Blue Forum: R&D Pathways for Maritime Energy Solutions

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- Washington Maritime Blue, a maritime cluster organization, along with partners in Federal Government, PNNL, and DNV-GL hosted the Blue Forum Workshop in Seattle on October 29, 2019

- This workshop provided an opportunity for the maritime industry and R&D institutions to come together with federal organizations to identify maritime energy needs for decarbonization and cross agency/industry collaboration opportunities.

Three Themes for the Workshop

Part I: Current Approaches to R&D from Industry, Agencies, and Labs

Models and Examples

Discuss the role, and examples of the federal government in supporting innovation

Identify gaps

Facilitated workshop to identify the gaps between known R&D projects and industry needs

Part III: Organizing for Success: Clusters, Collaborations & "Coopetition"

Organize for Success

Discuss the role of the cluster organization and other mechanisms to bridge gaps and identify solutions

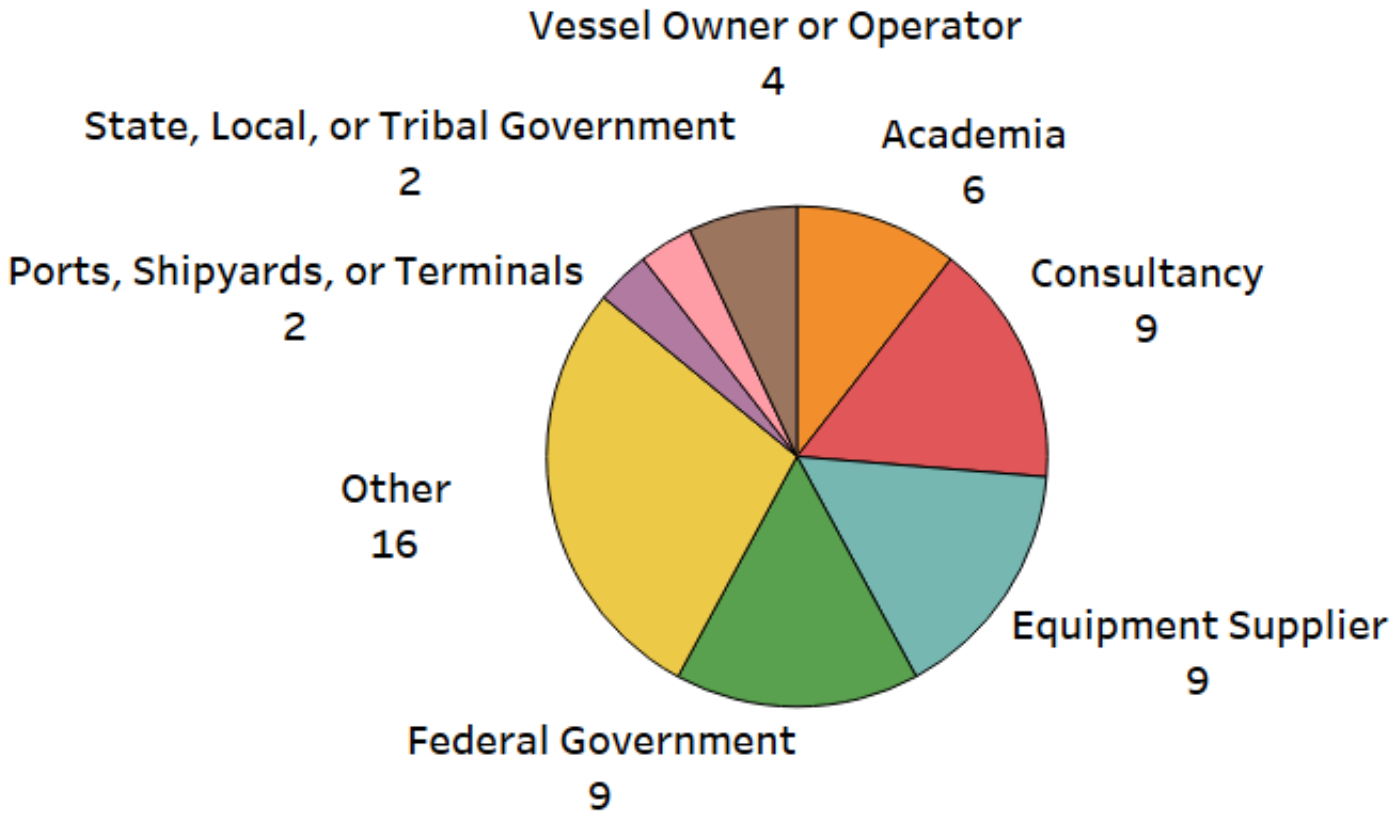
Part II: R&D to Implementation: Models, Examples and Gaps

