Draft 2027 Annual Deployment Plan for Observers and Electronic Monitoring in the Groundfish and Halibut Fisheries off Alaska

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Contents

Executive Summary

This draft 2027 Annual Deployment Plan (ADP) describes how the National Marine Fisheries Service (NMFS) intends to assign at-sea and shoreside fishery observers and electronic monitoring (EM) to vessels and processing plants engaged in halibut and groundfish fishing operations in the North Pacific.

The North Pacific Observer Program (Observer Program) is the largest observer program in the country and is responsible for monitoring a fleet of nearly a thousand vessels that fish a combination of hook-and-line, pot, and trawl gear across the Alaska Exclusive Economic Zone (EEZ) area of roughly 3.77 M km^2. Fishing activities are classed as belonging to either partial or full coverage components of the program. In the full coverage component of the program, every trip is monitored by 1 or 2 observers and covers the vast majority of groundfish harvest. In the partial coverage component, a subset of trips are randomly selected for monitoring by an observer or EM system, except for vessels in the trawl EM category which are subject to monitoring on all fishing trips. In 2027, NMFS expects to monitor 2,742 trips, consisting of an estimated 16,374 days in the full coverage component of the program, and 1,404 trips and 4,408 days in the partial coverage component. Despite being a much smaller component of the overall monitoring, the ADP focuses on the partial coverage component of the program and outlines the science-driven method for deployment of observers and EM systems to support statistically reliable data collection. Specifically, the ADP describes the scientific deployment design and selection rate - the portion of trips that are sampled by observers and EM - for the partial coverage category.

Preliminary Budget & Cost Assumptions

For this draft ADP, the NMFS set a ***preliminary*** **budget of $5.45M** to support monitoring of the partial coverage fisheries in 2027. Both the cost estimates and the budget are ***preliminary*** and will be updated in the final 2027 ADP to be presented to the North Pacific Fishery Management Council (Council) at their December 2026 meeting.

The partial coverage monitoring program has three monitoring methods: 1) at-sea observers; 2) fixed-gear EM; and 3) at-sea compliance EM with shoreside observers to monitor and sample deliveries in the GOA inshore pollock fishery (trawl EM).

For partial coverage trips, vessel owners/operators declare each trip in a NMFS database and, if the trip is selected for coverage, a NMFS-contracted observer provider company arranges for coverage. Funding for partial coverage is obtained from an ex-vessel fee on landings from the prior year and is used by NMFS to pay for observer and EM services. To estimate the costs of monitoring in the partial coverage category, cost functions were constructed for each monitoring method. Each model incorporates: the best available information; assumptions about both fixed and variable costs; and known economy of scale.

In full coverage, every trip is monitored by 1 or 2 observers if monitoring is completed at sea, or by an EM system at sea and an observer at the shoreside processor receiving catch from the EM monitored vessel. For full coverage trips, vessel and shoreside processor owners/operators are responsible for procuring observer and EM hardware services directly through NMFS-authorized companies and EM service providers and there is no cost incurred by the NMFS for full-coverage monitoring.

Deployment Design

The deployment design for the partial coverage component of the program involves three elements: 1) the selection method to accomplish complete or random sampling; 2) division of the full and partial populations into selection groups or strata; and 3) the allocation of deployment among strata. Appendix B details the decision points, calculations, and resulting values presented in this summary.

Selection method

For 2027 in the partial coverage category, NMFS will implement trip selection from all ports throughout Alaska to assign both at-sea observers and EM to fishing events for partial coverage vessels. Trip-selection refers to the use of the fishing trip as the primary sampling unit, and is accomplished using the Observer Declare and Deploy System (ODDS). The rates at which trips are randomly selected by ODDS for monitoring are determined by the analysis in the ADP.

In the Gulf of Alaska (GOA), every trawl EM trip is monitored by an EM system at sea and by a partial coverage observer at the shoreside processor receiving catch from EM monitored vessels. NMFS will sample every offload for all salmon and halibut and randomly select offloads for biological sampling by observers assigned to the shoreside processing plants.

In full coverage, every trip is monitored by 1 or 2 observers if monitoring is completed at sea, or by an EM system at sea and an observer at the processing plant receiving catch from the EM monitored vessel.

Sampling strata

Fishing trips are broadly divided into groups, or selection pools, based on the regulatory categories that establish monitoring requirements, including whether monitoring is required on all trips (Full Coverage) or a subset of trips (Partial Coverage), and whether the trips are monitored at sea by observers or EM. These regulatory categories provide the basis for forming selection pools and, where applicable, the sampling strata within these pools. Each sampling stratum is assigned a specified monitoring rate.

In 2027, NMFS will implement 6 selection pools and 10 sampling strata:

1. Full Coverage Observer Pool/Stratum
   Vessels and processors in the full observer coverage category must comply with observer and EM coverage requirements at all times when fish are harvested or processed. Every trip is monitored. Vessels and processing plants in full coverage include: Catcher/Processors (C/P),with limited exceptions; Motherships; Catcher Vessels (CVs) participating in programs that have transferable Prohibited Species Catch (PSC) allocations as part of a catch share Limited Access Privilege Program; and shoreside processors receiving or processing Bering Sea pollock.

2. EM Trawl BSAI Pool/Stratum
   Pollock CVs using pelagic trawl gear must opt-in annually by 1 November, and subsequently be approved by NMFS to participate in the full coverage trawl EM category for the upcoming fishing year. In the Bering Sea and Aleutian Islands (BSAI), these vessels are in full coverage and compliance monitoring with an EM system is required on every trip. Shoreside processors are responsible for maintaining two observers at minimum, and may need to procure additional

observers to ensure management needs are met for trawl EM category deliveries. All trawl EM category deliveries in the BSAI are monitored by observers..

3. Partial Coverage Observer Trip-Selection Pool

There are four observer trip-selection strata based on gear and FMP area for 2027:

- *At-sea Observer Fixed-gear BSAI (Fixed-gear BSAI)*
- *At-sea Observer Fixed-gear GOA (Fixed-gear GOA)*
- *At-sea Observer Trawl BSAI (Trawl BSAI)*
- *At-sea Observer Trawl GOA (Trawl GOA)*

4. Partial Coverage EM Fixed-Gear Pool

The EM Fixed-gear selection pool consists of two sampling strata:

- *EM Fixed-gear BSAI*
- *EM Fixed-gear GOA*

All requests to be in or out of the EM selection pool for 2027 must be received in ODDS by 1 November 2026.

Vessel owners/operators opt into the EM Fixed-gear selection pool and, if approved by NMFS, a vessel will remain in the EM selection pool for the duration of the following calendar year (1 January–31 December). To ensure cost-efficiency, NMFS may approve or deny requests by vessels to be added to the EM Fixed-gear pool based on the priorities identified by NMFS and supported by the Council, including: vessel size, fishing effort, and/or minimizing data gaps.

Additionally, minimum fishing effort requirements to remain in the EM Fixed-gear pool go into effect starting in 2028 (Appendix C). The purpose of these requirements is to ensure that participants are more cost-efficient than if participating in the at-sea observer pool. Vessels with at least three (3) years of membership in the EM Fixed-gear pool must complete at least nine (9) trips in the EM Fixed-gear pool over the most recent three year period (i.e., three trips per year on average) to remain in the EM Fixed-gear pool in 2028. Vessels that do not meet the minimum effort requirements while participating in the EM Fixed-gear pool will be automatically placed into the at-sea observer pool. Vessels that do not meet the minimum fishing effort requirements will be notified of their removal from the EM pool before the start of the 2028 calendar year. Vessels will be eligible for re-entry into the EM pool after demonstrating they meet the fishing effort inclusion criteria while fishing in the at-sea observer pool (for 2027: 15 trips in the last 3 years). NMFS will evaluate the eligibility of all EM vessels in the fall of each year for both inclusion and exclusion. The inclusion and exclusion criteria will be evaluated annually and could be revised and updated in future ADPs.

Each year, all vessels in the EM Fixed-gear selection pool are required to submit and follow a NMFS-approved Vessel Monitoring Plan (VMP). As part of the VMP approval, NMFS will assess a vessel's past adherence to their approved VMP. To evaluate a vessel's ongoing eligibility for the EM Fixed-gear program, NMFS will review the volume and severity of compliance infractions that adversely affect data collection and quality.

5. EM Trawl GOA Pool/Stratum

Pollock CVs using pelagic trawl gear must opt-in annually by 1 November, and subsequently be approved by NMFS, to participate in the partial coverage trawl EM category for the

upcoming fishing year. Once approved, all trips where the vessel targets pollock with only pelagic trawl gear will be subject to the trawl EM regulations. Vessels must indicate prior to the trip whether they intend to deploy nonpelagic trawl gear during a trip. If a vessel intends to deploy nonpelagic trawl gear, they are subject to the Observer pool. Vessels only deploying pelagic trawl gear while targeting pollock must comply with EM system requirements for every trip. Observers placed at shoreside processors monitor EM deliveries by CVs and tender vessels.

6. No-selection Pool/Stratum

The no-selection pool is composed of vessels in the partial coverage category that will have no probability of carrying an observer or EM system on any trip for the 2027 fishing year. This stratum includes vessels <40 feet length overall (LOA) and/or fishing with jig gear.

Allocation of Monitoring in Partial Coverage

In 2027, NMFS proposes to use the Proximity Allocation method to deploy fixed-gear EM and at-sea observers in the partial coverage category. This method is precautionary with respect to obtaining data from all types of fishing activity (decreasing data gaps) while protecting against high variance associated with low sample sizes. This allocation method applies to all sampled partial coverage strata (i.e., does not apply to the no-selection stratum) except the EM Trawl GOA stratum.

For the EM trawl GOA stratum, NMFS will implement dockside monitoring and allocate funds for monitoring according to estimates of the number of plant observers required.

Dockside Monitoring

In 2027, dockside monitoring at shoreside processing plants by observers will enable sampling of deliveries from pollock vessels fishing with pelagic trawl gear. The data collection objectives are to 1) enumerate salmon bycatch from EM deliveries and deliveries that were observed at sea; 2) enumerate halibut bycatch from EM deliveries; 3) collect salmon genetic information to determine bycaught salmon area of origin; and 4) collect biological samples from non-salmon species from EM deliveries.

For partial coverage trawl EM category vessels in the GOA that deliver pollock to shoreside processors or tenders, observers will complete objectives 1–3 (above) for every EM offload and will complete objective 4 (above) for a randomly selected subset of EM offloads.

For vessels in the GOA pollock fishery that do not participate in the partial coverage trawl EM category and deliver to shoreside processors, observers at the shoreside processor will also complete objectives 1 and 3 for the offloads from trips that are randomly selected for at-sea observer coverage. Halibut PSC estimates will be based on sample data collected by at-sea observers using current Catch Accounting System (CAS) methods. Objective 4 will be completed *at-sea* by the vessel observer, as has been the norm in the past.

For observed trips in the GOA pollock fishery outside of the partial coverage trawl EM category that are delivered to tender vessels (as well as trawl trips outside of the pollock fishery), data to meet objectives 1 through 4 will be obtained from observer at-sea samples of the total catch.

For trips in the BSAI trawl pollock fishery, for CVs both in full coverage trawl EM and those not in the full coverage trawl EM, a census of salmon will be completed during the offload.

Selection Rates

The *preliminary* selection rates (rounded to the nearest whole number) for strata in 2027 are:

Component	Pool	Stratum	Selection Rate (%)	Number of Trips Expected to be Observed	Monitoring Location & Purpose
Partial Coverage	**Observer Trip Selection**	Fixed-gear BSAI	31	79	At-sea for discard & PSC estimation / biological sampling **Plus pollock trawl deliveries monitored dockside for salmon on selected trips**
		Fixed-gear GOA	9	174	
		Trawl BSAI	47	16	
		Trawl GOA	15	47	
	EM Fixed-gear Trip Selection	EM Fixed-gear BSAI	42	40	At-sea for discard & PSC estimation
		EM Fixed-gear GOA	15	154	
	EM Trawl GOA	EM Trawl GOA	100	894	At-sea EM compliance monitoring
			100	894	Dockside salmon & halibut PSC accounting
			33	298	Dockside biological sampling
	No-selection	No-selection	0	0	n/a
Full Coverage	**Full Coverage**	Full Coverage	100	968	At-sea for discard & PSC estimation / biological sampling Plus pollock trawl deliveries monitored dockside for salmon
	EM Trawl BSAI	EM Trawl BSAI	100	1,774	At-sea EM compliance monitoring
					Dockside salmon & halibut PSC accounting / biological sampling

Introduction

Purpose and Authority

This 2027 Annual Deployment Plan (ADP) describes how the National Marine Fisheries Service (NMFS) intends to assign at-sea and shoreside fishery observers and electronic monitoring (EM) to vessels and processing plants engaged in halibut and groundfish fishing operations in the North Pacific. This plan is developed under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (16 U.S.C. 1862), the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area (BSAI FMP), the Fishery Management Plan for the Groundfish Fisheries of the Gulf of Alaska (GOA FMP), and the Northern Pacific Halibut Act of 1982. The ADP outlines the science-driven method for deployment of observers and EM systems to support statistically reliable data collection. The ADP is a core element in implementation of section 313 of the Magnuson-Stevens Act, which authorizes the North Pacific Fishery Management Council (Council) to prepare a fishery research plan in consultation with NMFS.

The Council's role in the ADP process is described in the analysis that was developed to support the restructured observer program (NPFMC 2011) and in the preamble to the proposed rule to implement the restructured observer program (77 FR 23326). The preamble to the proposed rule notes that:

NMFS would consult with the Council each year on the deployment plan for the upcoming year. The Council would select a meeting for the annual report consultation that provides sufficient time for Council review and input to NMFS. The Council would likely need to schedule this review for its October meeting. The Council would not formally approve or disapprove the annual report, including the deployment plan, but NMFS would consult with the Council on the annual report to provide an opportunity for Council input. The final deployment plan would be developed per NMFS' discretion to meet data needs for conservation and management. (77 FR 23344 & 23345).

The ADP follows the process envisioned by the Council and NMFS when the restructured observer program was developed and implemented. As a result, both the ADP development and the evaluation of data collected by observers and EM is an ongoing process. NMFS is committed to working with the Council throughout the annual review and deployment cycle to identify improved analytical methods and ensure Council and public input is considered.

More details on the legal authority and purpose of the ADP are found in the Final Rule for Amendment 86 to the BSAI FMP and Amendment 76 to the GOA FMP (77 FR 70062, 21 November 2012). Further details on the integration of EM deployment into the ADP process are found in the final rule to integrate EM into the Observer Program (82 FR 36991).

North Pacific Groundfish and Halibut Observer Program

NMFS implements the Council's fishery research plan through the North Pacific Groundfish and Halibut Observer Program (Observer Program). The Observer Program provides the regulatory framework and support infrastructure for stationing observers and EM systems to collect data necessary for the conservation, management, and scientific understanding of the commercial groundfish and Pacific halibut fisheries of the BSAI and GOA management areas. EM is broadly

defined as technological tools which collect fishing data to support stock assessment and fishery management. In the North Pacific, EM is usually specifically referencing video imagery and sensors to provide catch and discard information and compliance monitoring after video review.

The Observer Program is the largest observer program in the country and is responsible for monitoring a fleet of nearly a thousand vessels that fish a combination of hook-and-line, pot, and trawl gear across the Alaska Exclusive Economic Zone (EEZ) area of roughly 3.77 M km^2. The deployment of monitoring assets (observers and/or EM) is the first stage of a hierarchical sampling design (Cahalan and Faunce 2020). Since 2013, the fishing trip has been the primary sampling unit. Fishing trips made by vessels are assigned to either full or partial coverage.

In full coverage, every trip is monitored by 1 or 2 observers if monitoring is completed at sea, or by an EM system at sea and an observer at the processing plant receiving catch from EM monitored vessels. For full coverage trips, vessel and processing plant owners/operators are responsible for procuring observer and EM hardware services directly through NMFS-authorized companies. There are currently three NMFS-permitted observer service providers, two NMFS-approved EM hardware service providers, and one EM review service provider.

For partial coverage trips, vessel owners/operators declare each trip in a NMFS database and if the trip is selected for coverage, a NMFS-contracted observer provider company arranges for coverage. Funding for partial coverage is primarily obtained from an ex-vessel fee on landings from the prior year and is used by NMFS to pay for observer and EM services. In the partial coverage component, the ADP specifies the scientific sampling design and the selection rate—the portion of trips that are sampled. NMFS and the Council recognized that selection rates in partial coverage, for any given year, would be dependent on available revenue generated from fees on groundfish and halibut landings. The annual apportionment of the budgets for observer deployment and EM system deployment is also reflected in the ADP process. The ADP process allows NMFS to adjust deployment in each year so that sampling can be achieved within financial constraints. While fisher participation in observer monitoring is automatic, if a vessel wishes to participate in at-sea EM they must volunteer, be approved by NMFS, and follow a Vessel Monitoring Plan (VMP). Cost efficiency of an EM vessel may change over time, but hardware infrastructure cannot be easily or cheaply modified to respond to different fishing effort patterns. As a result of these different rules of participation, NMFS evaluates each vessel volunteering for EM for cost efficiency, annual fishing effort, minimization of data gaps, and vessel size (as a proxy for ability to carry an observer) prior to accepting them into the EM strata.

Observer Program Data Collection

Data collection through the Observer Program provides a reliable and verifiable method for NMFS to gain fishery discard and biological information on fish, and data concerning seabird and marine mammal interactions with fisheries. These data contribute to the best available scientific information used to manage the fisheries in the North Pacific. The design of the holistic monitoring program that meets mandates of the Magnuson-Stevens Act, Marine Mammal Protection Act (MMPA), and Endangered Species Act (ESA) ensures that multiple monitoring programs are not required on the fleet. Observers and EM systems provide fishery-dependent information that is used to estimate total catch and interactions with protected species. Managers use these data to manage groundfish and Prohibited Species Catch (PSC) within established limits and to document and quantify fishery interactions with protected species. Much of this information is expeditiously available (e.g., daily or

at the end of a trip, depending on the type of vessel) to ensure effective management. Scientists also use fishery-dependent data to assess fish stocks, evaluate marine mammal and seabird interactions with fishing gear, characterize fishing impacts on habitat, and provide data for fisheries and ecosystem research and fishing fleet behavior. While both observers and EM systems provide fishery-dependent data, these monitoring methods provide different information on catch and interactions with protected species. Table 1 summarizes the broad suite of data collection through the different monitoring approaches under the Observer Program.

Annual Deployment Plan Process

On an annual basis, NMFS develops an ADP to explain how observers and EM will be deployed for the upcoming calendar year, and prepares an Annual Report that evaluates the performance of the prior year's ADP implementation. NMFS and the Council created the ADP–Annual Report process to provide flexibility in the deployment of monitoring assets used to gather reliable data for estimation of catch in the groundfish and halibut fisheries off Alaska.

The Annual Report is presented to the Council at their second meeting of the year. The Annual Report informs the Council and the public about how well various aspects of the program are working. The review highlights areas where improvements are recommended to: 1) collect the data necessary to manage the groundfish and halibut fisheries; 2) maintain the scientific goal of unbiased data collection, and; 3) accomplish the most effective and efficient use of the funds collected through the observer fees.

A draft ADP that outlines sampling for the upcoming year is prepared in October each year and a final ADP is completed in December. The ADP defines partial coverage strata, participation requirements, allocation methods, and selection rates each year. Strata define how trips will be monitored (for example which vessels belong to observer or EM selection pools and the requirements necessary to participate in each) and may be based on factors such as gear type, vessel length, home or landing port, availability of EM systems, funding, and monitoring goals. Since 2013, aspects of deployment have been adjusted through the ADP (e.g., NMFS 2020; AFSC and AKR 2025). The modifications have included moving types of partial coverage trips between selection pools or strata, varying the selection unit from vessel to trip, and changes in selection rates used to deploy observers and EM in the partial coverage category (Table 2).

