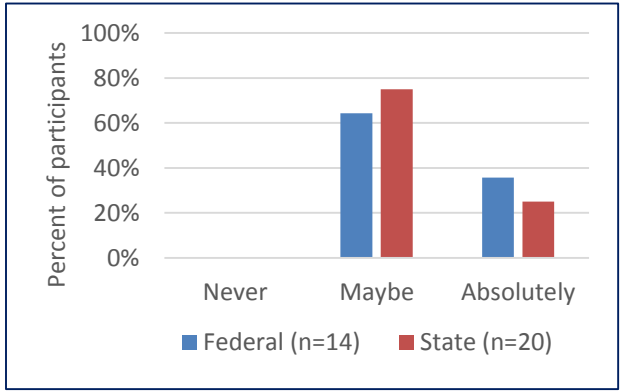
    Could be raw or quality controlled data but *more likely* analyzed data and information, synthesized data to reach some conclusion, reports, etc.
- Environmental Interactions
  - Collision Risk
  - Underwater Noise
  - EMF
  - Habitat Changes
  - Displacement/Barrier Effects
  - Physical Systems

Working with US Regulators

- 2017
  - Held two regulator webinars:
    - Environmental Effects of Permitting MRE Development
    - Environmental Effects of MRE Development: Regulator Survey Results and Next Steps
  - US Regulator Survey
- 2018
  - White paper on “Data Transferability and Collection Consistency”
  - 5 regional regulator Workshops (in-person and online)
  - ICOE workshop with regulators, developers, and researchers
    - Framework
    - Best Management Practices
    - Implementation Plan

Working with US Regulators

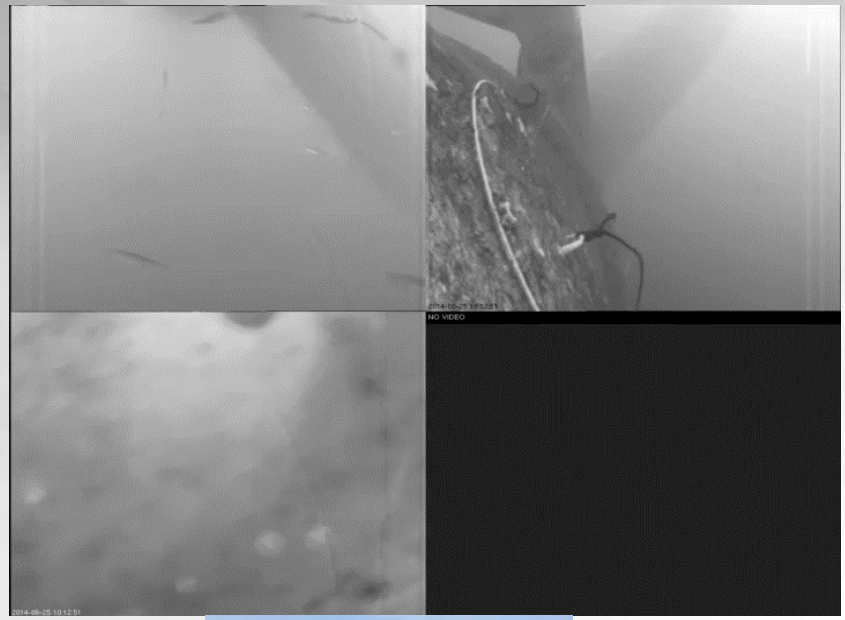
- Data can be transferred from:
  - Research studies and monitoring of already permitted projects
  - Other industries with similarities
- Site specific data collection could be reduced
- Data for “transferring” need to be collected consistently for comparison