Workshop Overview

- Over 160 people attended
- Real time survey data on ten questions collected during the event using Poll Everywhere:

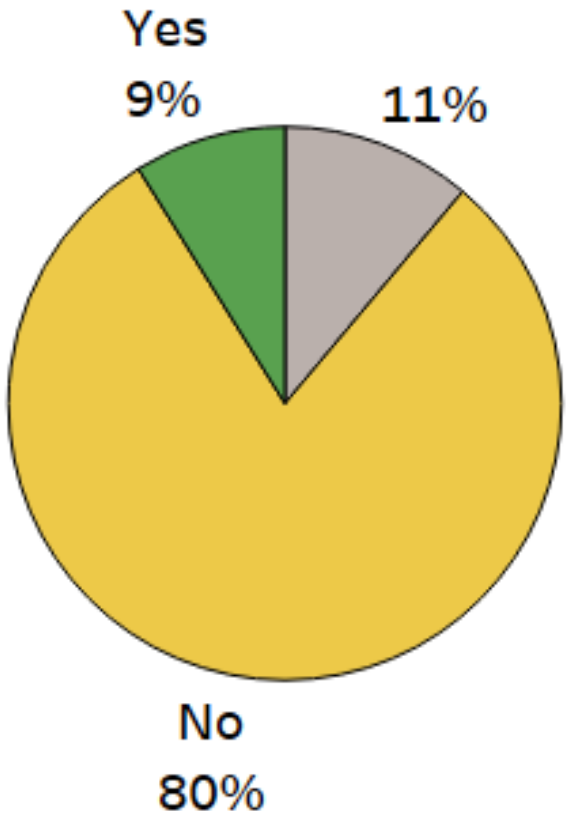
Q1	What is your primary affiliation?
Q2	Do you think the federal government is currently doing enough support maritime energy R&D and technology commercialization?
Q3	What do you believe to be the role of Federal government in researching, developing, or otherwise supporting maritime energy technologies?
Q4	There are several different Federal entities supporting R&D for maritime energy (US Navy, Department of Energy, or Maritime Administration, etc.) How familiar are you with maritime energy related R&D projects within these agencies?
Q5	How important is staying aware of the latest maritime technology R&D to the success of your organization?
Q6	In conducting R&D and building new capabilities within your organization, what stakeholders do you typically work with? (Select all that apply)
Q7	What are the most important resources that you look for in partners when collaborating on R&D? (Select all that apply)
Q8	Are you able and interested in working with other organizations to conduct maritime energy related R&D?

Demographic Subset



Perceived Government Involvement

Do you think the federal government is currently doing enough to support maritime energy R&D and technology commercialization?



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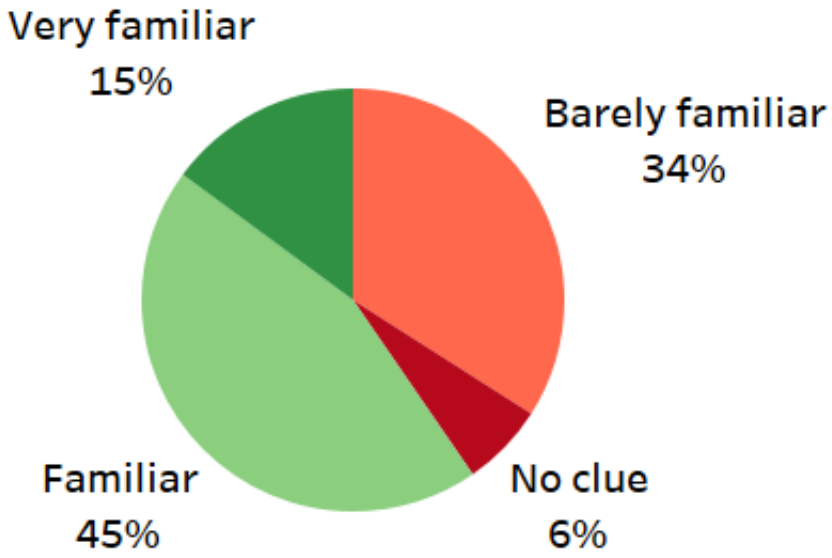