The flexibility offered by the ADP allows NMFS and the Council to achieve transparency, accountability, and efficiency from the Observer Program to meet its myriad objectives. The ADP process ensures that the best available information is used to evaluate deployment, including scientific review and Council input, to annually determine deployment methods. The Observer Program is accountable to operate within annual financial constraints that are dependent on the amount of fee revenue collected from groundfish and halibut landings in the prior year and the anticipated future costs of monitoring and fishing effort.

Recent updates to the Annual Deployment Plan

The draft 2024 ADP incorporated changes to increase efficiency in the sampling design. In 2026, a review of this design was conducted by a panel of experts from the Center of Independent Experts (CIE; Appendix E). The CIE reviewers made no recommendations to change the core ADP in 2027.

Suggested research recommendations from the CIE review will be considered for inclusion in future ADPs. Each of the reviewer's complete reports are available at: https://noaa-afsc.github.io/CIE-Review-Observer-ADP-AnnualReport/reviewerreports.html .

In response to Council requests (Appendix A), this draft ADP includes two independent analyses supporting potential cost efficiencies: Appendix C evaluates changes to fixed-gear EM membership rules, while Appendix D evaluates changes to no-selection membership rules.

Funding mechanisms remain roughly the same as in past ADPs with the exception of a change to sources of funding for EM. Since 2023, Congressional Directed Spending funds have been directly allocated to the Pacific States Marine Fisheries Commission (PSMFC) to support new installations of EM systems and EM equipment replacements. The Congressional Directed Spending funds are expected to be expended by the end of 2026 and thus the costs of equipment installation and replacement are now included in the budget costs for the 2027 ADP.

Table 1. Data collected by at-sea observers, trawl EM with shoreside observers, and EM fixed-gear. A green checkmark (✔) indicates that the data are collected, a red ✖ indicates that the data are not collected, and blue arrows (⇔) indicate that compared to at-sea observers, some, but not all, data are collected.

Data Collected		At-sea Observers	EM Trawl + Shoreside Observers	EM Fixed-gear
Catch				
	Trip Characteristics (e.g., duration, total effort)	✔	✔	✔
	Haul Characteristics (e.g., location, effort, depth, gear performance)	✔	⇔	⇔
	Haul Level Species Composition - Counts	✔	✖	✔
	Haul Level Species Composition - Weights	✔	✖	✖
	Trip Level Species Composition - Counts	✔	✔	✔
	Trip Level Species Composition - Weights	✔	✔	✖
	Speciation of Similar Species (e.g., large red rockfish, king crabs)	✔	✔	✖
	Haul Specific Salmon PSC Enumeration	✔	✖	⇔
	Trip Specific Salmon PSC Enumeration	✔	✔	⇔
	USCG Marine Casualty Information	✔	⇔	⇔
Biologicals				
	Sex Length Data (fish and crab)	✔	✔	✖
	Pacific Halibut Size and Mortality Assessment	✔	✔	✖
	Trip Specific Age Structures (e.g., otoliths, scales, fin rays)	✔	✔	✖
	Trip Specific Tissue for Genetic Analyses	✔	✔	✖
	Tagged Organism Information	✔	✔	✖
	Stomach Samples (trophic interactions)	✔	⇔	✖
	Maturity Information	✔	⇔	✖
Protected Species				
	Marine Mammal Injury and Mortality	✔	⇔	⇔
	Marine Mammal Tissue (genetics, trophic information, contaminants)	✔	✖	✖
	Marine Mammal Interactions (non-lethal, non-injury)	✔	✖	⇔
	Marine Mammal Sightings	✔	✖	✖
	Verify Use of Seabird Avoidance Methods	✔	n/a	✔
	Seabird Mortality (catch by gear)	✔	✔	✔
	Seabird Mortality (vessel interactions)	✔	⇔	⇔
	ESA-Listed Seabird Carcass	✔	⇔	✖

Table 2. The planned partial coverage percentages (trips at-sea and deliveries shoreside) set through the Annual Deployment Plan for each stratum 2023–2027. GOA= Gulf of Alaska; BSAI = Bering Sea and Aleutian Islands; Fixed-gear = Hook and Line and/or Pot Gear; EM = electronic monitoring; Composition = species composition sampling; Disposition = retained or discarded catch; Tissues = biological tissue sampling. Blank cells indicate strata that were not used in the Annual Deployment Plan for a particular year.

			Year				
Stratum Description	**Coverage Type**	**Data Focus**	**2023**	**2024**	**2025**	**2026**	**2027**
Fixed-gear BSAI	At-sea observers	Composition, Disposition, and Tissues		43.97	19.83	19.19	31.35
Fixed-gear GOA				13.17	6.16	7.45	9.31
Hook-and-line			17.90				
Pot			17.10				
Trawl BSAI				72.28	40.39	45.21	46.54
Trawl GOA				20.58	15.45	13.46	15.34
Trawl			22.70				
EM Fixed-gear BSAI	At-sea EM	Composition and Disposition		74.29	47.91	38.47	42.99
EM Fixed-gear GOA				24.20	11.11	13.06	15.24
EM Hook-and-line			30.00				
EM Pot			30.00				
EM Trawl BSAI	At-sea EM	Compliance	100.00	100.00	100.00	100.00	100.00
	Shoreside observers	Composition, Tissues, Halibut and Salmon Counts	100.00	100.00	100.00	100.00	100.00
EM Trawl GOA	At-sea EM	Compliance	100.00	100.00	100.00	100.00	100.00
	Shoreside Observers	Composition, Tissues, Halibut and Salmon Counts	33.33	33.33			
		Composition and Tissues			33.33	33.33	33.33
		Halibut and Salmon counts			100.00	100.00	100.00
Vessels < 40’ LOA and Jig Gear	None	Design efficiency (No data collected)	0.00	0.00	0.00	0.00	0.00

Partial Coverage Preliminary Budget and Cost Assumptions

For this analysis, the NMFS set a **preliminary budget** of $5.45M to support monitoring of the partial coverage fisheries in 2027. The preliminary budget includes revenues generated from ex-vessel fees collected from fishing in 2025, estimated ex-vessel fees that are expected to be collected from fishing in 2026, and federal funds that are able to be secured for monitoring. However, there is still uncertainty in the annual budget due to: 1) difficult predictions regarding the amount of revenue that will be generated from fees for landings in 2026; 2) shoreside facility operations in the partial coverage trawl EM category, including the number of shoreside observers required by each plant; 3) adjustments to monitoring costs due to a sharp increase in travel costs and other inflationary pressures in 2026; and 4) updated assumptions about monitoring costs. The estimated **budget presented here is preliminary** and will be updated in the final 2027 ADP that will be presented to the Council at their December 2026 meeting.

The partial coverage monitoring program has three monitoring methods: 1) at-sea observers; 2) EM fixed-gear; and 3) at-sea compliance EM on vessels combined with shoreside observers to sample deliveries in the GOA pollock trawl fishery. Trawl EM trips in the Bering Sea are full coverage and therefore monitoring costs for those trips are excluded from the partial coverage budget. To estimate the costs of monitoring, cost functions were constructed for each of the three monitoring methods. Each function incorporates: the best available information; assumptions about both fixed and variable costs; and known economy of scale. An in-depth description of how the cost functions were generated is provided in Appendix B.

The at-sea observer costs were a function of the number of sea days purchased, the price per guaranteed day and optional day, and travel costs. The cost function for plant observers monitoring the Trawl EM GOA stratum considered the shoreside observer cost per plant-day, including the number of guaranteed and optional days purchased, lodging, and food costs.

This 2027 draft ADP assumes: five shoreside observers to monitor processing plants in Kodiak during A season and B season, two shoreside observers to monitor offloads at Sand Point in A season and one at Sand Point in B season and, no partial coverage-shoreside observers are stationed at False Pass, Akutan, or Dutch Harbor plants; all observers monitor on all calendar days while pollock fishing is open; plant operations in 2027 are similar to the 2025–2026 period. These assumptions are subject to change in the final ADP.

The trawl EM and EM fixed-gear cost functions also considered the annual cost for EM equipment maintenance by EM service providers (which is dependent on the number of vessels in the pool), EM system installation and replacement costs, and video review costs. The EM fixed-gear cost function was updated for the Draft 2027 ADP budget to include the costs of EM system installations and EM equipment replacements because those are no longer supported separately by external funding. The trawl EM cost function will reflect this change in the Final 2027 ADP. The Congressional Directed Spending funds that were administered through a grant with Pacific States Marine Fisheries Commission (PSMFC) in 2023 are expected to be fully expended in 2026.

In total, trawl EM was estimated to cost $732K which was deducted from the total $5.45M budget prior to allocation of the remaining funds (approximately $4.72M) to deploy at-sea observers and EM fixed-gear. This is a preliminary budget and these cost allocations are subject to change in the final ADP.

2027 Deployment Methods

Selection Method

For 2027, NMFS will implement trip selection from all ports throughout Alaska to assign both at-sea observers and EM to fishing events for vessels in the partial observer coverage category. Trip-selection refers to the use of the fishing trip as the primary sampling unit, and is accomplished using the Observer Declare and Deploy System (ODDS; Faunce et al. 2021).

In the EM trawl GOA stratum, every trip is monitored by an EM system at sea. Moreover, all offloads by catcher and tender vessels are monitored for salmon and halibut by observers at the processing plants. A subset of these deliveries will also be randomly selected by the shoreside observers for biological sampling.

In full coverage, every trip is selected and monitored by 1 or 2 observers if monitoring is conducted at sea, or by an EM system at sea and an observer at the processing plant receiving catch from EM vessels.

Selection Pools and Stratification Scheme

Fishing trips are broadly divided into groups, or selection pools, based on the regulatory categories that establish monitoring requirements, including whether monitoring is required on all trips (Full Coverage) or a subset of trips (Partial Coverage), and whether the trips are monitored at sea by observers or EM. These regulatory categories provide the basis for forming selection pools and, where applicable, the sampling strata within these pools. Each sampling stratum is assigned a specified monitoring rate.

In 2027, NMFS will implement 6 selection pools and 10 sampling strata, discussed below.

Full Coverage

1. Full Coverage Observer Pool/Stratum

Vessels and processors in the full observer coverage category must comply with observer coverage requirements at all times when fish are harvested or processed. Every trip is monitored by one or more observers. Specific requirements for the observer component of the full coverage stratum are defined in regulation at 50 CFR 679.51(a)(2) and observers are required on every trip. Vessels and processing plants in full coverage includes the following:

- Catcher/Processors (C/Ps; with limited exceptions).
- Motherships.
- Catcher Vessels (CVs) participating in programs that have transferable PSC allocations as part of a catch share program, which includes: CVs harvesting PCTC quota; Bering Sea pollock (both American Fisheries Act [AFA] and Community Development Quota [CDQ] programs), the groundfish CDQ fisheries (CDQ fisheries other than Pacific halibut and fixed-gear sablefish; only vessels greater than 46 ft length overall [LOA]); and the Central GOA Rockfish Program.
- CVs using trawl gear that have requested placement in the full coverage category for all fishing activity in the BSAI for one year.
- Inshore processors receiving or processing Bering Sea pollock.

2. EM Trawl BSAI Pool/Stratum

Pollock CVs using pelagic trawl gear must opt-in annually by 1 November, and be approved by NMFS, to participate in the full coverage trawl EM category for the upcoming fishing year. In the BSAI, these vessels are in full coverage and compliance monitoring with an EM system is required on every trip. In addition, processing plants are responsible for procuring observers to ensure that all trawl EM deliveries by CVs or tender vessels to shoreside processors are subject to required dockside monitoring (for more details, see section below on Dockside Monitoring).

Partial Coverage

3. Partial Coverage Observer Trip-Selection Pool

There are 4 observer trip-selection strata based on gear and FMP area for 2027.

- The *At-sea Observer Fixed-gear in the BSAI* stratum is composed of trips in the partial coverage category on vessels that are greater than or equal to 40 ft LOA, fishing pot or hook-and-line gear, and where the vessel declared in ODDS that they intend to harvest the majority of catch on the trip in the BSAI.
- The *At-sea Observer Fixed-gear in the GOA* stratum is composed of trips in the partial coverage category on vessels that are greater than or equal to 40 ft LOA, fishing pot or hook-and-line gear, and where the vessel declared in ODDS that they intend to harvest the majority of catch on the trip in the GOA.
- The *At-sea Observer Trawl gear in the BSAI* stratum is composed of all trawl trips in the partial coverage category that are not in trawl EM where the vessel declared in ODDS that they intend to harvest the majority of catch on the trip in the BSAI.
- The *At-sea Observer Trawl gear in the GOA* stratum is composed of all trawl trips in the partial coverage category that are not in trawl EM where the vessel declared in ODDS that they intend to harvest the majority of catch on the trip in the GOA.

4. EM Fixed-Gear Trip-Selection Pool

The EM Fixed-gear selection pool consists of 2 sampling strata:

- The *EM Fixed-gear in the BSAI* stratum is composed of vessels in the EM Fixed-gear selection pool, fishing pot or hook-and-line gear, where the vessel declared in ODDS that they intend to harvest the majority of catch on the trip in the BSAI.
- The *EM Fixed-gear in the GOA* stratum is composed of vessels in the EM Fixed-gear selection pool, fishing pot or hook-and-line gear, where the vessel declared in ODDS that they intend to harvest the majority of catch on the trip in the GOA.

Each year, all the vessels in the EM Fixed-gear selection pool—including those that were previously in the pool—are required to submit and follow a NMFS-approved VMP[1]. The vessel owner/operator receives notification of NMFS approval of their placement in the EM Fixed-gear pool by logging into ODDS. Once approved, that vessel will remain in the EM selection pool for the duration of the following calendar year (1 January–31 December).

All requests to be included or removed from the EM selection pool for 2027 must be received in ODDS by 1 November 2026. NMFS may approve or deny requests by vessels to be added to the EM Fixed-gear pool based on the priorities identified by NMFS (NMFS 2024, AFSC and AKRO 2024), criteria specified

[1] The VMP template is available at: https://alaskafisheries.noaa.gov/fisheries/electronic-monitoring

at 50 CFR 679.51(f)(1)(iv), and supported by the Council (Appendix A) including: vessel size, fishing effort, and minimizing data gaps. New vessels requesting entry into the EM Fixed-gear pool must have completed at least 15 trips in the prior three year period (i.e., five (5) trips per year on average with at least 1 trip per year) to be included in the EM Fixed-gear pool for the 2027 calendar year.

Vessels in the EM Fixed-gear selection pool in 2026 remain eligible to be in the EM selection pool for 2027 unless:

- the vessel owner/operator submitted a request to leave the EM selection pool;
- NMFS has disapproved the vessel's VMP or the vessel failed to adhere to the requirements of their VMP; or
- the vessel owner/operator was placed into probationary status due to repeated problems with EM system reliability and/or video quality, were notified of specific issues needed to bring the vessel into compliance, and the vessel owner/operator failed to address the problems; or they failed to adhere to the requirements in their VMP.

Minimum Fishing Effort Criteria for Fixed-Gear EM

Additionally, minimum fishing effort requirements to remain in the EM Fixed-gear pool go into effect starting in 2028 (Appendix C). The purpose of these requirements is to ensure that participants are more cost-efficient than if participating in the at-sea observer pool. Vessels with at least three (3) years of membership in the EM Fixed-gear pool must complete at least nine (9) trips in the EM Fixed-gear pool over the most recent three year period (i.e., three trips per year on average) to remain in the EM Fixed-gear pool in 2028. Vessels that do not meet the minimum effort requirements while participating in the EM Fixed-gear pool will be automatically placed into the at-sea observer pool. Vessels that do not meet the minimum fishing effort requirements will be notified of their removal from the EM pool before the start of the 2028 calendar year. Vessels will be eligible for re-entry into the EM pool after demonstrating they meet the fishing effort inclusion criteria (for 2027: 15 trips in the last 3 years; see above) while fishing in the at-sea observer pool. NMFS will evaluate the eligibility of all EM vessels in the fall of each year for both inclusion and exclusion. The inclusion and exclusion criteria will be evaluated annually and could be revised and updated in future ADPs. Vessels that meet the fishing effort criteria described above could still be removed from the EM program if they have repeated noncompliance with VMPs or poor data quality as described below.

EM Data Quality and Notice of Improvement Pool

As part of the VMP approval process, NMFS will assess a vessel's past adherence to their approved VMP from the previous year. The type, quantity, and severity of compliance issues that negatively impact data collection or quality will be used to assess vessel eligibility to continue to participate in EM programs. For example, a vessel operator with recurring issues that have resulted in unusable or very poor quality EM data (e.g., obstructing the camera view) might be placed on probationary status or deemed ineligible for participation in an EM program. EM data collection and quality are analyzed both in-season and annually at the end of the calendar year. As soon as EM issues are identified by NMFS, NMFS reaches out to vessels to help the vessel come back into compliance with their VMP. When an issue is logged by an EM reviewer, which could be a month or more after the trip, an automatic email is sent to all email addresses listed on the VMP. In addition, NMFS requires the EM Service Provider to attempt to contact the vessel by phone and email to help address the issue. OLE will contact vessels if the issue is serious (significant data loss) or a continuous, repeated offense. NMFS makes every attempt to help the vessel rectify the issue as soon as it is identified. Vessel operators who voluntarily report issues with EM data

collection or quality to FMA and immediately take corrective actions upon discovery will not be placed into the Notice of Improvement Pool (NIP, see below).

If the EM data provided by an EM vessel is of consistently poor quality and improvements are required, "Notice of Improvement Needed" outreach letters are sent to the vessel. These letters notify the vessel that they are being placed into the Notice of Improvement Pool (NIP). Placement in the NIP is determined annually, after NMFS conducts an EM data quality analysis at the end of each calendar year after all EM data from the vessel has been reviewed. The NIP letter notifies the vessel owner/operator of specific issues that must be addressed to bring the vessel into compliance. NIP vessels have a disproportionate impact on overall data quality and timeliness because these vessels require long review times which adds expense and delays the review of hard drives from compliant vessels. Data from vessels in the NIP is of poor quality and is often missing or cannot be used for management or other purposes.

Vessels in the NIP must satisfactorily improve their performance within a year to continue to participate in an EM program. Vessels that do not improve or adhere to program responsibilities and guidelines may be deemed ineligible to participate in, and subsequently removed from, an EM program. Vessels which are removed from an EM program automatically revert to the at-sea observer pool. Vessels in the NIP that were not active (i.e., did not fish) or did not have an EM trip selected during the year, and therefore had no opportunity to improve, will remain in the NIP the following year. NMFS will notify the vessel operator of their EM/NIP status for the upcoming calendar year through a cover letter attached to the VMP.

This draft report precedes the deadline to opt in or out of the EM Fixed-gear selection pool, so this analysis will assume the number of participants in 2027 will be the same as in 2026. The final report will account for any changes to the list of participants.

5. EM Trawl GOA Pool/Stratum

Vessels using pelagic trawl gear[2] must opt-in annually by 1 November, are required to submit and follow a NMFS-approved VMP, and be approved by NMFS, to participate in the partial coverage trawl EM category for the upcoming fishing year. Once approved, all trips where the vessel targets pollock with only pelagic trawl gear will be subject to the trawl EM regulations, as specified at 50 CFR 679.51(g). Vessels must indicate in ODDS whether they intend to deploy pelagic trawl gear during a trip and compliance monitoring with an EM system is required on every trip. In addition, observers will monitor EM deliveries by CVs or tender vessels to shoreside processors (for more details, see section below on Dockside Monitoring).

EM Data Quality and Notice of Improvement Pool

As part of the VMP approval process, NMFS will assess a vessel's past adherence to their approved VMP from the previous year. The type, quantity, and severity of compliance issues that negatively impact data collection or quality will be used to assess vessel eligibility to continue to participate in EM programs. For example, a vessel operator with recurring issues that have resulted in unusable or very poor quality EM data (e.g., obstructing the camera view) might be placed on probationary status or deemed ineligible for participation in an EM program. EM data collection and quality are analyzed both in-season and annually at the end of the calendar year. As soon as EM issues are identified by NMFS, NMFS reaches out to vessels to help the vessel come back into compliance with their VMP. When an issue is logged by

[2] If a vessel intends to deploy non-pelagic trawl gear, they will be subject to observer coverage as part of the Partial Coverage Observer Trip-Selection Pool.

an EM reviewer, which could be a month or more after the trip, an automatic email is sent to all email addresses listed on the VMP. In addition, NMFS requires the EM Service Provider to attempt to contact the vessel by phone and email to help address the issue. OLE will contact vessels if the issue is serious (significant data loss) or a continuous, repeated offense. NMFS makes every attempt to help the vessel rectify the issue as soon as it is identified. Vessel operators who voluntarily report issues with EM data collection or quality to FMA and immediately take corrective actions upon discovery will not be placed into the Notice of Improvement Pool (NIP, see below).