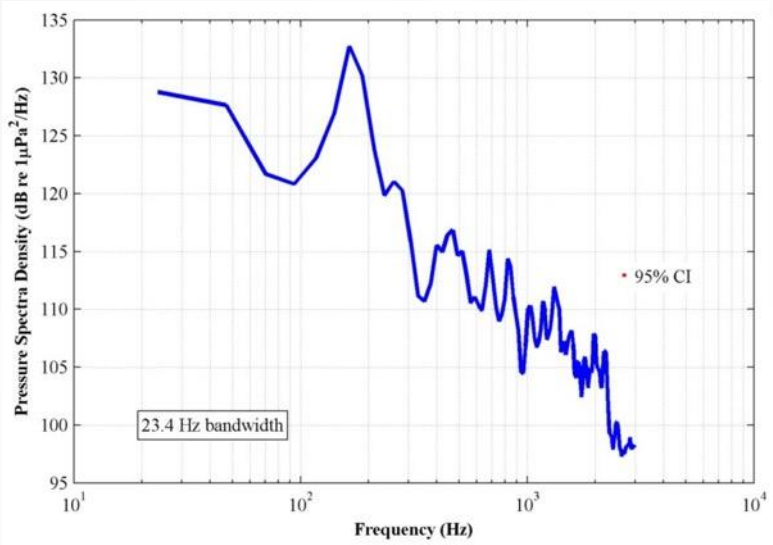


- 5 Data Transferability Workshops (~2 hours)
- Shared MRE data, understand regulators’ needs and willingness to transfer data
- Gathered feedback on Data Transferability Framework

