Draft Analytical Document for a Regulatory Amendment Under the Pacific Coast Groundfish Fishery Management Plan - West Coast Electronic Monitoring Program

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Lead Agency:	National Marine Fisheries Service, West Coast Region National Oceanic and Atmospheric Administration
Responsible Official:	Dr. Scott Rumsey, Acting Regional Administrator West Coast Regional Office, National Marine Fisheries Service

For further information contact: Brett Wiedoff of PFMC, and Abbie Moyer of NMFS

Abstract: Current regulatory deadlines to submit required electronic monitoring (EM) feedback reports to fishing vessels, video review data summary reports, and logbook data to National Marine Fisheries Service (NMFS) may need to be revised to create more flexibility for EM video review providers. In addition, the regulations need clarity regarding the process to evaluate and summarize EM video review data via the West Coast EM Program Manual (EM Manual). Therefore, the Council is considering changes to the current requirements and deadlines in the federal regulations and the EM Manual. This action is largely administrative and would not impact the natural environment. Fishery participants under the EM program would likely not be negatively affected. It's expected that an extension of the regulatory deadlines and clarifications in the EM Manual would provide positive benefits to participants, create some efficiencies and lower overall costs of the program.

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1.0 INTRODUCTION

This document analyzes proposed management measures that would apply exclusively to the West Coast Electronic Monitoring Program (EM Program). The measures under consideration include changes to Federal regulations that guide implementation of EM video review protocols and deadlines to submit information that is generated by National Marine Fisheries Service (NMFS)-approved EM providers.

This document is an analysis of the proposed regulatory changes to assist the public and the Pacific Fishery Management Council (Council) in recommending alternatives for implementation by NMFS. It provides an assessment of the impacts of the proposed actions and its reasonable alternatives, the benefits and costs of the alternatives and the distribution of impacts (Regulatory Impact Review, RIR), identification of the small entities that may be affected by the alternatives (Regulatory Flexibility Act, RFA), and analysis of how the alternatives align with the National Standards of the Magnuson Stevens Fishery Conservation and Management Act (MSA). This document addresses the statutory requirements of the MSA, the National Environmental Policy Act, Presidential Executive Order 12866, and the RFA. An EA/RIR/RFA/MSA is a standard document produced by the Council and NMFS West Coast Region to provide the analytical background for decision-making.

1.1 Purpose and Need

Individual accountability for fish caught, landed and fish discarded is central to the function of the trawl rationalization program (catch share program) that was implemented as part of Amendment 20 to the groundfish fishery management plan (FMP). The catch share program initially relied on at-sea observers to provide discard accountability, but an EM alternative has been under development with the expectation that it might reduce program costs and/or provide vessels with more operational flexibility than reliance on observers. When the Council developed the framework for EM program and the regulations under 50 CFR 660 Subpart J, they adopted a purpose statement:

"The purpose of this action is to expand the range of monitoring tools for vessel operators to meet the 100 percent monitoring requirements of the Trawl Program. This action is needed to achieve the following objectives:

1. Reduce total fleet monitoring costs to levels sustainable for the fleet and agency;
2. Reduce observer costs for vessels that have a relatively lower total revenue;
3. Maintain monitoring capabilities in small ports;
4. Increase national net economic value generated by the fishery;
5. Decrease incentives for fishing in unsafe conditions;
6. Use the technology most suitable and cost effective for any particular function in the monitoring system; and,
7. Reduce the physical intrusiveness of the monitoring system by reducing observer presence."

During the EM program development process, operational challenges and regulatory specifications have been identified that might unnecessarily limit flexibility of video review

providers (i.e., be too restrictive), thereby leading to potentially higher costs for industry and lower net benefits for the nation. This situation led to the development of a purpose and need statement for the proposed actions in this analysis.

A draft purpose and need statement was presented to the presented to the Council's Ad Hoc Groundfish Electronic Monitoring Policy Advisory and Technical Advisory Committees (GEMPAC) on January 31, 2023. Staff revised that draft statement based on changes suggested in the report by the GEMPAC, analysis of the proposed actions in this document and suggestions from preparers of the document.

The revised statement for the proposed actions in this analysis is as follows:

> "This action is needed to create and ensure flexibility in the electronic monitoring (EM) program in order to reduce potential costs. Current regulatory deadlines for EM video review providers to submit required feedback reports to fishing vessels, and video review data summary reports as well as logbook data to NMFS may need to be revised to create more flexibility for EM video review providers. In addition, the regulations need clarification to ensure the intended flexibility regarding the process to evaluate and summarize EM video review data via the West Coast EM Program Manual (EM Manual). Therefore, the Council is considering changes to the current deadlines and requirements.
>
> The purpose of extending the regulatory deadlines and clarifying regulations regarding the EM Manual is to provide positive benefits to participants and the nation, and to lower overall costs of the program while still meeting the data collection and data quality requirements of the EM program."

The proposed actions in this analysis continue to support items 1 and 4 in the overarching purpose statement of the EM Program. The actions also support the goal to continually monitor the catch share program for compliance with existing regulations in an economical and flexible manner while meeting the goals and objectives of national policies and standards, the Pacific Coast Groundfish Fishery Management Plan (FMP), the trawl rationalization program, and all applicable laws and acts including the MSA and Endangered Species Act (ESA).

1.2 History of this Action

The Council began developing an EM program in 2011 to explore a cost-effective and flexible option to monitor the catch share program. The Council recommended that the Pacific States Marine Fisheries Commission (PSMFC) assist in the development of the program framework, develop reporting and review protocols, and conduct video review for fishery participants. As the regulations were being developed, PSMFC began testing the EM program framework through exempted fishing permits (EFP). This allowed the Council to examine any issues that may arise and modify the program and regulations over time to ensure the program was flexible and cost effective prior to full implementation of the regulatory program.

On September 6, 2016, NMFS published a proposed rule (81 FR 61161), and final rule on June 28, 2019 (84 FR 31146) providing an overall regulatory framework for the EM program and

specific regulations for EM use with whiting midwater trawl gear and fixed gear. At the time of these rulemakings, additional information was needed to finalize protocols for the use of EM on trips using bottom-trawl and non-whiting midwater gear. In April, September, and November 2017, the Council discussed various aspects of the EM program and took final action to allow the use of EM with bottom trawl and non-whiting midwater trawl gear. Draft regulations were developed by NMFS and deemed by the Council in 2017.
The analytical basis for these decisions and recommendations by the Council can be found in the *Draft Environmental Assessment for a Regulatory Amendment to the Pacific Coast Groundfish Fishery Management Plan - An Electronic Monitoring Program for the Limited Entry Groundfish Trawl Fishery* (Transmitted to NMFS by the Council on August 16, 2016), in *NMFS Final Environmental Assessment for a Regulatory Amendment to the Pacific Coast Groundfish Fishery Management Plan to Implement an Electronic Monitoring Program* (Proposed by NMFS, September 6, 2016), and *An Electronic Monitoring Program for the Bottom Trawl and Non-Whiting Midwater Trawl Fisheries Under the Shorebased IFQ Program*. In addition, the Council's website contains meeting materials, advisory body statements, and recordings of Council meeting discussions that document the development of the EM Program.

At the April and June 2020 meetings, the Council recommended minor regulatory changes to existing EM program regulations implemented under the June 2019 final rule. These regulatory changes were identified and developed from information collected through EFPs used to test EM systems and protocols. In addition, NMFS proposed some additional regulatory language that was intended to clarify and streamline EM program requirements, including the addition of submission deadlines for EM Providers to provide feedback reports to fishing vessels, and video review data summary reports as well as logbook data to NMFS. The full rationale for the Council's recommendation is detailed in the March 1, 2022 proposed rule (87 FR 11382) and analytical document (NMFS 2022) for this action, and is not repeated here. These changes were finalized on October 3, 2022 (87 FR 59705). During this timeframe, NMFS also delayed the start date for the EM program until at least January 1, 2024, and only after NMFS issues a public notice at least 90 calendar days before it will begin accepting applications for EM authorizations for the first year of the program (86 FR 55525) based on the Council's recommendation. NMFS approved the recommendation, to strengthen Council and industry support for the EM program, increase participation when the program is implemented, and to provide additional time for industry and prospective service providers to prepare for implementation. The EM program regulations can be found in 50 CFR Subpart J.

In order to implement the Council's EM Program, NMFS developed several documents that guide EM providers and participants on how to participate in the program and comply with the regulations. The EM Manual and program guidelines were developed by NMFS with input and feedback from the Council's advisory bodies. These documents are posted on NMFS website and may be adjusted annually by NMFS if, for example, regulatory requirements change, clarifications are needed or new video review protocols are developed. In particular, section 2.2 (Data Services) of the EM Program Manual provides a description of the protocols to be used and the deadlines for EM providers to follow, which are the subject of this analysis. Therefore, if the proposed actions presented in this analysis are recommended by the Council and implemented by NMFS, these documents and the regulations would need to be revised.

Currently, the fishery continues under EFPs with PSMFC conducting the video review process on behalf of the industry, funded by NMFS, and attempts to follows the video review protocols and submission deadlines outlined in the current EM Manual and Guidelines. However, timely review and submission of the EM vessel feedback reports and NMFS EM summary reports has been challenging for PSMFC. The delay has caused concern amongst the industry regarding the deadlines and the potential increase in costs associated with increasing the number of personnel to meet the video review workload and deadlines. Therefore, the Council is continuing to examine the EM Program to reduce costs to the industry, create more flexibility in the program to ensure the overall program is cost effective and efficient for all participants.

Starting in February of 2022 the Council began scoping several issues brought forth by the industry via the GEMPAC/TAC. A timeline of recent meetings and the development of the current range of alternatives identified in this draft analysis can be found in Table 1. The most recent report by the GEMPAC/TAC identifies the regulatory changes that may provide some flexibility to EM providers and potential cost savings to participants in the program (Alternatives 2 through 4). Alternative 5 includes a clarification of how discard estimates are developed and that this information can be found in the EM Manual. These recommendations were included in the adopted range of alternatives (Section 2, Description of Alternatives).

Table 1. Meetings and documentation for the development of the proposed action in this analysis.

Date	Meeting
February 23, 2022	GEMPAC/TAC webinar meeting (GEMPAC Report)
April 2022	Council Meeting to provide update on progress (Agenda Item F7, Decision Summary)
September 2022	Council Meeting to provide update on progress (Agenda Item G3, Decision Summary)
Oct 24th & 28th, 2022	GEMPAC/TAC webinar meeting (GEMPAC Report, webinar recordings are posted for each day: 24th and 28th)
November 2022	Council Meeting to select Range of Alternatives (Agenda Item H.7, Decision Summary)
Jan 31st & Feb 3rd, 2023	GEMPAC/TAC webinar (webinar recordings are posted for each day: Jan 31 and Feb 3)

1.3 Analysis of the Problem

During this last phase of development and implementation of the EM program, PSMFC has been serving as the EM reviewer with the intent of providing services that generally meet the standards specified in regulation, including meeting the time frames for processing and reviewing logbook and video data. When program regulations become effective, vessels will be required to provide trip information within 24 hours of completion of the trip to NMFS or its agent (in this case the video reviewer). Hard drives must be mail-postmarked within 72 hours of landing; however, they are typically sent with logbooks within the 24-hour mark as shown in Figure 1. The video reviewer will then be required to submit that information to NMFS within two business days and complete the video review and submit reports within 3 weeks (as depicted in Figure 1). During the development phase, these timelines for the vessel operator and video reviewer have been targets rather than regulatory requirements.

Figure 2 provides a breakdown of the percentage of EM EFP hard drives reviewed within different timeframes (21 days, 60 days, 90 days, and over 90 days) from the date the drive was received from 2015 (the start of the EFP EM program) through 2020. In the first years that PSMFC provided these services, it was relatively successful in meeting the three-week turnaround target

(Figure 2, blue bars for years 2015-2017), however, as participation increased, its ability to meet this target has fallen off (Figure 2, orange, grey and yellow bars for years 2018-2020). The height of curved line in Figure 1 indicates very generally the pattern of completion of video review of the last several years.

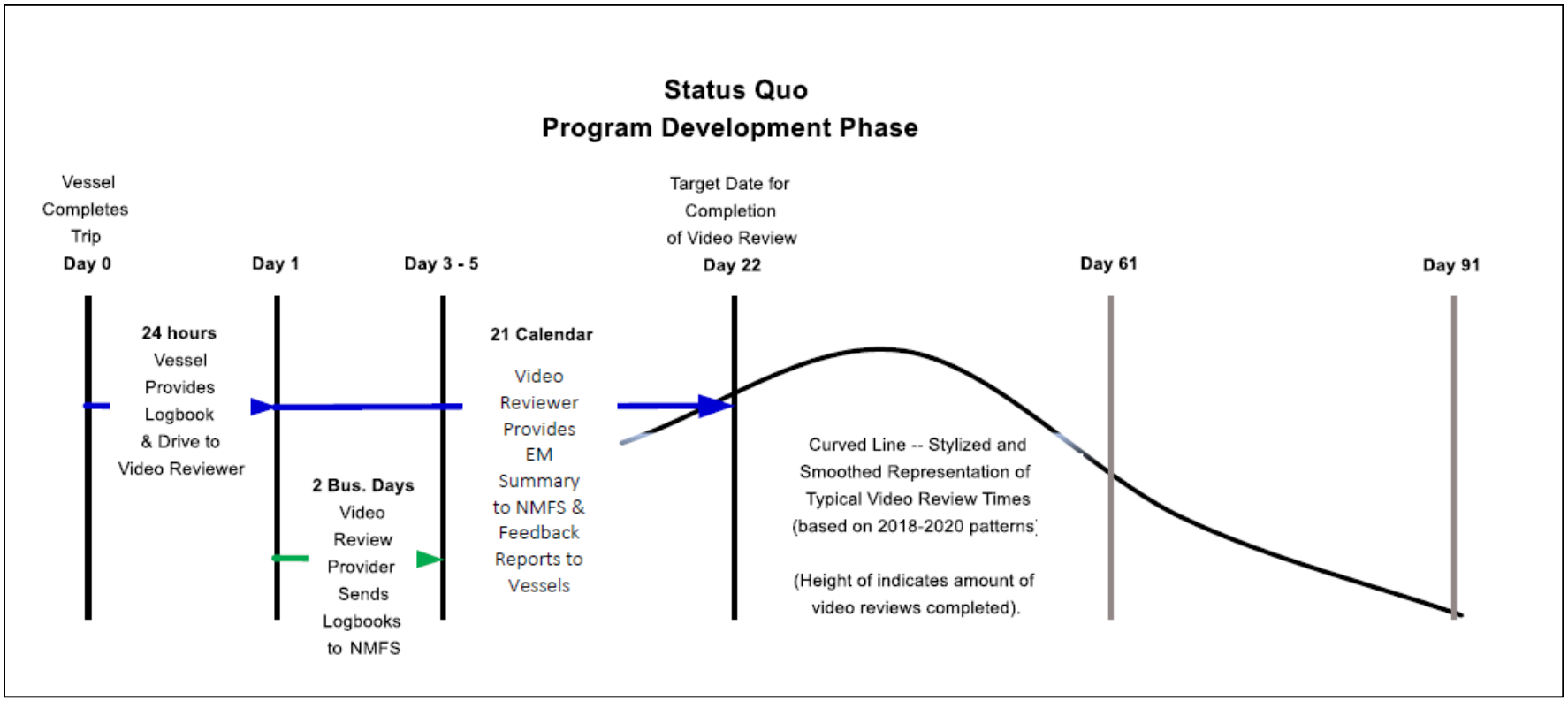

Figure 1. Schematic representation of video review time frames and pattern of review completion in the 2018-2020 period. Note: Hard drives must be mailed-postmark within 72 hours of landing; however, they are typically sent with logbooks within the 24-hr mark as shown.