If the EM data provided by an EM vessel is of consistently poor quality and improvements are required, "Notice of Improvement Needed" outreach letters are sent to the vessel. These letters notify the vessel that they are being placed into the Notice of Improvement Pool (NIP). Placement in the NIP is determined annually, after NMFS conducts an EM data quality analysis at the end of each calendar year after all EM data from the vessel has been reviewed. The NIP letter notifies the vessel owner/operator of specific issues that must be addressed to bring the vessel into compliance. NIP vessels have a disproportionate impact on overall data quality and timeliness because these vessels require long review times which adds expense and delays the review of hard drives from compliant vessels. Data from vessels in the NIP is of poor quality and is often missing or cannot be used for management or other purposes.

Vessels in the NIP must satisfactorily improve their performance within a year to continue to participate in an EM program. Vessels that do not improve or adhere to program responsibilities and guidelines may be deemed ineligible to participate in, and subsequently removed from, an EM program. Vessels which are removed from an EM program automatically revert to the at-sea observer pool. Vessels in the NIP that were not active (i.e., did not fish) or did not have an EM trip selected during the year, and therefore had no opportunity to improve, will remain in the NIP the following year. NMFS will notify the vessel operator of their EM/NIP status for the upcoming calendar year through a cover letter attached to the VMP.

6. No-selection Pool/Stratum

The no-selection pool is composed of vessels in the partial coverage category that will have no probability of carrying an observer or EM on any trips for the 2027 fishing season and represents a single stratum. The *No-selection* stratum is comprised of fixed-gear vessels less than 40 ft LOA, where length overall is defined in regulations at 50 CFR 679.2 and means the centerline longitudinal distance, rounded to the nearest foot; and vessels fishing with jig gear, which includes handline, jig, troll, and dinglebar troll gear.

Partial Coverage Allocation Strategy

Allocation strategy refers to the method of allocating monitoring among strata to sample units. In 2027, NMFS proposes to implement the Proximity Allocation Method to deploy EM fixed-gear and at-sea observers in the partial coverage category. This method is precautionary with respect to obtaining data from all types of fishing activity (decreasing data gaps) while protecting against high variance associated with low sample sizes.

NMFS first implemented the Proximity Allocation Method in 2024 (NMFS 2023a). The Council has supported implementation of the Proximity Allocation Method[3]. In June 2026, the NMFS held a Center for Independent Experts (CIE) review[4] of the methods used in the ADP, including the Proximity Allocation Method. The general consensus among the three external, independent reviewers was that the

[3] C-1 Council motion 2023 Observer Annual Report & 2025 Annual Deployment Plan June 8, 2024
[4] External Independent Peer Review of the North Pacific Observer Program Annual Deployment Plan and Annual Report

science is sound, appropriate, and best available. The Executive Summaries of the CIE reviewer reports are provided in Appendix E. The final CIE Reviewer Reports can be found at: https://noaa-afsc.github.io/CIE-Review-Observer-ADP-AnnualReport/reviewerreports.html

The Proximity Allocation Method spreads sampled trips throughout the fisheries to increase the proportion of trips that are sampled or near a sampled neighbor and to be consistent between strata within a specified budget, while also protecting against small sample sizes within a stratum. This allocation method applies to all strata sampled at sea, but does not apply to the no-selection stratum or the EM trawl GOA stratum which is sampled shoreside. Details on how selection rates were determined are provided in Appendix B.

Dockside Monitoring

Dockside sampling methods

Dockside monitoring by observers will occur in shoreside processing plants to enable sampling of deliveries from pollock vessels fishing with pelagic trawl gear (Table 3). The data collection objectives are to: 1) enumerate salmon bycatch from EM deliveries and deliveries that were observed at sea; 2) enumerate halibut bycatch from EM deliveries; 3) collect genetic information from salmon in EM and observed deliveries; and 4) collect biological samples from non-salmon species from EM deliveries.

For GOA trawl EM category vessels that deliver to shoreside processors or tenders, observers in the processing plant will complete an enumeration of salmon and halibut bycatch for every EM offload. Observers will collect salmon tissue samples for genetic analysis to determine the river of origin of bycaught salmon from all EM deliveries. In addition, for deliveries from trips with at-sea observer coverage, salmon enumeration and collection of salmon tissue samples for genetic analysis will be conducted at the shoreside processing plant. For 2027, NMFS proposes to collect genetic samples from 1 in 10 Chinook and 1 in 30 chum, which is the same sampling rate used in the full coverage fisheries. This would result in consistent sampling rates across all EM and observed trips and would spread genetic tissue collections over a larger number of offloads at a lower collection rate, decreasing the amount of time an observer spends on tissue collection for deliveries with large numbers of salmon.

For vessels in the GOA pollock fishery that do not participate in the trawl EM category and deliver to shoreside processors, the offloads from trips that are randomly selected for at-sea observer coverage will be monitored for salmon bycatch by an observer during offload of the catch at the shoreside processing plant.

For trips in the GOA pollock fishery outside of the trawl EM strata that are delivered to tender vessels (as well as trawl trips outside of the pollock fishery), salmon counts and tissue samples will be obtained from salmon found within observer at-sea samples of the total catch.

For trips in the BSAI trawl pollock fishery, for CVs both in the trawl EM category and those not in trawl EM, a census of salmon will be completed during the offload.

Dockside observer coverage and Catch Monitoring Control Plans

To ensure that shoreside processors are meeting dockside monitoring requirements they are required to submit and maintain Catch Monitoring Control Plans (CMCPs). Shoreside processors that receive

[5] CIE Reviewer Reports

landings from vessels in the trawl EM category are required to have an approved CMCP, as specified at 50 CFR 679.28(g)(2). The CMCP is submitted by the owner and manager of a shoreside processing plant to NMFS for approval, and outlines how the processor will meet the applicable catch monitoring and control standards.

For processors receiving pelagic pollock deliveries in the BSAI full coverage fisheries, their CMCP indicates the specific number of observers that are necessary to meet program sampling objectives. NMFS may update the CMCP throughout the year to ensure that sufficient data can be collected, as processing effort may change seasonally. At a minimum, processors receiving AFA deliveries are required to have one observer per 12 hour period, as specified at 50 CFR 679.51(b)(2). Shoreside processors in the BSAI that receive AFA pollock trawl deliveries, both EM and non-EM, may need to carry 4 observers per day (2 per 12 hour shift) to meet the observer program sampling requirements. Each shoreside processor has a unique operation and, as such, NMFS will work with each shoreside processor to determine the number of observers necessary to meet data collection needs and document the plant-specific requirements in the CMCP.

The deployment of observers, both at sea and for dockside monitoring in the partial coverage program is determined through the ADP process, using estimated costs and anticipated budget. As such, the agency will determine the total number of observers needed in the GOA at shoreside processors. Based on the agency data needs and sampling duties outlined for shoreside observers, one observer will be necessary per pollock processing line at the shoreside plant. If a shoreside plant has two lines of operation for pollock then two observers will be necessary. NMFS requests information from industry to ensure budget allocations are accurate in the ADP (Appendix F), however information on the specific observer needs at shoreside plants accepting partial coverage deliveries was not available at the time of the draft ADP. Therefore, this draft ADP estimates that five observers will be needed to monitor processing plants in Kodiak while pollock fishing is open, as well as up to two observers to monitor deliveries in Sand Point.

Table 3 summarizes the 2027 dockside sampling protocols for salmon and groundfish delivered by CVs in the pelagic pollock fishery in the GOA and BS. Trips by non-pollock trawl vessels in the GOA fall under the partial coverage category and will be randomly selected for coverage by at-sea observers who will sample at sea for salmon, salmon genetics, and groundfish biological samples.

Communication with observers

The CMCP also facilitates communication between the vessels, shoreside processors, and observers. This is achieved by requiring all necessary information be supplied to the observers. CV and tender vessel operators will be required to follow landing notice procedures specified in their respective VMPs, as specified at § 679.51(g)(3). The landing notice is transmitted by the CV or tender vessel to the intended shoreside processor, as outlined in the VMP. Once the landing notice is received by the shoreside processor, that information is provided to the shoreside observers. Beginning on 1 January 2025, Bering Sea shoreside processors implemented an internal email account that allows observers to monitor daily schedules, and other communications. The Alaska Regional Office (AKR) is included on these emails. This process gives observers adequate information to perform their sampling duties, and gives the agency the ability to track communications. These emails are listed in the communication section of the CMCP. A similar process is in place for the GOA shoreside processing plants.

Table 3. Summary of dockside sampling for CVs in the pelagic pollock fishery in 2027.

FMP Area	Stratum	Fishery	Offload location	Salmon and halibut PSC accounting	Salmon genetic samples	Biological sampling of groundfish in the plant
GOA	EM Trawl	Pelagic pollock	Shoreside plant or tender	Enumeration of all salmon and halibut PSC on 100% of deliveries.	1 in 10 Chinook and 1 in 30 chum	33% of deliveries
	Partial Coverage At-sea Observer Trips	Pelagic pollock	Shoreside plant	Enumeration of all salmon PSC on deliveries for selected trips. Estimates from halibut found within observer at-sea samples of the total catch on selected trips.	1 in 10 Chinook and 1 in 30 chum	Collected at sea on random selection of trips
			Tender	Estimates from salmon and halibut found within observer at-sea samples of the total catch on selected trips.	Within observer at-sea samples	Collected at sea on random selection of trips
BS	EM Trawl	Pelagic pollock	Shoreside plant	Enumeration of all salmon and halibut PSC on 100% of deliveries.	1 in 10 Chinook and 1 in 30 chum	100% of deliveries
	Full Coverage At-sea Observer Trips	Pelagic pollock	Shoreside plant	Enumeration of all salmon PSC on 100% of deliveries Estimates from halibut found within observer at-sea samples of the total catch on selected trips.	1 in 10 Chinook and 1 in 30 chum	Collected at sea on 100% of trips

Selection Rates

The **preliminary** selection rates for deployment of observers (50 CFR 679.51(a)) and EM (50 CFR 679.51(f)) in 2027 are summarized in Table 4. Using a combination of at-sea observers, shoreside observer sampling, and EM, the NMFS expects to monitor 2,742 trips in full coverage and 1,404 trips in partial coverage in 2027 (Table 4). Details on how selection rates were determined are provided in Appendix B. As noted above, both the budget for 2027 and the estimated costs presented in this draft ADP are preliminary. **Any change in the estimated 2027 budget or costs will affect the final selection rates in the final ADP.** The final ADP will be presented to the Council in December 2026.

Table 4. Summary of total trips, selection rates (rounded to the nearest whole number), the number of trips expected to be observed, and monitoring location and purpose, in each sampling stratum in 2027. Selection rates presented here are **preliminary** based on estimated budget and costs. Final selection rates will be provided in the final ADP in December 2026.

Component	Pool	Stratum	Total No. Expected Trips	Selection Rate (%)	No. Trips Expected to be Monitored	Monitoring Location	Monitoring Purpose
Partial Coverage	**At-sea Observer**	Fixed-gear BSAI	253	31.35	79	At-sea	Discard & PSC estimation/ biological sampling
		Fixed-gear GOA	1,868	9.31	174		
		Trawl BSAI	35	46.54	16		
		Trawl GOA	305	15.34	47		
	EM Fixed-gear	Fixed-gear BSAI	92	42.99	40	At-sea	Discard & PSC estimation/ biological sampling
		Fixed-gear GOA	1,010	15.24	154		
	EM Trawl	EM Trawl GOA	894	100	894	At-sea	EM Compliance
				100	894	Dockside	PSC accounting
				33	298	Dockside	Biological sampling
	No-selection	No-selection	1,427	0	0		
Full Coverage	**Full Observer**	Full Observer Coverage	968	100	968	At-sea	Discard & PSC estimation/biological sampling
	EM Trawl BSAI	EM Trawl BSAI	1,774	100	1,774	At-sea	EM Compliance
				100	1,774	Dockside	PSC accounting
				100	1,774	Dockside	Biological sampling

Observer Declare and Deploy System (ODDS)

Vessels in the partial coverage strata are required to notify NMFS and their fishery monitoring service provider with their intended fishing plans prior to departure. This is accomplished through phone or direct access to the ODDS web-application. The strata and associated selection rates are programmed into ODDS for each ADP prior to the start of the year. For each logged trip, ODDS selects a four digit random number. If the random number is equal to or below the stratum-specific selection rate, the trip is selected for monitoring; otherwise the trip is not selected for monitoring. In this way, ODDS facilitates random selection of which trips will be monitored. In addition, owners or operators of vessels making trips in the EM Fixed-gear selection pool must also use ODDS to close each trip following the instructions in their VMP.

The NMFS is currently updating the ODDS to facilitate more timely and accurate data entry by vessel and call center users. Starting in 2027, when closing pending trips in ODDS, users will be presented a list of landing report identification numbers with fishing trip dates that closely match the trip's planned embarkation and disembarkation dates in ODDS. Users can then select one or more landing reports to close a trip. If no potential landing reports are listed, the trip's embark and disembark dates may need to be updated by the user in ODDS. If there are still no landing reports listed, the user may enter the landing

report identification numbers or the landing date into ODDS, consistent with the current process for closing trips. This upgrade will improve ease of use, data quality, and data timeliness.

Operators of CVs in the partial coverage trawl EM category with a NMFS-approved VMP must register anticipated trips in ODDS. Prior to embarking on each fishing trip, the owner or operator must specify the use of pelagic or nonpelagic trawl gear to determine trawl EM category participation for the upcoming fishing trip.

For new partial coverage trip selection participants, vessel owners should contact NMFS at odds.help@noaa.gov requesting an ODDS account. NMFS will then create a user account for the new partial coverage trip-selection participant so that they may access the application at http://odds.afsc.noaa.gov/ and log eligible fishing trips electronically. Vessel owners can also log, change, or cancel trips through the ODDS call center (1-855-747-6377). Communication between users and NMFS is facilitated through odds.help@noaa.gov.

Annual Coverage Category Requests

Partial coverage catcher/processors

Under Observer Program regulations at 50 CFR 679.51(a)(3), the owner of a non-trawl C/P can request to be in the partial observer coverage category, on an annual basis, if the vessel processed less than 79,000 lb (35.8 mt) of groundfish on an average weekly basis in a particular prior year. The deadline to request placement in the partial observer coverage category for the following fishing year is 1 July and the request is accomplished by submitting a form[6] to NMFS. Twelve vessels are in the partial coverage C/P category for the 2027 fishing year. However, only one of these vessels has a history of C/P activity within the Observer Program. The other eleven vessels have not fished as C/Ps, but have had C/P endorsements on their Federal Fisheries Permits (FFPs), primarily for freezing rockfish in jig or troll fisheries. NMFS will be reevaluating 50 CFR 679.51(a)(3) as part of its deregulatory efforts under EO 14276.

Full coverage CVs

Under Observer Program regulations at 50 CFR 679.51(a)(4), the owner of a trawl CV may annually request the CV to be placed in the full observer coverage category for all directed fishing for groundfish using trawl gear in the BSAI management area for the upcoming year. Requests to be placed into full observer coverage in lieu of partial observer coverage must be made in ODDS[7] prior to 15 October 2026 for the 2027 fishing year. Each year, the list of CVs that have been approved to be in the full coverage category is available on the NMFS website.[8]

Vessels Participating in Halibut Deck Sorting

On 24 October 2019, NMFS published a final rule to implement regulations allowing halibut to be sorted on the decks of trawl C/Ps in the non-pollock fisheries off Alaska. Fishing under the new regulations began on 20 January 2020. The final rule implementing this program does not specify the amount of time allowed for vessel crew to sort, and observers to discard, deck-sorted halibut. This flexibility enables

[6] The form for small catcher/processors to request to be in partial coverage is available at: https://media.fisheries.noaa.gov/dam-migration/catcher-processor-observer-partial-coverage-request.pdf
[7] Instructions for catcher vessels to request to be in full coverage using ODDS are available at: https://www.fisheries.noaa.gov/resource/document/bsai-trawl-catcher-vessel-annual-full-observer-coverage-request
[8] List of BSAI trawl catcher vessels in full coverage available at https://www.fisheries.noaa.gov/resource/document/bsai-trawl-catcher-vessels-cvs-full-coverage

NMFS to adjust sorting times in response to new information. In 2027, NMFS will continue to allow all vessels operating under these regulations 35 minutes to deck-sort and discard halibut. This uniform time allowance maintains the protocol from previous years and is consistent with the fact that there is no data to support vessel-specific deviations from the current time limit.

Voluntary Increase in Observer Coverage on Freezer Longline Vessels

The Freezer Longline Coalition and Alaskan Observers are intending to deploy two observers on select C/P longliners to increase the number of non-trawl lead level 2 (LL2) endorsed observers. This unique approach combines the two monitoring options in 50 CFR 679.51(a)(2)(vi)(E) and § 679.100(b) by taking increased observer coverage and using a flow scale.

Combining the monitoring options provides increased opportunities for observers to gain a non-trawl LL2 endorsement; supports the collection of high quality data by increasing sampling on these select vessels and sharing the sampling workload; and uses a flow scale to determine the weight of all retained Pacific cod. Additionally, deploying two observers to a challenging sampling platform has the potential to increase observer retention by improving the inexperienced observer's experience through mentorship and minimizing burn-out for the experienced observer.

EM Development Projects

In addition to the regulatory EM programs, NMFS supports ongoing innovation of EM and collaborating with industry partners on EM development projects when funding and staff resources are available. Industry members frequently apply for funding through non-governmental organizations to support these projects and the Council often provides letters of support and NMFS is committed to collaborating to the extent possible when funding decisions are announced.

Pending availability of staff resources, known and ongoing projects that NMFS intends to support in 2027 include:

- Central Gulf of Alaska Rockfish Program EM Pilot Project;
- Freezer-longline Coalition EM Pilot Project;
- RealTime Data/Deckhand Electronic Logbook Development;
- North Pacific Fisherman's Association & Under Sixty Cod Harvester's proposal with Saltwater, Inc. to evaluate pot cod EM catch handling protocols; and
- Advancing Fisheries Monitoring: Scaling AI tools to Modernize Data Collections and Analytical Practices of Electronic Monitoring Videos.

Communication and Outreach

In an effort to enhance communication and collaboration between Alaska commercial fisheries shoreside processors and NMFS, an email and letter were sent from the AFSC Fisheries Monitoring and Analysis Division to shoreside processors on August 19, 2026. A copy of the email and the letter are attached in Appendix F. For questions or concerns related to the ADP, or to inform NMFS of 2027 monitoring needs, please contact: nmfs.alaska.adp@noaa.gov.

NMFS will continue to communicate the details of the ADP to affected participants through letters, public meetings, NMFS Information Bulletins, and information on NMFS websites:

- Information about the Observer Program and Frequently Asked Questions on observer deployment are available at: https://www.fisheries.noaa.gov/alaska/fisheries-observers/north-pacific-observer-vessel-plant-operator-faq

- Frequently Asked Questions about EM fixed-gear are available at: https://www.fisheries.noaa.gov/alaska/resources-fishing/frequent-questions-electronic-monitoring-em-small-fixed-gear-vessels

- Frequently Asked Questions about trawl EM are available at: https://www.fisheries.noaa.gov/s3//2025-01/Common-Questions-Trawl-Electronic-Monitoring-EM-Category.pdf

- For technical information and Frequently Asked Questions regarding ODDS go to http://odds.afsc.noaa.gov/ and click the "ODDS login" button.

NMFS continues to communicate with industry groups and past participants as we work to ensure smooth monitoring of fisheries in 2027. AKR Staff are available for outreach meetings upon request. To request a meeting, please contact Joel Kraski at joel.kraski@noaa.gov.