Sample Monitoring Data

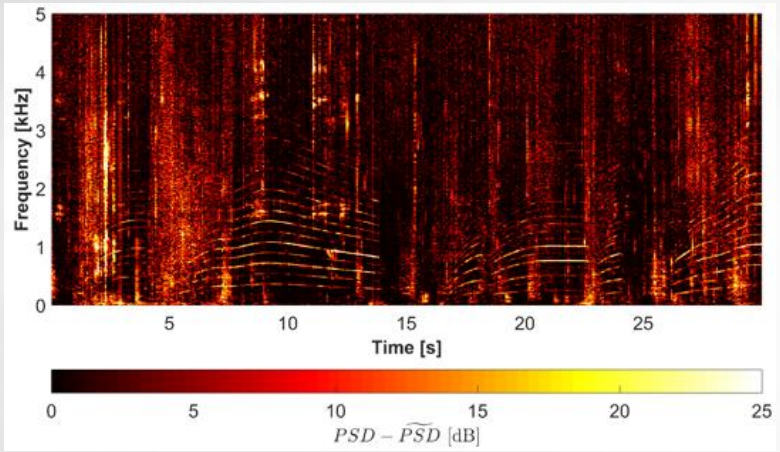
- Tidal turbines at EMEC

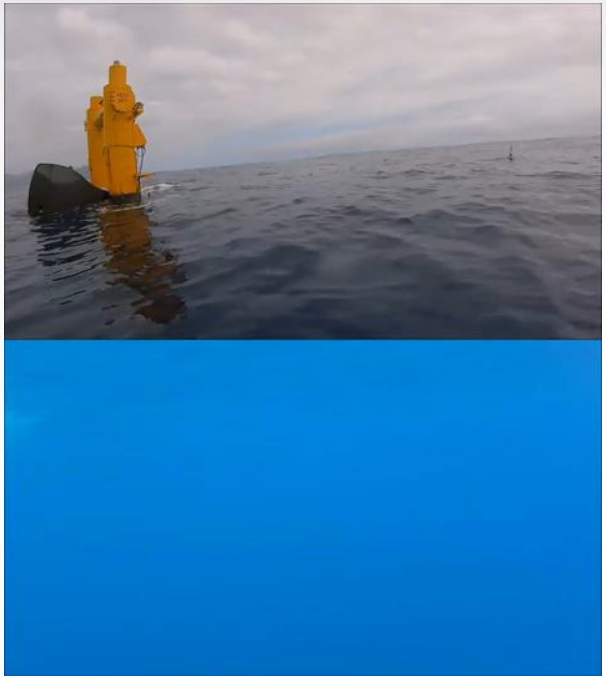




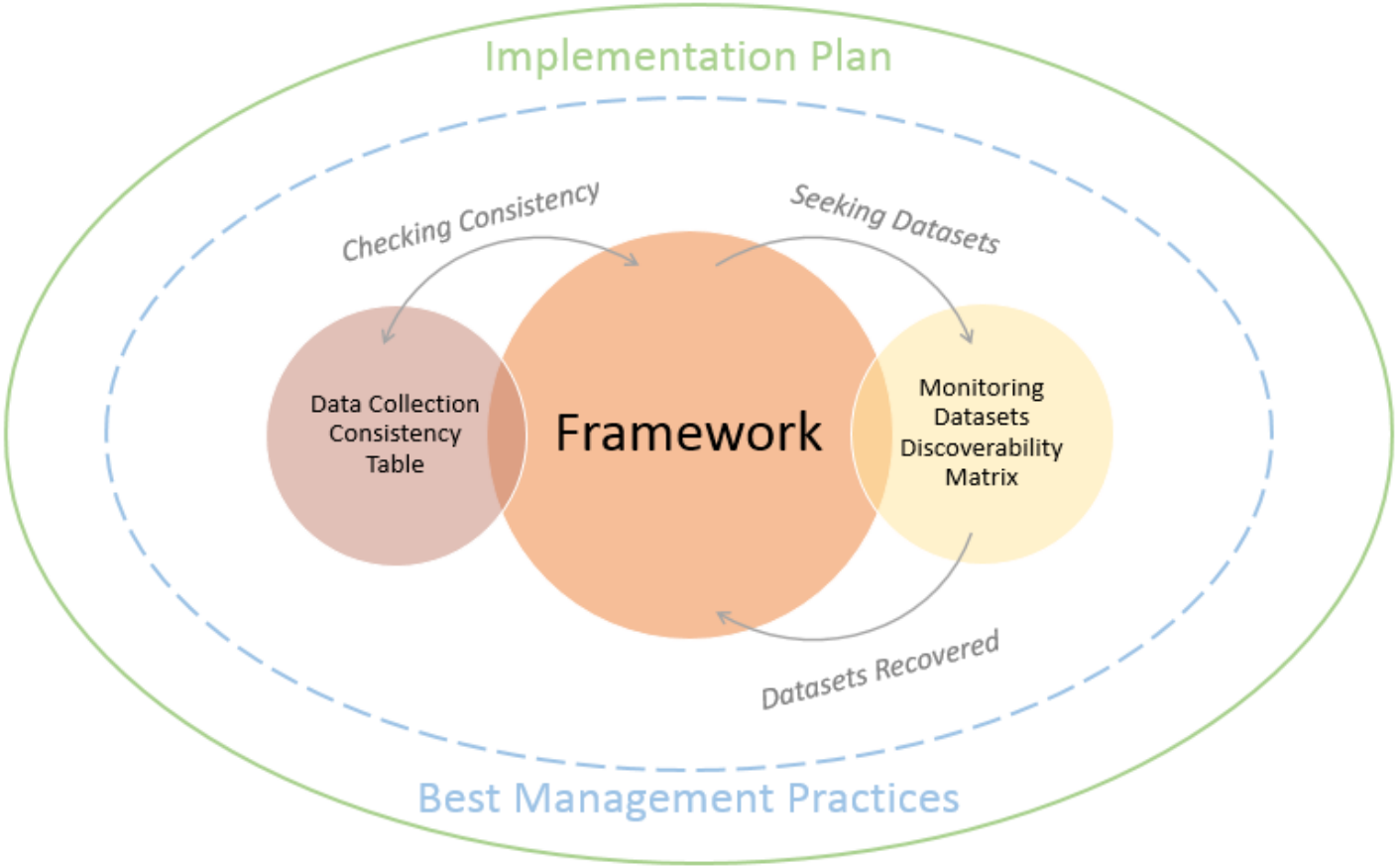
Sample Monitoring Data

- WECs at WETS (Hawaii)

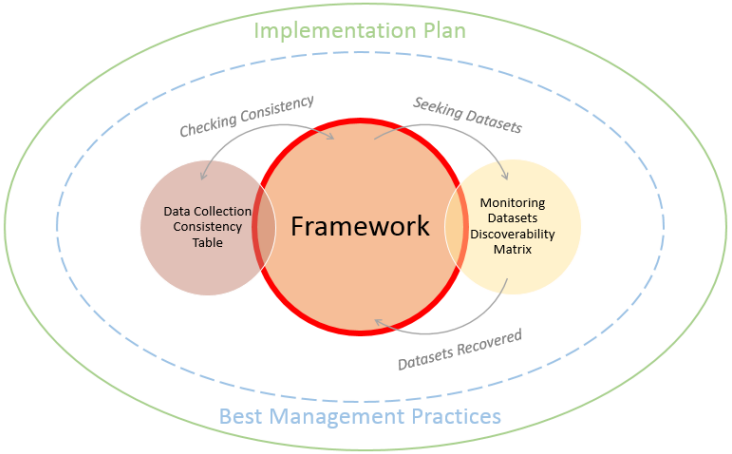




Data Transferability Process



Framework for Data Transferability



- Develop common understanding of data types and parameters to address potential effects of MRE development
- Create best practices for consistent collection of data

