

# Ocean Research Advisory Panel

*Public Meeting: December 3-4, 2024*

## Biogeochemical Observing Technologies Subgroup

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## ORAP Task:

Develop a report to offer an initial set of recommendations to the U.S. Ocean Policy Committee (OPC) about **opportunities to leverage public-private partnerships to advance emerging marine biogeochemical observing technologies and advance national ocean science initiatives.**

The report identifies **barriers and challenges, recommendations for addressing those challenges, and examples of technologies** that are mature for investment.

# Focus of the Report:

- **Value of Public Private Partnerships** to advance marine biogeochemical observing technologies
- **Challenges and barriers** to public-private partnerships
- **Recommendations** for addressing these challenges
- **Examples of emerging technologies** relevant to the challenges and recommendations discussed in the report

## Recent Progress:

The subgroup heard from colleagues in the government (USGS) and the private sector (Woolpert) about factors that contributed to the success of the 3D Elevation Program.

Guest speakers invited to the December ORAP meeting will share their perspectives on the barriers, challenges, and potential mechanisms that expand opportunities for public-private partnerships to inform the recommendations in our report.

# Challenges and Barriers to Public-Private Partnerships

# Challenges and Barriers to Public-Private Partnerships

## Improving the Market

- Enhancing visibility of US companies in the market
- Aggregating government demand
- Supporting R&D and investments in innovation
- Evolving an under-defined regulatory framework

# Challenges and Barriers to Public-Private Partnerships

## Partnership Mechanisms

- Lack of awareness of potential funding mechanisms
- Overly focused funding that provides limited support
- Onerous paperwork and delays in processing funds
- Inability to convey funds from disparate sources via one award
- Lack of or weak risk management agreements and other legal protections
- Conflicting expectations and deliverables under grants versus contracts

# **Draft Recommendations to Address Challenges and Barriers to Public-Private Partnerships**



## Draft Recommendations for Addressing Challenges and Barriers to Public-Private Partnerships

- Establish and define standards for emerging technologies
- Coordinate interagency communication and engage the private sector
- Offer incentives to leverage industry infrastructure to collect publicly-accessible measurements
- Apply more flexible funding mechanisms
- Provide intra-agency support for public private partnerships
- Ensure appropriate legal protections for all parties involved

# Draft Recommendations for Addressing Challenges and Barriers to Public-Private Partnerships

## Establish and define standards for emerging technologies

- The OPC, through its interagency processes, should recommend that **relevant agencies establish and define monitoring standards** for e-DNA, mCDR, and other emerging technologies for which standards do not exist or for which inconsistent standards are applied. In doing so, *agencies should consider the input of federal, state, and tribal governments, academia, industry, and stakeholders.*
- The ORAP recommends the development of a **national catalog of standard protocols and best practices; consistent data formats, reporting rules, and communication guidelines; accreditation procedures for laboratories and technical staff; and performance-based testing methods** that would undergird the legally robust use of methods while also supporting continuous improvement.

# Draft Recommendations for Addressing Challenges and Barriers to Public-Private Partnerships

## Coordinate Interagency Communication & Engage the Private Sector

- The ORAP recommends the **NOPP regularly facilitate communication** among federal agency leads and the private sector to identify priorities for investment and initiate public-private partnership opportunities.
- Convene **White House Summit** on Partnerships in Ocean Science and Technology  
Topics of conversation might include: ocean observation and characterization; offshore energy development; biodiversity; environmental DNA and omics; ocean climate action; exploration and mapping; and artificial intelligence and machine learning.
- The ORAP recommends the NOPP **lead coordination of regular communications and seize opportunities to convene conversations at venues** such as the Ocean Sciences Meeting organized by the American Geophysical Union.

# Draft Recommendations for Addressing Challenges and Barriers to Public-Private Partnerships

## Offer Incentives to Leverage Industry Infrastructure to Collect Publicly-Accessible Measurements

- NOAA cooperation with the National Academy of Sciences to **assess the need for and feasibility of an ARPA-O**; bolster agency investment in innovation prizes and competitions that lower barriers of entry for startups and small business to advance novel technologies.
- Provide a mechanism for industry to **recover the costs of collecting and publicly sharing ocean data** via the federal R&D tax credit (26 USC 41).
- Under the provisions of the Build America, Buy America Act (Public Law 117-58) **consider federally operated and federally funded ocean observing systems public infrastructure** to support secure/stable domestic supply chains for ocean research technologies.