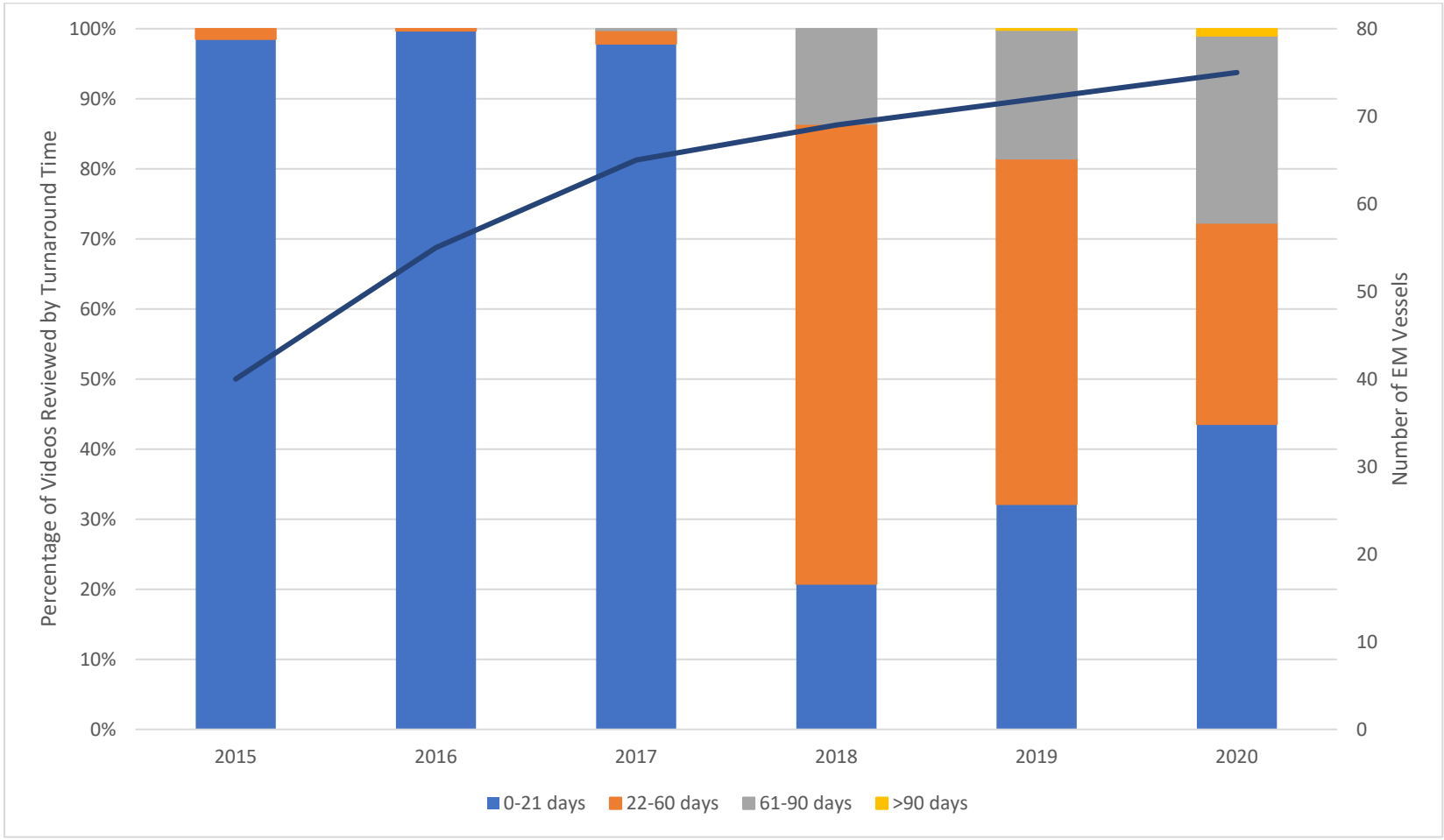

Figure 2. Percentage of videos reviewed by turnaround time from 2015-2020 (bar graph; left axis) and the number of vessels participating in the EM EFPs (line graph; right axis).

Figure 3 provides the number of hard drives received each month from 2015-2020. As shown, June through October reveal peak times when hard drives are received by PSMFC and when video review effort ramps up to meet the demand. This increase negatively affected the goal of a three-week turnaround time for submission of EM feedback reports for vessels and summary reports for NMFS summary reports.

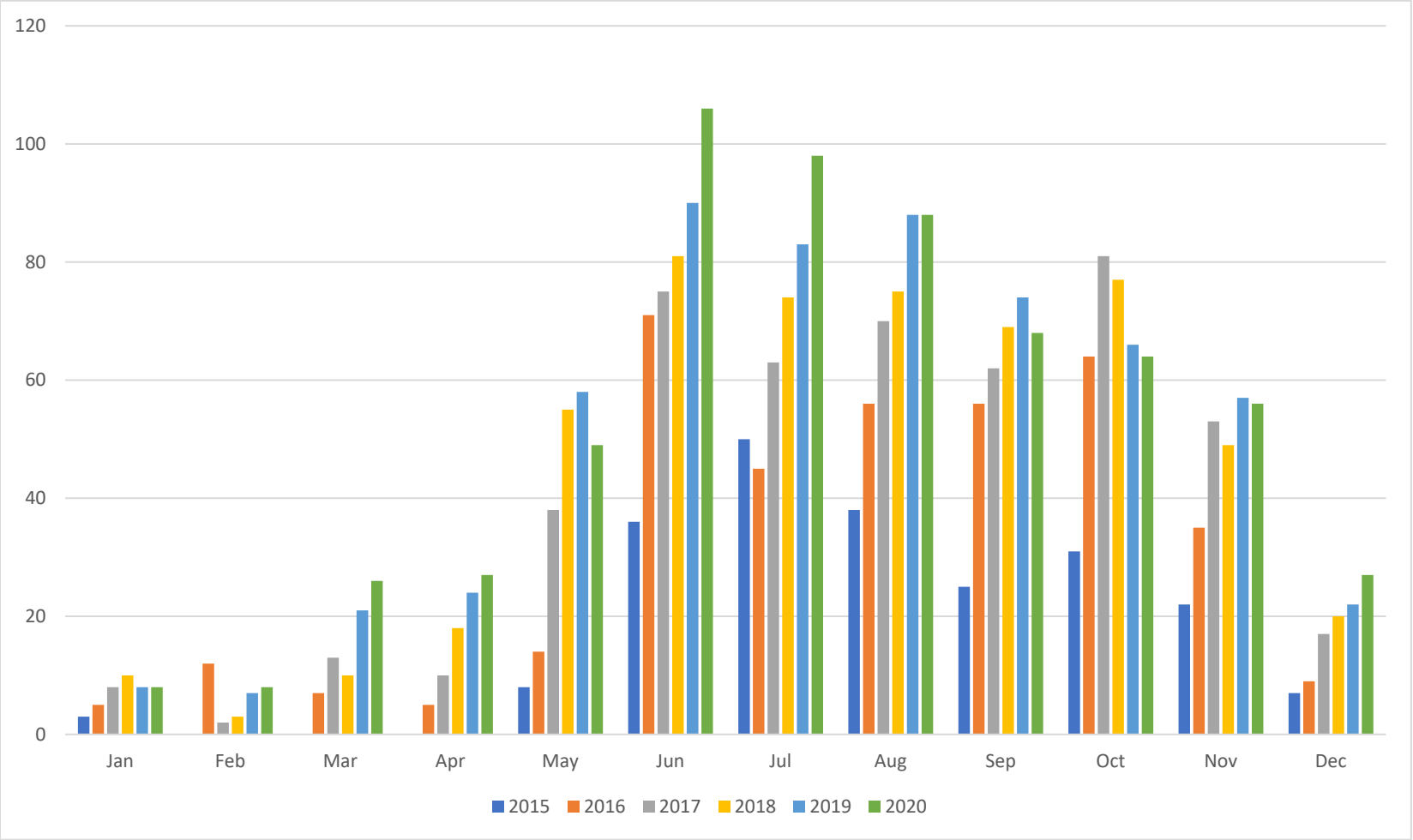

Figure 3. Number of EFP hard drives received per month from 2015-2020.

One way to address the shortfall in meeting the three-week turnaround requirement could be to hire more video reviewers. However, this presents its own challenges. The delays beyond the three-week turnaround time are largely due to capacity overload associated with peaks (annual high points) and pulses (surges in demand within or outside of peaks) in the number of trips to be reviewed (higher volumes occur from late spring through fall, Figure 3). Therefore, if additional permanent employees were hired, there would be periods of time during which their specialized skills would not be needed. If they are kept on during periods of low demand, program costs would escalate, and fees paid by industry would be higher.

Alternatively, video reviewers could try to hire seasonal workers to cover peak demand and maintain reviewers on call to handle pulses, but this approach also has its costs. It can be difficult to find skilled seasonal workers who might be readily available and called in to handle high demand times. Often, when steady reliable work cannot be provided, there is higher job turnover. The task of finding and training replacement reviewers has its own costs (in addition to the loss of revenue and failure to meet requirements that occurs when workers leave). Reviewing video requires specialized knowledge and skills. Job training and on-the-job experience is required to reach the required level of competency, a company investment required for each new employee. This problem of seasonal or sporadic work is not dissimilar to problems that have been encountered in trying to find catch monitors in ports to cover sporadic needs for services.

The challenges of peaks and pulses in the demand for video review is endemic to fishing patterns. It will not be resolved regardless of how many companies are providing the services or whether the proportion of the trips that need to be reviewed declines.[1]

Another approach would be for companies to target overperformance in slow periods, but maintaining a capacity that allows them to meet the three-week turnaround during peaks and pulses. For example, companies could work with the current three-week requirement and target seven days. This may require a substantial increase in the number of video reviewers employed, relative to what PSMFC has been doing during the EM program development phase under EFPs. Alternatively, the regulatorily required turnaround time could be extended while companies use the current three-week turnaround as their target, which is the subject of this analysis.

In addition to the three-week review turnaround time, there is a requirement that logbooks received from vessels be transmitted to NMFS within two business days. Like the three-week turnaround time, the two-day turnaround time can be challenging during peaks and pulses. An extension of the current two-day turnaround requirement could also reduce costs.

The question then becomes, what are the impacts from extending these deadlines. Given the potential costs in meeting the current deadlines, the Council is considering an extension of both the video review deadlines (Alternatives 2 and 3) and the logbook submission deadline (Alternative 4).

In addition, there is concern that the regulatory language that specifies that a "standardized estimation method" needs clarity and correction. The current regulatory language can be interpreted to be that only one specific method must be used by all EM providers. The intent of the original regulatory language was to guide each qualified provider to develop a method for discard estimation using general protocols outlined in the EM Manual that provides NMFS the

[1] For example, PSMFC has been reviewing 100 percent of the video, but under no action review levels for vessels in some strategies may be as low as 25 percent.

desired data and for NMFS to determine if the data is collected consistently and appropriately by each EM provider. However, it is unclear whether the language that refers to a "standardized estimation method" provides the intended flexibility and where to find this method.

In addition, the current regulatory language is incorrect since it specifies EM providers need to *determine an estimate of discards for each trip.* Rather the estimation method outlined in the EM Manual requires sampling percentages to be based on the hauls for each trip.

Alternative 5 proposes language to direct EM providers to the EM Manual for the prescribed review methodology as specified by NMFS. The intent of the proposed changes would also ensure performance standards provide the flexibility that allows for innovation and improvements that can potentially result in lower costs and greater benefits. Finally, the proposed changes would correct the language regarding discard estimations be based on hauls for each trip.

1.4 Proposed Structure for Analytical Document

Analysts have consulted with NMFS West Coast Region and preliminarily determined that the proposed action may fall within one of the National Oceanic and Atmospheric Administration (NOAA) Categorical Exclusion categories listed in Appendix F of the Companion Manual for NOAA Administrative Order 216-6A and that none of the alternatives have the potential to have an effect individually or cumulatively on the human environment.

This document contains a RIR. An RIR provides assessments of the benefits and costs of the alternatives, the distribution of impacts, and identification of the small entities that may be affected by the alternatives. The RIR addresses the statutory requirements of the MSA, the National Environmental Policy Act, and Presidential Executive Order (E.O.) 12866.

The Council and NMFS often prepare RIRs in combination with EAs. An RIR/EA provides assessments of the economic benefits and costs of the action alternatives, as well as their distribution (the RIR), and the environmental impacts of an action and its reasonable alternatives (the EA). In this case, however, the proposed action would not individually or cumulatively have a significant effect on the human environment. The only effects of the action are economic and social, as analyzed in the RIR. Based on this preliminary assessment of the action, the proposed management actions may be categorically excluded from the need to prepare an EA or Initial Regulatory Flexibility Analysis. This determination is subject to further review and public comment. If this determination is confirmed when a proposed rule is prepared, the proposed action will be categorically excluded from the need to prepare an EA.

Impacts to non-salmonid protected or prohibited species (i.e., ESA listed species like green sturgeon, eulachon; Dungeness crab, Pacific halibut, seabirds or marine mammals) are not expected to change beyond what has been observed in the past since the fishery is not expected to alter its fishing operations (historic fishing location, gear used or retention/discard requirements). Based on this information, we do not provide an impact analysis.

There are no expected impacts to essential fish habitat (EFH) and there are no proposed changes to EFH conservation areas or gear design that would impact habitat. Based on this information, we do not provide an impact analysis for EFH (bottom substrate or water column).

Climate change is one important source of uncertainty for both near and far-ranging future scenarios. Since the proposed actions are administrative, we do not expect the proposed action to have an impact on the environment in relation to climate change. Based on this information, we do not provide an impact analysis regarding changes to the climate.

1.5 Description of the Management Area

The management area for this action is the Exclusive Economic Zone (EEZ) for the Pacific West Coast of the United States, defined as 3 to 200 nautical miles from state baselines along the coasts of Washington, Oregon, and California and communities that engage in fishing in waters off these states.

1.6 Description of the Fishery

The Pacific Coast Groundfish FMP provides a description of the history of the management of the groundfish resource (Chapter 1), managed groundfish resource (Chapter 3.1), and the groundfish fishery management measures (Chapter 6 and 11). The most recent Stock Assessment Fishery Evaluation (SAFE) document provides a detailed description of the status of the fishery and social and economic characteristics of the groundfish fishery. The descriptions in those documents are incorporated by reference and the following information is summarized from them. In addition, the Northwest Fisheries Science Center provides annual groundfish and Pacific halibut mortality reports that include estimates of discarded fish by fishery sector under the EM program.

The groundfish fishery, from a management perspective, generally divides the overall fishery into three components: commercial, recreational, and tribal, with a multitude of sub-components or sectors. Given that only sectors of the trawl catch share program are allowed to participate in the development of the EM program, and eventually the regulated EM Program, we only describe and analyze these sectors for impacts. The gear used in the developing EM program is midwater trawl (whiting and non-whiting), bottomtrawl and fixed gear (pot).

These sectors are briefly described below.

Whiting Sector – These vessels use midwater trawl net in their operations and strictly target Pacific whiting. Within the whiting sector, there are two fishery designations within the whiting sector, at-sea and shoreside. The at-sea fleet consists of the catcher-processor and mothership sectors. Catcher processors both catch and process whiting at sea; whereas motherships receive, and process catch supplied by catcher vessels. The shoreside fleet lands its catch at a shore-based processing plant with Westport and Ilwaco, Washington, and Astoria, Oregon, being the principal ports for shoreside landings. Multiple vessels participate as both catcher vessels in the mothership and shoreside sectors. The Makah participate in this fishery and operate both shoreside and at-sea with a mothership. In the whiting sector, only shoreside and mothership catcher vessels are eligible to participate in the EM program; in 2022, 24 and 18 vessels, respectively, participated in the EM EFP program.

Non-Whiting – This sector of the fishery includes the non-whiting groundfish trawl (bottom and midwater trawl gear), fixed gear (hook and line, bottom longline and pot gear), as well as the

recreational fishery. All four Washington coastal tribes (Makah, Quileute, Hoh, and Quinault) tribes have fixed gear vessels and the Makah are active in the bottomtrawl and midwater fisheries as well.

Trawl – The non-whiting trawl fishery operates under the shorebased IFQ program and consists of two primary gear types that target groundfish: midwater trawl and bottom trawl . While trawling portfolios are made up of a variety of groundfish species, the non-whiting midwater trawl fishery primarily targets widow and yellowtail rockfish while bottom trawlers typically target sablefish, dover sole, thornyheads (i.e., the DTS complex), and other flatfish species. In 2022, 13 bottomtrawl and 17 midwater trawl vessels per year participate in the EM EFP program.

Fixed gear – This sector targets groundfish via bottom longline, trap, pot, set net and stationary hook-and-line (includes vertical hook-and-line). This fishery is divided between "limited entry" and "open access" from a regulatory standpoint, but fishery managers more commonly characterize a "non-nearshore" sector which primarily targets sablefish and a "nearshore" sector, which targets various nearshore groundfish species off Oregon and California, including blue/deacon and black rockfish. Included in this designation there is the category of "gear switchers", trawl permitted vessels that use fixed gear to target such species as sablefish. In 2022, 8 fixed gear vessels per year participate in the EM EFP program.

The total number of vessels that may be eligible to use EM once the program is implemented would be 175 (the total number of limited entry trawl permits in 2022). Of the 165 limited entry trawl endorsed permits (excluding those 10 with a CP endorsement), 110 permit owners holding 129 permits classified themselves as small entities. The average small entity owns 1.17 permits with 15 entities owning more than one permit.

2.0 DESCRIPTION OF ALTERNATIVES AND ANALYSIS

During the November 2022 meeting, the Council adopted a range of alternatives for public review relative to 50 CFR Part 660 Subpart J, West Coast Groundfish Electronic Monitoring Program. The analysis is organized around status quo, no action, and four action alternatives (Alternatives 2 through 5, Table 2). Status quo is the current interim EM EFP program that has been in place for the developmental phase. That program is guided but not bound by the EM regulations that have been published and are expected to go into place in 2024. The No Action alternative is full implementation of the program starting January 1, 2024, under the current regulations, EM Manual, and EM Guidelines. Alternatives 2, 3, and 4 would address the purpose and need by modifying submission deadlines in federal regulations regarding vessel feedback reports, summary reports and logbook submissions. In addition, Alternative 5 was developed to address the purpose and need by clarifying in the regulations and EM Manual how EM discard data should be estimated via the video review process.

Among the action alternatives, only Alternatives 2 and 3 are mutually exclusive. The additional time for logbook transmission provided in Alternative 4 would run concurrent with the video review turnaround time, so there would be no direct interaction between it and Alternatives 2 or 3

(Alternative 4 would not create longer turnaround times for Alternatives 2 or 3 and resulting benefits would be additive).