ERM Priorities for Fed and PNW

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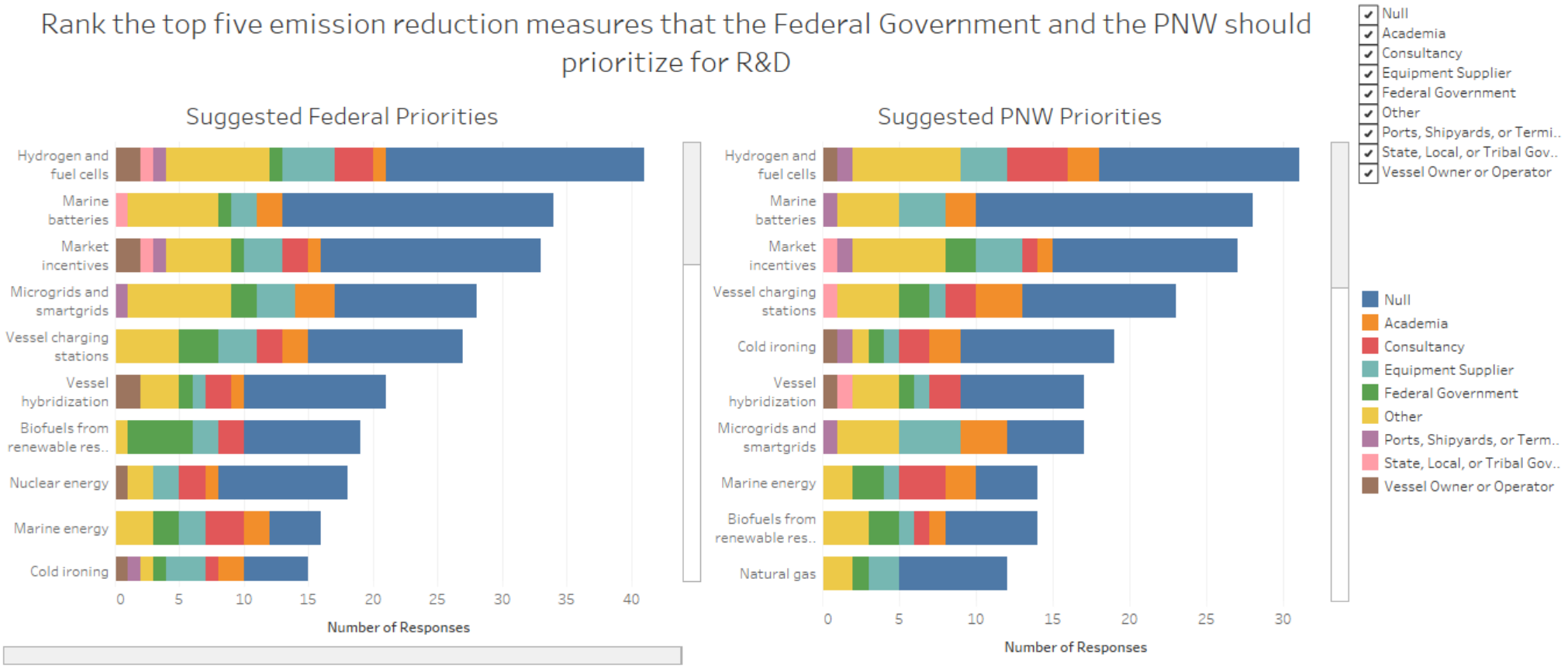