Observer Program staff are also available for outreach meetings upon request by teleconference and/or video conferencing. To request a meeting or suggest a topic for discussion, please contact Sean Lucey at 1-206-900-5565 or Sean.Lucey@noaa.gov.

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Appendix A: Council Motions on the ADP

C-1 Council motion
2025 Observer Program Annual Report & 2027 Annual Deployment Plan
June 6, 2026

2025 Annual Report
Given changes to the Council's future meeting schedule, the Council supports NOAA's proposal to provide relevant data to the Council at the May Council meeting to support recommendations on the following year's annual deployment plan, with the final annual report released prior to September. Overall, the Council recommends an abbreviated annual report, with a focus on:

- Clear, plain language results on the projected and achieved observer or electronic monitoring (EM) coverage by sector and whether spatial and temporal distribution were achieved
- Statistics on the percentage of actual catch observed by gear type in the GOA and BSAI, as indicated on p. 6 and Tables 4-3 and 4-4 of the 2025 annual report
- Identification in the executive summary of any notable changes from the previous year's deployment scheme and resulting changes in trends or conclusions as to their effectiveness
- An addition to the enforcement section to identify whether the vessel or processor was able to resolve the issue inseason

2027 Annual Deployment Plan (ADP)
The Council supports the following recommendations for the 2027 ADP:

- For the partial coverage program, use the proximity allocation method (except for pelagic trawl EM) and the following strata for deployment: (observer, EM fixed gear, EM pelagic trawl), Fishery Management Plan areas (BSAI, GOA), and gear type (fixed, trawl)
- For pelagic trawl EM, maintain 100% EM at-sea monitoring and the 33% sampling rate of EM deliveries by shoreside observers
- Maintain fixed gear EM selection pool of up to 181 vessels. If needed, prioritize placement in the EM selection pool based on vessel size, fishing effort, minimizing data gaps, and cost efficiency
- Provide a process to remove or deny vessels in the EM programs if they are inactive or have repeated issues causing data loss from the EM pool
- Continue to improve EM video review times with Pacific States Marine Fisheries Commission and use prioritization rules to better allocate review effort to the fisheries, gear types, times, and areas most dependent on EM data for management
- Present revisions to the zero selection pool (currently <40' fixed-gear catcher vessels and jig gear) for cost efficiency purposes
- For pelagic trawl EM, ensure logbook explanations are available to EM reviewers to provide additional context for discard of pollock events; develop a secondary blind review process for pollock discard events that may advance to enforcement actions; and support an OLE focus on compliance assistance given early implementation of the program, similar to the fixed gear EM approach

The Council recommends sending a letter to the Department of Commerce on the planned transition to login.gov multi-factor authentication for all public-facing systems (such as Observer Declare and Deploy System, or ODDS)

beginning as early as mid-2026. The letter should highlight the challenges for Alaska fisheries participants given unreliable internet and cell service in some areas of rural Alaska, and request reconsideration or accommodations.

C-2 Council motion
Observer 2026 Annual Deployment Plan
October 3, 2025

2026 Annual Deployment Plan (ADP)
The Council supports the draft 2026 ADP for partial coverage fisheries with the additions outlined below. Observer coverage rates resulting from the selected design and the final budget are expected in the final ADP in December 2025. Regulations requiring 100% and 200% observer coverage requirements are unchanged.

- Confirmation that vessels operating in partial coverage can deliver to and have their harvest observed by a full coverage observer at an AFA shoreplant. No partial coverage shoreside observers need to be stationed at full coverage AFA plants.
- Continued outreach to the fleets on 1) the deadlines to opt in or opt out of the EM pool for 2026, and 2) any changes to, or potential disruptions with, the ODDS system to log trips for coverage.
- Consistent with the Trawl EM Council action, the cost of housing and feeding observers was not to be directly paid for by processors and should be included in the ADP. There may be specific cases where processors can continue to house and feed observers, and these can be excluded.

The Council reiterates its support for agency efforts to revise the zero selection pool (currently <40' fixed gear catcher vessels and jig gear) for cost efficiency purposes to evaluate including fixed gear catcher vessels with 1-2 annual trips and/or low annual quota/volume.

NFWF Proposals
The Council supports the following proposals submitted for funding from the National Fish and Wildlife Foundation (NFWF):

- Freezer Longline Coalition project proposal with FlyWire to test using EM on longline catcher processors for catch composition and consider real-time data reporting options for EM monitored vessels
- Real Time Data proposal to expand use of electronic logbooks in the halibut and sablefish fleets through evolved integration with eLandings, testing broader platform support, and enhanced features for fishermen

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C-1 Council motion
2024 Observer Annual Report & 2026 Annual Deployment Plan
June 6, 2025
2024 Annual Report
The Council appreciates the 2024 Annual Report on the observer program and recommends the following for future reports, in addition to SSC recommendations as practicable:

- The executive summary should include program summary statistics, such as the percentage of catch observed as indicated on p. 85:
    - In the Bering Sea/Aleutian Islands (BSAI), all pelagic trawl catch was on trips with 100% or 200% coverage. In the BSAI and Gulf of Alaska combined, **91.2% of pelagic trawl catch was on trips with 100% or 200% coverage and 8.8% was on trips in partial coverage.** All partial coverage trips were in the Gulf of Alaska and 34% of the catch was monitored. This percentage is higher if trawl trips covered by electronic monitoring (EM) are considered.

    - In the BSAI and Gulf of Alaska combined, **95.6% of non-pelagic trawl catch was on trips with 100% or 200% coverage and 4.4% was on trips in partial coverage.** Partial coverage trips occurred in both the BSAI and GOA, with 79.1% and 16.4% of their catch monitored, respectively.
- The executive summary should include identification of any notable changes from the previous year's deployment scheme and resulting changes in trends or conclusions as to their effectiveness. • Include the amount and timeliness of EM data review for the pelagic gear EM program similar to the fixed gear EM program.
- Highlight the results of the ODDS trip cancellation policy change in 2025 (i.e., ability to edit not cancel selected trips) and its effect on reducing temporal bias.

<u>2026 Annual Deployment Plan (ADP)</u>

The Council supports the following recommendations for the 2026 ADP:

- For the partial coverage program, similar to 2025, use the proximity allocation method (except for pelagic trawl EM) and the following strata for deployment: (observer, EM fixed-gear, trawl EM), Fishery Management Plan areas (BSAI, GOA), and gear type (fixed, trawl)
- For pelagic trawl EM, maintain 100% EM at-sea monitoring and the 33% sampling rate of EM deliveries by shoreside observers
- Maintain fixed-gear EM selection pool of up to 178 vessels. If needed, prioritize placement in the EM selection pool based on vessel size, fishing effort, minimizing data gaps, and cost efficiency. Remove vessels with repeated problems causing data loss from the EM pool.
- Improve EM video review times with Pacific States Marine Fisheries Commission and use prioritization rules to better allocate review effort to the fisheries, gear types, times, and areas most dependent on EM data for management.
- As practicable for this or future ADPs, consider revisions to the zero selection pool (currently <40' fixed-gear catcher vessels and jig gear) for cost efficiency purposes to potentially include fixed-gear catcher vessels with: 1-2 annual trips and/or low quota/catch volume.

Appendix B: Calculation of the Selection Rates for the Partial Coverage Strata of the 2027 ADP

Introduction

The Annual Deployment Plan (ADP) specifies how fishery monitoring assets (observers and electronic monitoring [EM] equipment) are deployed into federal fisheries off Alaska by the North Pacific Observer Program (Observer Program). Fishery monitoring data are used for near real-time catch estimation for quota monitoring as well as in fish and marine mammal stock assessments as authorized through several statutes. The observer program is administered by the Fisheries Monitoring and Analysis Division (FMA) of the Alaska Fisheries Science Center (AFSC).

The sampling hierarchy used by FMA to obtain fishery dependent data has several levels, and the ADP is important because it affects the first, and top-most level of this hierarchy (Cahalan and Faunce, 2020). The ADP is focused predominantly on fishing operations for which sampling rates will be less than 100% (i.e., the partial coverage fleet). The partial coverage fleet consists of catcher vessels (CVs) and some catcher/processors (C/Ps, when they are not participating in a catch sharing or cooperative style management program) and accounts for approximately 10% of the landed tonnage in the federal fisheries off Alaska.
Changes to the composition of the partial coverage fleet have resulted from National Marine Fisheries Service (NMFS) policy, North Pacific Fishery Management Council (Council) actions, and regulations. Since the inception of the ADP process in 2012 (2013 ADP), trip-selection has been the preferred method to deploy fishery monitoring assets into the partial coverage fleet (NMFS 2013).

For the sampling design employed by the observer program to be statistically defensible, it must include several key elements. These elements include randomized data collections over spatial and temporal scales (a probability sample) coupled with the use of stratification and prespecification of sampling intensity to control precision of estimates, while also making efficient use of available funding (Cahalan and Faunce, 2020). Therefore, the sampling design for the deployment of fishery monitoring assets (i.e., the deployment design) in the partial coverage fleet involves two components; how the population of partial coverage trips is subdivided (*stratification*), and what proportion of the total observer deployments are to occur within these subdivisions (*allocation*). The Observer Declare and Deploy System (ODDS) is used to identify the strata of fishing trips and randomly select trips in partial coverage fisheries for monitoring at the sampling rates defined by this ADP.

The ADP process includes a draft and final version. The draft ADP is focused on presenting the best deployment design for consideration for the year ahead, while the final ADP is focused on refining the design presented in the draft ADP and providing the most likely coverage rate that available budgets can afford. In this way, the ADP provides an annual process for NMFS and the Council to evaluate and recommend improvements to fisheries monitoring in response to changing needs.

This appendix contains the analyses used to define the deployment design for fishery monitoring in 2027 and presents **preliminary selection rates based on preliminary budgets** that are likely to differ from those presented in the final ADP. The final version will incorporate updates to the partial coverage monitoring budget, predicted fishing effort, EM participation, and monitoring costs—all of which may influence final prescribed selection rates.

Methods

Data Preparation: Defining the Partial Coverage Fleet

A dedicated dataset developed by the staff of the Sustainable Fisheries Division of the Alaska Regional Office and FMA was used in this analysis. Briefly, these data consist of gear types used, fishing dates, locations, observation status, and associated ADP strata that occurred on partial coverage fishing trips between 1 January 2013 to 12 August 2026. For this analysis, the expected fishing effort for 2027 was assumed to be similar to all partial coverage fishing effort for the most recent 12 month period (between 13 August 2025 through 12 August 2026).

As in past ADPs, trip data were adjusted to reflect fishing effort in the partial coverage fleet for the upcoming year. These adjustments included: 1) using deployment data to more accurately model the duration that observers are assigned to selected fishing trips; 2) labeling fishing activity by two 'historically low volume' C/Ps as belonging to the partial coverage category (i.e., those exempted from full coverage through regulatory flexibility); 3) labeling fishing by American Fisheries Act (AFA) eligible trawl vessels targeting Pacific cod in the BSAI FMP as belonging to the full coverage fleet if they opted into full coverage for 2026; and 4) removing vessels with no probability of selection (i.e., all trips corresponding to the no-selection pool) from the analysis. Vessel lists for the EM Fixed-gear pool and trawl EM category were assumed to be the same as those in the 2026 final ADP (NMFS 2026) and will be updated following the opt in/out deadlines for those programs for the 2027 final ADP.

The 2027 partial coverage sampling design includes the following strata, defined by gear type, monitoring method (observers, EM, or none), and fisheries management plan area (FMP; Bering Sea and Aleutian Islands - BSAI or Gulf of Alaska - GOA):

1. At-sea Observer Fixed-gear BSAI: Observer monitoring of trips that occur primarily in the BSAI using hook-and-line, pot, or both gears on vessels that are greater than or equal to 40 ft length overall (LOA), are not in EM Fixed-gear.

2. At-sea Observer Fixed-gear GOA: Observer monitoring of trips using hook-and-line, pot, or both gears that occur primarily in the GOA on vessels that are greater than or equal to 40 ft LOA, are not in EM Fixed-gear.

3. At-sea Observer Trawl BSAI: Observer monitoring of trips that occur primarily in the BSAI by vessels using trawl gear, excluding trips where vessels participate in trawl EM.

4. At-sea Observer Trawl GOA: Observer monitoring of trips that occur primarily in the GOA by vessels using trawl gear, excluding trips where vessels participate in trawl EM.

5. EM Fixed-gear BSAI: EM of trips using hook-and-line, pot, or both gears that occur primarily in the BSAIon vessels that are greater than or equal to 40 ft LOA.

6. EM Fixed-gear GOA: EM of trips using hook-and-line, pot, or both gears that occur primarily in the GOA on vessels that are greater than or equal to 40 ft LOA, have been approved to carry EM.

7. EM Trawl GOA: EM compliance monitoring of trips that occur primarily in the GOA by vessels participating in the partial coverage trawl EM category with shoreside monitoring of offloads by observers.

8. No-selection: No monitoring, includes vessels in the partial coverage category less than 40 ft LOA and trips fishing exclusively with jig gear.

Accounting for Uncertainties

Uncertainty in Monitoring Costs Due to Random Trip Selection

The ADP prescribes monitoring rates such that the predicted monitoring costs incurred in 2027 will be roughly equal to the budget available to deploy observers and EM into partial coverage (i.e., the monitoring budget). However, in practice random processes in trip selection introduce uncertainty in the realized costs.

The random process of trip selection in ODDS may impact the realized costs in several ways. First, although ODDS is programmed to select trips for monitoring at a specified rate, some degree of variation in each stratum's realized sampling rate is to be expected, and this affects the total number of trips monitored. Second, trip durations vary, with longer trips being generally more expensive to monitor than shorter trips, causing monitoring costs to vary depending on which trips are randomly selected. To account for these sources of variability, randomization was incorporated by simulating trip selection in ODDS at the prescribed trip selection rates 10,000 times. Finally, unpredictable processes, such as whether trips logged into ODDS are canceled, inherited, waived, or if trips are not logged at all are not accounted for.

Uncertainties to Be Addressed in the Final ADP

Uncertainties that were not included in this draft analysis:

1. EM vessel participants: The current analysis assumes the vessels participating in EM in 2027 are the same as those that participated in 2026. The application deadline for opting in or out of the EM pools is 1 November. The final analysis will include the final list of EM participants for 2027.

2. Partial coverage fishing effort: In this analysis, fishing effort in 2027 was assumed to be equal to the number of trips that fished between 13 August 2025 and 12 August 2026. The final analysis will incorporate modeled predictions of expected 2027 fishing effort by stratum, calculated using historical fishing effort, and will include measurements of uncertainty around predictions.

3. Number of EM Trawl GOA deliveries and participating processing plants: This draft analysis assumes that shoreside observer requirements will be similar to B season of 2025 and A season of 2026. Through discussions with industry, expectations of fishing effort in this stratum, as well as which processing plants will require shoreside observers and in which seasons, will be incorporated into the budgeting process in the final version of this analysis.

Budget and Monitoring Costs

The preliminary budget for monitoring the partial coverage fisheries was set at $5.45M and includes revenues generated from ex-vessel fees in 2025 and 2026 and federal funds. Beginning in 2023, Congressional Directed Spending funds allocated to Pacific States Marine Fisheries Commission (PSMFC) supported new installations of EM systems and EM equipment replacements. These costs were not included in budget considerations in those prior years. The Congressional Directed Spending funds are expected to be expended by the end of 2026 and thus the costs of equipment installation and replacement are now included in the budget for 2027.

Cost Assumptions

The partial coverage monitoring program has three monitoring methods: 1) at-sea observers; 2) fixed-gear EM; and 3) at-sea compliance EM with shoreside observers to monitor and sample deliveries in the GOA inshore pollock fishery (trawl EM). To estimate the costs of monitoring, cost functions were constructed for each monitoring method. Each model incorporates the best information available on monitoring costs paid by contracted sources and available budgets, assumptions about both fixed and variable costs, and known economy of scale.

What follows are the most detailed descriptions of costs for each deployment stratum possible while maintaining the confidentiality of estimated prices included in the partial coverage observer contract.

EM Trawl GOA

Vessels in the partial coverage trawl EM in the GOA carry EM systems for at-sea compliance and are monitored shoreside by observers for prohibited species catch (PSC), total catch, and collection of biological samples. The 2027 cost estimate for EM trawl GOA is the sum of: 1) estimated shoreside observer plant day costs; 2) estimated shoreside observer travel costs; 3) estimated EM data and video review costs; and 4) estimated vessel EM equipment maintenance costs.

In 2027 the shoreside observer cost estimate assumes: 5 observers are required to monitor processing plants in Kodiak in both A and B season; 2 observers in A season and 1 observer in B season are anticipated at Sand Point; no partial coverage shoreside observers are required at processing plants in False Pass, Akutan, or Dutch Harbor; all observers monitor on all calendar days while the pollock fishery is open; the duration of A season is similar to that of 2026; the duration of B season is similar to that of 2025. Under these assumptions, 777 plant observer days are predicted in the GOA for 2027. These assumptions are subject to change in the final ADP.

According to the partial coverage observer contract, the cost of a shoreside plant day is a function of total plant days, which contract year the days occur in, and the number and type of days purchased (guaranteed or optional). Based on the assumptions above, approximately 79% of the 2027 GOA pollock fishery will occur during the first contact period (1 Jan 2027–30 September 2027) of the partial coverage contract and 21% during the second contract period (1 October 2027–31 December 2027). The total plant day costs were estimated by combining the estimated number of guaranteed and optional days with independent government estimates of day prices for the upcoming observer partial coverage contract.

The travel costs include estimates of the total lodging costs and total per diem costs. Air travel costs were assumed to be negligible because, unlike at-sea observers, shoreside observers are not expected to travel while deployed at a processing plant. Lodging costs were assumed to be similar to those reported by A.I.S., Inc., the provider responsible for deploying observers on vessels and at processing plants within Alaskan partial coverage fisheries, during A season of 2026 and B season of 2025, taking into account which processing plants provide lodging and food for plant observers which do not incur these costs. The sum of the total lodging costs and the total per diem costs yielded the total GOA travel costs.

The costs of EM were separated by 1) video review costs and 2) vessel equipment maintenance costs. Data and video review costs for 2027 were calculated using inflation adjusted values from previously published estimates (Table E-1-2, NMFS 2024b). The review cost per day was determined by dividing the sum of the transmittal, review, processing, and storage costs by the total number of reviewed days. This review cost per day multiplied by the assumed fishing effort resulted in the estimate for video review costs for 2027. Vessel equipment maintenance costs were determined by multiplying estimates for the

annual EM equipment upkeep fee per vessel in a year ($5,000) by the number of GOA-only trawl EM catcher and tender vessels, assumed to be 36 catcher vessels and 6 tender vessels based on participation during 2026, giving an estimate of $210,000. Any vessels participating in trawl EM that fish in the Bering Sea are responsible for the costs of their equipment and its upkeep. Distinct from equipment maintenance costs, new EM system installation and replacement costs were not included in this draft analysis and will be accounted for in the final analysis. Prior to this year, these costs were funded externally by the Congressionally Directed Spending funds, which were administered through a grant with the PSMFC, but these funds are expected to be fully expended in 2026.

In total, EM Trawl GOA was deducted from the total $5.45M budget prior to allocation of the remaining funds to the At-sea Observer and EM Fixed-gear strata. Because this cost is known, the costs for the remaining portions of the partial coverage fleet are estimated from cost rates and predicted effort.