Thus, the alternatives were organized as follows:

- Alternative 1 - No Action

Action Alternatives:

- Alternative 2 – No More than 60 Days to Submit Feedback/EM Summary Reports
- Alternative 3 – No More than 90 Days to Submit Feedback/EM Summary Reports
- Alternative 4 – No More than Seven Business Days for EM Providers to Submit Logbooks to NMFS
- Alternative 5 – Revise EM Discard Data Review Language

These proposed alternatives would apply to all NMFS-approved EM providers under the program and EM participants (mainly vessel operators). Implementation of an alternative would require changes to the current federal regulations but would not require an amendment of the groundfish FMP.

Table 2. Comparison of basic differences among the alternatives.

			Action Alternatives [a/]			
	Status Quo (PSMFC)	**Alternative 1 (No Action)**	**Alt 2 (30 Day Review Turnaround)**	**Alt 3 (60 Day Review Turnaround)**	**Alt 4 (7 Business Day Logbook Transmission)**	**Alt 5 Regulatory Clarification**
Turn Around Time	Up to 60 (in practice)	3 weeks	60 Days	90 Days	3 weeks	3 weeks
Logbook Transmission to NMFS	2 to 7 business days (in practice)	2 business days	2 business days	2 business days	7 business days	2 business days
	Percent of Hauls Reviewed					
Midwater Trawl (max retention)	100%	100%	100%	100%	100%	100%
Bottom Trawl (optimized retention)	100%	25%	25%	25%	25%	25%
Fixed Gear (optimized retention)	100%	25%	25%	25%	25%	25%
Regulatory Clarification	Not Included					Included

a/ Among the action alternatives, only Alternatives 2 and 3 are mutually exclusive.

2.1 Categories of Impacts Covered in the Analysis

This analysis first describes the status quo, which is the current EFP program under PSMFC; this illustrates the issues that have surfaced since creation of the current set of regulations. We then describe each alternative, including No Action, and include an impact analysis for EM providers, EM participants (vessel operators and vessel account holders under the catch share program), NMFS' administration of the EM program, and enforcement. We also consider the non-fiscal costs of the action alternatives and the potential impact on data completeness and the compliance ethic in the fishery. Finally, we discuss the impacts of cost to participants in the program. The impact analysis compares changes of the regulations under Alternatives 2 through 5 to the No Action Alternative.

As noted in the purpose and need (Section 1.1) and analysis of the problem (Section 1.3), the action alternatives are intended to provide flexibility that will enable video reviewers to reduce costs. This would be achieved by increasing the turnaround times and clarifying that different reviewers may follow different protocols (as long as they are approved by NMFS) rather than a protocol that is standardized across reviewers. The flexibility provided in both of these facilitates business innovation in methods and procedures that could reduce industry costs and have a positive impact on benefits to the nation. At the same time, there would potentially be some negative impacts that need to be considered with respect to their likelihood and, if probable, their degree of impact. These include impacts on individual accountability, data quality and completeness, conservation and vessel costs.

With respect to individual accountability, the positive benefits expected from the trawl catch share program, implemented as Amendment 20, are largely grounded in the flexibility that is provided to vessels through the individual accountability of individual quotas. Individual accountability depends on compliance. The analysis will discuss whether the alternatives might have a short-term impact on detection of vessel non-compliance, and, if so, the potential long-term impact on the compliance ethic in the fishery and consequences of such an impact. The next area of consideration has to do with data quality and completeness and whether a delay in the completion of video review would have an impact on data quality and completeness. Finally, is the question of whether any impact on data might have a noticeable effect on conservation.

2.2 Approach to Costs Analysis

As noted above, some changes may be needed to refine the EM program to limit cost increases that are expected to occur due to the tighter logbook transmission and video review turnaround times that would be required under No Action when regulations come into effect (as compared to status quo practices). We focus the analysis on the cost categories for video review only. We include quantitative analysis for Status Quo, No Action, and Alternative 2 based on estimates produced by PSMFC. Only qualitative cost analysis was provided for Alternative 3 through 5 since estimates were not produced for these changes. We then compare current program costs under the

developing program via PSMFC (Status Quo) to potential future costs once the program is implemented (No Action). We then discuss the potential effects of the alternatives compared to the No Action (with some assumptions) and identify where cost savings or increases in the program may occur.

2.3 Status Quo – Development of the EM Program under EFPs

Status quo is the EM program that is currently occurring under EFPs, and the video review services provided by PSFMC. This development work is scheduled to continue through 2023, ending when the regulations that have already been published become effective (expected to occur in 2024). Section 1.3 Analysis of the Problem, applies to the status quo conditions. The following sections describe activities under status quo and fiscal costs.

2.3.1 EFP Program Feedback Report and Data Summary Report Turnaround Times.

As stated earlier, PSMFC has provided video review services for all vessel participants to assist in the development of the West Coast EM Program. Per the Council's direction and as the video review provider, they review 100 percent of all videos received via the video review protocols outlined in the manual and provide feedback reports to vessels and EM summary reports to NMFS. PSMFC conducts the reviews and provides reports with the goal of a three-week turnaround time, (i.e., the timeframe that will be required by regulations when they become effective).

However, as discussed in Section 1.3, as hard drive submissions increased each year, it became challenging to conduct 100 percent of the reviews within a three-week timeframe under the current number of staff, with higher volumes of hard drives to review in late spring through fall (Figure 2 and Figure 3). In addition, vessel feedback turnaround time has also increased over time beyond the targeted 3-week turnaround time, up to 90 days in recent years (Figure 4).

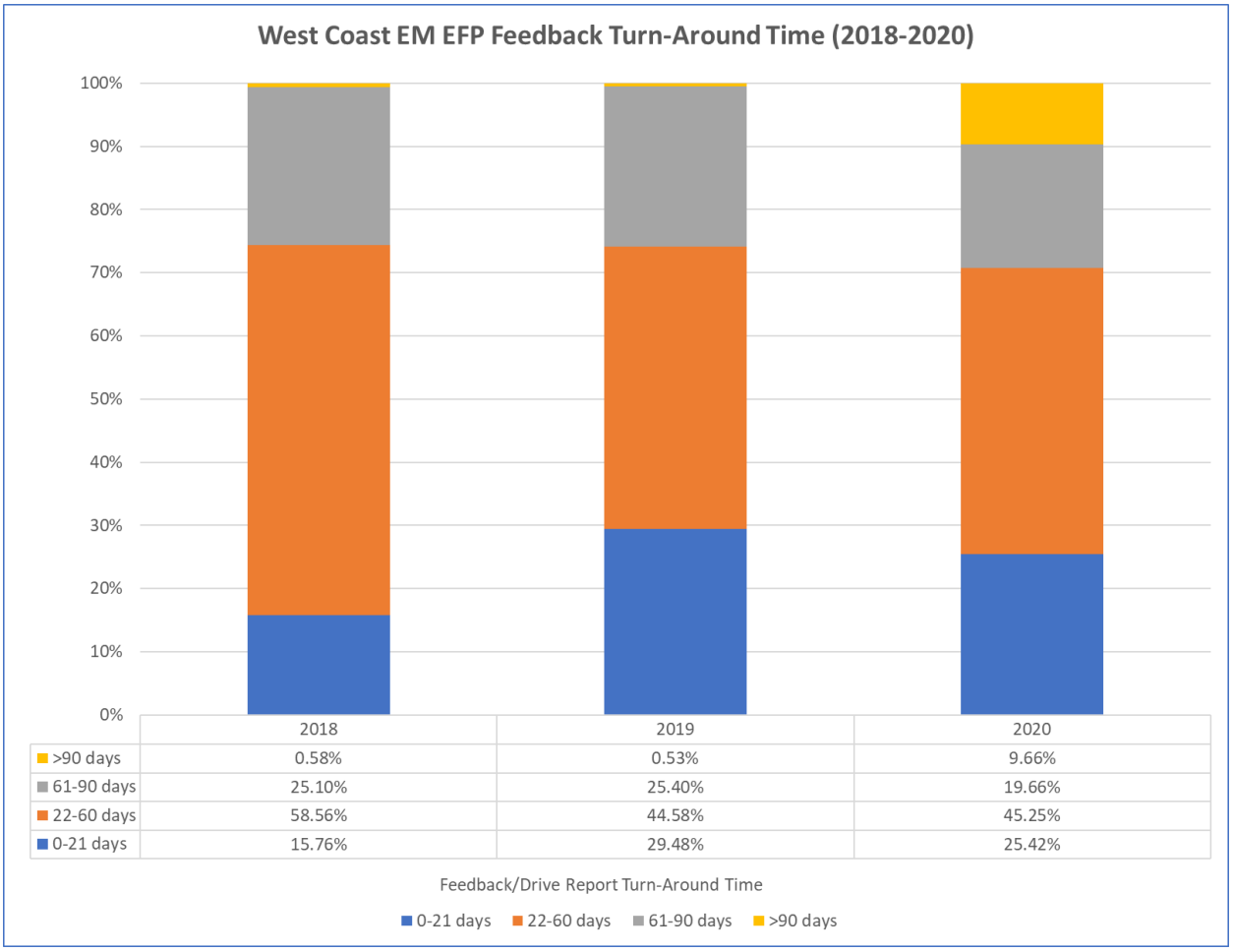

Figure 4. The percentage of EM EFP feedback/drive reports sent to vessel operators within different timeframes. Source: PSMFC 2023

The number of participating vessels in each fishery has increased from 2015 to 2022, except for fixed gear which has remained relatively stable throughout this period (Table 3). From 2015-2019, the average number of hauls and trips was increasing, followed by a slight downward trend regarding number of hauls and trips taken from 2019 to 2021 (Table 4). The increase in hauls and trips contributed to an increase in the turnaround time of feedback to vessels and reports to NMFS. From 2015-2021, the average number of trips and hauls per hard drive submitted to PSMFC, has remained relatively consistent (Table 5).

Table 3. Number of vessels participating in the EM program under EFPs. Source: PSMFC 2023

Year	Bottom Trawl	Non-Whiting Midwater Trawl	Midwater Trawl (Mothership Catcher Vessel)	Fixed Gear (Fixed Gear (Pot)	Midwater Trawl (Shoreside Hake)
2015	6	0	9	8	17
2016	9	4	16	6	20
2017	10	9	14	10	22
2018	10	12	16	8	23
2019	10	13	17	7	25
2020	9	18	13	8	27
2021	11	18	16	6	24
2022	13	17	18	8	24

Table 4. The annual number of trips and hauls by fishery, 2015-2021. Source: PSMFC 2023

Fishery		2015	2016	2017	2018	2019	2020	2021
Bottom Trawl	**# Trips**	24	120	156	176	184	154	153
	# Hauls	146	669	924	1076	1012	878	831
Non-Whiting Midwater Trawl	**# Trips**	N/A	27	52	81	88	101	129
	# Hauls	N/A	76	105	120	164	168	233
Midwater Trawl (Mothership Catcher Vessel)	**# Trips**	25	63	47	63	51	32	33
	# Hauls	456	1460	1219	1457	1170	622	625
Fixed Gear (Pot)	**# Trips**	57	70	82	66	95	103	81
	# Hauls	698	1021	1226	988	1085	1176	938
Midwater Trawl (Shoreside Hake)	**# Trips**	483	642	1103	1029	1148	1223	998
	# Hauls	1277	1419	2089	1930	2250	2750	2005
Total	**# Trips**	589	922	1440	1415	1566	1613	1394
	# Hauls	2577	4645	5563	5571	5681	5594	4632

Table 5. Average number of trips and hauls per data set (hard drive). Source: PSMFC 2023

Year	Bottomtrawl		Non-Whiting Midwater Trawl		Midwater Trawl Whiting - Mothership Catcher Vessel		Fixed Gear (Pot)		Midwater Trawl Whiting - Shoreside Hake	
	Average # Trips	**Average # Hauls**	**Average # Trips**	**Average # Hauls**	**Average # Trips**	**Average # Hauls**	**Average # Trips**	**Average # Hauls**	**Average # Trips**	**Average # Hauls**
2015	1.3	6.3	N/A	N/A	1.4	22.9	1.4	13.4	3.9	3.6
2016	1.4	6.2	1.5	3.4	1.2	26.2	1.4	16.5	4.1	3.0
2017	1.4	6.3	1.8	2.3	1.0	26.9	1.5	16.3	4.5	2.6
2018	1.3	6.5	1.9	1.7	1.0	23.1	1.6	15.8	4.1	2.6
2019	1.2	5.8	1.9	2.2	1.0	23.1	1.8	12.6	4.2	2.8
2020	1.1	5.9	1.6	1.8	1.0	19.4	1.7	13.2	3.8	3.2
2021	1.2	5.8	1.8	2.1	1.0	18.9	1.5	12.0	3.5	2.7
All Years	**1.3**	**6.1**	**1.8**	**2.3**	**1.1**	**22.9**	**1.5**	**14.3**	**4.0**	**2.9**

2.3.2 PSMFC Fiscal Cost Estimates

PSMFC provided current cost estimates that have been incurred for the most recent years with reviews completed (2020 and 2021 fishing seasons). These estimates include statistics for number of sea days per fleet, review minutes, etc. PSMFC also provided additional information regarding potential staffing needs, fixed costs, and review costs that may be incurred based on the 2023 fishing year and current budget. The main variable affecting cost is the video review rate percentage and the turnaround time to complete reviews and reports. Future costs will be substantially lower to the degree that a 25 percent review rate is used for optimized retention fisheries rather than the 100 percent rate that was used during the program development period. However, cost savings can be realized through an extension of the submission timelines as estimated by PSMFC between the No Action and Alternatives 2 and 3.

As stated earlier, PSMFC is required to review all video submitted regardless of fishing gear or retention requirements. This was required to test and refine the data systems flow of information and the EM review protocols that were developed. PSMFC provided review for the industry with the goal of a 3-week turnaround time regarding vessel feedback reports and EM summary reports. However, the current system with available staff is targeting a 45-day turnaround time with no more than a 60-day turnaround time. Therefore, the cost estimates do not reflect what would have been expected if the standards of the No Action Alternative had been achieved. A 3-week turnaround time (as described under No Action) would be more expensive than what is shown under the Status Quo.

Estimated costs regarding the status quo are shown in Table 6. These estimates are based on the status quo review activities of 100 percent for all participants, with a data turnaround time of approximately 40-60 days. When creating the estimates, we assumed that all bottom trawl and fixed gear trips would pass via the EM/logbook comparison protocols (i.e., pass/fail business rules) and would not require additional review since an increase in the review rate could drive up cost estimates. By not including this variable cost, we attempted to establish the least-cost estimate for the current and possible future costs of the program under separate review rates and fisheries.

Appendix A contains additional detailed cost estimates from PSMFC. Those estimates were used throughout this document to help illustrate the costs under Status Quo and provide estimates of costs under No Action and Alternative 2. No cost estimates were provided for Alternatives 3 through 5.

Table **6**. Status Quo - Estimated PSMFC EM Review costs by fleet at review rate of 100 percent with current turnaround time of ~40-60 days (from hard drive receipt until vessel accounts are debited).

	Costs Per Sea Day at 100% Review		
	Midwater Trawl	**Fixed Gear (Fixed Gear (Pot)**	**Bottom Trawl**
Review Time Variable Cost (video review)	$16.61	$185.62	$247.75
Review Time Fixed Costs*	$50.08	$50.08	$50.08
Admin Cost**	$47.15	$47.15	$47.15
Archive Storage Cost	$0.36	$0.25	$0.35
TOTAL PER SEA DAY	$114.20	$283.10	$345.33
TOTAL FLEET COST	$353,796	$73,889	$119,311
PSMFC TOTAL EST. PROGRAM COSTS FOR REVIEW		**$546,995**	

*Other review work includes tracking, reporting, communication with vessels, etc.
**Program management, logbook data entry, QA/QC, database maintenance, mailing hard drives, etc.
Note: Table does not include cost of EM equipment, maintenance of EM equipment or reviews that fail and must be reviewed at 100 percent.

PSMFC used the following inputs and assumptions for Table 6:

- **Overview**: We used the actual total budget based on staff time and then partitioned the costs. The costs were split into four categories, and for each category the cost was allocated among fleets. Staff time is based on current staffing for 2023. Other inputs such as the number of sea days per fleet, review minutes, etc. were based on 2020-2021 (most recent years with review completed).
- **Fleets**: Costs were estimated separately for bottom trawl, fixed gear (pot) and midwater trawl (shoreside hake, midwater rockfish target, and MSCV). Midwater trawl is combined because the review protocols and times are comparable.
- **Cost Estimates**
    - Variable review costs
        - All time spent by reviewers watching and annotating the video.
        - The total variable review cost was 50 percent of all review staff time costs.
        - Reviewers record the minutes to review each haul. These values were used to determine the ratio of time spent watching video for each fleet. Total

variable review costs were apportioned among the fleets using this ratio, then for each fleet it was divided by the number of sea days reviewed for that fleet.

- Fixed review costs
  - All other time for review staff including tracking, reporting (e.g., drive reports), correspondence with skippers, updates to protocols, staff meetings, etc.).
  - The total fixed review cost was 50 percent of all review staff time/budget.
  - Fixed review costs were divided by sea days (all fleets charged equally per sea day).
- Admin costs
  - Costs for non-review staff including data entry of logbooks, database maintenance, data QAQC, mailing hard drives, and administrative work.
  - The total admin costs were 100 percent of all non-review staff time/budget.
  - Admin costs were divided by sea days (all fleets charged equally per sea day).
- Storage cost
  - Cost to store the video files per sea day of fishing. Costs are slightly different among fisheries based on the typical number of cameras.