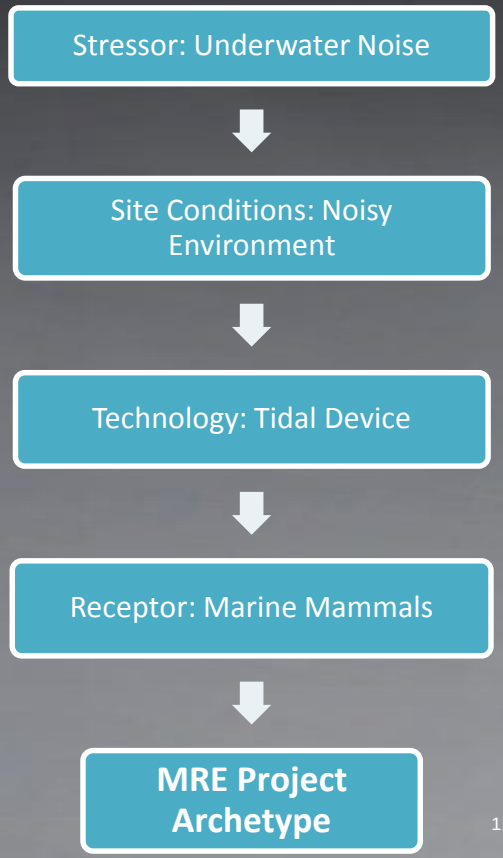
Framework:

1. Method for describing environment, evaluating the comparability of data sets (MRE project archetypes);
2. Description for applying framework; and
3. Method for implementing framework to support regulatory processes

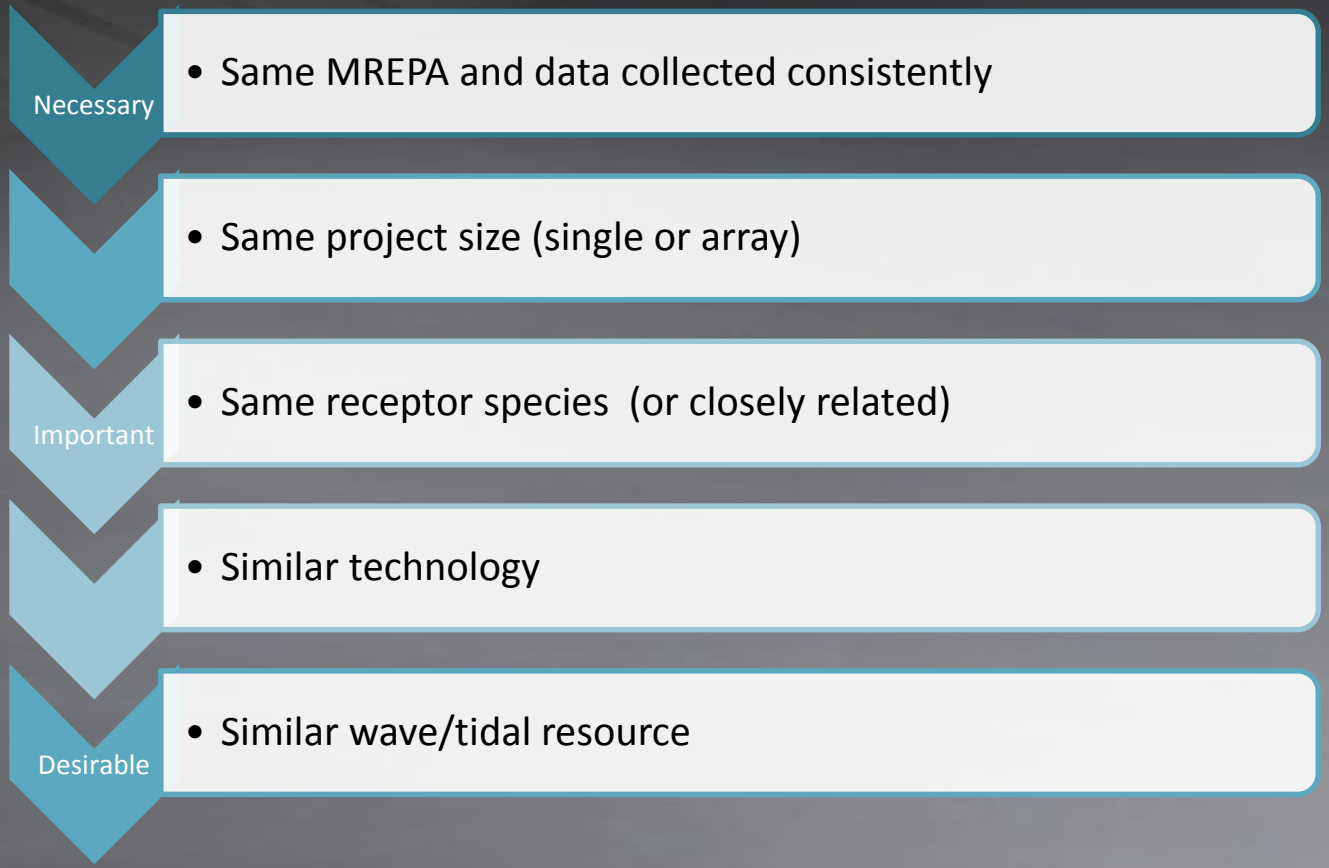
Site Condition	Technology	Receptors
Isolated/Quiet Environment	Tidal Device	Marine Mammals
		Fish
	Wave Device	Marine Mammals
		Fish
Noisy Environment	Tidal Device	Marine Mammals
		Fish
	Wave Device	Marine Mammals
		Fish