At-sea Observers

At-sea observer costs were estimated as a function of sea day costs and travel costs. Twelve hundred ‘guaranteed’ sea days are purchased before ‘optional’ sea days are purchased. Estimating sea day costs for the 2027 calendar year involved two steps: 1) calculation of the number of days under the base contract that will have already been used from 1 October to 31 December 2026; and 2) an estimate of the total number of days to be monitored 1 January to 31 December 2027. We first estimated the number of days monitored between 1 October and 31 December 2026 using fishing effort data from the same period in 2025 and the sampling rate for each stratum from the 2026 ADP. The values were then summed for each stratum to estimate the number of guaranteed/optional days remaining on the base contract as of 31 December 2026. Next, the total number of days that could be monitored by at-sea observers in 2027 was determined using the Proximity Allocation algorithm (described in the Allocation Method section later), which accounted for the number of days already used on the base contract, the additional number of guaranteed and/or optional days afforded on the base contract through 30 September 2027, and additional days expected to occur during the next contract year beginning 1 October 2027. An estimate of travel cost per sea day was calculated using detailed monitoring expenses compiled from internal reports for years 2017–2026. Annual totals of travel costs were divided by the number of sea days monitored in each year and resulted in annual estimates of travel cost per monitored day that were then inflation-adjusted to 2027 dollars. Based on cost trends, the inflation-adjusted average travel day cost from 2025 through 2026 was then used as the value for travel day costs in 2027. The sum of sea day costs and travel costs represented the total cost of at-sea observers.

EM Fixed-gear

The 2027 cost estimate function for EM Fixed-gear includes the recurring costs for EM system maintenance, new system installations, system replacements, EM service provider management, and estimates of video review. Previously, new system installations and replacements were covered through funds from Congress and administered through a grant with PSMFC. However, these funds were fully expended in 2026 and none currently remain for 2027 and beyond.

Cost information was provided by PSMFC on actual EM fixed-gear program expenses for the most recent full calendar year. The costs of EM equipment maintenance that recur each year were assumed to scale with the number of active vessels in the EM Fixed-gear pool. Annual maintenance cost per vessel was calculated by dividing total maintenance expenditures by the number of vessels active during the previous 12 months. System installation and replacement costs were annualized by dividing the total expenditures for new installations and replacement systems during the most recent full calendar year by an estimated

5-year lifespan. Total recurring equipment cost per active vessel was then calculated as the sum of the mean annual maintenance cost and annualized system cost. For this draft analysis, the recurring annual equipment cost per vessel was estimated at $6,002.96.

Average video review costs were calculated by dividing total video review expenditures during the most recent full calendar year by the number of hard drives reviewed during that period. The total cost of the EM Fixed-gear program was estimated as a function of (1) overhead and project management costs, (2) the number of active vessels in the pool and associated EM service provider management and equipment costs and (3) the estimated number of hard drives requiring review under the sampling rates prescribed by the proximity allocation algorithm multiplied by the estimated average review cost per hard drive.

Allocation Method

The allocation method involves several steps that are depicted in Figure B-1. The sample allocation method used here, named Proximity Allocation, was introduced in the 2024 draft ADP (NMFS 2023) and reviewed by a panel of external, independent experts in June 2026[9]. Proximity Allocation has two primary objectives: 1) minimize data gaps and 2) guard against low stratum-specific sample sizes. The algorithm evaluates the extent to which a stratum's sample rate achieves these objectives (weighing both objectives equally), and maximizes the sample rates to the extent that the budget supports. This method is designed to distribute sampled trips throughout the strata by increasing the proportion of trips that are sampled or near a sampled neighbor in space and time while also protecting against high variance resulting from small sample sizes (and remaining within budget). This allocation method was applied to the At-sea Observer and EM Fixed-gear strata only because sample rates in the EM Trawl GOA and No-selection strata were predetermined.

Defining Spatiotemporal Boxes

Expected fishing effort was categorized based on each trip's stratum, gear type used, and the Alaska Department of Fish and Game (ADF&G) statistical areas fished. The spatial positions of each trip were categorized by overlaying a hexagonal grid with cells 200 km wide and identifying which cells contained the centroids of the ADF&G statistical areas. Trips were also assigned to temporal categories 1-week in duration based on each trip's start and end date. The spatial and temporal categorizations together created spatiotemporal units, or "boxes". A sensitivity analysis showed that choice of box size and time period had minimal impact on allocation and final selection rates (Mayhew & Cahalan manuscript in preparation). Trips could belong to multiple weeks and hexagons but their weighting was set to total to one trip (e.g., a trip that crossed three boxes was counted as 0.33 trips in each box). The "neighborhood" of a box was defined as the number of trips in directly adjacent spatial or temporal boxes. Hence, the overall extent of the neighborhood of a box is 600 km across and 3 consecutive weeks. The use of neighborhoods allows the boxes to be defined with finer resolution and reduces the impacts of the arbitrarily placed boundaries of each box (i.e., how the hexagon grid is placed or which day each 7-day block begins), including edge effects.

Data gaps were quantified as the proportion of trips that are in boxes without any monitored trips in their neighborhoods. For any given monitoring rate, boxes containing a greater number of fishing trips have a higher probability of being monitored, and the neighborhood of the box will also have a higher probability of containing a monitored trip. Therefore, strata with fishing trips that are distributed widely in space and time (e.g., many boxes and each with few trips) are more likely to have a greater proportion of boxes with

[9] External Independent Peer Review of the North Pacific Observer Program Annual Deployment Plan and Annual Report

unmonitored neighborhoods and vice versa. Strata with diffuse fishing effort require a higher monitoring rate to achieve the same proportion of data gaps as a stratum with concentrated fishing effort.

The probability that there are no sampled trips in a neighborhood, $\hat{A}_b$, was estimated using the binomial approximation of the hypergeometric distribution:

$$\hat{A}_b = (1 - r)^{t_{G_b}} \quad \text{Eq. 1}$$

where b is defined as the box of interest. G_b defines the neighborhood of box b (i.e., includes the adjacent 20 boxes—6 spatial cells in the same week and 7 cells in the week prior and 7 in the week after), t_G is the number of trips, t, in a neighborhood, G, and r is the initial (assumed) sample rate of each fishing trip. Hence, t_{G_b} is the number of fishing trips, t, in the neighborhood, G, of a particular box, b.

Proximity Index

The proximity index is the expected proportion of trips in a stratum's boxes that are in monitored neighborhoods and is therefore the opposite of our measure for data gaps—as sampling rate increases, the proximity index also increases. The proximity index is a function of the available budget, each stratum's monitoring cost and size (total number of trips), spatiotemporal distribution of fishing effort, and sample rate. Strata with clustered fishing effort will achieve a specified proximity index at a lower sample rate than strata with more diffuse fishing effort. Equation 1 was used to generate the probability that there were no monitored trips in the neighborhood of box b, $\hat{A}_b$.

The expected number of trips in sampled neighborhoods is the sum of the number of trips in the neighborhood, w_b, multiplied by the probability that one or more of those trips are sampled, $(1 - \hat{A}_b)$. The proximity index, $\hat{T}$, is the average of the expected proportion of trips in monitored neighborhoods averaged over the b ($b = 1, \ldots, B$) boxes in the stratum:

$$\hat{T} = \frac{\sum_{b=1}^{B} w_b \left(1 - \hat{A}_b\right)}{B} \quad \text{Eq. 2}$$

The proximity index is useful for prioritizing the allocation of samples to highly spatiotemporally dispersed strata. For a given budget, we could maximize the proximity index, increasing sample rates until reaching the budget cap. However, strata with highly concentrated fishing effort and relatively small stratum sizes would be allocated a small portion of the total sample amount (i.e., few monitored trips). For these strata, virtually all unmonitored trips are located near monitored trips even at low sample rates, and allocation based solely on this index can result in small sample sizes for these strata. Since variance is a function of sample size, these small sample sizes can lead to catch estimates with high variability. In addition, estimated length and age composition data that drive some stock assessments will be sparse, leading to stock assessment harvest recommendations with higher uncertainty. For these reasons, the proximity allocation also includes a variance scaling factor.

Variance Scaling Factor

To control for high uncertainty associated with estimates (e.g., buffer against low sample sizes [numbers of monitored trips]), the mathematical relationship between sample size and the variance of an estimated parameter (such as the sample mean) was incorporated into the allocation algorithm. By quantifying how the level of uncertainty around a stratum-level estimate changes based on its sample size and the proportion of the population sampled, this variance scaling factor causes the allocation algorithm to allocate more samples (monitored trips) to strata prone to higher uncertainty.

All populations have a base variance; the variability in a measured parameter between all sample units (both in the sampled and unsampled). For the ADP, the population base variance is the between trip variance of a parameter over all trips in a stratum and will be different for different strata (years, gear types, etc.). The variance of a parameter, x, is given by

$$Var(x) = \frac{\sum_{i=1}^{N}\left(x_i - \bar{x}\right)^2}{N-1} \qquad \text{Eq. 3}$$

Note that in Eq. 3 we are summing not only over those sample units that were sampled, but all sample units in the population (i.e., $i = 1, \ldots, N\}$ where N is the total number of units in the population, rather than the number of sampled units in the population ($i = 1, \ldots, n$). Note that this variance does not change with sampling intensity (sample rate).

The estimated variance of the sample mean (or other parameter of interest) has two terms in addition to the population variance: the finite population correction (FPC, $(N\text{-}n)/N$, equal to 1 minus the proportion of the population sampled) and the inverse of the sample size ($1/n$):

$$\hat{Var}\left(\bar{x}\right) = \frac{(N-n)}{N}\frac{1}{n}\frac{\sum_{i=1}^{n}\left(x_i - \bar{x}\right)^2}{n-1} \qquad \text{Eq. 4}$$

As the sample size n increases , we know more about the population, and hence estimates will have less variance. The estimated variance of the sample mean will decrease with increasing sample rates until all sample units are included in the sample (sample rate = 100%), at which point we have a census of the population and there is no variance. In addition, as a larger and larger portion of the population is sampled (smaller FPC), we know more about the population, and the uncertainty about the estimate decreases.

The FPC and sample size combine to form a single variance scaling factor, F:

$$F = \frac{(N-n)}{N}\frac{1}{n} \qquad \text{Eq. 5}$$

F was incorporated into the proximity allocation algorithm such that a higher sample rate is assigned to strata with fewer total trips, and its influence decreases as stratum size (N) increases. In addition, when used in combination with the proximity index, F acts as a strong buffer against small stratum-specific sample sizes that would otherwise occur if allocation was strictly based on the proximity index.

Proximity Allocation Index

The final *proximity allocation index* used to allocate sampling effort to strata h, $\hat{D}_h$, is the product of $\hat{T}_h$ (the average of the expected proportion of trips with monitored neighbors) and $(1 - F_h)$ (the variance scaling factor), where all terms are as previously defined:

$$\hat{D}_h = (1 - F_h)\hat{T}_h \qquad \text{Eq. 6}$$

The expanded version of Eq. 6 highlights the estimation process, noting that the stratum-specific sample size, n_h, is an estimated parameter that is the product of stratum size, N_h, and the stratum monitoring rate, r_h:

$$\hat{D}_h = \left[1 - \frac{N_h}{(N_h - N_h r_h)} \frac{N_h r_h}{1}\right] \frac{\sum_{b=1}^{B} w_{bh}(1-\hat{A}_{bh})}{B_h} = \left[1 - \frac{N_h}{(N_h - n_h)}\right] \frac{\sum_{b=1}^{B} w_{bh}(1-\hat{A}_{bh})}{B_h} \qquad \text{Eq. 7}$$

Equation 7 cannot be solved for stratum sample sizes or monitoring rates because $\hat{T}$, F, and costs are functions of sample size. Therefore, iterative numerical methods were used to determine the strata sample sizes that maximize the proximity allocation index while not exceeding the predetermined budget. The overall cost is the product of the number of trips in the stratum, the stratum-specific sampling rate, and the cost per trip for that stratum:

$$Cost = \sum_{h=1}^{H} N_h r_h c_h \qquad \text{Eq. 8}$$

Where r_h is the stratum specific rate for the final proximity allocation index value, c_h is the cost per trip for stratum h, and N_h is the total number of trips for stratum h.

Proximity allocation index values were calculated for each stratum over a range of sampling rates 0.0001 to 0.9950, as well as the associated monitoring costs. From these estimates, the sample rates for each stratum that were associated with the maximal proximity allocation index value, $\hat{D}_h$, for the budget were identified.

Determining Selection Rates for 2027

The selection rates of the EM Trawl GOA and No-selection strata were specified by policy. In EM Trawl GOA, 100% of trips are to be monitored at sea for compliance of discard retention, 100% of shoreside deliveries are to be monitored for PSC enumeration and salmon genetic tissue sampling by observers, and 33.33% (one in three) of shoreside deliveries are monitored by observers for biological and specimen data collection. The No-selection stratum is not monitored.

The total costs for the EM Trawl GOA (~$732K) was deducted from the total available budget, and the selection rates of the remaining partial coverage strata were determined using the proximity allocation algorithm.

Results and Discussion

Table B-1 summarizes how the $5.45M partial coverage monitoring budget was allocated to each monitoring method and the expected number of vessels participating in each stratum. Note that the overall budget is a 14.7% increase from the $4.75M monitoring budget set in the 2026 ADP. The allocation indices and selection rates resulting from the partial coverage allocation algorithm are provided in Table B-2. **These indices are provided with the caveat that they will change and be updated in the final ADP to reflect updates to fishing effort predictions, cost estimates, and/or budgets.** The proximity allocation index, a general measure of the degree of monitoring coverage allocated to the At-sea Observer and EM Fixed-gear strata, was 0.8080. This represents an increase from the value afforded in the 2026 ADP of 0.7793, indicating a lower potential for data gaps.

The selection rates, estimated number of trips, and estimated number of days to be monitored are summarized in Table B-3 for all partial and full coverage strata. Note that the EM Trawl GOA stratum's monitoring rate of 33.33% strictly represents the subset of deliveries that will be monitored shoreside by observers for biological and specimen collection. All trips will be monitored at sea by EM systems for compliance with regulations and all associated EM deliveries will be monitored shoreside by observers for salmon and halibut enumeration as well as the collection of tissues from salmon to determine genetic stock of origin.

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Table B-1. Budget allocation and vessel participation. The preliminary budget through the observer fee and NMFS funds for monitoring (both observer and EM) is $5.45 million. The number of vessels participating is estimated as the number of unique vessels that fished within each stratum within 365 days prior to the completion of the analyses. Some vessels may fish in multiple strata (e.g., a fixed-gear vessel may fish within the At-sea Observer Fixed-gear GOA and BSAI strata.)

	Draft 2027 ADP
Partial Coverage Monitoring Budget ($)	
At-sea Observer	$3,227,000
EM Fixed-gear	$1,479,000
EM Trawl GOA	$732,000
Total	**$5,438,000**
Vessels Participating (Partial Coverage)	
At-sea Observer Fixed-gear BSAI	49
At-sea Observer Fixed-gear GOA	292
At-sea Observer Trawl BSAI	2
At-sea Observer Trawl GOA	44
EM Fixed-gear BSAI	12
EM Fixed-gear GOA	119
EM Trawl GOA	39
No-selection	272
Vessels Participating (Full Coverage)	
Full Coverage	92
EM Trawl BSAI	64

Table B-2. Partial coverage allocation proximity index ($\hat{T}_h$), variance scaling factor (F_h), and proximity allocation index ($\hat{D}_h$).

Stratum (h)	$\hat{T}_h$	F_h	$\hat{D}_h$
Draft 2027 ADP			
At-sea Observer Fixed-gear BSAI	0.8909	0.9070	0.8080
At-sea Observer Fixed-gear GOA	0.8710	0.9278	0.8080
At-sea Observer Trawl BSAI	0.9868	0.8188	0.8080
At-sea Observer Trawl GOA	0.9336	0.8655	0.8080
EM Fixed-gear BSAI	0.9182	0.8799	0.8080
EM Fixed-gear GOA	0.8728	0.9258	0.8080

Table B-3. Estimated number of trips in a stratum (N_h), number of observed or monitored trips/deliveries (n_h), observed or monitored days (d_h), and coverage rates (r_h) resulting from the deployment sampling design for the 2027 Annual Deployment Plan (ADP).

Stratum (h)	N_h	n_h	d_h	r_h (%)
Draft 2027 ADP				
At-sea Observer Fixed-gear BSAI	253	79	408	31.35
At-sea Observer Fixed-gear GOA	1,868	174	723	9.31
At-sea Observer Trawl BSAI	35	16	40	46.54
At-sea Observer Trawl GOA	305	47	119	15.34
Total	**2,461**	**316**	**1,290**	**12.84**
EM Fixed-gear BSAI	92	40	199	42.99
EM Fixed-gear GOA	1,010	154	774	15.24
Total	**1,102**	**194**	**973**	**17.60**
EM Trawl GOA	**894**	**894**	**2,145**	**100.00***
No-selection	**1,427**	**0**	**0**	**0.00**
Full Coverage	968	968	9,740	100.00
EM Trawl BSAI	1,774	1,774	6,634	100.00
Total	**2,742**	**2,742**	**16,374**	**100.00**

* The sample rate and estimated number of monitored deliveries for the EM Trawl GOA stratum is for salmon and halibut enumeration. Biological and specimen data collection by shoreside observers will occur in every one out of three deliveries, or an estimated 298 deliveries.

Figure B-1. Process diagram for the analyses used to determine Annual Deployment Plan selection rates and realized costs. Green boxes indicate inputs and blue boxes indicate iterative and random processes.