- **Reduced Review Rates**
  - To estimate costs at a reduced review rate, the variable review cost was adjusted while other costs remained the same.
  - At reduced review rates, the actual review rate is somewhat higher than the stated rate. For example, if there is a trip with 3 hauls, 1 haul would be reviewed for either the 25 percent or 10 percent rate. Using past years data, we determined the percent of hauls that would have actually been reviewed and adjusted the variable review costs based on these values.
  - Reduced review costs assume no penalties of additional review (no added review for not "passing" a logbook comparison or meeting other program rules).

2.4 Alternative 1 - No Action

The No Action alternative is considered to be the full implementation of the EM program and current set of regulations at 50 CFR Subpart J starting January 1, 2024[2], as well as the EM Manual and EM Guidelines. These requirements were developed through the Council process with input from prospective service providers, EFP vessel operators, industry members and the Council's advisory bodies. At the time of developing the regulations in (2017, 2019, and 2022), the deadlines and review methods were considered reasonable.

Under No Action, vessels would still be required to submit logbooks to EM providers within 24 hours and EM providers would be required to submit that data to NMFS within two business days after receipt from a vessel operator (Figure 5). In addition, EM Providers would have three weeks after receipt of logbooks and EM data from the vessel to provide feedback reports to vessels and submit EM summary reports to NMFS. Finally, the regulatory language that requires EM Providers to analyze EM data "for each trip using standardized estimation methods specified by NMFS" would remain in regulation and in the EM Manual. The EM Manual provides the general protocols for EM providers to follow to conduct the logbook audit. These steps to conduct the logbook audit protocols would remain as is under No Action.

Under No Action, we assume that the video review rate protocols set up in the EM Manual would be applied; therefore, the review percentage requirements may be as low as 25 percent for optimized retention (i.e., bottom trawl and fixed gear vessels) but remain at 100 percent for maximized retention (i.e., whiting and non-whiting midwater trawl). Maximized retention review would remain at 100 percent since it's been proven that this review rate is the lowest cost per seaday for these vessels. Vessels that use optimized retention could have review rates reduced to as low as 25 percent if they establish a record of good performance and agreement between logbooks and video review.

[2] Regulations will only become effectives after NMFS issues a public notice at least 90 calendar days before it will begin accepting applications for EM authorizations for the first year of the program.

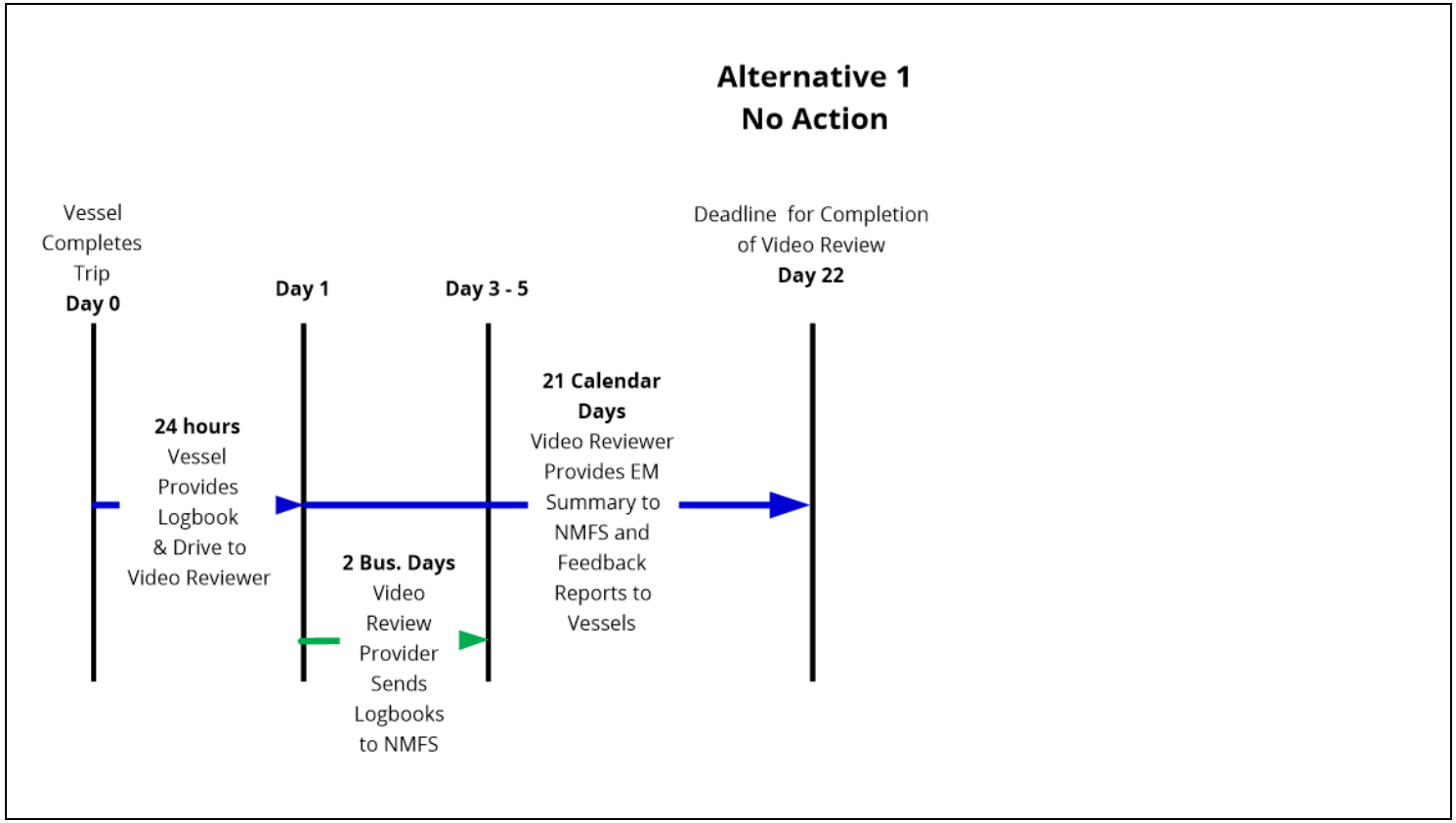

Figure 5. Schematic of logbook timeline for submission to video review provider and NMFS under No Action, Alternative 1. Note: Hard drives must be mailed-postmark within 72 hours of landing; however, they are typically sent with logbooks within the 24-hr mark as shown.

The following sections describe the regulatory requirements under the No Action alternative.

2.4.1 Discussion of Regulatory Requirements

2.4.1(a) Feedback Reports

Under regulations at § 660.603(m)(4), EM service providers are responsible for providing various feedback reports to vessel operators and field services staff, and data summaries to NMFS three weeks from the date of receipt of the data.

§ 660.603(m)(4):

> "The EM service provider must communicate with vessel operators and NMFS to coordinate data service needs, resolve specific program issues, and provide feedback on program operations. No later than ***three weeks from the date of receipt of EM data*** for processing from the vessel operator, the EM service provider must provide feedback to vessel representatives, field services staff, and NMFS regarding…"

The list of required reports includes logbook data, technical assistance, vessel operator feedback, EM summary data, and compliance reports. Generally, discards are initially debited from the Vessel Account system (VAS) using logbook data and discards in logbooks are audited using EM data. The VAS can be adjusted based on comparison/adjustment protocols that utilize the most accurate estimate (Appendix B and in EM Manual, Section 2.2.1 Overview of the Logbook Audit Model for the protocols).

EM reviewer feedback is required on EM systems, crew responsibilities, and any other information that would improve the quality and effectiveness of data collection on the vessel. For example, if a crew member is blocking a camera for a portion of a haul or trip, then EM estimates may be missing, and logbook comparison cannot be done. NMFS requires feedback to be submitted to vessels within three weeks of the date that EM data is received from the vessel operator for processing by the service provider to ensure corrections are made prior to subsequent trips. Concrete and enforceable deadlines are necessary to ensure service providers submit feedback reports in a timely manner and establish the data processing procedures to meet these deadlines.

It is important to provide timely feedback to vessel captains and crew on catch handling, EM system care, and other aspects of operations that affect data quality and completeness. Timely feedback to vessels helps ensure EM data is being collected and that the data is reliable in meeting the EM program monitoring goals under the Catch Share Program. If vessel operators and vessel account holders are unaware that corrections to the data collection process are needed via the feedback reports, subsequent trips may not provide the necessary data for logbook comparison. In addition, if the EM data shows that more discard occurred than what was recorded in a logbook and the vessel account data is updated, the vessel may be fishing in deficit on subsequent trips.

2.4.1(b) EM Summary Data Deadline

In addition, current regulations at § 660.603(m)(5) require service providers to submit EM summary data and compliance reports to NMFS following completion of video review within three weeks of the date the EM data was received from the vessel operator. EM summary data includes

discard estimates, fishing activity information, and trip metadata. Summary data and compliance reports are used by NMFS to debit vessel accounts, monitor program and vessel performance, and enforce requirements of the EM program. Trip metadata is an essential record of when and where EM data were created by the vessel, submission time, date and location of review, and point of contact for reviewers. Trip metadata ensures fishing data can be accurately corroborated with logbook data and is necessary for a complete chain of custody and accountability between the vessel, service provider, and NMFS.

50 CFR 660.603(m)(5):

> "Submission of data and reports. On behalf of vessels with which it has a contract (see § 660.604(k)), the EM service provider must submit to *NMFS* ***logbook data, EM summary reports, including discard estimates, fishing activity information***, and meta data (*e.g.,* image quality, reviewer name), and incident reports of compliance issues according to a NMFS-accepted EM Service Plan, which is required under paragraph (b)(1)(vii) of this section, and as described in the EM Program Manual or other written and oral instructions provided by the EM program, such that the EM program achieves its purpose as defined at § 660.600(b). ***Logbook data must be submitted to NMFS within two business days of receipt from the vessel operator. EM summary reports must be submitted within three weeks of the date the EM data was received by the EM service provider from the vessel operator***. If NMFS determines that the information does not meet these standards, NMFS may require the EM service provider to correct and resubmit the datasets and reports."

2.4.1(c) Logbook Data Deadline

Vessel operators are required to submit logbook data to their EM service provider within 24 hours of landing. EM service providers must then submit initial logbook data to NMFS within two days of receipt from vessel operators. This deadline ensures timely debiting of discards from vessel accounts, to provide clear expectations for all participants, and is consistent with submission timelines used for EM EFPs and West Coast Groundfish Observer Program (WCGOP) data. Setting the deadline based on the receipt of initial logbook data ensures service providers are not held responsible for late or incomplete submissions from vessel operators. After initial logbook submission, the EM service provider works with the vessel operator to review data and, if necessary, revise and submit updated logbook data. WCGOP uses the logbook data to initially debit discards from the vessel's quota share account. This needs to be done in a timely manner so that a vessel has the most current data when planning trips and ensuring the account has the proper amount of fish when landing its catch. Fishing when a deficit exists but has not yet been recorded in the data system is undesirable as it may further increase the size of the deficit, making it more challenging to cover negative balances prior to the next fishing trip or season.

The discard information from logbooks is used to calculate total mortality estimates for the groundfish fishery. A complete description of the methodology is contained in the most recent report by NMFS (NMFS 2022).

2.4.1(d) EM Discard Data Review Method

Under the EM program, EM providers are required to follow certain protocols to estimate discards from the video data (See Appendix B). Under the No Action alternative, the Federal regulations that require this standardized estimation method would remain as is.

50 CFR 660.603(m)(1):

> "The EM service provider must process vessels' EM data and logbooks according to a prescribed coverage level or sampling scheme, as specified by NMFS in consultation with the Council, and determine an estimate of discards for each trip using standardized estimation methods specified by NMFS. NMFS will maintain manuals for EM and logbook data processing protocols on its website."

In addition, providers would still be required follow the regulations that refer to the EM Manual and to provide a written method for development of the EM discard estimates (see EM Service Plan Guidelines, Section 2.2 - EM Service Plan):

> "As part of an application for an EM service provider permit and endorsement, a service provider must develop and submit an EM Service Plan (EMSP) that describes in detail how the applicant will provide EM services for vessels. NMFS has developed this EM Program Guidelines document to assist EM service providers with developing an EMSP that meets the requirements of the EM Program as laid out in the regulations at §660.603. The Guidelines describe the requirements for EM service providers, the required elements of the EMSP, as well as best practices, recommendations, and other information that NMFS will use to evaluate proposed EMSPs and to evaluate the performance of EM service providers in meeting the regulations to achieve the purpose of the EM Program. Specific requirements and standards for EM data processing, reporting, and other services are contained in the EM Program Manual on NMFS's website… "
> and…
>
> "An EM service provider may propose an alternative but equivalent method to any of the recommendations in this document in their EMSP, and NMFS may consider and approve those methods if they achieve the purpose of the EM program as defined at 50 CFR §660.600(b)."

These EM protocols, guidelines and manual were developed over four years ago and utilized the experience and expertise of EM providers and PSMFC. It's expected that in March and June of 2023, the EM Manual and guidelines will be used by prospective EM participants and EM providers to assist them in applying to participate in the EM program in 2024. In addition, EM providers will use this information to develop their individual methods for analyzing and summarizing the data.

2.4.2 Impact Analysis

2.4.2(a) General Impacts

The analysis for the action alternatives considers issues of individual accountability, data completeness, conservation, vessel costs, and projected video review costs in comparison to No Action. With the exception of the video review provider costs, the evaluation of these categories of impact is primarily qualitative and relative to No Action. Because of this, it is difficult to provide an analysis for no action without the context of the other alternative to which a comparison is being made, with the exception of video review costs, which are covered in the following section.

2.4.2(b) Projected Video Review Provider Costs under No Action

The development of the EM program from 2015 to 2019 included serval iterations of cost estimations (See Appendix C). In 2021, NMFS, members of the fishing industry, and prospective EM service providers developed updated cost estimates for the West Coast Groundfish EM program. In addition to PSMFC, NMFS received cost estimates from four prospective 3rd party EM service providers to provide projected per seaday costs for EM Vessels if the program is implemented under No Action. NMFS established the final rules accordingly and relied heavily on EM providers input regarding interpretation of the draft requirements, including cost incurred by PSMFC to conduct video review for the industry.

During the EFP, vessel owners were responsible for purchasing or leasing and installing EM systems, and for service and maintenance of the EM systems. When the EM program transitions to regulations, vessel owners will continue to be responsible for these items, as well as review of the video data, reporting of data to NMFS, and storage of the EM data and other records. This analysis does not include estimates for these costs; however, NMFS estimates that were developed in can be found in Appendix C from NMFS 2022 RIR.

Under No Action, we assume that the video review rate protocols set up in the EM Manual would be applied as well. If so, then the review percentage requirements may be as low as 25 percent for optimized retention (i.e., bottom trawl and fixed gear vessels) and 100 percent for maximized retention (i.e., whiting and non-whiting midwater trawl). To establish a baseline of potential review costs and estimate how costs may shift, be reduced, or increase under the No Action alternative, we provide costs estimates at the current review rate of 100 percent for maximized retention and 25 percent for optimized retention. We assume all vessels would be reviewed at these rates with a turnaround time of three weeks for EM feedback reports and NMFS summary reports as well as a 2-business day submission time for logbooks. When creating the estimates, we again assumed that all bottom trawl and fixed gear trips would pass via the EM/logbook comparison protocols (i.e., pass/fail business rules) and would not require additional review.

Since the No Action has not yet been implemented and the fishery has not operated under these potential review rates, we must create estimates of potential costs under No Action. Updated estimates were provided by PSMFC using the parameters and assumptions above (Table 7). The details for the additional inputs and assumptions that were used to create Table 7 can be found after Table 6 in Section 2.1.2.

Under the No Action, with assumed 100 percent and 25 percent video review requirements (depending on retention method), it's expected that the 3-week turnaround time for reports and 2

business day logbook requirement will result in higher program costs. As shown in Table 7, cost of video review will vary by gear and retention requirements. Video data from hauls with selective gear and homogenous target species (e.g., maximized retention midwater whiting) requires shorter review time. Catch with less selective gear with more diverse species complexes (e.g., bottom trawl) require additional time for crew to sort and will require additional time for reviewers to process video data. We note that costs are estimated to increase beyond what is currently seen under Status Quo. Even though the review rates may decrease from 100 percent to 25 percent for optimized retention fisheries (bottom trawl and fixed gear), the cost of additional effort to accommodate the three-week turnaround time causes an increase in variable and fixed costs. Overall projected costs under the No Action alternative are $576,720.

Table 7. No Action - Estimated PSMFC EM review costs by fleet at variable rates of review with a 3-week turnaround time (from hard drive receipt until vessel accounts are debited).

	Per Sea Day 100% Review	Per Sea Day 25% Review	
	Midwater Trawl	**Fixed Gear (Pot)**	**Bottom Trawl**
Review Time Variable Cost (video review)	$23.97	$75.96	$112.72
Review Time Fixed Costs*	$72.26	$72.26	$72.26
Admin Cost**	$47.15	$47.15	$47.15
Archive Storage Cost	$0.36	$0.25	$0.35
TOTAL PER SEA DAY	$143.75	$195.63	$232.49
TOTAL FLEET COST	$445,337	$51,059	$80,324
PSMFC TOTAL EST. PROGRAM COSTS FOR REVIEW		**$576,720**	

*Other review work includes tracking, reporting, communication with vessels, etc.