Framework: MRE Project Archetype

Underwater Noise



Guidelines for Transferability

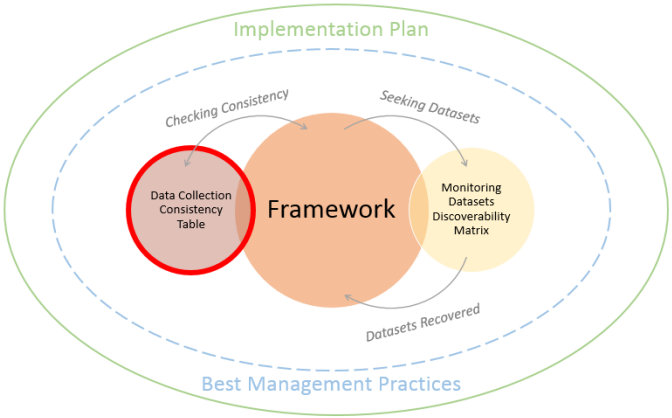


Regulator Feedback

- Regulators not looking for raw data
- Valued videos, audio clips and other data/information
  - Help increase understanding of potential impacts
- Overall, positive feedback
  - Would help to find data/information easier
  - Liked the idea of having data that is compatible with one another

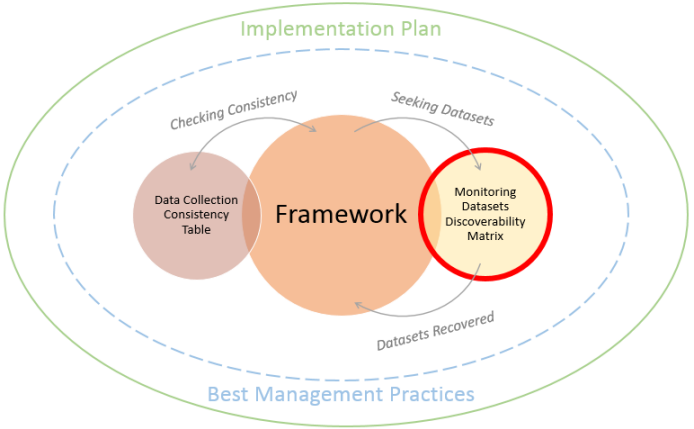
Data Collection Consistency

- Consistent processes/units for data collection can increase confidence in transfer of data
- Quality assurance checks on existing data
- Trustworthiness of data: credible, transferrable, dependable, confirmable, and reflexive