# Draft Recommendations for Addressing Challenges and Barriers to Public-Private Partnerships

## Apply more flexible funding mechanisms

**Flexible funding mechanisms that have been applied narrowly** to address specific challenges should be **considered as a model for broader application across the Federal enterprise.** For example, the Denali Commission is a federal agency that allows other federal agencies to contribute funds to address the needs of rural communities in Alaska and “deliver the services of the Federal Government in the most cost-effective manner practicable by reducing administrative and overhead costs”.

# Draft Recommendations for Addressing Challenges and Barriers to Public-Private Partnerships

## Intra-agency support for Public Private Partnerships

Employ **Technical Points of Contact** to serve as **liaisons** between private industry and Federal agencies to support public-private partnerships to meet agency needs.

Use the interagency **National Ocean Partnership Program** to **identify priorities** for issuing contracts for research and development.

## Challenges

### Improving the Market (§4.1)

- Inadequate visibility of US companies in the market (§4.1.1)
- Non uniform information delivery that spans agencies (§4.1.2)
- Non uniform set of requirements for technology performance (§4.1.2)
- Non uniform data production (§4.1.2)
- Absence of standards, specifications for measurements (§4.1.2)
- Limited opportunities for R&D and Investments in Innovation (§4.1.3)
- Underdefined Regulatory Framework (§4.1.4)

### Improving Partnerships mechanisms (§4.2)

- Lack of awareness of potential funding mechanisms (§4.2)
- Overly focused funding that provides only limited support (§4.2)
- Overwhelming paperwork needed to both apply for and receive federal funding (§4.2)
- Delays in processing awards once funded (§4.2)
- Lack of opportunities for cross-agency support as blended funding is currently not allowed between agencies (§4.2)
- Challenges with inclusion of public funding alongside private (philanthropic) funding, as awards cannot legally be linked (§4.2)
- Risk management agreements and other legal protections (§4.2)
- Lengthy permitting processes (§4.2)

## Recommendations

### Coordinate Interagency Communication/ Engage the Private Sector

- Recommendation for **NOPP to regularly facilitate communication** among federal agencies and private sector to identify priorities for investment and initiate public-private partnership opportunities (§5.2).
- Convene White House Summit** to engage a wide range of stakeholders in conversation about opportunities for public-private partnerships (§5.2).

### Establish and Define Standards

- Establish and define standards** for emerging technologies (e.g., eDNA, mCDR), with input from federal, state, and tribal governments, academia, industry, and stakeholders (§5.1).
- Establish protocols for **accreditation procedures** for laboratories and technical staff; performance-based **testing methods**; consistent **data formats, reporting rules, and communication guidelines** (§5.1).

### Offer Incentives to Leverage Industry Infrastructure

- NOAA cooperation with the National Academy of Sciences to **assess the need for and feasibility of an ARPA-O** (§5.3.1).
- Provide mechanism for industry to **recover the costs of collecting and publicly sharing ocean data** via the federal R&D tax credit (§5.3.2).
- Consider **federally operated/funded ocean observing systems public infrastructure** to support secure/stable domestic supply chains for ocean research technologies (§5.3.3).
- Bolster agency (e.g., NOAA) **investment in innovation prizes and competitions** that lower the barriers of entry for startups and small businesses to advance novel technologies (§5.3.4).

### Apply more flexible funding mechanisms

Broader (across the Federal enterprise) **application of successful and flexible (but currently only narrowly applied) funding mechanisms** (e.g., Denali Commission) (§5.4).

### Intra-agency support for Public Private Partnerships

Federal Government should consider using **NOPP as a vehicle to support the work of Technical Points of Contact**, to serve as a liaison between private industry and federal agencies to support public-private partnerships and meet agency needs (§5.5).

# Examples of Relevant Emerging Technologies



## Example Emerging Technologies

- Present opportunities to apply the recommendations to advance emerging technologies that are relevant to the challenges and barriers identified in the report
- Current and potential applications are relevant to addressing various spatial and temporal scales and the missions of multiple agencies
- Address physical, chemical, and biological aspects of the ocean
- Allow monitoring of taxa that range from microbes to whales
- Technology is mature for investment
- Market and industry maturity level are discussed in the report

# NEXT STEPS

- Identify additional existing partnership mechanisms that could inform the recommendations to address the challenges and barriers discussed in the report.
- Discuss/explore additional recommendations that are within the purview of the Executive Branch to address.