**Program management, logbook data entry, QA/QC, database maintenance, mailing hard drives, etc.

Note: Table does not include cost of EM equipment, maintenance of EM equipment or reviews that fail and must be reviewed at 100 percent.

2.5 Alternative 2 - No More than 60 Days to Submit Feedback/EM Summary Reports

Under alternative 2, EM providers would have 60 days to submit feedback to vessels and the EM summary report to NMFS (Figure 6). The GEMPAC/TAC recommended 60 days as an alternative to the current three-week requirement to provide flexibility to meet the deadline. This alternative would not require an FMP amendment but require an amendment of Federal regulations at (660.603(m)(4)).

Under the developing EM program, and discussed under status quo, reporting timelines have ranged from less than 21 days after receipt of the hard drive in 2015 through 2017 to one to two months and greater during periods of higher fishing activity in 2019 to 2020 (Figure 2). When the original deadline was developed, it was thought that three weeks was a reasonable timeframe to complete video review. However, as the program developed and more vessels joined the EFP program, video review data coming in for review increased, including the peak/pulse volumes. If the current requirements are to be met without increasing costs to handle peaks and pulses, more time for EM providers to process the EM data may be needed.

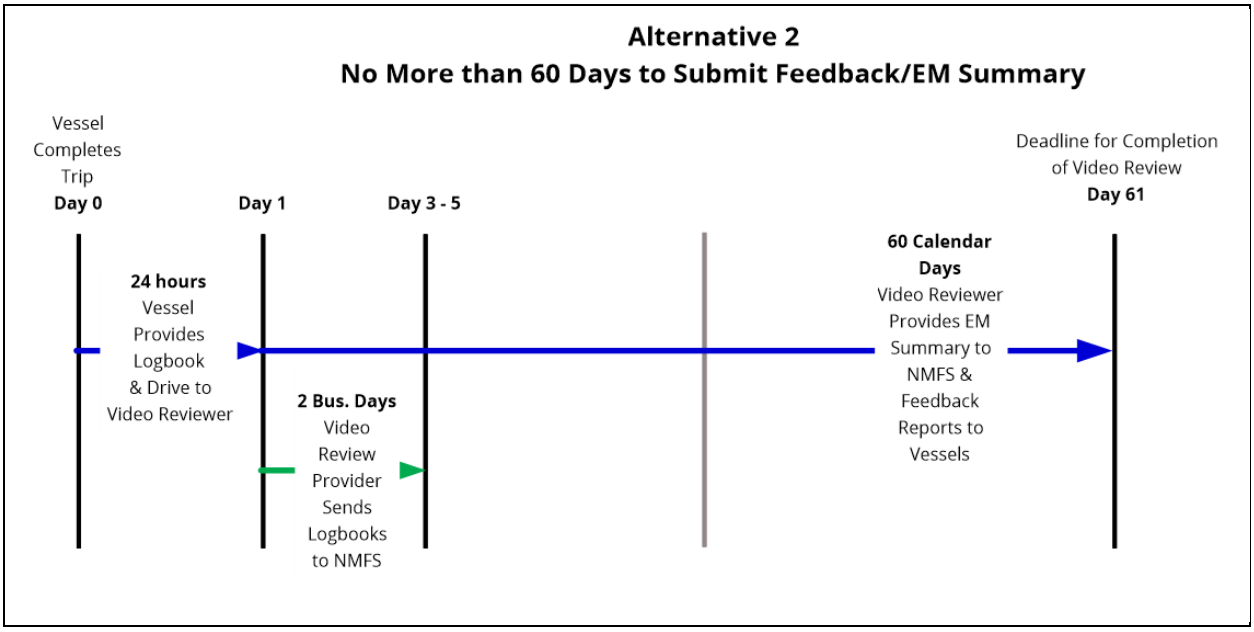

Figure 6. Schematic of logbook timeline for submission to video review provider and NMFS under Alternative 2. Note: Hard drives must be mailed-postmark within 72 hours of landing; however, they are typically sent with logbooks within the 24-hr mark as shown.

2.5.1 Impact Analysis

EM Providers are required to summarize the data per the current regulations and submit this information to vessels and NMFS. Compared to the No Action alternative, extending the timeline for submission may provide more flexibility to handle pulses of hard drive submissions to EM providers, especially during increased fishing activity in the summer and early fall (Figure 3). In addition, providers may not have to employ and train more reviewers during peak seasons;

therefore, an extension could limit the need for additional full-time employees to meet the 3-week deadline vs a 60-day. This alternative could also allow EM Providers to provide more accurate estimated costs to potential EM participants via estimating video review workload (i.e., number of employees needed to provide timely review). For example, an EM provider may be able to more accurately assess the necessary number of employees and expertise/training needed to meet a 60-day objective versus a three-week turnaround time, in turn keeping coast down and enticing potential EM participants to utilize their services.

EM program participants will experience longer timelines between video submission and receipt of vessel feedback reports. Longer time frames may cause a delay in corrective actions when data collection issues arise and are not known by the vessel operator (i.e., sensor or video data gaps, camera blocked/clouded, poor camera position, etc.) resulting in loss of data (See Appendix D for an example of a feedback report).

The average number of trips per hard drive is greater than one for each fishery and the number of hauls per hard drive varies greatly between fisheries (Table 5). For example, the mothership catcher vessels in the midwater trawl whiting fishery have an average of 22.9 hauls per hard drive and the non-whiting midwater trawl fishery has an average of 2.3 hauls per hard drive. Therefore, if a vessel turns in more than one hard drive per month (on average no more than 4 per month are submitted in each fishery), the number of trips and hauls that need review in a 60-day period can increase four-fold or more in that period. If a systemic problem causing data loss or the inability to corroborate logbook entries is found for those trips and hauls, then the correction may not be made for potentially more than 60 days after a hard drive submission. Any additional trips that are recorded on a new hard drive may contain similar issues.

The magnitude of compounding data loss could be assessed using the 2019 EA to implement the EM program (NMFS 2019). As shown in Table 8, EM data loss was minimal as noted under "missing trips". The 2016 and 2017 lost trips resulted from single corrupt hard drives with multiple trips on them. According to PSMFC staff, in recent years corrupt hard drives are considered rare events. As discussed under No Action, if logbook data cannot be corroborated, then the logbook data would be used to debit vessel accounts.

Uncertainty in discard estimates can arise from data gaps resulting from system malfunctions, non-compliance, or other issues. In 2015-2017 (when turnaround times were 3 weeks), approximately 5, 3, and 4 percent of trips (respectively) had gaps in video imagery (Table 8). The majority of these were small interruptions of a few minutes caused by short power interruptions and generally did not disrupt monitoring of catch sorting. A total of 4 trips each year (less than 0.01 percent of all trips) were missing video imagery from a complete haul and 1, 4, and 7 trips, respectively, had no imagery at all.

Table 8. Summary of gaps in video footage in 2015-2017. Source: NMFS 2019; Data from EM trips through December 11, 2017.

Year	Fishery	Total Vessels	Total Trips	Trips with Gaps	Trips with Missing Haul	Missing Trip
2015	Bottom trawl	6	24	6	0	0
	Fixed Gear (pot)	7	58	8	0	1
	Midwater Trawl Whiting - Shoreside Hake	17	483	15	3	0
	Midwater Trawl Whiting - Mothership Catcher Vessel	10	*na*	1	1	0
2016	Bottom trawl	9	109	14	0	0
	Fixed Gear	6	70	4	0	0
	Non-whiting Midwater Trawl	6	33	0	0	0
	Midwater Trawl Whiting - Shoreside Hake	20	651	4	3	4
	Midwater Trawl Whiting - Mothership Catcher Vessel	*na*	*na*	1	1	0
2017	Bottom trawl	11	159	15	0	0
	Fixed Gear	9	81	4	1	0
	Non-whiting Midwater Trawl	9	43	0	0	0
	Midwater Trawl Whiting - Shoreside Hake	22	1103	30	3	7
	Midwater Trawl Whiting - Mothership Catcher Vessel	14	*na*	1	0	0

Source: NMFS 2019; Data from EM trips through December 11, 2017.

As stated in the NMFS 2019 analysis, video gaps could affect NMFS's ability to account for discards, particularly if it occurred during a "lightning-strike", a rare bycatch event of a large volume of an overfished species. Although data gaps are rare, lightning strikes are also rare. So, although unlikely, if they coincided because of a system malfunction or an attempt to hide the bycatch event, NMFS may not be able to detect and account for the lightning strike if it was not otherwise reported. In the 2015-2016 EFPs, two lightning strike events occurred and both vessels were using EM without an observer onboard. Both events were reported by the captains in their logbooks, recorded by the cameras, and delivered to a plant/mothership for accounting. This suggests that the regulations and monitoring and enforcement programs in the fishery provide sufficient protections and counterincentives to discourage misreporting of catch. As such bycatch events are rare, and misreporting of them even rarer, it appears that data gaps would not be likely to substantially affect NMFS's ability to account for discards of IFQ species in the EM program, so long as the compliance ethic is maintained.

We expect some minor changes to NMFS administration of the EM program under Alternative 2. NMFS would continue to receive the EM data, but on a less frequent timeframe to update the vessel accounts as needed. In addition, this may delay any secondary review by NFMS to conduct

quality assurance and control checks (QA/QC) on EM providers; however, these quality control checks would continue to be conducted as needed by NMFS under Alternative 2 regardless of the turnaround time. In addition, corrections regarding EM estimation methods would ensue, as needed regardless of the timeline for when NMFS receive video records for QA/QC. We do not have information from NMFS indicating a delay in receiving this information would cause substantial conservation concerns or cause an impact on the EM program.

Enforcement relies on the EM feedback reports to identify any issues detected during the review, including delays in hard drive and logbook submissions. Therefore, a longer time frame to receive reports could cause delays in follow-ups with vessels. The timeliness of the follow-ups not only provides vessels feedback on the importance of the timeliness of their submissions but also, in cases where an infraction is suspected, allows enforcement to begin its investigation while evidence and witnesses are still available. This ability is essential to effective enforcement which in turn contributed to a positive compliance environment. As stated, delays can be up to 60 days under alternative 2; similar delays have been observed during the development of the program. It's unclear how the impact of the delays observed during development of the program over the past four years might be similar to or different from the impacts that occur once the program is in place.

2.5.2 Impact: Individual Accountability

Effective functioning of the catch share program requires individual accountability and individuals cannot be accountable if they are not in compliance with the catch share program. West Coast fisheries can be managed most effectively and with the least enforcement cost when there is a high compliance ethic—when fishermen comply with the regulations whether there is a chance of being monitored or not. In any group of people, there are often a few that decide not to comply with rules and, if they are successful in doing so, there are a few more that will follow suit. Research indicates that there may be social tipping points with compliance (see Betreger et al., 2021[3] for a discussion). These tipping points can move a community toward either a culture of compliance or one of non-compliance. If an ethic of non-compliance takes hold, in some cases it has been found that punitive measures must be unexpectedly harsh to enable change back toward a culture or compliance.

A number of factors may be correlated with program compliance that are only indirectly related to the presence of effective monitoring. Some of the strongest of those factors may be a sense of moral obligation, involvement in the regulatory process, and whether one thinks others are complying (Hatcher, et al, 2000[4]). If a fisherman does not believe others are complying, there may be a higher likelihood of not complying themselves.

[3] Bretreger, D., Yeo, I.-Y., Kuczera, G., & Hancock, G. (2021). Remote sensing's role in improving transboundary water regulation and compliance: The Murray-Darling Basin, Australia. *Journal of Hydrology X*, *13*, 100112. https://doi.org/10.1016/j.hydroa.2021.100112

[4] Hatcher, A., Jaffry, S., Thébaud, O., & Bennett, E. (2000). Normative and Social Influences Affecting Compliance with Fishery Regulations. *Land Economics*, *76*(3), 448–461. https://doi.org/10.2307/3147040

More directly related to EM, and typically associated with compliance, are an individual's expectations about being detected and the expected size of the fine, if caught (Hatcher, et al, 2000). Thus, if fishermen believe EM to be reasonably effective, it may influence compliance directly by increasing their belief that it is likely their own non-compliance would be detected, and indirectly by increasing their belief that others are likely to comply.

Paired with consideration of the probability of detection is the size of the associated fine. And, the size of that fine is impacted by enforcement's ability to make a case that a violation has occurred and reliably identify the responsible parties. The Council's Enforcement Consultants have indicated that making such cases requires collection of additional information about an incident from witnesses and other sources and that as the time between an incident and seeking the additional information increases, the ability to collect it decreases. Some of the factors at work are the availability of and memory reliability of witnesses regarding events that are in the increasingly distant past.

The opportunity that the feedback reports provide managers and enforcement personnel to contact vessels that are having compliance difficulties provides nudges may be helpful in reducing administrative and enforcement costs (Linos et al., 2019[5]).[6] Delays in the opportunity to provide these nudges may reduce their effectiveness due to the additional incidences of data loss that occur in the interim.

Relative to No Action, Alternative 2 impacts the program by increasing by up to 39 days the time between when an adverse event is detected on video and vessel operators receive feedback or enforcement is able to begin collecting evidence to complete the case for a violation. For unintentionally non-compliant vessel operators, the delay in feedback mainly means a loss in data and individual accountability for the period prior to when corrective action is taken. For someone who is intentionally non-compliant, there is a possibility of some diminishment in compliance and the compliance ethic in the fishery and consequently a possibility of some reduction in individual accountability. This would be due to the additional trips they make without being contacted about non-compliance and an increase in the frequency of occurrences where enforcement contacts them but is not able to collect the data needed to make an effective case. The degree is uncertain and the weight of a sense of moral obligation in determining fishermen's behavior provides a countervailing factor that should be taken into account.

2.5.3 Impact: Data Completeness

Discards identified in logbook data are used to monitor total catch (verified discards plus verified landed catch). Video data is used to crosscheck what fisherman record in the discard logbooks.

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[5] Linos, E., Quan, L. T., & Kirkman, E. (2020). Nudging early reduces administrative burden: Three field experiments to improve code enforcement. *Journal of Policy Analysis and Management*, *39*(1), 243–265. https://doi.org/10.1002/pam.22178

[6] Linos et al. (2020) covered three different studies of the enforcement of housing codes and showed that early compliance nudges can reduce enforcement costs. With these nudges "the number of properties that continued onto court hearings from persistent code violations decreased, realizing significant cost savings for both property owners and local governments. We estimate these savings to range from 6 to 15 percent of annual city enforcement budgets" (Linos et al., 2019).

Sources of differences include, for example, logbook recording errors and differences in the estimation acuity of the fishermen and the video reviewers.

Video data loss (and lost opportunity for crosschecking) can come from several causes including improper sorting (not showing catch to the camera), discard of species that should be retained, and obscured camera views (see further discussion in Section 2.5.1). Whether loss of video data is an actual loss of fishing data depends on whether the events are accurately recorded in logbooks.

Sources of data loss need to be corrected as soon as possible, so that the errors are not repeated. The longer the time between when an incident occurs and when the fishermen is contacted about the problem, the greater the probability is that additional data will be lost through repetition of whatever conditions caused the incident. Under Alternative 2, the time would increase by up to 39 days, relative to Alternative 1, No Action.

2.5.4 Impact: Conservation Concerns

As a result of the proposed extension of the review deadline under Alternative 2, total vessel catch could increase if vessels unknowingly fish into a deficit or if there is a decrease in individual accountability (see discussion in Section 2.5.2 on individual accountability). With respect to a vessel fishing into deficit, the biological impacts would be expected to be minimal. This is because vessels still must cover their overages with QP, even if they come from the following year (deficit carryover). While using QP from a following year to cover catch in the current year could result in an overage in the current year, the deficit carryover would reduce the QP available in the following year, largely mitigating any impact from such an overage, particularly with respect to groundfish, which tend to be longer lived. Thus, there would be little impact on the fleet's total catch and mortality to the stock. Regardless of the degree to which overage carryovers might increase, they would still be within the limits originally analyzed for the program and continue to be accounted for in the annual mortality estimates.

If a reduction in data completeness were to occur, either through a reduction in individual accountability or completeness of the video data, there could be some loss of information on total catch. This might be a more likely outcome for species that are particularly constraining to harvest, if financial stress leads a vessel operator to attempt to under account for them. However, the status of those constraining species (such as species that are highly attained or overfished) are generally carefully monitored by the Council. Therefore, significant systematic losses of information would likely be detected, and deterioration in stock condition would not likely be irreversible.

Relative to No Action, Alternative 2 would extend the maximum lag between trip completion and video-based updates from 21 days to 60 days (a 39-day increase).

2.5.5 Impact: Vessel Costs

The alternatives include impact mechanisms that could have downward and upward influences on vessel costs. With respect to downward influences, vessel operating costs may be reduced to the degree that 1) there is a reduction in video reviewer costs and 2) those cost reductions are passed along to vessels. Reduction in video reviewer costs is discussed in the following section.