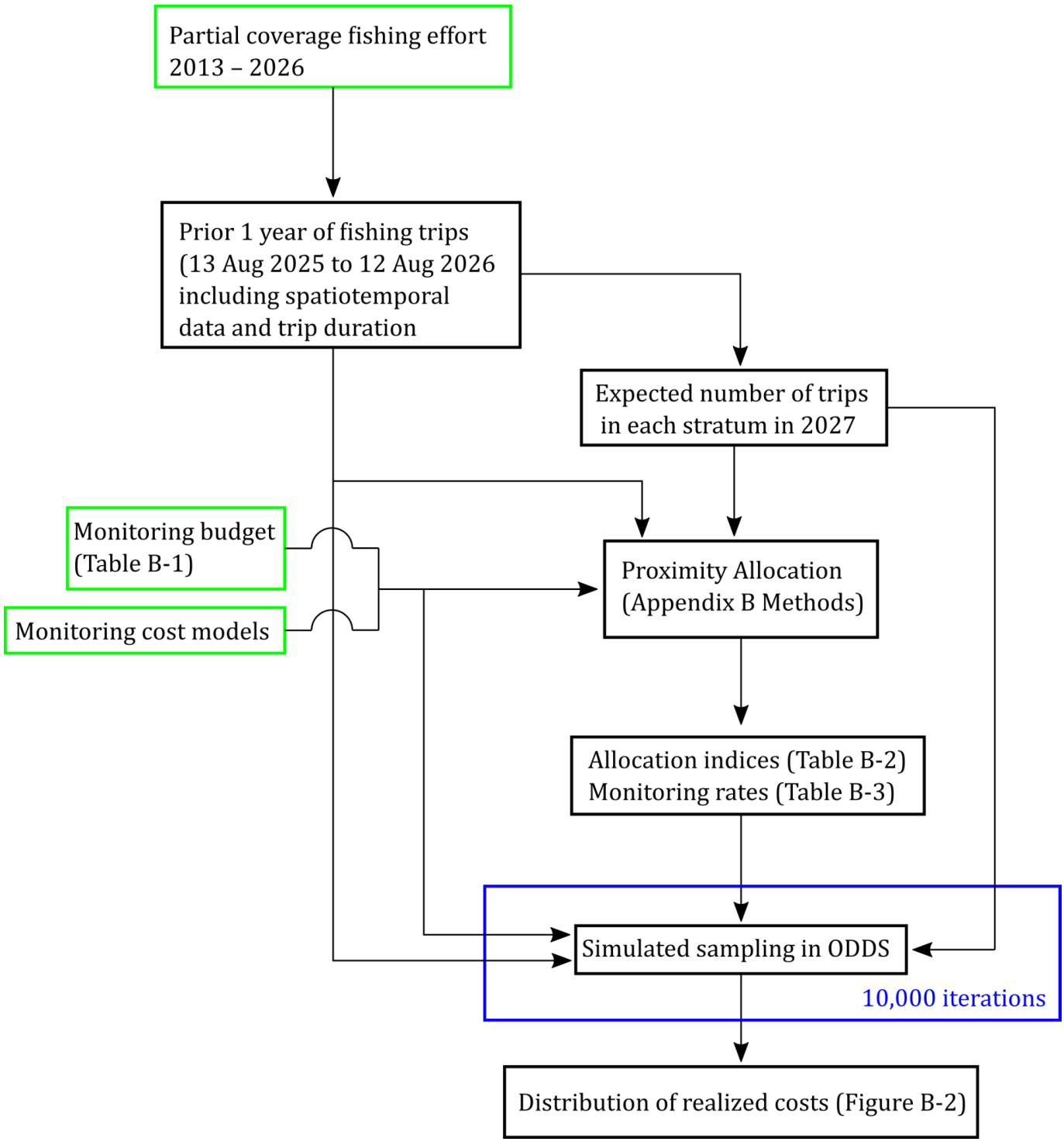
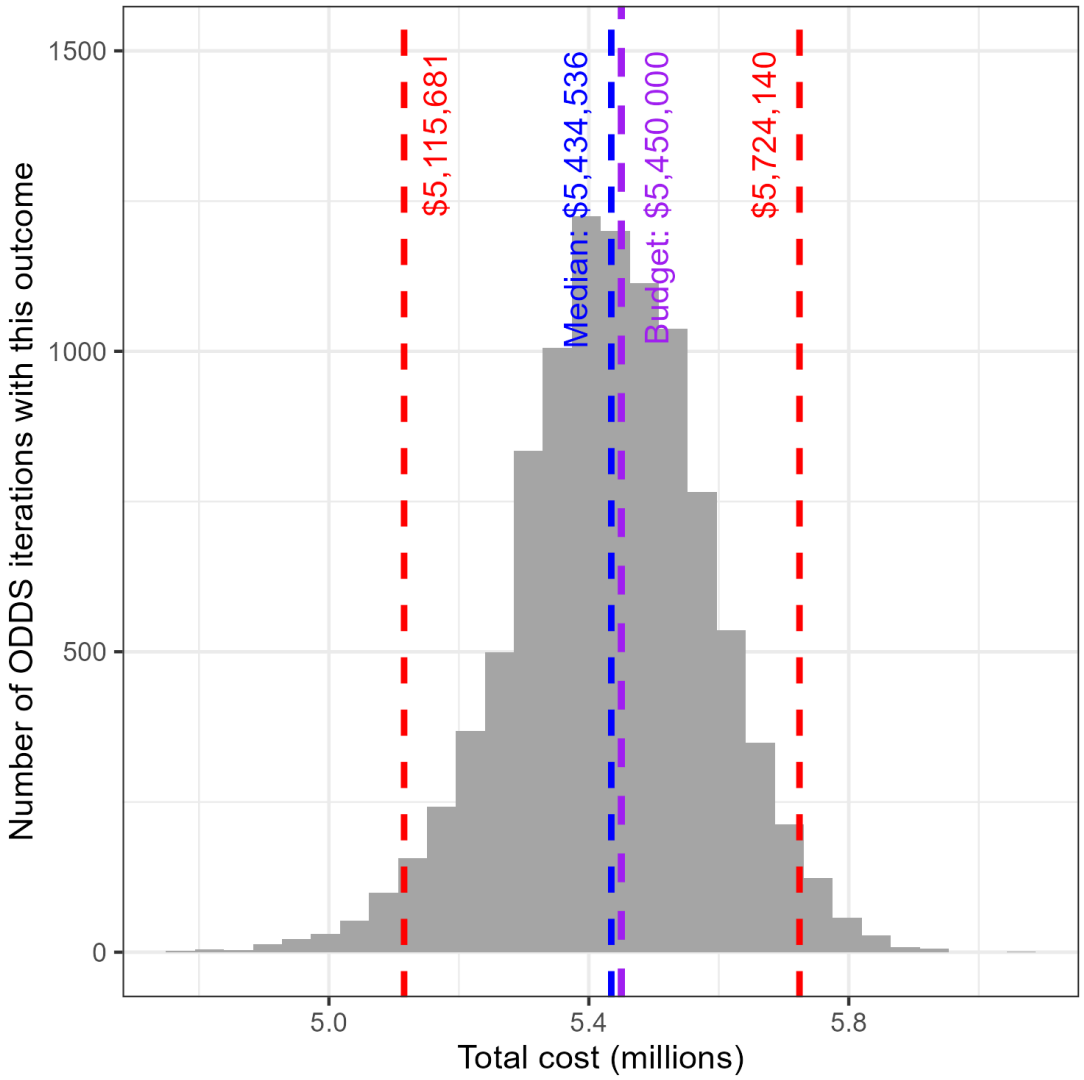


Figure B-2. Summary of 10,000 outcomes of simulated sampling in ODDS showing the total costs of the partial coverage monitoring program expected for 2027. Vertical lines depict the available budget (purple line), median expected cost (blue line), and 95% confidence limits (red lines).



Appendix C: Fixed-gear Vessel EM Minimum Effort Analysis

Background

This analysis evaluates the cost-efficiency of vessels currently in the fixed-gear EM pool in response to the Council's request to "...Provide a process to remove or deny vessels in the EM programs if they are inactive or have repeated issues causing data loss from the EM pool…" (Appendix A). Since the implementation of the regulated fixed-gear EM program in 2018, the number of vessels that voluntarily joined the fixed-gear EM pool steadily increased to the current count of 178 vessels. Once in the fixed-gear EM pool, these vessels remain in the pool unless the vessel voluntarily opts out of, or is removed from, the EM program for repeated failures to follow their Vessel Monitoring Plan (VMP). The costs of maintaining EM systems on vessels in the fixed-gear EM pool that have either not fished for several years or take very few trips each year exceeds the costs that would be incurred if these vessels were monitored by at-sea observers. The main benefit of the fixed-gear EM program is to provide a cheaper alternative for monitoring despite the fact that it does not provide data with the same quality or timeliness as at-sea observers (see Table 1 in the Introduction of this document). If some fixed-gear EM vessels take too few trips to be cost-effective to remain in the EM program, moving such vessels into the observer pool could result in cost savings which could then be reallocated to increase overall monitoring in the partial coverage fisheries. Cost-efficiencies in the overall monitoring program could potentially be gained by defining and applying a minimum fishing effort threshold within the EM pool under which fixed-gear EM vessels are assumed to no longer be cost-effective and reallocating the savings to monitoring across the partial coverage fisheries.

Monitoring Costs Estimates

To evaluate the cost-effectiveness of individual vessels currently in the EM fixed-gear pool, the costs of monitoring these vessels with EM systems and with at-sea observers was estimated for each individual vessel over the three year period of 2023–2025, taking into account the number of trips completed by each vessel. Of the 182 vessels in the fixed-gear EM pool over that period, 172 were in the pool for all three years. Vessels with higher EM costs were deemed cost-ineffective and identified as candidates for removal and placement into the at-sea observer monitoring pool. The distribution of fishing effort by active EM vessels is presented in Figure C-1. Note that of the 172 vessels, 39 were inactive and did not complete any trips over the three-year period, 47 completed less than one trip on average, 59 completed less than two trips on average, 76 completed less than three trips on average, and 86 completed less than four trips on average.

The costs of monitoring in the fixed-gear EM monitoring pool were categorized under program management and overhead, equipment maintenance, data storage and review, and system installation and replacements. Cost estimates under these categories were provided by the Pacific States Marine Fisheries Commission for the 2025 fishing year. Confidentiality requirements prevent presentation of the exact costs . Instead, we present the per-vessel cost structure. The lifespan of a fixed-gear EM system is assumed to be five years, although the exact lifespan is unknown and likely dependent on unknown and unmeasured factors such as weather, use, and maintenance. Thus, the costs for individual EM system installations and replacements were divided by five years for an averaged per-year-per-vessel cost. The total yearly costs for equipment replacements were divided by the number of maintenance visits and further divided by the number of active fixed-gear EM vessels. The 133 active fixed-gear EM vessels that fished at least one trip over the 2023–2025 period were assumed to incur equipment maintenance costs. Inactive vessels that were in the pool but did not fish during this period, were assumed to not incur any costs during this period. The total data storage and review costs were divided by the number of reviewed

hard drives in 2025 to estimate the cost of monitoring each fishing trip. The average number of EM trips completed by each vessel per year was calculated and the expected number of monitored trips by each vessel was calculated by applying the 2026 sampling rates (NMFS 2026). Each vessel's yearly data storage and review costs was estimated as the combination of the per-trip monitoring cost. Program management and overhead costs were largely excluded from this analysis as it is unclear if or how these costs would change with the number of fixed-gear vessels in the pool. These costs were excluded from the vessel-specific cost-efficiency comparisons but were later included in the pool-level cost-per-trip estimates. Therefore, all active vessels had the same base cost per year - the total of the equipment installation/replacement cost divided by five years and the average maintenance cost per year. The final cost-per-vessel-per-year by EM was calculated as the total of this base cost with the additional data storage and review costs that scaled with the average number of trips taken over the three year evaluation period.

The cost of monitoring by at-sea observers was estimated by combining the estimated cost per monitored trip and the expected number of trips monitoring according to the sampling rates in the 2026 ADP. The cost-per-trip was calculated from the 2025 Annual Report (AFSC and AKR 2026) as $2,937,000 for 1,299 observer days, or $2,260.97 per day. These costs include both labor costs and travel costs. Therefore, the final cost-per-vessel-per-year by at-sea observers was calculated as the expected number of observed days multiplied by the estimated cost-per-day.

Cost Comparison

Of the 172 unique vessels in the evaluation period, 39 were inactive and had no cost estimates. Of the remaining 133 active vessels, 35 were identified as cost inefficient fixed-gear EM vessels with a total potential **cost savings of over $110K** if monitored by at-sea observers. However, in an effort to identify a simpler definition for cost-efficiency, the average number of trips taken per vessel per year was used. The number of trips taken per year over a three-year period provides a clear performance standard that can be enforced and easily tracked by individual vessels. Figure C-2 demonstrates the relationship between fishing effort and cost-efficiency. Vessels that take many trips per year provide substantial cost-savings to the program and use their equipment enough to overcome the base equipment maintenance and replacement costs. However, many vessels that fish too few trips are an outsized burden to the limited monitoring budget and would better serve the program in the at-sea observer pool.

To determine which minimum fishing effort threshold to apply to remain in the fixed-gear EM pool that maximizes cost efficiency, the status quo scenario (no threshold) was compared to fishing effort thresholds of less than one, two, three, and four trips per year on average over the three year period (Table C-1). Note that under each threshold, all 39 inactive vessels were removed from the fixed-gear EM pool in spite of the assumption of not incurring any costs because they would be expected to incur equipment maintenance and replacement costs if and when they become active again. The 'less than (<) 3 trips per year' threshold was identified as providing the maximum cost savings of $96K by moving 37 low-effort fishing vessels, averaging a total of only 60 trips per year, in addition to the 39 inactive vessels out of the fixed-gear EM pool and into the at-sea observer pool.

Applying the Minimum Effort Threshold

The cost-analysis thus far used simplified cost estimates to determine a minimum fishing effort threshold to remain in the EM program. In reality, average costs per monitored trip or day is influenced by the allocation algorithm and the different cost structures between the monitoring programs. For instance, any at-sea observer day purchased past the 1,200 base days is afforded at a lower price, so cost-efficiencies are

gained as more observer days are purchased. Similarly, the fixed-gear EM pool becomes more cost-efficient at higher monitoring rates because the higher base cost of equipment maintenance and replacements achieve a return on investment the more it is used, as review costs are relatively cheaper per unit. The allocation routine was performed under the status quo scenario and with the minimum effort threshold applied to provide a more accurate representation of realized cost efficiencies. Allocation was performed with a $5.45M budget in both scenarios, where costs of the EM Trawl GOA stratum was also identical at $732K.

A comparison of the allocation results between the status quo scenario and < 3 trips per year threshold is provided in Table C-2, summarizing the afforded sample rates, total trips, and sampled trips in each stratum. By operating a fixed-gear EM pool of only 96 active vessels and reallocating monitoring costs to both the fixed-gear EM and Observer pools, monitoring rates were increased substantially for all strata. Overall, the at-sea observer pool achieved 30 more monitored trips (9.9% increase) and the fixed-gear EM pool achieved 13 more monitored trips (7.0% increase), and an overall increase of 8.8% more monitored trips. Table C-3 summarizes the changes to the amounts allocated to the different monitoring pools and the impacts to the cost-per-trip efficiency. With the < 3 trips per year threshold applied, the cost-per-trip for observers decreased by 9.1% and for fixed-gear EM trips it decreased by 6.4%, demonstrating the increased cost-efficiency provided by the potential for purchasing more cheaper optional at-sea observer days and the higher use of EM systems by active participants.

Recommendation

For the 2028 ADP year, apply the three-trip-per-year average threshold to the fixed-gear EM pool on a yearly basis to ensure current participants are cost-effective. This threshold would be assessed on a yearly basis for vessels with at least three full years of participation in the fixed-gear EM pool. Participants below the threshold will be given advance notice, via email and the ODDS, if they are below this threshold. Fixed-gear EM vessels that are below this threshold at the time of the analysis of the Final ADP (annually each December) will be removed from the fixed-gear EM pool and placed in the at-sea observer pool the following year. Such vessels must return their EM equipment to their provider for systems to be reused.

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Table C-1. Cost analysis of the fixed-gear EM (FGEM) and at-sea observer (Observer) pools under several scenarios that reassign fixed-gear EM vessels to the at-sea observer pool when they fish under certain fishing effort thresholds. The fishing effort thresholds were applied to the average number of trips fished by vessels in the fixed-gear EM pool during the three year period of 2023 through 2025. The estimated monitoring costs are the total of per-vessel monitoring costs. Note that estimated fixed-gear EM costs do not include the program management and overhead costs of the fixed-gear EM program, which were assumed to not differ between scenarios. The < 3 trips per year threshold is highlighted, indicating the scenario under which cost savings (relative to status quo) were maximized.

Fishing effort threshold	Vessels		Total Trips per year		Estimated Cost ($M)		Total Cost ($M)	Savings ($M)
	FGEM	Observer	FGEM	Observer	FGEM	Observer		
Status quo (none)	172	0	930	0	1.228	0	1.228	
< 1 trip per year	125	47	925	4	1.173	0.017	1.190	0.038
< 2 trips per year	113	59	909	20	1.088	0.060	1.148	0.080
< 3 trips per year	**96**	**76**	**870**	**60**	**0.961**	**0.170**	**1.132**	**0.096**
< 4 trips per year	86	86	835	95	0.883	0.264	1.147	0.081

Table C-2. Comparison of sample allocation under status quo scenario versus under application of the < 3 trips per year fishing effort threshold for the fixed-gear EM strata. Both scenarios used a $5.45M budget. Sample rates (*r*), total trips (*N*), and monitored trips (*n)* under each scenario, as well as the differences, are presented for each monitoring stratum and summarized by monitoring pool.

	Status quo			**< 3 trips per year**			**Difference**		
Strata	***r* (%)**	***N***	***n***	***r* (%)**	***N***	***n***	**r (%)**	***N***	***n***
OB FIXED BSAI	31.01	242	75	33.80	244	82	+2.79	+2	+7
OB FIXED GOA	9.21	1,819	168	9.73	1,894	184	+0.52	+75	+17
OB TRW BSAI	42.88	36	15	47.07	36	17	+4.19	0	+2
OB TRW GOA	14.61	305	45	16.11	305	49	+1.50	0	+5
EM FIXED BSAI	41.73	91	38	45.68	89	41	+3.95	-2	+3
EM FIXED GOA	14.71	1,001	147	16.97	926	157	+2.26	-75	+10
OB summary	12.60	2,402	303	13.43	2,479	333	+0.83	+77	+30
EM FIXED summary	16.96	1,092	185	19.49	1,015	198	+2.53	–77	+13

Table C-3. Comparison of cost metrics under the status quo scenario and the minimum fishing effort threshold scenario with identical $5.45M budgets.

Metric	Status Quo	< 3 trips per year	Difference	Relative Difference (%)
Total Allocation ($M)				
At-sea Observer	3.106	3.317	+0.211	+6.8
EM Fixed-Gear	1.609	1.388	-0.211	-13.7
EM Trawl GOA	0.732	0.732		
Option Days Afforded	9	112	103	
Cost Per Trip				
At-sea Observer	10,964	9,967	-977	-9.1
Fixed-Gear EM	7,494	7,017	-477	-6.4

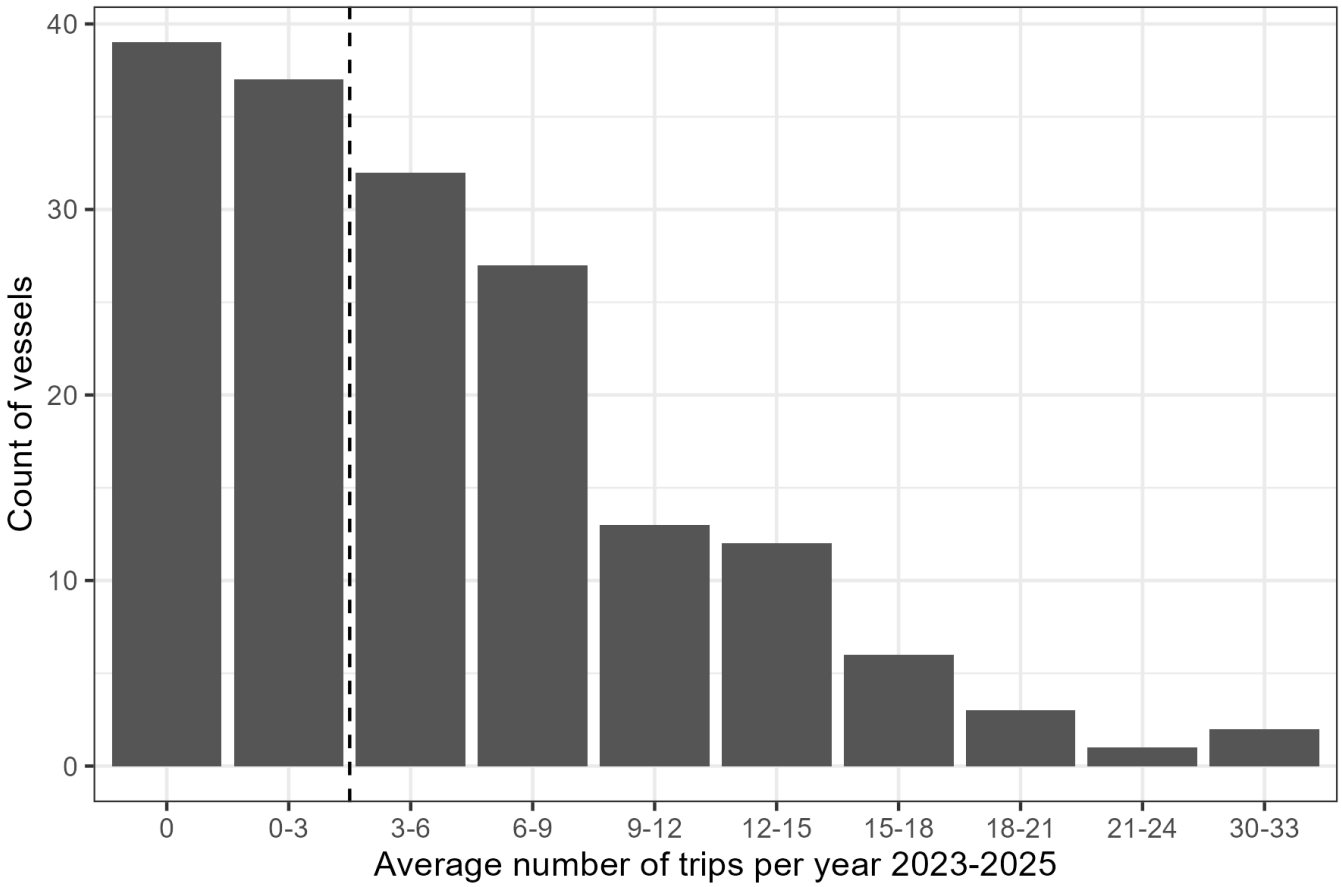

Figure C-1. Histogram of fishing effort by fixed-gear EM vessels during 2023 through 2025 as the average number of trips over that period. The '0' trip bin represents inactive vessels that did not fish any trips during this time period. The '0-3' trip bin includes vessels that fished more than zero but fewer than three trips per year. The remaining bins include vessels where the range includes the lower bound but excludes the upper bound, e.g., '3-6' contains the vessels that fished at least three trips but less than six trips per year. The dashed vertical line at three trips per year represents the proposed minimum effort threshold to remain in the fixed-gear EM pool.