Suggested R&D from those Familiar with Fed

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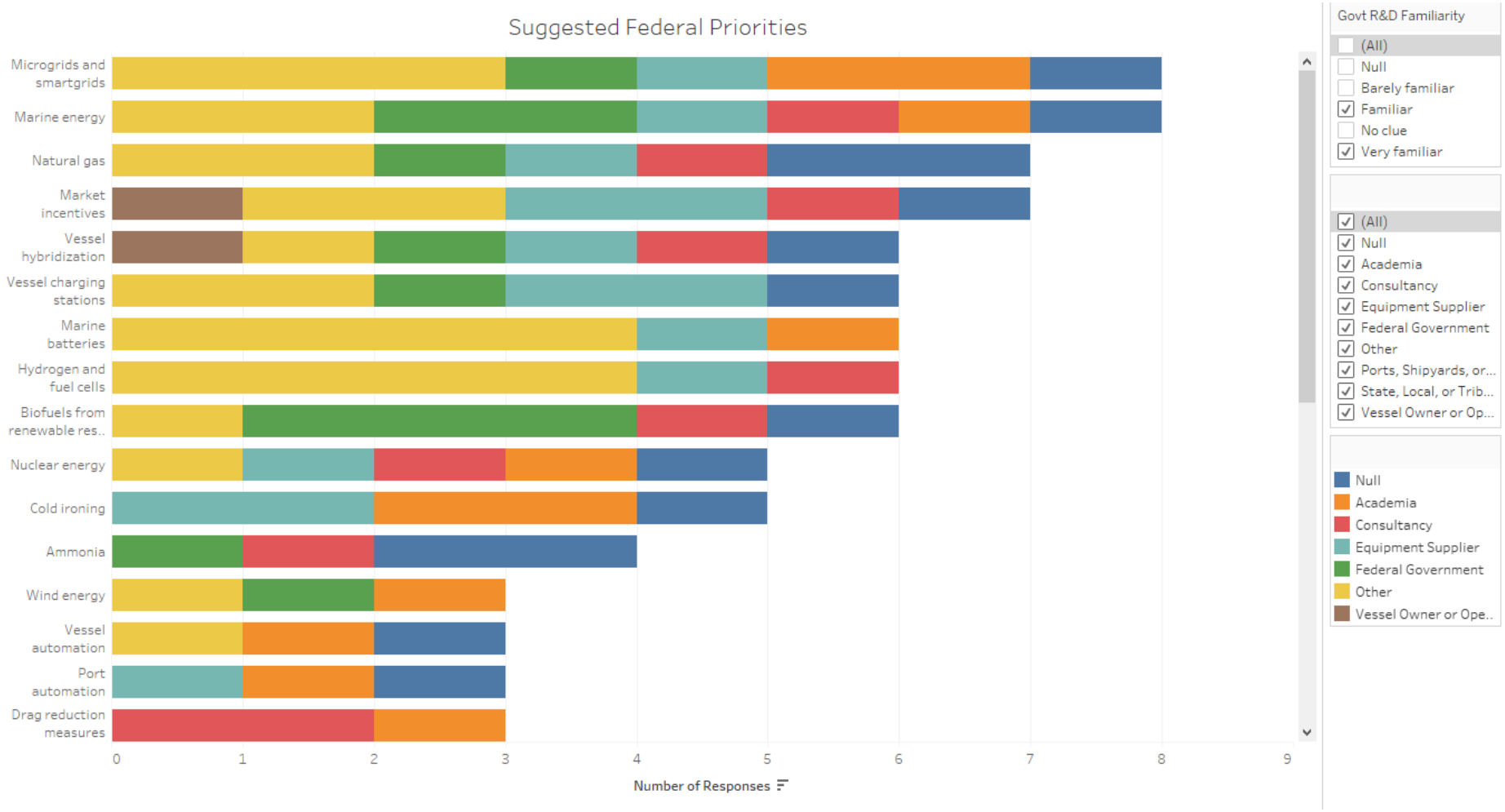