With respect to upward influences, delayed information about the amount of QP a vessel uses on a trip could increase costs related to deficits. Vessels that do not have sufficient QP to cover their catch are required to cover those deficits and may not resume fishing until they do, even if they cannot locate the QP they need until the following year. Increasing the time between the completion of a fishing trip and video-based account balance updates increases the chance that 1) vessels may unknowingly fish further into deficit, further increasing the amount of QP they must acquire to cover the deficits, and 2) vessels will be trying to acquire QP when less unused QP is available. For many species, QP availability is not likely an issue because attainment levels are low and there is plenty of surplus QP. For some of the more highly attained species (e.g., northern sablefish, petrale sole, widow rockfish, and, in some years whiting), prices may be higher later in the year. Further, if QP cannot be located, additional trips may need to be forgone. The degree to which these costs are of concern to a vessel will be related to the vessel operator's ability to make logbook estimates that match those of video reviewers. Relative to No Action, Alternative 2 would extend the maximum lag between trip completion and video-based updates from 21 days to 60 days (a 39-day increase).

2.5.6 Impact: Projected Video Reviewer Costs Under Alternative 2

Estimated costs regarding implementation of Alternative 2 are shown in Table 9. This estimate includes a data turnaround time of approximately 40-60 days. A description of the information used to create these estimates can be found in 2.3.2 after Table 6. Overall program costs for video review under Alternative 2 are projected to be $453,677 and would be less than the No Action alternative of $576,720. If Alternative 2 is implemented, then a 60-day turnaround time may reduce overall program costs by $123,042.

Table 9. Alternative 2 - Estimated PSMFC EM Review Costs by Fleet at variable rates of review with a 40-60-day turnaround (from hard drive receipt until vessel accounts are debited).

	Per Sea Day 100% Review	Per Sea Day 25% Review	
	Midwater Trawl	**Fixed Gear (Pot)**	**Bottom Trawl**
Review Time Variable Cost (video review)	$16.61	$52.64	$78.11
Review Time Fixed Costs*	$50.08	$50.08	$50.08
Admin Cost**	$47.15	$47.15	$47.15
Archive Storage Cost	$0.36	$0.25	$0.35
TOTAL PER SEA DAY	$114.20	$150.12	$175.69
TOTAL FLEET COST	$353,796	$39,181	$60,701
PSMFC TOTAL EST. PROGRAM COSTS FOR REVIEW		**$453,678**	

*Other review work includes tracking, reporting, communication with vessels, etc.
**Program management, logbook data entry, QA/QC, database maintenance, mailing hard drives, etc.
Note: Table does not include cost of EM equipment, maintenance of EM equipment or reviews that fail and must be reviewed at 100 percent.

2.5.7 Interaction with Other Action Alternatives

This alternative and Alternative 3 are mutually exclusive of one another. See Section 2.7.2 for a discussion of the interaction between this alternative and Alternative 4. There is no interaction between this alternative and Alternative 5, the impacts of this alternative would be additive to impacts of Alternative 5.

2.6 Alternative 3 - No More than 90 Days to Submit Feedback/EM Summary Reports

Under Alternative 3, EM providers would have 90 days to submit feedback to vessels and EM summary report to NMFS (Figure 7).

Similar to alternative 2, the GEMPAC/TAC recommended 90 days as an alternative to the current three-week requirement. This alternative would provide the most flexibility compared to Alternative 2 and the No Action Alternative. This change would not require an FMP amendment but would require an amendment of Federal regulations at 660.603(m)(4).

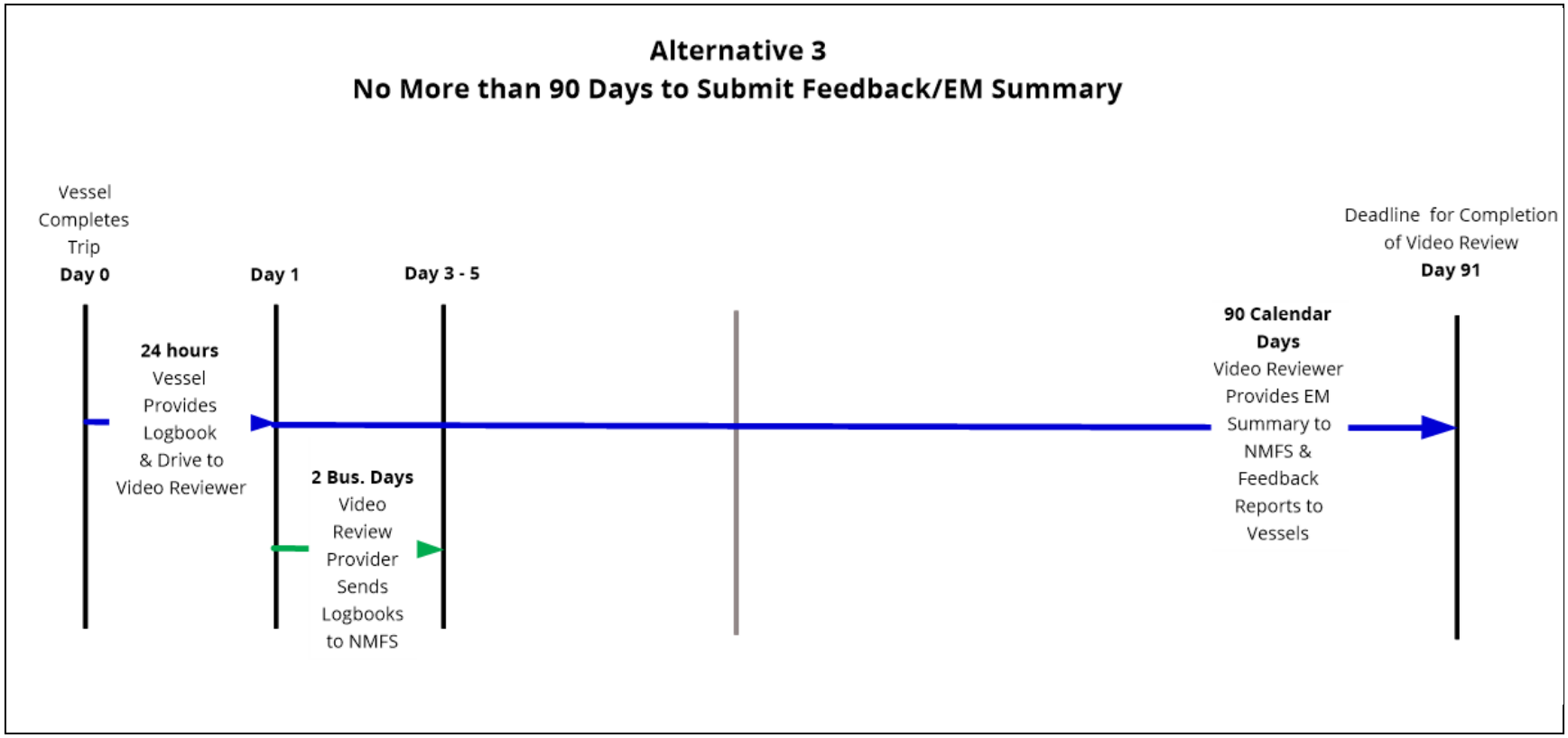

Figure 7. Schematic of logbook timeline for submission to video review provider and NMFS under Alternative 3. Note: Hard drives must be mailed-postmark within 72 hours of landing; however, they are typically sent with logbooks within the 24-hr mark as shown.

2.6.1 Impact Analysis

As described in Section 2.5 subsections on impacts, a greater lag between trip completions and video-based updates of logbook information has some chance of having an adverse impact on individual accountability, data completeness, conservation and some vessel costs, while potentially reducing video reviewer costs (and having an indirect positive impact on vessel costs—to the degree that cost savings are passed on to vessels). Relative to Status Quo (under which most video review turn-around times occurred within 90-days), there would be little change under Alternative 3. Relative to No Action, Alternative 3 would extend the regulatorily allowed lag between trip completion and video-based updates from 21 days to 90 days (a 69-day increase, 30 more than under Alternative 2). Unlike Alternatives 1 and 2, for Alternative 3 there are no quantitative projections available for video reviewer costs.

In addition to the categories of impacts described under alternative 2, there is concern that delays of up to 90 days in finalizing EM discard data could affect NMFS administration through longer delays of secondary reviews of EM providers by NMFS and could affect timely corrective action regarding discard estimation methods. This could cause data discrepancies or loss of data if EM providers continue to use incorrect methods to estimate discards for multiple vessels for a longer period of time. However as discussed under Alternative 2, NFMS would continue to conduct quality assurance and control checks (QA/QC) on EM providers and corrective measures regarding EM estimation methods would ensue, as needed, regardless of the timeline for when NMFS receives video records for QA/QC. We do not have information from NMFS indicating a delay in receiving this information would cause substantial conservation concerns or cause an impact on the EM program.

We do not have cost estimates associated with Alternative 3; however, we expect that additional time and flexibility to review EM data would create the highest cost savings compared to Alternative 2 and the No Action. We expect that this alternative would create more cost savings than Alternative 2 and even more compared to No Action.

2.6.2 Interaction with Other Alternatives

This alternative and Alternative 2 are mutually exclusive of one another. See Section 2.7.2 for a discussion of the interaction between this alternative and Alternative 4. There is no interaction between this alternative and Alternative 5, the impacts of this alternative would be additive to impacts of Alternative 5.

2.7 Alternative 4 - No More than Seven Business Days for EM Providers to Submit Logbooks to NMFS

Under alternative 4, EM providers would be required to submit logbook data to NMFS within seven business days of receipt from the vessel operator (Figure 8). The timeline for the data to be entered, verified as accurate, and then submitted to NMFS is challenging to meet when several vessels submit logbooks at one time; however, according to PSMFC logbook submissions rarely exceeded seven days. Therefore, this alternative was developed by the GEMPAC/TAC to provide

more flexibility to EM providers to meet this deadline. This alternative would not require an FMP amendment but would require an amendment of Federal regulations at (660.603(m)(5)).

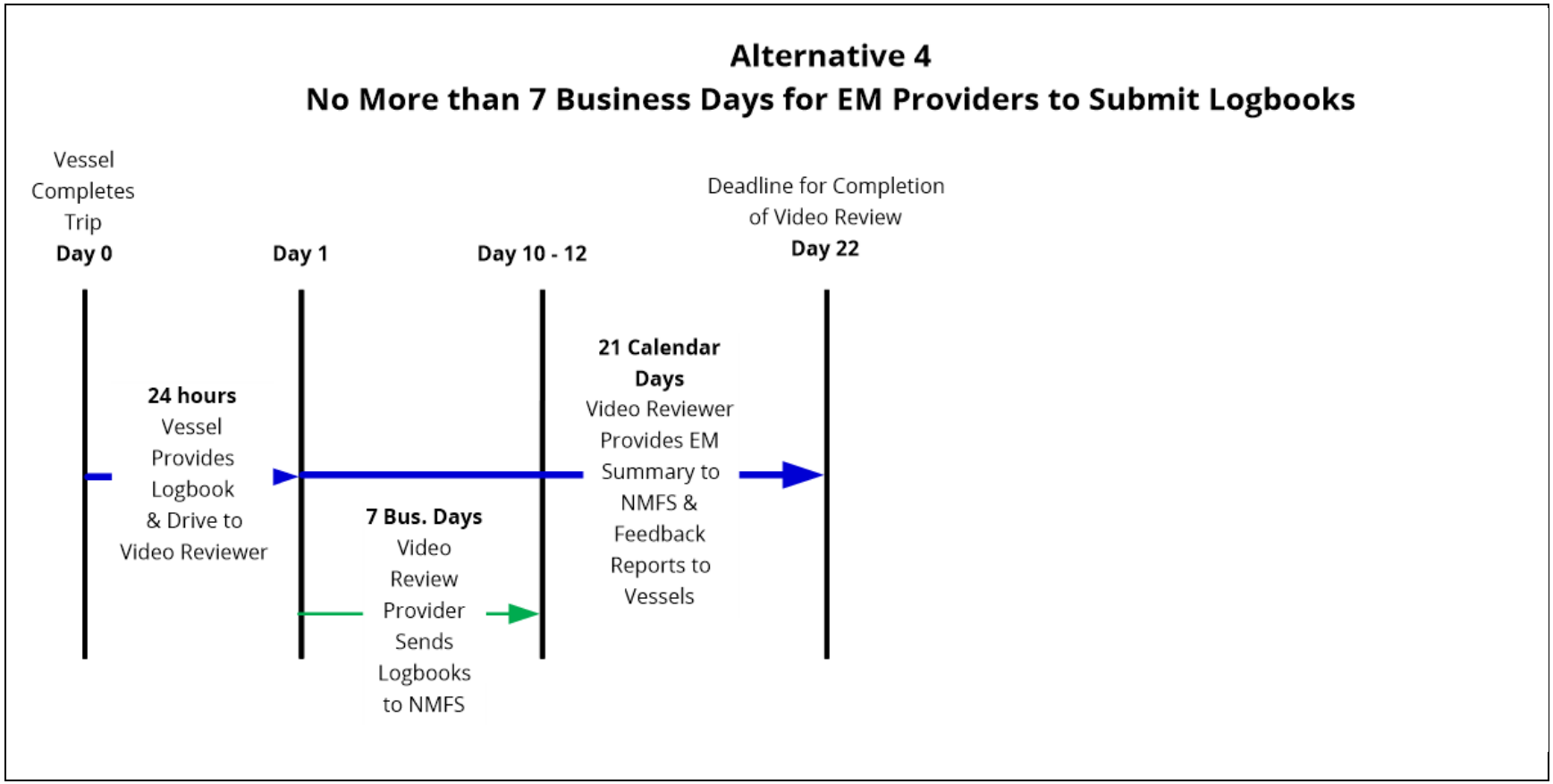

Figure 8. Schematic of logbook timeline for submission to video review provider and NMFS under Alternative 4. Note: Hard drives must be mailed-postmark within 72 hours of landing; however, they are typically sent with logbooks within the 24-hr mark as shown.

2.7.1 Impact Analysis

Vessel operators are required to submit logbook data to their EM service provider within 24 hours of landing. Under Alternative 4, EM service providers must then submit initial logbook data to NMFS within 7 business days of receipt from vessel operators to document fishing trips and ensure all fish that are legally discarded are accounted for under the IFQ program. The data is used, initially, to debit vessel accounts before it is corroborated with the EM review. Compared to the No Action alternative, video review providers would be allowed five more business days (seven business days total, i.e., up to 11 calendar days) to submit logbook data to NMFS.

We do not expect substantial changes to enforcement or NMFS administration of the logbook data if the deadline is changed; therefore, we expect most impacts of Alternative 4 to be similar to the No Action. As noted, vessel account updates would be less timely since initial debits to accounts are based on logbook information. Enforcement would continue to monitor and enforce deadlines for submission of the logbook. This alternative would help to reduce video reviewer costs in that they would not have to add personnel to handle peaks in pulses in logbook and hard drive submission. However, this change would not impact the video review deadline (considered under Alternatives 2 and 3). The deadlines are not sequential, both are set based on the date the vessel provides its logbook and hard drive to the video reviewer. Since Alternative 4 would not impact the time frame for completion of video review, it is not expected to impact individual accountability, data completeness, or conservation. It may reduce vessel costs if reduced video reviewer costs (through longer time frame to submit the data to NMFS) are passed on to vessels.

As discussed under Alternative 3 with respect to an allowance for more time to complete a video review, a longer time to submit logbook data may result in a delay in updating vessel accounts with that information. It's unclear if vessel operators and account holders rely solely on the logbook to strategize subsequent fishing trips before that data is incorporated into their account balances. However, we would expect fisherman to personally monitor discards via their logbooks and track any change in their accounts to prevent surprise overages once their logbook data is incorporated into the system, especially for high-demand species like sablefish. Alternative 4 by providing more flexibility around the logbook transmission task, may generate more flexibility to manage data flow and hard drive submissions, in turn reducing the likelihood of back log of video review tasks. EM and logbook data have been sufficiently similar that logbook data is considered reliable for use in debiting accounts (See tables Figures 6 through 13, NMFS 2019).

2.7.2 Interaction with Other Action Alternatives

Note that the extension of the turnaround time for transmission of logbook information proposed in Alternative 4 does not directly interact with the extension of the video review time in Alternatives 2 and 3 in that deadlines are not sequential, the additional submission time does not extend the amount of time provided for completion of the video review. The indirect interaction is that the flexibility provided for processing logbook submissions could help buffer the challenges in dealing with the video review schedule if the same personnel are employed in both activities. For example, rather than switching from video review to processing logbooks within the required two-day period, personnel might continue to work on meeting video review timelines and when

those are met, switch back to processing logbooks to meet the seven-day deadline for transmitting logbooks. The other interaction is only additive: to the degree that there is a cost savings from a longer logbook transmission deadline, it would add to cost savings from a longer video review deadline.

There is no interaction between Alternative 4 and Alternative 5.

2.8 Alternative 5 - Revise EM Discard Data Review Language

Under alternative 5, the language in section 50 CFR 660.603(m)(1) would be revised from:

> "The EM service provider must process vessels' EM data and logbooks according to a prescribed coverage level or sampling scheme, as specified by NMFS in consultation with the Council, and determine an estimate of discards for each trip using standardized estimation methods specified by NMFS. NMFS will maintain manuals for EM and logbook data processing protocols on its website."

to be:

"The EM service provider must process vessels' EM data and logbooks according to a prescribed review methodology, as specified by NMFS in the EM Manual on its website."