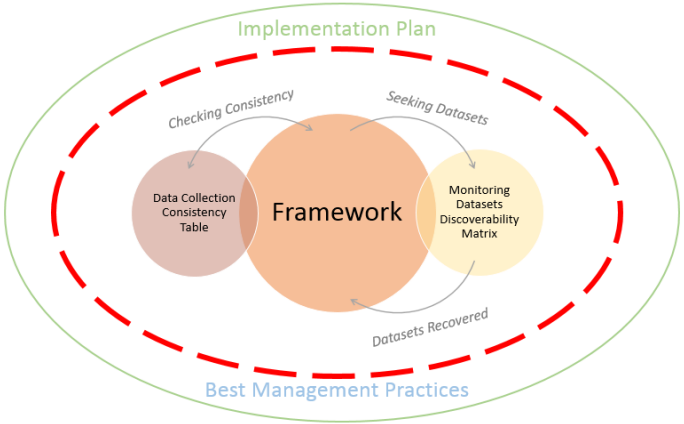
Stressor	Process or Measurement Tool	Reporting Unit	Analysis or Interpretation
Collision Risk	Sensors include: acoustic only, acoustic + video, Other	Number of visible targets in field of view, number of collisions	Number of collisions and/or close interactions of animals with turbines used to validate collision risk models
Underwater Noise	Fixed or floating hydrophones	• Amplitude dB re 1 µPa at 1 m • Frequency: broadband or specific frequencies	Sound outputs from MRE devices compared against regulatory action levels. Generally reported as broadband noise unless guidance exists for specific frequency ranges.
EMF	Source: Cable, other, shielded or unshielded	AC or DC, voltage , amplitude	Measured EMF levels used to validate existing EMF models around cables and other energized sources.
Habitat Change	• Underwater mapping with: sonar, video • Habitat characterization from: mapping , existing maps	Area of habitat altered, specific for each habitat type	Compare potential changes in habitat to maps of rare and important habitats to determine if they are likely to be harmed.
Displacement/ Barrier Effect	Population estimates by: human observers , passive or active acoustic monitoring , video	Population estimates for species under special protection	Validation of population models, estimates of jeopardy, loss of species for vulnerable populations
Changes in Physical Systems	Numerical modeling, with or without field data validation	No units. Indication of data sets used for validation, if any.	Data collected around arrays should be used to validate models.

Monitoring Datasets Discoverability Matrix



- Classify existing monitoring datasets by MREPA, including:
  - Project size (single/array)
  - Stressor and receptor
  - Technology
  - Site conditions
- Used to discover already permitted/consented datasets, based on MREPA, and evaluate consistency of information
- Help transfer data from an already permitted/consented project to future projects
- Will be hosted on *Tethys* (https://tethys.pnnl.gov/)

Best Management Practices (BMPs)



- "Practices or procedures, that are qualitative and flexible" (EPA 1993)

- Three phases:
  1. Planning
     - Regulator workshops and data transferability process
  2. Development and Implementation
     - Draft BMPs
     - Implementation plan
  3. Evaluation and reevaluation
     - As BMPs are applied

Best Management Practices

- **BMP 1: Meet the necessary requirements in the Guidelines for Transferability to be considered for data transfer from an already permitted/consented project to a future project.**
  - Purpose: Ensure minimum thresholds, necessary to have the same MREPA and data collected consistently, are met for transferring data.

- **BMP 2: Determine likely datasets that meet data consistency needs and quality assurance requirements.**
  - Purpose: Ensure methods used to collect/analyze data are compatible and will help to determine the validity of their comparison.

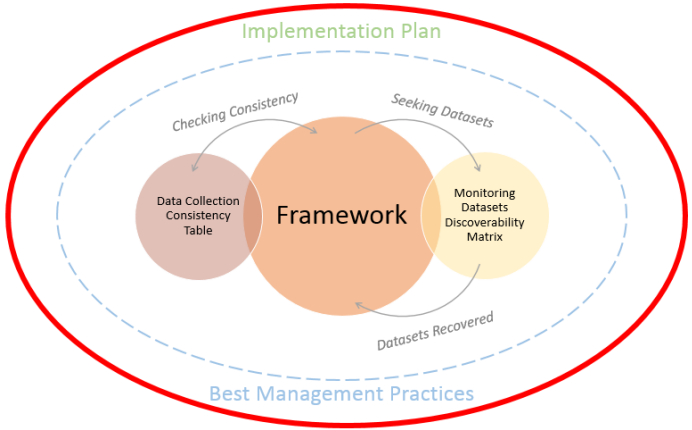
- **BMP 3: Use of models in conjunction with and/or in place of datasets.**
  - Purpose: Encourages the use of numerical models to simulate interactions.

- **BMP 4: Provide context and perspective for datasets to be transferred.**
  - Purpose: Encourages the use of available and pertinent datasets to enhance the interpretation of data and information.