Suggested R&D from those Unfamiliar with Fed

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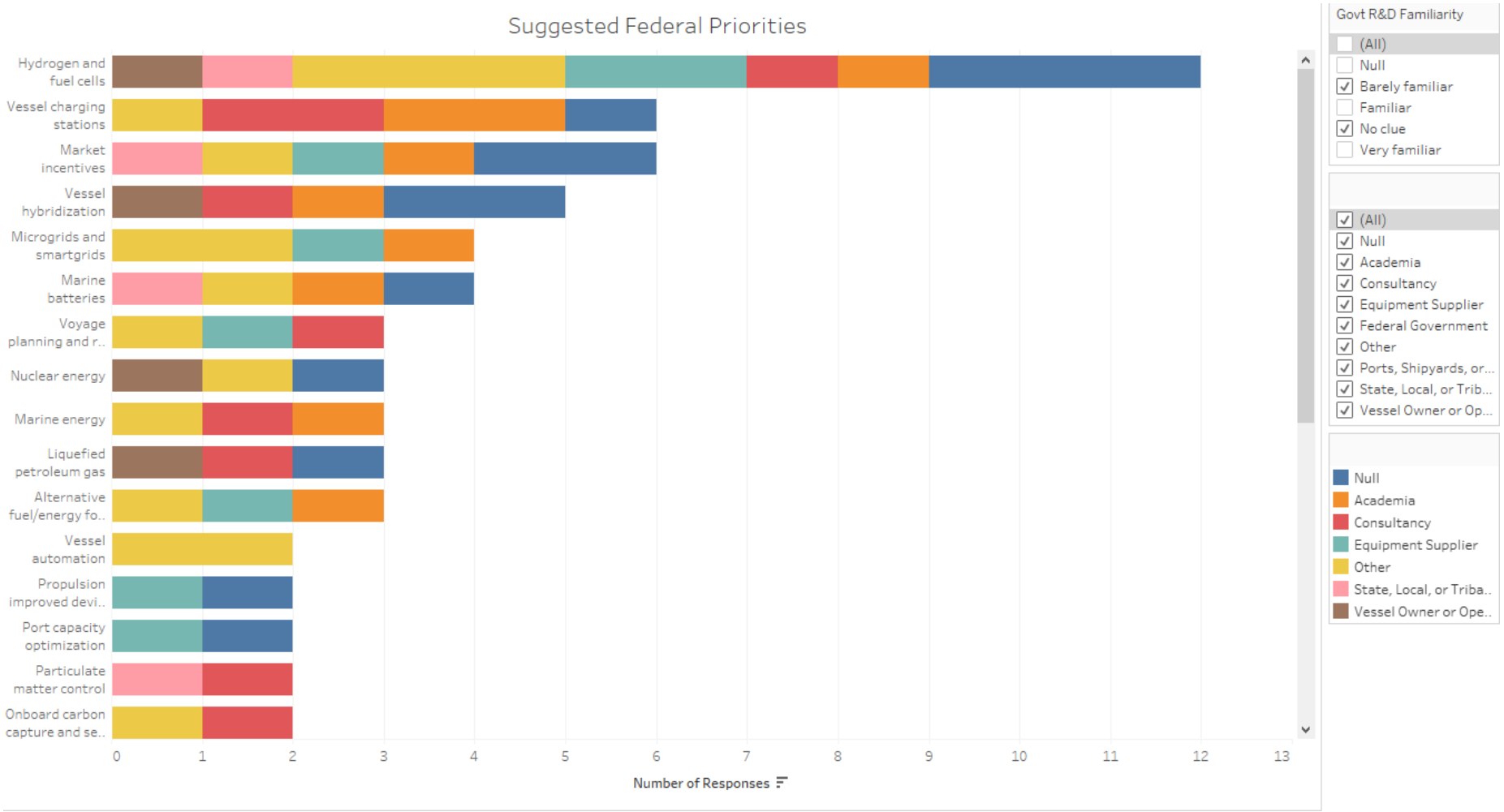
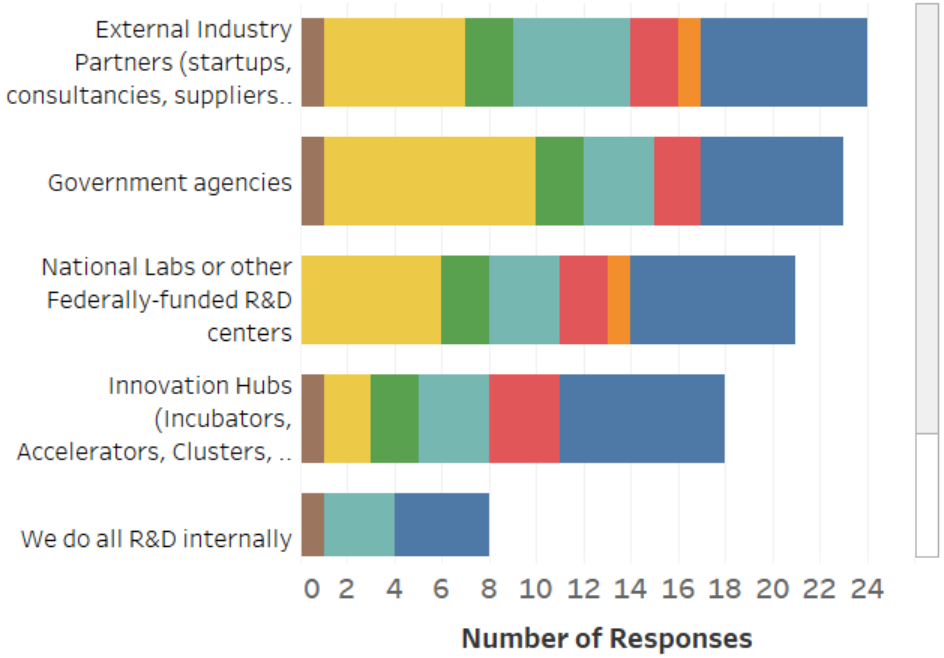
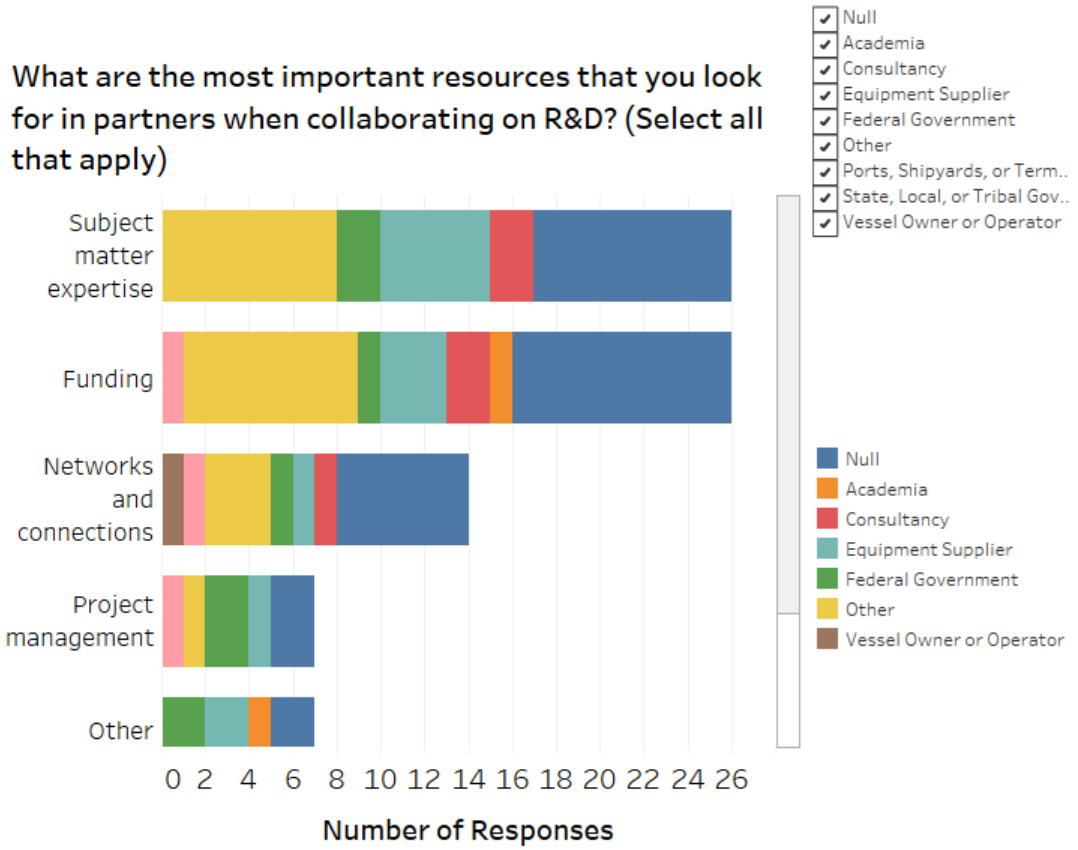