2.8.1 Discussion of Regulatory Language Changes

The EM Manual provides the general protocols for EM providers to follow to conduct the logbook audit (See steps 1-8 in Section 2.2.1 Overview of the Logbook Audit Model). The steps to conduct the logbook audit protocols would not change if the "standardized estimation method" language was removed from the regulations. EM providers would benefit from clear and consistent language between the regulations and the EM Manual. The language that describes the logbook data processing protocols in the current EM Manual (See Section 2.2.1 Overview of the Logbook Audit Model) reads:

> "Under a logbook audit model, EM is used to validate the self-reported logbook discards submitted by the vessel operator. Vessel operators are expected to accurately report catch and discards with estimated weights and correct species identification. During EM review, the EM service provider will create independent *discard estimates for sampled hauls*, and based on the comparison of the two, NMFS will use either EM or logbook data for the final discard estimate to debit the vessel's IFQ account."

The intent of the original regulatory language was to guide each qualified provider to develop a method for discard estimation using general protocols outlined in the EM Manual that provides NMFS the desired data and for NMFS to determine if the data is collected consistently and appropriately by each EM provider. The EM Manual provides the general protocols for EM providers to follow to conduct the logbook audit are found in steps 1-8 in Section 2.2.1 Overview of the Logbook Audit Model. The current regulatory language could be interpreted that only one method must be used by all EM providers to "determine an estimate of discards for each trip."

In addition, the current regulatory language is incorrect since it specifies EM providers need to *determine an estimate of discards for each trip.* Rather the estimation method outlined in the EM Manual requires sampling percentages to be based on the hauls for each trip (See Step 5 in Section 2.2.1 Overview of the Logbook Audit Model).

Finally, the EM Manual was developed to assist all EM program participants on how to comply with the current set of regulations. NMFS in consultation with the Council may review the EM manual for consistency with the regulations and to ensure the information is clear and appropriate for all users.

However, the proposed text removes the Council's ability to review potential changes (i.e., deletion of "...in consultation with the Council....") This language was developed to ensure that any proposed changes to the EM Manual would be reviewed by the Council prior to implementation. This language is similar to the language developed at 50 CFR 660.600(b) regarding review of the EM Program Guidelines:

> "**EM program purpose**. The purpose of the EM program is to provide NMFS with the best scientific information available to determine individual accountability for catch (including discards) of IFQ species and compliance with requirements of the Shorebased IFQ Program (§ 660.140) and MS Co-op Program (§ 660.150). NMFS will develop EM Program Guidelines, which will document best practices and other information that NMFS will use to evaluate proposed service and vessel monitoring plans submitted by EM service providers and vessel owners under this subpart, and to evaluate the performance of EM service providers and vessels, in meeting the requirements of this subpart to achieve the purpose of the EM program. *NMFS will develop the EM Program Guidelines in consultation with the Council and publish notice of their availability in the Federal Register.* NMFS will maintain the EM Program Guidelines on its website and make them available to vessel owners and operators and EM service providers to assist in developing service plans and vessel monitoring plans that comply with the requirements of this subpart and meet the purpose of the EM program."

Alternative 5 proposes language to direct EM providers to the EM Manual for the prescribed review methodology as specified by NMFS. The intent of the proposed changes would also ensure performance standards provide the flexibility that allows for innovation and improvements that can potentially result in lower costs and greater benefits. Finally, the proposed changes would correct the language regarding discard estimations be based on hauls for each trip. .

This alternative would not require an FMP amendment but require a change the Federal regulations at 50 CFR 660.603(m)(1). If the regulatory change is made, then the language in the EM Manual in Section 2.2.3 EM Data Processing would need to be revised.

2.8.2 Impact Analysis

Under Alternative 5, it's expected that clarification of the estimation method language in the regulations and the EM Manual would not directly affect EM participants (i.e., vessel operators and vessel account owners) nor enforcement since this information is only applicable to EM providers and NMFS West Coast Region.

Impacts to EM providers are expected to be minimal under Alternative 5 but may allow for future innovations that decrease costs. EM Providers would still need to seek approval from NMFS to be an EM provider and still be required to estimate a subset of all EM video to validate the discards identified and estimated in the logbook as discussed under the No Action Alternative. EM providers would benefit from clear and consistent language between the regulations and the EM Manual. The intent of the proposed changes would ensure performance standards provide the flexibility that allows for innovation and improvements that can potentially result in lower costs and greater benefits. The regulatory changes would clarify that there is flexibility for EM providers to develop their own methods, as long as those methods meet NMFS performance requirements.

NMFS administration would likely not be impacted if the language was modified since they would continue to evaluate the methods proposed by each EM provider to determine whether they meet performance requirements. The existing language may impose challenges to NMFS if multiple EM providers are seeking to understand how to create a standardize estimation method (as might be interpreted under the existing regulatory language). However, other than this, NMFS would continue to work with EM providers seeking approval as a provider, conduct quality control checks, assist providers to refine a method to get the desired results for management of vessel accounts and ensure the collection of other pertinent information.

No changes to fiscal costs of the program are expected under this alternative since the changes would not affect a vessels operators or vessel account holder's ability to participate in the program. EM providers

2.8.3 Interaction with Other Action Alternatives

There is no interaction between Alternative 5 and the other action alternatives. Alternative 5 is additive in terms of its contribution to the specification of a well-functioning program.

3.0 COMPARISON OF ALTERNATIVES

Table 10. Summary of alternatives and major impacts.

Alternative	**Alternative 1- No Action**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Alternative 5**
Description of Alternative	No Action, status quo, no change to federal regulations Logbook deadline is within 2 business days of receipt by EM provider (i.e., up to 4 calendar days). 21 days to submit feedback and EM summary reports to NMFS	60 days to submit feedback and EM summary reports to NMFS Cannot be adopted with Alternative 3 but can be combined with Alternatives 4 or 5.	90 days to submit feedback and EM summary reports to NMFS Cannot be adopted with Alternative 2 but can be combined with Alternatives 4 or 5.	Change logbook deadline to be within 7 business days of receipt by EM provider Can be combined with any other action alternative.	Revise federal regs and EM Manual language regarding estimation method Can be combined with any other action alternative.
Differences in Action Alternatives Compared to No Action					
Policy Change compared to No Action		Increase submission deadline by 39 days	Increase submission deadline by 69 days	Increase deadline by 5 business days (increase up to 11 calendar days)	Clarify federal regs and original EM Manual language to indicate more flexibility for discard estimation method
Environmental Impacts					
Conservation and Data Loss		Unlikely Potential for some data loss due to longer period for feedback to vessels—more likely during learning period. Also see individual accountability, below.	Unlikely More potential for some data compared to Alternative 2.	None	None

Alternative	Alternative 1- No Action	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Socio-Economic Impacts					
Operating Cost Impacts to Video Reviewers		Savings relative to no action – due to more flexibility for handling peaks and pulses in video review demand. Positive benefit up to overall program cost savings of $123,042 compared to No Action.	Savings relative to no action – greater than Alternative 2. Highest savings compared to No Action.	Savings relative to no action – due to more flexibility for handling peaks and pulses in logbook demand. Substantially less than for Alt 2 or 3 but additive to those savings, if adopted in combination with either of them.	Savings relative to no action – methodological flexibility permitted by regulatory clarification may allow cost savings innovations. Probably less than for Alt 2, 3, or 4 but additive to those savings if adopted in combination with them.
Cost impact to vessels		Cost savings to the degree that video reviewers pass on cost savings to vessels. Possible increases in costs if, during the period over which any corrections are delayed, QP availability goes down (QP prices increase and/or vessels have to stop fishing because of lack of QP availability).	Cost effects similar to but possibly greater than Alternative 2 due to 30 additional days for video reviewers to complete their review.	Cost savings to the degree that video reviewers pass on cost savings to vessels. Substantially less than for Alt 2 or 3 but additive to those savings, if adopted in combination with either of them.	Cost savings to the degree that video reviewers pass on cost savings, if any, to vessels. Substantially less than for Alt 2 or 3 but additive to those savings, if adopted in combination with either of them.
Individual Accountability and Compliance Ethic		Some delay in opportunity to provide nudges for compliance (particularly with respect to unintentional non-compliance) and reduction in enforcement's ability to collect information needed to support violation cases. This could have some implication for maintaining a good compliance ethic in the fishery, which is important for individual accountability and keeping enforcement costs down.	More possibility for reduction of compliance and compliance ethic (and consequent effects) relative to Alt 2.	No Change	No Change

4.0 REGULATORY IMPACT REVIEW

The President of the United States signed E.O. 12866, "Regulatory Planning and Review," on September 30, 1993. This order established guidelines for promulgating new regulations and reviewing existing regulations. The E.O. covers a variety of regulatory policy considerations and establishes procedural requirements for analysis of the benefits and costs of regulatory actions. The E.O. stresses that in deciding whether and how to regulate, agencies should assess all of the costs and benefits of available regulatory alternatives. Based on this analysis, they should choose those approaches that maximize net benefits to the Nation, unless a statute requires another regulatory approach.

NMFS satisfies the requirements of E.O. 12866 through the preparation of an RIR. The RIR provides a review of the potential economic effects of a proposed regulatory action in order to gauge the net benefits to the Nation associated with the proposed action. The analysis also provides a review of the problem and policy objectives prompting the regulatory proposal and an evaluation of the available alternatives that could be used to solve the problem.

The RIR provides an assessment that can be used by the Office of Management and Budget to determine whether the proposed action could be considered a significant regulatory action under E.O. 12866. E.O. 12866 defines what qualifies as a "significant regulatory action" and requires agencies to provide analyses of the costs and benefits of such action and of potentially effective and reasonably feasible alternatives. An action may be considered significant if it is expected to:

- Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local or tribal governments or communities;
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in E.O. 12866.

4.1 Statutory Authority

Under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (16 U.S.C. 1801, et seq.), the United States has exclusive fishery management authority over all marine fishery resources found within the exclusive economic zone (EEZ). The management of these marine resources is vested in the Secretary of Commerce (Secretary) and in the regional fishery management councils. In the West Coast Region, the Council has the responsibility for preparing fishery management plans (FMPs) and FMP amendments for the marine fisheries that require conservation and management, and for submitting its recommendations to the Secretary. Upon approval by the Secretary, NMFS is charged with carrying out the Federal mandates of the Department of Commerce with regard to marine and anadromous fish.

The commercial and recreational groundfish fisheries in the EEZ off Washington, Oregon, and California are managed under the PCGFMP. The proposed action under consideration would amend this FMP and Federal regulations at 50 CFR 660. Actions taken to amend FMPs or implement other regulations governing these fisheries must meet the requirements of Federal law and regulations, and Executive Orders.

4.2 Statement of the Problem

A statement of the problem is available in Section 1.1 of this document titled "Purpose and Need". Analysis of the problem is provided in Section 2.3 on Status Quo.

4.3 Description of the Management Goals and Objectives

A statement of the management goals and objectives in Sections 1.1 and 1.3 of this document titled "Purpose and Need" and "Analysis of the Problem", respectively.

4.4 Description of Fisheries and Other Affected Entities

A summary for the Description of the Fishery is found in Section 1.6. A detailed description of the fishery and affected entities is also available in the Stock Assessment and Fishery Evaluation document in Section 1.4.1.1. This includes a summary of historic harvests, description of management, and economic characteristics of harvesting vessels, processors, and communities.

4.5 Description of the Alternatives

A description of the Alternatives is available in Section 2.0.

4.6 An Economic Analysis of the Expected Effects of Each Selected Alternative Relative to the No Action Alternative

Costs to NMFS regarding management, enforcement or administration are not expected to change under the actions proposed. The costs of current monitoring of the fishery through electronic monitoring or observers, including catch and discard accounting would not change for NMFS as these costs are born by industry via required observational costs or paid through cost recovery for NMFS administrative costs to debrief observers and manage the data gathered.

4.5.1 Analysis of Expected Effects: Alternatives 2 through 5

See Sections 2.0 and 3.0.

4.5.2 Summation of the Alternatives with Respect to Net Benefit to the Nation

Net benefits to the nation would primarily be experienced from cost savings associated with the action alternatives, as summarized in Section 3.0. Minimal, if any, negative impacts to the resource are expected.

4.7 Determination of Significant Impact

As noted above, under E.O. 12866, a regulation is a "significant regulatory action" if it is likely to: (1) have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order. This rule will not trigger any of the EO 12866 test requirements for significant regulatory actions. The proposed rule would revise regulations that may be unnecessarily constraining and create clear instructions for EM participants to provide increased operational flexibility and lower costs in the EM program.

Therefore, pursuant to the procedures established to implement section 6 of E.O. 12866, the Office of Management and Budget has determined that this action is not significant. The costs of the proposed changes or the overall EM program do not trigger the EO 12866 requirements for a "significant regulatory action."

5.0 MAGNUSON-STEVENS ACT AND FMP CONSIDERATIONS

Below are the 10 National Standards as contained in the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), and a brief discussion of how each alternative is consistent with the National Standards, where applicable. In recommending a preferred alternative, the Council considered how to balance the national standards.

National Standard 1 — Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

The FMP determines how overfishing and optimum yield are determined for all Pacific Coast groundfish stocks and provides measures by which the fisheries are managed in order to prevent overfishing and achieve optimum yield. Neither the No Action nor the action alternatives would change these measures.

National Standard 2 — Conservation and management measures shall be based upon the best scientific information available.

The proposed action analyzed in this document utilizes the best scientific information available regarding fishery operations off the West Coast and the EM Program.

National Standard 3 — To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

The FMP manages stocks as a unit and utilizes stock complex designations and measures in order to manage interrelated stocks of fish as a unit. The proposed action does not affect the management of the stocks of FMP management unit species.

National Standard 4 — Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be; (A) fair and equitable to all such fishermen, (B) reasonably calculated to promote conservation, and (C) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

The proposed actions would apply to commercial fisheries authorized to fish in the west coast EEZ with specific requirements under the EM Program. The EM Program is open to only those operating under the Catch Share Program and utilizing EM is not a requirement. Therefore, the proposed actions would not discriminate between residents of different states nor allocate or assign fishing privileges.

National Standard 5 — Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources, except that no such measure shall have economic allocation as its sole purpose.

The proposed action provides alternatives that create more flexibility and increase efficiencies in the EM Program. In addition, Alternatives 2 through 4 may lower overall costs to participants. Alternative 5, clarifies EM Program requirements to ensure an effective program is created that utilizes the highest quality and complete data for effective fishery management.

National Standard 6 — Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

The proposed actions to adjust submission timelines (Alternatives 2 through 4) and to clarify EM Program requirements would apply to all participants that are eligible to participate in the EM Program. Multiple fishing strategies can be used in the program with varying harvest capacities with continued monitoring at varying, but specific levels. In addition, multiple NMFS-approved EM Providers could be available for use by the industry to monitor, verify, and summarize discards monitoring. Vessel owners or operators may choose an EM Provider based on profitability and cost drivers to continue fishing. In addition, it is not a requirement for vessel owners or operators to participate in the EM Program (if eligible) as it is a flexible choice in lieu of human observers.

National Standard 7 — Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

The proposed action does not create unnecessary duplication. The EM Program and the modifications under the proposed action would continue to allow vessel owners and operators to choose a method in which to be monitored, EM or human observers. The proposed actions would provide potential cost savings if fishers choose to participate in the EM Program.

National Standard 8 — Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of

overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirements of National Standard 2, in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

The proposed action takes into account the characteristics of each affected fishing sector. As noted under National Standard 6, vessel owners or operators may choose an EM Provider based on profitability and cost drivers to continue fishing under multiple fishing strategies. In part, the EM Program was developed as a flexible tool to accommodate required fishery monitoring for vessels in remote or small ports since human observers may not be readily available. Providing further flexibility and reduced costs under the proposed action continues to enable fair and equitable access to fishery resources for all participants while continuing to meet the goals of sustained participation and, to the extent practicable, minimize adverse economic impacts on fishing communities operating under the West Coast Catch Share Program.

National Standard 9 — Conservation and management measures shall, to the extent practicable, (A) minimize bycatch, and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

The proposed action is largely administrative and does not propose to minimize bycatch or minimize the mortality of bycatch. Therefore, the action would not change current rates of bycatch in the fishery nor contribute to the minimization of the bycatch. NMFS would maintain the ability to monitor bycatch in the EM Program under the proposed action.

National Standard 10 — Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

The proposed action does not substantially alter the current means and methods utilized by fishermen to prosecute their respective fishery while using EM. Safety concerns would remain status quo with the PCGFMP.

6.0 PREPARERS AND PERSONS CONSULTED

Preparers
Brett Wiedoff, Jim Seger, Jessi Doerpinghaus, PFMC Staff

Contributors and Reviewers
Abbie Moyer, Keeley Kent, NMFS WCR
Caitlin Imaki, NOAA General Counsel

7.0 REFERENCES

To Be Developed

8.0 APPENDIX A – PSMFC COST ESTIMATES

Estimated PSMFC EM Review Costs by Fleet at Variable Rates of Review – *2/13/2023*

PSMFC estimated the costs of doing EM review per sea day by fleet for 2023, both at the current rate of 100% review and at reduced review rates of 25% or 10% (Appendix A, Table 1). Estimates of cost were also made for a proposed requirement for a 3-week review turnaround time (Appendix A, Table 2). Below is a description of the method for calculating costs, the inputs used, and assumptions.