Success of the Data Transferability Process

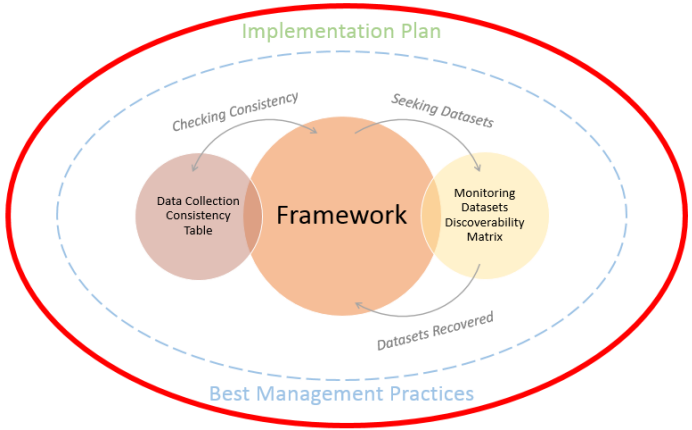
- Regulators (essential):
  - willing to accept the premise of data transferability
  - apply the principles of data transferability and collection consistency to evaluate permitting/consenting applications
- Device and project developers:
  - recognize the value of data transferability
  - commit to collecting and providing data that are consistent with the collection guidelines and that will best fit the framework and guidelines for collection consistency, quality assurance, and trustworthiness
- Researchers and consultancies:
  - inform themselves of the data consistency requirements and potential use of data collected around MRE devices to ensure that research data are usable for transfer

Implementation Plan for Data Transferability



- Regulators:
  - Ensure have access to datasets and processes for transferring data
  - Assist in understanding the applicability of these processes through an active outreach and engagement process
  - Provide technical assistance to help implement the framework and BMPs

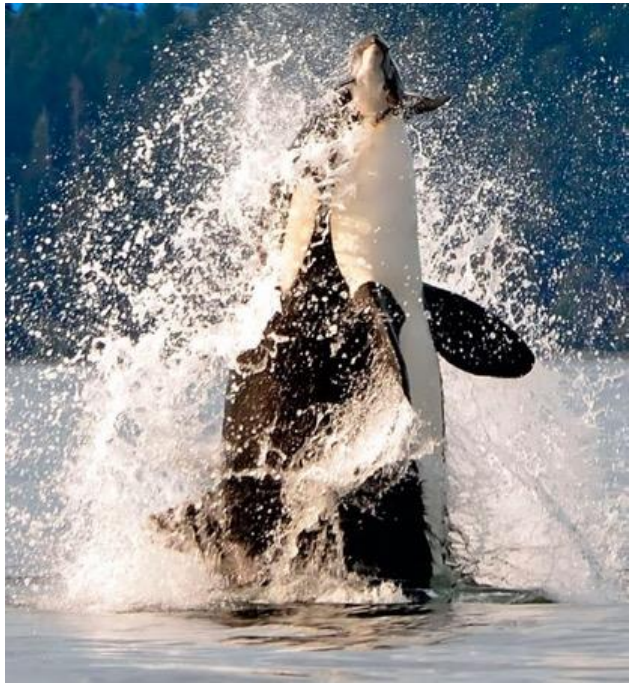
Implementation Plan for Data Transferability



- Device and project developers:
  - Reach out to ensure they are familiar and accepting of the framework, data collection consistency, and BMPs

- Researchers and consultancies:
  - Engage to provide added value to the process steps and to consistently collect data that will further support the process

Next steps (FY19: Oct 2018 – Sept 2019)



- Implement plan for data transferability
- Continue to seek input from US and other Annex IV country regulators
- Extend process to other Annex IV countries
- Present process via web-based tool on *Tethys*

- Convene a virtual group of international representatives from across the MRE community:
  - To share progress in understanding and permitting/consenting MRE projects
  - To provide technical assistance in using the framework and BMPs
  - To gauge the success of the venture

Data Transferability Process Links

- *Tethys*:

  https://tethys.pnnl.gov/

- Data Transferability Process:
  - Regulator webinars on environmental effects
  - Data Transferability White Paper
  - Regulator online workshop recording
  - Annex IV workshop documents and report
  - *Will host today's presentation and recording*

    https://tethys.pnnl.gov/data-transferability

Thank you!

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