In conducting R&D and building new capabilities within your organization, what stakeholders do you typically work with? (Select all that apply)



What are the most important resources that you look for in partners when collaborating on R&D? (Select all that apply)



Suggested Missing ERMs

Suggested Emission Reduction Categorization

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Emission Reduction Measure Grouping	
1	Funding Technology And Integration
	Ports And People
	Regulations And Incentives
	Vessel Operations
2	High Funding/High Emissions Reduction
	Low Funding/Low Emissions Reductions
3	Automation
	Energy In General
	Energy Optimization,
	Market Incentives
	Technology Deployment Accelerator
4	Design And Hardware
	Energy And Fuel Source
	Operational Efficiencies
	Regulatory
5	Analytical Tools
	Cleanup Aspect
	Energy Source
	Government/Federal/State/Local Data Tools ..
	Port Operations And Optimizing Performance
	Port Operations In General Taking Things On ..
	Port Transportation On And Off Water
	Public Education Training
	Vessel Techniques For Optimization
6	Compliance
	Energy Sources
	Operations
	Ports
	Technology And Control
	Vessel Design
7	Component Or Product Technology Developm..
	Infrastructure And Fuels
	Vessel Design
	Vessel/Port Operations
8	Conservation
	Incentives
	Technology
9	Alternate Energy
	Alternative Shipboard Fuels
	Energy
	Fossil Fuels
	Market Incentives
	Port Initiatives
	Vessel Design Optimization
	Vessel Maintenance And Operation Optimizat..
10	Commercialization
	Intense Government Funding
	Required By Regulation
	Things Not Related To Shipping
	Transitional From Government To Industry
11	Efficiency
	Energy Pathways
	Fuels
	Onboard Vessel
	Port
12	Energy Sources,
	Existing Vessel Optimization And Improveme..
	Financing
	Future Vessel Design
	Mitigation Or Treatment Of Fossil Fuels After..
	Policy
	Shoreside Operations Improvements
13	Emission Reduction And How To Capture Emi..
	Energy Density And Making It More Viable.
	Increase Interaction Between Marine And Lan..
	Synthetic Fossil Fuels
14	Cold Ironing
	Collaboration
	Design
	Energy Sources And Storage Technologies
	Grid Optimization
	Hydrogen Fuel Cells
	Land Side Integration
	Priorities Are Market Incentives
15	Fossil Fuel Emission Measures
	Fuels And Energy Sources.
	Port Infrastructure And Port Electrification
	Vessel Efficiency,

LESSONS LEARNED

- Need to do better job collecting demographic data before the workshop
- Ask participants to self-report their level of familiarity with maritime energy tech
- Need to space out ERM prioritization questions to reduce bias in results (Fed rankings may have influenced regional priorities)

NEXT STEPS

- Refine emission reduction list and finalize grouping method
- Positive feedback on the workshop, intent is to replicate it across multiple regions of the US to better understand regional maritime R&D interests
- Identify relevant maritime conferences in the next 12 months in regions of interest
- Initiate conversations with regional stakeholders to partner with

Questions or comments, please contact David Hume at david.hume@pnnl.gov