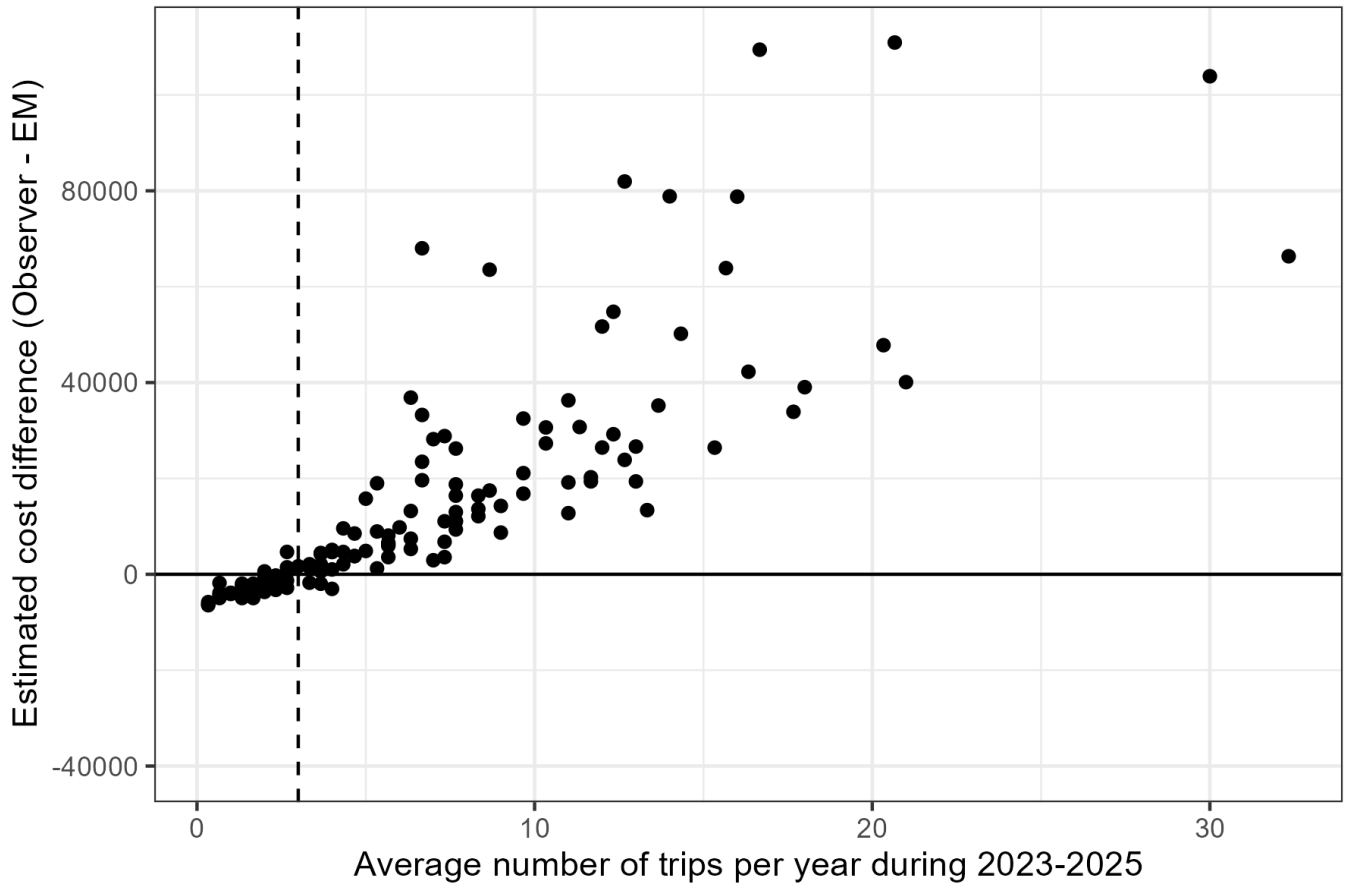

Figure C-2. Estimated cost differential of monitoring by EM systems versus at-sea observers for active fixed-gear EM vessels over the period of 2023–2025. Points under the horizontal line represent vessels that were not cost-effective. The dashed vertical line at three trips per year represents the proposed minimum effort threshold to remain in the EM fixed-gear pool.

Appendix D: Evaluation of Low-effort Fixed-gear Vessels for No-selection Eligibility

In response to the North Pacific Fishery Management Council's request to "evaluate whether fixed-gear catcher vessels with 1–2 annual trips and/or low annual quota or volume could be included in the zero[no-] selection pool for cost-efficiency purposes", the National Marine Fisheries Service (NMFS) evaluated an effort-based eligibility criterion for vessels in the at-sea observer selection pool that made no more than two trips in any year and had at least three years of history in Federal fisheries off Alaska between 2021 through 2025. The minimum-history requirement was included to identify vessels with a demonstrated history of low annual effort rather than vessels that had only recently entered the fleet. A vessel-level quota criterion was not evaluated because quota is assigned to individuals rather than to vessels in the halibut and sablefish Individual Fishing Quota (IFQ) fisheries (50 CFR § 679.40), which comprise a large portion of the fixed-gear catcher vessel fleet. Consequently, there is no directly comparable annual vessel-level quota allocation that could be used to define a low-quota vessel criterion. Fixed-gear vessels in the electronic monitoring (EM) pool were also not evaluated here. A separate analysis was conducted for evaluating the minimum annual effort necessary for cost efficiency of EM vessels in the fixed-gear EM program (Appendix C). Vessels removed from the fixed-gear EM program would be placed into observer-selection and be subject to requirements of that pool.

Fishing Effort

NMFS found the fixed-gear observer-selection pool is inherently a low-effort fleet, with a large component of vessels making relatively few trips annually (Figure D-1). Most low-effort vessels were in the Gulf of Alaska (GOA), where the distribution of mean annual trips was concentrated at the lower end of the effort range. Vessels meeting the effort-based eligibility criterion represent the lowest effort portion of this fleet and accounted for approximately 17.7% of vessels that were active during the analysis window, of which 95.6% were GOA vessels. Because these vessels fish infrequently, they would very rarely be selected for observer coverage under current selection rates. For example, using at-sea observer fixed-gear selection rates from the final 2026 Annual Deployment Plan (ADP; NMFS 2026) and applying them to 2025 fishing effort, low-effort vessels meeting the effort criterion accounted for less than 1% of expected selected trips in the Bering Sea and Aleutian Islands (BSAI) and less than 3% in the GOA.

Impact on Selection Rates

The limited effort represented by vessels meeting the effort criterion resulted in little change to selection rates when moved into the no-selection pool. The partial coverage monitoring budget is fixed, so removing these trips from observer selection would not reduce North Pacific Observer Program (NPOP) expenditures or create cost savings. Instead, monitoring funds would remain within the NPOP and be reallocated among all partial-coverage monitoring strata through the ADP allocation process. To evaluate these effects, the allocation process was simulated twice using 2025 fishing data: once using current vessel strata assignments and once with vessels meeting the eligibility criterion moved into no-selection. Under the current monitoring design, observer selection rates allocated to fixed-gear vessels were 28.7% in the BSAI and 10.3% in the GOA. After moving candidate vessels to no-selection, these rates were 28.8% and 10.5%, respectively. Expected monitored trips were also essentially unchanged, and changes in the other partial coverage strata were similarly small (Table D-1). The overall allocation index ($\hat{D}_h$) remained unchanged under both scenarios at 0.84. These results provide no evidence that the proposed change would produce cost efficiencies or substantially change monitoring rates or the number of trips

expected to be monitored within the at-sea observer fixed-gear strata or elsewhere in the partial coverage program.

Impact on Geographic Distribution of Monitoring

Moving low-effort vessels to no-selection would not reduce the geographic footprint required for observer deployment. Vessels meeting the effort criterion generally operate from the same ports as vessels that would remain in the observer-selection pool, and all affected ports where these low-effort vessels operate would continue to have observer-selection pool activity (Figure D-2). The NPOP would therefore still deploy observers to the same ports at essentially the same rates. Although fewer trips would be eligible for observer selection, the change would not reduce deployment locations or associated port-level logistical requirements.

Impact on Administration

Implementation of an effort-based no-selection criterion would add administrative burdens to the fleet and NMFS because it would require continued tracking of fishing activity for vessels placed in the no-selection pool. Because eligibility depends on vessel trip history, NMFS would need to determine annually whether each vessel continues to meet the criterion and identify vessels that no longer qualify. Vessels placed in no-selection under this provision would therefore need to continue to log fishing activity in the Observer Declare and Deploy System (ODDS), even though their trips would not be subject to observer selection.

Summary

Overall, the analysis found no evidence that expanding no-selection eligibility under this criterion would provide the NPOP cost savings or result in any meaningful cost efficiencies. Vessels meeting the low-effort criterion rarely fish and are therefore rarely selected for monitoring. Removing their limited effort produces almost no change in monitoring rates, while the NPOP would continue to deploy observers to the same ports regardless of the composition of the pool. Additional administrative requirements would be incurred for both the fleet and NMFS. Vessels placed in no-selection under this provision would need to continue declaring trips in ODDS so that NMFS could track annual effort, while NMFS would need to review vessel trip histories each year to determine continued eligibility and identify vessels that should return to the observer-selection pool. Expanding the no-selection pool would also increase the amount of fishing activity that is never eligible for observer coverage. As a result, the NPOP would not collect monitoring information from those trips, and trips remaining in the observer-selection pool would need to represent a larger amount of unmonitored catch and effort which would add uncertainty into inseason management estimates of catch and bycatch.

Recommendation

Based on the findings of this analysis, NMFS does not recommend making any changes to the no-selection pool at this time for cost efficiency purposes.

References

National Marine Fisheries Service (NMFS). 2026. 2026 Annual Deployment Plan for Observers and Electronic Monitoring in the Groundfish and Halibut Fisheries off Alaska. National Oceanic and Atmospheric Administration, 709 West 9th Street, Juneau, Alaska 99802. Available at: https://www.fisheries.noaa.gov/s3/2026-01/Final_2026_ADP_akro.pdf

Table D-1. Allocated selection rates (*r*), expected number of trips (*N*), and expected number of monitored trips (*n*) for each stratum based on 2025 fishing effort under 1) the current monitoring design ("Status quo") and 2) after moving fixed-gear catcher vessels meeting the effort-based eligibility criterion to the no-selection pool ("Proposed"). Differences are calculated as Proposed minus Status quo.

	Status quo			**Proposed**			**Difference**		
Stratum	***r* (%)**	***N***	***n***	***r* (%)**	***N***	***n***	***r* (%)**	***N***	***n***
OB FIXED BSAI	28.8	300	86	28.9	300	87	+0.1	0	+1
OB FIXED GOA	10.6	1,905	203	10.8	1,871	202	+0.2	-34	-1
OB TRW BSAI	58.1	30	17	58.3	30	17	+0.2	0	0
OB TRW GOA	16.3	341	56	16.4	341	56	+0.1	0	0
EM FIXED BSAI	48.1	90	43	48.3	90	43	+0.2	0	0
EM FIXED GOA	18.4	977	180	18.5	977	180	+0.1	0	0

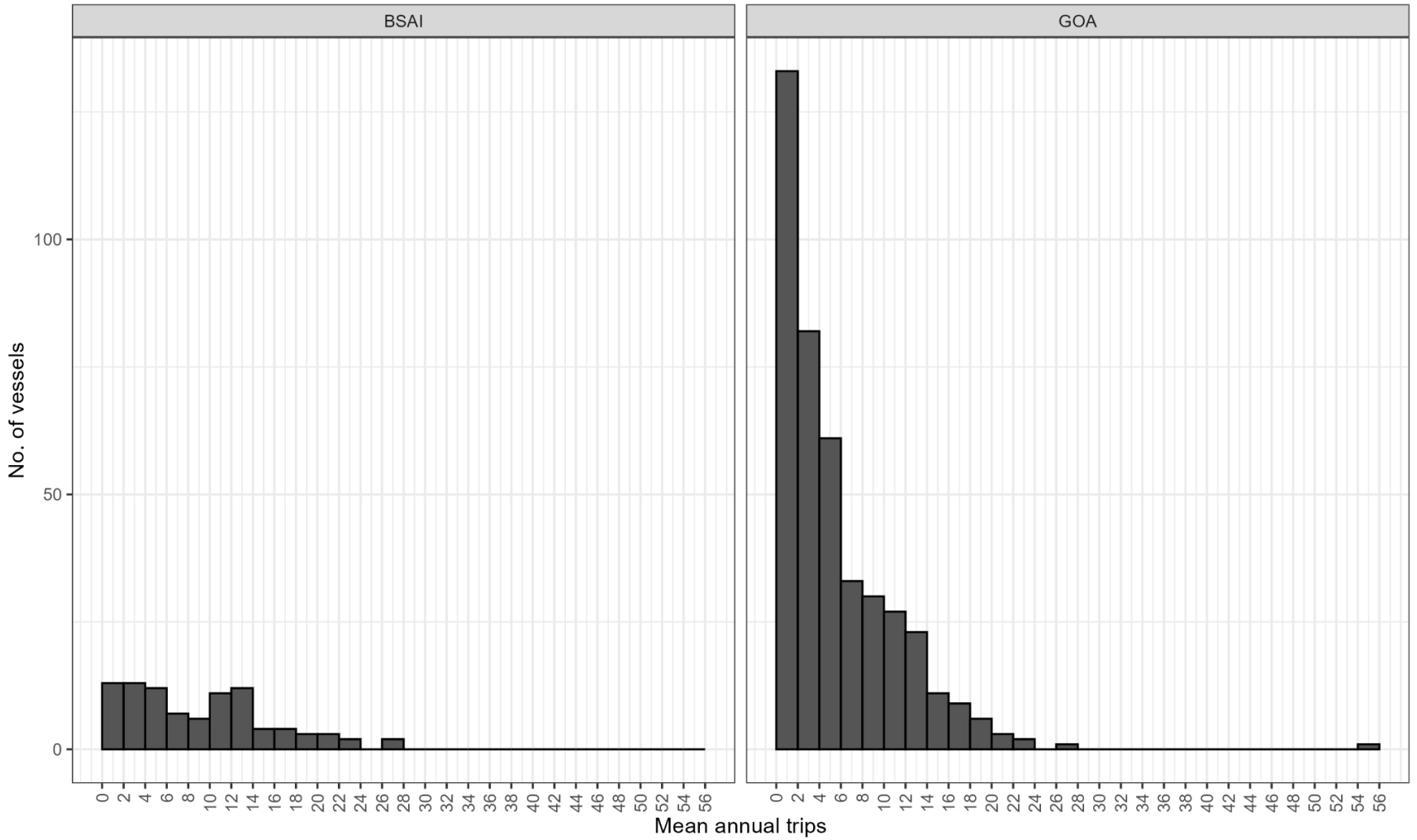

Figure D-1. Distribution of mean annual trips per vessel in the fixed-gear observer selection pool in the Bering Sea and Aleutian Islands (BSAI) and Gulf of Alaska (GOA) during Annual Deployment Plan years 2021–2025. Bars represent two-trip intervals and are closed on the upper bound (e.g., >0–2, >2–4, >4–6 trips). Thus, vessels with exactly two mean annual trips are included in the first bar, while vessels with more than two and up to four mean annual trips are included in the second bar.

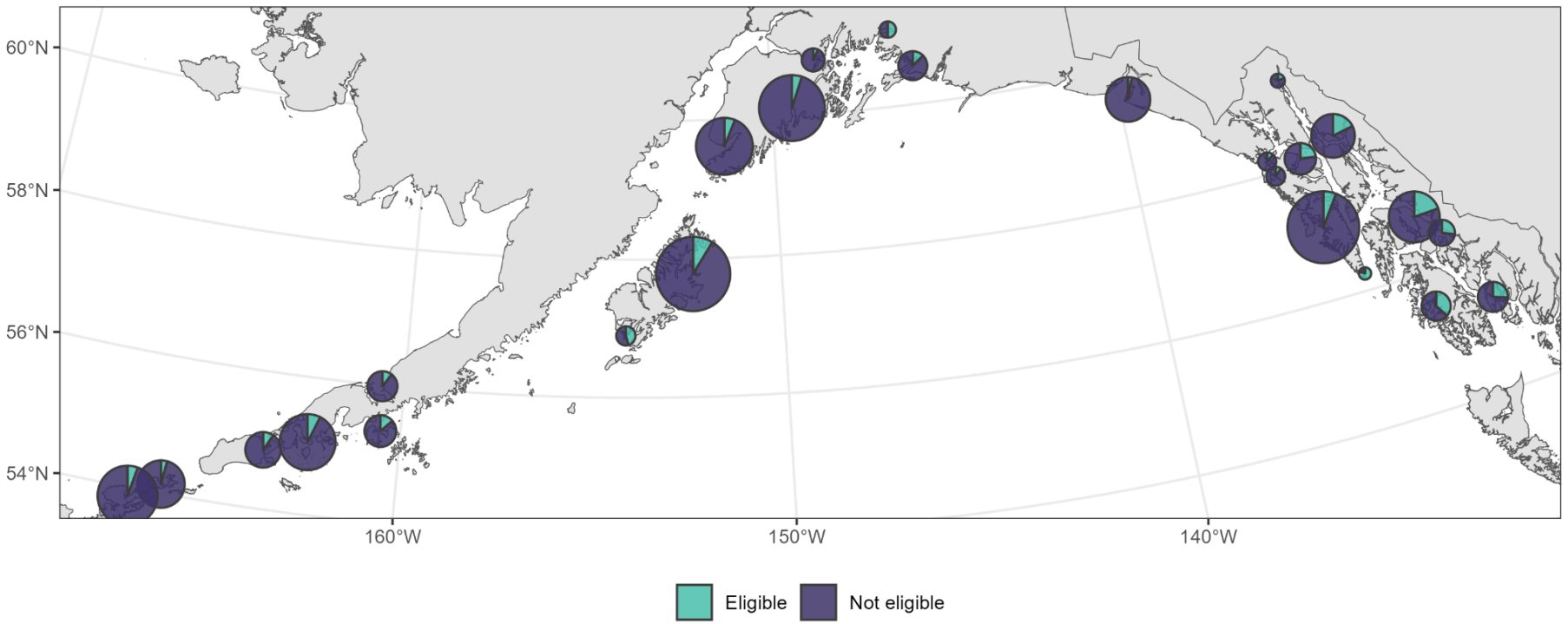

Figure D-2. Proportion of mean annual trips in affected ports during Annual Deployment Plan years 2021–2025 associated with vessels meeting the effort-based no-selection criterion ("Eligible") and vessels remaining in the observer-selection pool ("Not eligible"). Circle size represents the relative number of trips in each port.

Appendix E: Executive Summaries of the NOAA Center for Independent Experts Peer Reviews of the North Pacific Observer Program Annual Deployment Plan and Annual Report

Background

From June 16th to 18th 2026, NOAA's Alaska Fisheries Science Center (AFSC) Fisheries Monitoring Analysis (FMA) Division and Alaska Regional Office (AKRO) Sustainable Fisheries (SF) Division hosted a NOAA Center for Independent Experts (CIE) peer review of the North Pacific Observer Program (NPOP) Annual Deployment Plan (ADP) and Annual Report.

NOAA Fisheries is mandated by the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, and Marine Mammal Protection Act to conserve, protect, and manage our nation's marine living resources based upon the best scientific information available (BSIA). NOAA Fisheries science products, including scientific advice, might, at times, require scientific peer reviews that are strictly independent of all outside influences. A formal external process for independent expert reviews of the agency's scientific products and programs ensures their credibility. Therefore, external scientific peer reviews have been, and continue to be, essential to strengthening scientific quality assurance for fishery conservation and management actions. Scientific peer review is defined as the organized review process where one or more qualified experts review scientific information to ensure quality and credibility. Experts must conduct their peer review impartially, objectively, and without conflicts of interest. Each reviewer must also be independent from the development of the science, without influence from any position that the agency or constituent groups may have. Furthermore, the Office of Management and Budget (OMB), authorized by the Information Quality Act, requires all federal agencies to conduct peer reviews of highly influential and controversial science before dissemination, and that peer reviewers must be deemed qualified based on the OMB Peer Review Bulletin standards. Independent scientific peer review is a hallmark of gold standard science.

Scope of the CIE Review

A CIE Review of the methods associated with the ADP was recommended by the Science and Statistical Committee in their recommendations to the North Pacific Fisheries Management Council during their review of the North Pacific Observer Program 2023 Annual Report:

- "The SSC recommends that an occasional CIE (Center for Independent Experts) review be convened to review the ADP, with emphasis on novel methods such as the proximity allocation method and other elements of the Observer Program as appropriate."[10]

The AFSC FMA manages and executes the North Pacific Observer Program (NPOP) which is the largest observer program in the US. The NPOP is responsible for monitoring a commercial fishing fleet of nearly a thousand vessels that fish a combination of hook-and-line, pot, and trawl gear across the Alaska Exclusive Economic Zone (~3.77 M km2). Data collected during monitoring is used to estimate catch in the federal groundfish and halibut fisheries off Alaska in near-real time for inseason quota management, to inform stock assessments, and to set management harvest specifications. Fishing activities under the NPOP are divided into partial and full monitoring components using trip as the primary sampling unit. Full monitoring means that every trip is monitored by 1 or 2 observers (100% of trips). The full coverage component harvests most of the catch. In the partial coverage component, a subset of trips using trawl and

[10] SSC June 2024 final report

fixed gear (hook-and-line & pot) are randomly selected for monitoring (< 100% trips) by an observer or electronic monitoring (EM) system.

The CIE review addressed two products that describe the annual planning and evaluation of partial coverage monitoring. The Annual Deployment Plan (ADP) and the NPOP Annual Report are produced by the NPOP in collaboration with the AKRO. In the fall of each year, the ADP determines how monitoring assets (observers or electronic monitoring systems [EM]) will be deployed into the partial coverage fisheries for the upcoming calendar year. In the spring, the NPOP Annual Report evaluates the performance of the prior year's implementation of the ADP. The ADP-Annual Report process was created in collaboration with the North Pacific Fisheries Management Council (NPFMC) in 2013 to provide transparency, flexibility in the deployment of monitoring assets, and to assess cost efficiencies. In 2023, the FMA evaluated, and subsequently implemented via the 2024 ADP, a new method for deploying monitoring resources on commercial fishing vessels in federal fisheries off the coast of Alaska. At the same time, FMA began developing a new suite of tests to examine the assumptions underlying the methods and assess the outcomes against the previous year's goals specified in the ADP.

The overarching goal of the review panel was to: (1) provide scientific review of the methods used in the ADP to deploy monitoring and (2) assess the outcomes of the deployment plan in the Annual Report. The review covered the methods and assessments of deployment employed in 2025. A review of these methods was recommended by the NPFMC's Scientific and Statistical Committee and was endorsed by the NPFMC.

NOAA Fisheries required the 3 reviewers to conduct impartial and independent peer reviews in accordance with a Performance Work Statement (PWS), Terms of Reference (TORs), and OMB Guidelines. The PWS and ToRs can be found by clicking on the "Meeting Information" link at: External Independent Peer Review of the North Pacific Observer Program Annual Deployment Plan and Annual Report.

CIE reviewers had working knowledge of the role that fishery-dependent data play in fisheries stock assessment and fisheries management, the potential impacts of reductions in fishery-dependent data on inseason management and assessment of uncertainty, knowledge of sampling design and statistics (including modelling), knowledge of commercial fishery observer programs, and knowledge of, or familiarity with, EM data collection and catch and bycatch estimation. Each reviewer wrote an individual review report in accordance with the PWS, the TORs, and OMB Guidelines.

In the interest of brevity, below we provide the Executive Summary, verbatim, from each of the 3 reviewer's final reports, as approved by NOAA's CIE Office. Each of the reviewer's complete reports are available at: CIE Reviewer Reports.

In general, all three reviewers found that the scientific methods used in both the ADP and the Annual Report are justified and scientifically sound. All 3 reviewers recommended no changes to the 2027 ADP. Some research recommendations were made for future exploration.

Executive Summary Reviewer Report from Dr. Noel Cadigan

Center for Independent Experts (CIE) Independent Peer Review Report
North Pacific Observer Program Annual Deployment Plan and Annual Report
June 16 - 18th, 2026
Seattle, WA

Dr. Noel Cadigan
Centre for Fisheries Ecosystems Research
Marine Institute of Memorial University of Newfoundland
St. John's, NL. Canada

An independent peer review of the North Pacific Observer Program (NPOP) Annual Deployment Plan (ADP) for partial coverage fisheries and Annual Report was conducted during June 16 - 18th, 2026 in Seattle, WA. The objectives were: 1) provide scientific review of the methods used in the ADP for partial coverage fisheries; 2) assess the outcomes of the deployment plan. The review covered the methods and assessments used in 2025.

The NPOP ADP is generic and not dependent on specific survey outcomes, which is a strength of the approach. The proposed 2026 ADP methodology is appropriate to use.

The current stratification framework used in the ADP for partial coverage fisheries is generally justified and scientifically defensible. The use of gear type, broad geographic region, and monitoring mode reflect important sources of variability. Variation due to gear type was adequately controlled. I am uncertain if fishery management area adequately controls enough spatial variability. Hook and line and pot fisheries were combined into a single fixed gear stratum, which was appropriate. The combined Bering Sea and Aleutian Islands (BSAI) stratum for trawls is appropriate because of the small amount of trawl effort in the Aleutian Islands. I am uncertain if this is the case for fixed-gears.

The rationale of the Proximity Allocation Index was sound and scientifically reasonable. The specification of the model was suitable for the intended objective. Computational methods were sound and they appear to be novel. The Proximity Allocation Index is partly based on a neighborhood index. The definition of a neighborhood was appropriate and based on sound rationale. The Proximity Allocation methods were reasonably robust to the choice of neighborhood box size. Pots and longlines were not used as neighbors in the neighborhood index, which was appropriate.

The 2025 Annual Report includes analyses of whether the goals of the 2025 ADP for partial coverage fisheries were achieved. Monitoring activities using the Observer Declare and Deploy System for trip selection for partial coverage fisheries are very sound. They should robustly ensure that sampled trips are representative of the population, unless observed trips target different areas than unobserved trips. Analyses indicated monitoring activities for partial coverage fisheries were representative of the spatiotemporal distribution of fishing activity for 2025. Simulations of stratum-level neighborhood indices, used to determine if coverage rate goals for partial coverage fisheries were statistically different from expectations, were sound.

Important research recommendations for partial coverage fisheries involved strata definitions, routine investigations for observer effects, a gap analysis among NPOP data users to identify important sampling deficiencies, and research to expand the allocation methodology for partial coverage fisheries to include consideration of the benefits of sampling in the various strata.

Executive Summary Reviewer Report from Mr. Joël Vigneau

Center for Independent Experts (CIE) independent peer review report on the North Pacific Observer Deployment Program and Annual Report (Seattle 16-18 June 2026)

Mr. Joël Vigneau
Senior fisheries scientist
IFREMER
Port-en-Bessin, 14520 France

The fisheries of the Gulf of Alaska (GOA), Bering Sea, and Aleutian Islands (BSAI) are among the largest and most valuable fisheries in the world. These fisheries are monitored through a combination of Electronic Monitoring (EM) and observer programmes developed by NOAA Fisheries under the authority of the North Pacific Fishery Management Council. Preparation of the forthcoming observer deployment plan included a review of recent developments in fishery characteristics and stratification, a novel allocation approach for distributing sampling effort across strata, and a new framework for evaluating potential observer effects.

This review focused exclusively on the partially monitored component of the North Pacific Observer Program (NPOP), as opposed to the full-coverage fleet segment. Although this component accounts for approximately 9% of total catches, it represents more than 50% of the fishing effort and therefore remains a critical component of the monitoring programme.

The principal strengths of the programme are: (i) the strong probabilistic foundation maintained throughout the four stages of the clustered stratified sampling design; (ii) the high level of industry participation, resulting in very low non-response rates; (iii) a sampling design that remains independent of specific end-user or species requirements, thereby supporting broad applicability across management and scientific objectives; and (iv) the expertise and scientific rigour of the team responsible for programme development, implementation, and quality assurance.

The review session also identified several areas warranting further consideration. These include: (i) increasing complexity in parts of the stratification and allocation framework; (ii) the sensitivity of the allocation framework to forecasts of next year's fishing activity, as both budget estimates and sample allocations depend on these projections, and (iii) the evolving balance between EM and observer coverage and its implications for data collection objectives.

The review process benefited from a high level of transparency and constructive engagement with programme staff and technical experts. Three external reviewers participated in this review. While parts of this report may therefore overlap with those of the other reviewers, as some conclusions were drafted jointly during the review session, the conclusions are those of the author’s and represent an independent peer review report.

Executive Summary Reviewer Report from Dr. Jon Helge Vølstad

Center for Independent Experts (CIE) Independent Peer Review Report
North Pacific Observer Program Annual Deployment Plan and Annual Report
June 16 - 18th, 2026

Dr. Jon Helge Vølstad
Independent Scientist, formerly Chief Scientist at Institute of Marine Research, Norway
Strangehagen 22
5011 Bergen, Norway

This independent review concludes that the North Pacific Observer Program (NPOP) is founded on a scientifically sound, probability-based monitoring framework that is consistent with internationally recognized probability-based survey-sampling principles. My review evaluated the scientific basis of the stratification framework, the Proximity Allocation methodology used to allocate monitoring resources within partial-coverage fisheries, and the methods used to assess whether the objectives of the ADP were achieved. This report presents my independent scientific evaluation of the Terms of Reference. Where appropriate, the conclusions are consistent with the scientific discussions and areas of agreement that emerged during the panel review.

Overall, I conclude that the probability-based sampling framework is consistent with established survey-sampling principles and internationally recognized best practices for fishery-dependent monitoring programs. The current stratification framework is well justified, incorporates operational characteristics known prior to trip selection, and provides a robust foundation for monitoring a diverse and geographically extensive fishery. I found no evidence that major modifications to this stratification framework are warranted at this time.

I also conclude that the Proximity Allocation methodology is scientifically defensible and appropriate for its intended purpose. The method functions as an allocation tool that directs limited monitoring resources toward strata exhibiting greater spatial and temporal heterogeneity in fishing activity. Although the approach is heuristic rather than derived from a formal optimization criterion, it provides a practical, transparent, and scientifically defensible mechanism for reducing potential monitoring gaps while supporting the multiple management and scientific objectives of the NPOP. However, no formal evaluation was presented that explicitly quantified trade-offs among monitoring costs and the diverse end-user data requirements of the program. Consequently, the extent to which the current allocation framework provides an appropriate balance among competing objectives could not be fully assessed during this review.

The methods used in the 2025 Annual Report to evaluate achievement of ADP objectives are scientifically sound and informative. Spatial overlap metrics, proximity indices, realized neighborhood indices, and simulation analyses provide useful measures of deployment performance and implementation success. However, these metrics should not be interpreted as direct measures of statistical representativeness. Rather, they are best viewed as indicators of whether realized deployment patterns were consistent with expectations under the sampling design and with planned deployment patterns specified in the ADP. Future evaluations would benefit from greater use of spatial heat maps and comparisons of realized versus planned sampling rates within subregions and seasons.

A key conclusion of this review is that the validity of design-based inference depends not only on successful implementation of the probability-based sampling design, but also on the assumption that

monitored and unmonitored vessels exhibit similar fishing behavior. Consequently, monitoring effects represent one of the most important potential threats to the representativeness of resulting data. The observer-effect analyses presented in the Annual Report are scientifically sound and appropriate for the available data.

I view the newly developed Multivariate Observer Effects (MOE) framework based on generalized multivariate Tweedie models and permutation testing as a promising methodological advancement. The MOE approach provides a statistically rigorous method for evaluating whether monitored and unmonitored trips differ in multispecies catch composition and represents a promising approach for assessing monitoring effects in complex fisheries monitoring programs. Continued refinement and validation of this framework should remain a high priority.

The review also highlighted the increasing role of Electronic Monitoring (EM) within fisheries monitoring programs. While EM can provide reliable information on fishing effort, catch retention, and catch accounting, it generally provides less biological information than human observers. As the contribution of EM-monitored trips increases, periodic evaluation should be undertaken to ensure that biological sampling requirements for stock assessment, ecosystem monitoring, bycatch monitoring, and other scientific applications continue to be met.

The NPOP represents a well-designed and adaptive monitoring program that effectively integrates probability-based sampling, deployment planning, performance evaluation, and methodological innovation. The review materials provided substantial justification for the current stratification and allocation frameworks, and I did not identify any major deficiencies that would warrant substantial redesign of either component.

The primary recommendations arising from this review are:

1. Continue development and validation of observer-effect analyses.
2. Develop a Monitoring Data Needs Matrix linking monitoring methods with major end-user requirements.
3. Maintain the current probability-based sampling framework.
4. Expand deployment-performance evaluation using spatial heat maps and realized versus planned sampling rates.
5. Continue Proximity Allocation sensitivity analyses.
6. Improve fishing-effort forecasting.
7. Evaluate EM biological sampling.

In summary, I conclude that the stratification framework, Proximity Allocation methodology, observer-effect evaluation procedures and Annual Report methods are scientifically sound and appropriate for the program's objectives. The program represents a well-designed and well-implemented monitoring system that continues to evolve through rigorous evaluation, methodological innovation, and a strong commitment to probability-based monitoring principles.

Appendix F: Communication and Collaboration for 2027 Shoreside Observer Monitoring Needs

On August 19, 2026, the following email was sent from the AFSC Fisheries Monitoring and Analysis Division to Alaska commercial fisheries shoreside processors to enhance collaboration between FMA and industry when developing annual monitoring plans which are published in the Annual Deployment Plan (e.g., this document). The letter that follows was attached to the email.

Email

Dear Plant Managers,

Please find the attached letter outlining NMFS' request for your 2027 shoreside monitoring needs for trawl EM deliveries. In the spirit of cooperation we hope that you will engage in the collaborative process around the development of our Annual Deployment Plan (ADP). A draft plan will be presented to the Partial Coverage Fisheries Monitoring Advisory Committee (PCFMAC) on September 15th. To be included in the ADP, we require your plans no later than November 1st so that we can finalize the ADP prior to the December Council meeting. Please note that we have set up a new service account email to which you can submit your plans: nmfs.alaska.adp@noaa.gov.

Thank you for your continued cooperation,
Sean

Letter

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Alaska Fisheries Science Center
Fisheries Monitoring and Analysis Division
7600 Sand Point Way N.E.
Seattle, Washington 98115-6349

August 19, 2026

TO: Alyeska Seafoods Inc., North Pacific Seafoods Inc., Pacific Seafoods Inc., Silver Bay Seafoods Inc., Trident Seafoods Inc., Unisea, Inc., Westward Seafoods Inc.

FROM: Sean Lucey
Fisheries Monitoring and Analysis Division Director
Alaska Fisheries Science Center (AFSC)

RE Coordination of Shoreside Monitoring Needs

Key Takeaways

- **Critical Deadline:** Shoreside monitoring needs for trawl electronic monitoring (EM) deliveries for plants operating in the Gulf of Alaska (GOA) in the following year must be communicated to NMFS **prior to November 1st** for inclusion in the following year's Annual Deployment Plan to ensure program transparency and cost-efficiency.
- **Engagement Opportunities:** Stakeholders are encouraged to utilize the North Pacific Fishery Management Council (NPFMC) meeting cycle, specifically the September Partial Coverage Fishery Monitoring Advisory Committee (PCFMAC) meeting and the October NPFMC meeting, to provide feedback on the draft monitoring plan.
- **Funding Interdependence:** Shoreside monitoring in the GOA and at-sea observer coverage are both funded by the same limited pool of ex-vessel fees; an increase in one necessitates a decrease in the other, thus planning is crucial to prevent cost-inefficiencies.

On behalf of the National Marine Fisheries Service (NMFS), we would like to express our sincere gratitude for your cooperation during the transition from the Exempted Fishing Permit phase to the regulated Trawl EM program in 2025. The successful transition is a testament to the collaborative efforts between your facilities and staff, the observers, and NMFS. Your commitment to providing accurate data is vital to the sustainable management of North Pacific fisheries.

In the spirit of that successful collaboration, we ask that you convey to your plant operators that they communicate shoreside monitoring needs for deliveries received from catcher vessels or tender vessels in the trawl EM category within the GOA to NMFS **prior to November 1st** for inclusion in the following year's Annual Deployment Plan, as described in regulations at 50 CFR 679.51(b)(3)(i). This will ensure that the Trawl EM program remains transparent and cost-efficient. Notifications and questions can be directed to NMFS at nmfs.alaska.adp@noaa.gov.

Background

The Trawl EM program in the GOA relies on a delicate funding balance. Funds for shoreside monitoring are drawn from the total budget for monitoring vessels in the "partial coverage" category. The monitoring budget is funded through the 1.65% ex-vessel fee paid by vessels at landing. This single, limited funding stream funds both at-sea and shoreside monitoring resulting in a direct trade-off as increased costs in shoreside observation in the GOA can reduce the available funding for at-sea monitoring.

In November of each year, NMFS finalizes at-sea deployment rates for the following calendar year. Deployment rates are dependent on having clear, actionable plans for shoreside monitoring at all plants accepting trawl EM offloads in the GOA. NMFS avoids mid-year adjustments to at-sea observer rates for several reasons:

- **Transparency:** Rates are established through a public process with industry input.
- **Operational Integrity:** Adjusting rates mid-year requires re-programming the Observer Declare and Deploy System (ODDS), creating significant technical and administrative burdens, potential for errors, and increased workload for agency staff.
- **Clarity:** Frequent changes to selection rates create confusion and lack of transparency for both the public and industry, undermining the clarity and credibility of the annual agency report.

To achieve a cost-efficient and transparent program, NMFS must have a comprehensive understanding of processing plant operational plans in the GOA well in advance of the December finalization of the Annual Deployment Plan (ADP).

Communications

We welcome and encourage GOA plant operators to reach out directly to NMFS via nmfs.alaska.adp@noaa.gov at any time to discuss next year's operational plans. Please be advised that **November 1st** serves as a critical cutoff. After this date, the agency is finalizing the ADP for the upcoming year.

The Collaborative Process (Annual Report (AR) - Annual Deployment Plan (ADP) Process)

The ADP describes how NMFS assigns monitoring to vessels and processing plants to ensure a science-driven method for statistically reliable data collection. The AR-ADP process is designed to be consultative through engagement at NPFMC meetings. To maximize your input, we encourage you to engage with NMFS during the following meetings:

- **Late April/Early May:** NMFS meets with the Fishery Monitoring Advisory Committee to present the Annual Report. This is an excellent initial touchpoint for engagement.
- **May:** NMFS presents the Annual Report to the Council and Advisory Panel.
- **September:** This is the **most critical time for plants to communicate** their Trawl EM shoreside monitoring needs for the following year. NMFS presents a **Draft ADP at the PCFMAC meeting** specifically to solicit feedback from operators on their anticipated plans.
- **October:** NMFS presents the Draft ADP to the Council and Advisory Panel.
- **November 1:** Plant operator plans not reflected in the draft ADP must be received prior to November 1st to ensure their monitoring needs are included in the final ADP.

During November, NMFS finalizes the ADP for submission to the December Council meeting. We strongly encourage plant personnel to maintain open lines of communication with NMFS staff. By utilizing the AR-ADP process and **communicating your needs via nmfs.alaska.adp@noaa.gov prior to November 1st**, we can ensure a program that is both operationally sound and fiscally responsible.

For further details, please refer to the following resources:

- **2026 Final Annual Deployment Plan**
- **2024 Annual Report** (Final 2025 Annual Report should be available in September)

Cc: Jon Kurland, Jamal Moss