- **Overview**: We used the actual total budget based on staff time plus associated costs for hardware and software. These costs were then split into four categories, and for each category the cost was allocated among fleets. Staff time is based on current staffing for 2023. Other inputs such as the number of sea days per fleet, review minutes, etc. were based on 2020-2021 (most recent years with review completed).
- **Fleets**: Costs were estimated separately for bottomtrawl , pot and midwater trawl (shoreside hake, midwater rockfish target, and MSCV). Midwater trawl is combined because the review protocols and times are comparable.
- **Cost Estimates**
    - Variable review costs
        - All time spent by reviewers watching and annotating the video.
        - The total variable review cost was 50% of all review staff time costs.
        - Reviewers record the minutes to review each haul. These values were used to determine the ratio of time spent watching video for each fleet. Total variable review costs were apportioned among the fleets using this ratio, then for each fleet it was divided by the number of sea days reviewed for that fleet.
    - Fixed review costs
        - All other time for review staff including tracking, reporting (e.g. drive reports), correspondence with skippers, updates to protocols, staff meetings, etc.).
        - The total fixed review cost was 50% of all review staff time/budget.
        - Fixed review costs were divided by sea days (all fleets charged equally per sea day).
    - Admin costs
        - Costs for non-review staff including data entry of logbooks, database maintenance, data QAQC, mailing hard drives, and administrative work.
        - The total admin costs were 100% of all non-review staff time/budget.
        - Admin costs were divided by sea days (all fleets charged equally per sea day).
    - Storage cost
        - Cost to store the video files per sea day of fishing. Costs are slightly different among fisheries based on the typical number of cameras.
- **Reduced Review Rates**
    - To estimate costs at a reduced review rate, the variable review cost was adjusted while other costs remained the same.
    - At reduced review rates, the actual review rate is somewhat higher than the stated rate. For example, if there is a trip with 3 hauls, 1 haul would be reviewed for either the 25%

or 10% rate. Using past years data, we determined the percent of hauls that would have actually been reviewed and adjusted the variable review costs based on these values.
    - Reduced review costs assume no penalties of additional review (no added review for not "passing" a logbook comparison or meeting other program rules).
- **Review Turnaround Time**
    - The current turnaround time from the time a hard drive is received to debiting the vessel account is generally within 40-60 days.
    - Current rules would require a 21-day turnaround which would require additional staff
    - To estimate the cost to meet a 21-day turnaround, managers made their best estimate of the review staff that would be necessary and these costs were added to the Variable Review Costs and Fixed Review Costs.

Appendix A, Table 1. Estimated PSMFC EM Review Costs by Fleet at variable rates of review with current turnaround time of ~40-60 days (from hard drive receipt until vessel accounts are debited).

	Per Sea Day 100% Review			Per Sea Day 25% Review		Per Sea Day 10% Review	
	Midwater Trawl	Pot	Bottom Trawl	Pot	Bottom Trawl	Pot	Bottom Trawl
Review Time Variable Cost (video review)	$16.61	$185.62	$247.75	$52.64	$78.11	$24.74	$48.30
Review Time Fixed Costs*	$50.08	$50.08	$50.08	$50.08	$50.08	$50.08	$50.08
Admin Cost**	$47.15	$47.15	$47.15	$47.15	$47.15	$47.15	$47.15
Archive Storage Cost	$0.36	$0.25	$0.35	$0.25	$0.35	$0.25	$0.35
TOTAL PER SEA DAY	$114.20	$283.10	$345.33	$150.12	$175.69	$122.21	$145.88
TOTAL FLEET COST	$353,796	$73,889	$119,311	$39,181	$60,701	$31,898	$50,400
TOTAL PROGRAM COST		$546,995		$453,677 (17% savings)***		$436,094 (20% savings)***	

*Other review work includes tracking, reporting, communication with vessels, etc.
**Program management, logbook data entry, QAQC, database maintenance, mailing hard drives, etc.
***The savings depicted is the change in costs from 100 percent review to 25 or 10 percent review.

Appendix A, Table 2. Estimated PSMFC EM Review Costs by Fleet at variable rates of review with a 21-day turnaround (from hard drive receipt until vessel accounts are debited).

	Per Sea Day 100% Review			Per Sea Day 25% Review		Per Sea Day 10% Review	
	Midwater Trawl	Pot	Bottom Trawl	Pot	Bottom Trawl	Pot	Bottom Trawl
Review Time Variable Cost (video review)	$23.97	$267.86	$357.52	$75.96	$112.72	$35.70	$69.70
Review Time Fixed Costs*	$72.26	$72.26	$72.26	$72.26	$72.26	$72.26	$72.26
Admin Cost**	$47.15	$47.15	$47.15	$47.15	$47.15	$47.15	$47.15
Archive Storage Cost	$0.36	$0.25	$0.35	$0.25	$0.35	$0.25	$0.35
TOTAL PER SEA DAY	$143.75	$387.53	$477.29	$195.63	$232.49	$155.36	$189.46
TOTAL FLEET COST	$445,337	$101,145	$164,903	$51,059	$80,324	$40,550	$65,450
TOTAL PROGRAM COST		$711,384		$576,720 (19% savings) ***		$551,346 (22% savings) ***	

*Other review work includes tracking, reporting, communication with vessels, etc.
**Program management, logbook data entry, QAQC, database maintenance, mailing hard drives, etc.
***The savings depicted is the change in costs from 100 percent review to 25 or 10 percent review.

9.0 APPENDIX B – 2022 EM PROGRAM MANUAL LOGBOOK AUDIT PROCESS

Overview of the Logbook Audit Model

Under a *logbook audit model*, EM is used to validate the self-reported logbook discards submitted by the vessel operator. Vessel operators are expected to accurately report catch and discards with estimated weights and correct species identification. During EM review, the EM service provider will create independent discard estimates for sampled hauls, and based on the comparison of the two, NMFS will use either EM or logbook data for the final discard estimate to debit the vessel's IFQ account.

The following steps outline the logbook audit process:

1. The vessel operator declares an EM trip to WCGOP using the web-based EM application. EM service providers may login to application to view the list of open trips for their vessels. (The EM service provider may separately require notification from the vessel operator, if desired).

2. After an EM trip, the vessel operator submits images of the retained and discard logbook to WCGOP via mobile application within 24-hours of landing. The EM service provider may login to the application to obtain the logbook images for processing.

3. The EM service provider has two different options available to submit the logbook data to WCGOP. 1) If the provider annotates the logbook using their software, they may upload the annotated data summary via the API. 2) The logbook data may be entered directly in the E-logbook module in the web-based application. WCGOP uses the logbook data to initially debit discards from the vessel's account. WCGOP also uses the logbook data to determine the subsample of hauls to be selected for video review, if less than 100% (i.e., bottom trawl, fixed gear) based on the vessel's declaration.

4. Upon receipt of the hard drive, the EM Service Provider will then confirm trip level EM data matches the logbook. This includes verifying that the number of hauls reported on the logbook matches the number of hauls reported by the EM system. The EM service provider will work with the vessel operator to resolve discrepancies.

5. The EM service provider may login to the application to determine the sampling rate for a given trip (if less than 100%).

    a. The sampling unit is at the haul level, with either all or a percentage of hauls reviewed on each trip.

        i. Shorebased whiting – 100% of hauls
        ii. MS/CV - 100% of hauls
        iii. Non-whiting midwater trawl – (100% of hauls for maximized retention[3],

[3] For maximized retention fishing trips, sorting catch is generally prohibited and there are few discard events of unsorted catch. Conversely, optimized retention trips involved diverse catch with allowable sorting and discarding of certain species. Vessel captains will self-identify the retention type in their OTS declaration.

25% for optimized retention)

iv. iv. Bottom trawl - (100% of hauls for maximized retention, 25% for optimized retention)

v. Fixed gear - 25% of hauls

b. The EM service provider is not required to review "steam time" (vessel transit between hauls, to and from the fishing grounds) or time in port.

6. The EM service provider conducts the *primary video review* for hauls selected for review, which includes:

   a. Review of all raw sensor and image data to determine completeness.
   b. Review of sensor data to annotate haul start and end times and locations, and to identify the total number of hauls in a trip.
   c. Annotate discard events (described in Section 2.3.4).

7. The EM service provider submits an *EM summary report* to WCGOP via the API. NMFS will compare the EM data to logbook data based on the following business rules and notify the provider if the trip has "passed" the comparison. If the trip has passed, no further action is needed. If the trip has not passed, see Step 8. Appendix B, Tables 1 and 2 below describe the business rules used for comparing the EM summary data and self-reported logbook discards.

Type of Mismatch	**IFQ Species/Group**	**Business Rule**
LB > EM	All IFQ species/groups	Use LB to debit discards.
LB < EM	Cowcod rockfish South of 40°10'N, yelloweye rockfish	If LB < EM by more than 10% or 2 lb of the EM estimate, trigger 100% review, and use EM to debit discards.
LB < EM	All other IFQ species/groups	If LB < EM by more than 25% or 5 lb of the EM estimate, trigger 100% review, and use EM to debit discards.
If no EM estimate* (e.g., due to EM system failure)	All IFQ species/groups	Use LB to debit discards.

Appendix B, Table 1. Summary of EM/Logbook comparison criteria for non-whiting midwater trawl (optimized retention), bottom trawl (optimized retention), and fixed gear trips.

Type of Mismatch	IFQ Species/Group	Business Rule
LB > EM	Total weight of discard	Use LB to debit discards.
LB < EM	Total weight of discard	If LB < EM by more than 25% or 5 lb of the EM estimate, use EM to debit discards.
If no EM estimate* (e.g., due to EM system failure)	Total weight of discard	Use LB to debit discards.

Appendix B, Table 2. Summary of EM/Logbook comparison criteria for Pacific whiting midwater trawl, non-whiting midwater trawl (maximized retention), and bottom trawl (maximized retention) trips.

8. For trips that do not pass the logbook audit, in the case of maximized retention trips where 100% of video is initially reviewed, the EM estimate will be used and no further action is needed. For optimized retention trips the provider must review the remaining hauls from the trip and resubmit the EM summary report for the entire trip to WCGOP via the API.

10.0 APPENDIX C – PAST COST ESTIMATES FROM NMFS

From NMFS RIR March 2022:

In 2021 NMFS, members of the fishing industry, and prospective EM service providers developed updated cost estimates for the West Coast Groundfish EM program for the March and June 2021 Council meetings. Estimates initially developed and presented to the Council in March 2021 provide a projection for EM on an annual basis compared to the cost of observers, and costs under the EFPs (NMFS 2021a). These estimates were further refined to provide an estimate of EM costs by seaday, and presented at the June 2021 Council meeting. (NMFS 2021b).

NMFS. 2021a. NMFS Report: EM Cost Estimates Prepared by NMFS West Coast Regional Office. PFMC Meetomg, March 2-11, 2021. https://www.pcouncil.org/documents/2021/03/g-5-a-supplemental-nmfs-report-8-em-cost-estimates.pdf/.

NMFS. 2021b. NMFS Report: EM Cost Estimates and Information Requests Prepared by NMFS West Coast Regional Office, PFMC Meeting, June 21-30, 2021. https://www.pcouncil.org/documents/2021/06/g-3-a-supplemental-nmfs-report-2-electronic-monitoring-implementation-update.pdf/

Table 1 describes the average annual cost of EM per vessel include amortized equipment and installation costs (over 5 years), for those vessels that do not currently have an EM unit or that need a new EM unit, and program costs, which include program coordination, overhead, administrative tasks, software licensing, maintenance for existing EM units, and other non-seaday-driven costs.

Table 2 describes the per seaday cost of EM Vessels in the bottom trawl fishery will spend when the program is implemented. NMFS provided seaday-driven video review costs separate from other costs, in order to provide individual vessel owners the most detailed information possible. The cost of video review will vary by catch composition as a result of gear type: video data from hauls with selective gear and homogenous target species (e.g., midwater whiting), requires shorter review time. Catch with less selective gear on more diverse species complexes (e.g., bottom trawl) more mixed and require additional time for crew to sort, and will require additional time for reviewers to process video data. These per seaday estimates also include both the incremental cost of purchasing equipment and installation for new vessels, and ongoing participation costs of current vessels that already have EM units installed.

Table 3 shows detailed estimates of EM costs by gear type and for different program components, and incorporates the annual per vessel cost estimates provided in Table 1 and per seaday estimates in Table 2. The top section of the table contains information on EFP vessel participation and effort as the total number and average number of seadays fished by each gear type (bottom trawl, midwater trawl, and fixed gear).

Additional Information:

Table 4 contains estimates from Agenda Item G.5.a, Supplemental NMFS Report 8, March 2021. A group of industry members, service providers, Pacific States Marine Fisheries Commission (PSMFC), and NMFS staff volunteered to work together to develop updated estimates of the EM program for consideration by the Council.

Appendix C, Table 1. Average Total Annual costs of EM per individual vessel.

Annual Costs (Per Vessel)	Average
New Vessels (or every 5 years)	**per vessel**
Equipment	$1,944
Installation	$423
Total New Vessel Equipment Costs	**$2,366**
Existing Vessels	**per vessel**
Avg. Equipment maintenance, service, etc.	$2,724
Avg. Annual Program Coordination/Registration Fee	$1,578
(Average) Total Annual Costs	**$4,956**

Appendix C, Table2. Per seaday cost of EM to Individual Vessels by Gear Type (based on NMFS data for 2015-2019 period).

Average Per Seaday per vessel	**Gear Type**		
Cost Components:	**Midwater Trawl**	**Fixed Gear (Pot)**	**Bottom trawl**
EM unit and installation (amortized over 5 years)	$22	$120	$57
Video Review	**$74**	**$161**	**$165**
Program Management	$95	$35	$54
Service and Maintenance	$25	$85	$66
Average Total Seaday cost (w/o Equipment and Installation)	**$120**	**$316**	**$285**
Average Total per Seaday Cost	**$142**	**$390**	**$342**

Appendix C, Table 3. Total Annual Industry Costs of EM vs Observers.

	Total Industry Annual	**Midwater Trawl**	**Fixed gear (Pot)**	**Bottom trawl**	
# of vessels	48	30	8	10	
Total annual sea days	3,883	3,215	256	412	
Average sea days per vessel	N/A	107.17	32.00	41.20	
EM Cost	**Total Industry Annual**	**Per Sea Day**			Per vessel
EM unit and installation	$113,568	$22	$120	$57	$2,367
Review cost	**$347,180**	**$74**	**$161**	**$165**	
Program costs	$75,744	$15	$49	$38	$1,578
Service & maintenance fees	$130,704	$25	$85	$66	$2,724
Total EM Cost	**Total Annual**		**Per Sea Day**		
EM cost w/ equipment	$667,196	$142	$390	$342	
EM cost w/o equipment	**$553,628**	**$120**	**$316**	**$285**	
Observer cost/ seaday		$510	$499	$537	
Total Observer cost	$1,988,638	$1,639,650	$127,744	$221,244	
EM Savings vs Obs.	**Total Annual**		**Per Sea Day**		
With EM unit cost	$1,321,442	$368	$109	$195	
Without EM unit cost	$1,435,010	$390	$183	$252	

Appendix C, Table 4. Estimate of observer, EM EFP, and third-party program costs (2021). Agenda Item G.5.a, Supplemental NMFS Report 8, March 2021

	Observer	EFP	Third Party (Mean)	Third Party (Median)
NMFS Costs				
WCR		$202,345	$202,345	$202,345
NWFSC	$366,000		$378,000	$378,000
PSMFC		**$435,000**		
Recovered via cost recovery	-$190,630		-$210,286	-$210,286
NMFS Subtotal	**$175,370**	**$637,345**	**$370,059**	**$370,059**
Industry Costs				
Observer sea days	$1,362,900			
Equipment, field services		$481,500	$334,808	$317,483
Video review, storage, reporting			**$253,307**	**$229,752**
Cost recovery	$190,630		$210,286	$210,286
Industry Subtotal	**$1,553,530**	**$481,500**	**$798,401**	**$757,521**
Program Total	**$1,728,900**	**$1,118,845**	**$1,168,460**	**$1,127,580**

11.0 APPENDIX D - PARTIAL EXAMPLE OF PSMFC-DEVELOPED EM SUMMARY REPORT

Drive Report for Sensor and Video Review

This document summarizes EM data review for the following drive(s). This report may not be inclusive of all EM issues. This report may contain sensitive or confidential information and is intended only for the vessel owner(s), vessel operator(s), or authorized representative(s). If you are not the intended recipient, you may not access this report or share the information with any other unauthorized person, and must immediately destroy all copies. By downloading this document you acknowledge notification of any potential violations of the terms and conditions of the exempted fishing permit.

Report ID:	22_VESSELNAME01	**Date of Data Set Begin:**	06/27/2022
Vessel Name:	VESSEL NAME	**Date of Data Set End:**	07/13/2022
EFP:	Trawl-Whiting	**Date of Last Fish Ticket:**	07/13/2022
Date of Report:	08/23/2022	**Date Drive Received:**	07/15/2022
Completed By:	ABC	**Number of Fishing Trips on Drive:**	5

Trip Number:	Departure Date:	Return Date:	Fish Tickets:
1	06/27/2022	06/29/2022	12345
2	06/29/2022	07/02/2022	12346
3	07/05/2022	07/09/2022	12347
4	07/09/2022	07/10/2022	12348
5	07/11/2022	07/13/2022	12349

	Vessel Type	Event	Present: (Y/N/P/NA)	Comments:
Reporting Issues	All vessels	Hard drive submitted in the required time period	No	Hard drive postmarked 7/14/22, more than 10 days past date of first landing.
		Hard drive submitted with a complete data set	Yes	
		Logbooks submitted in the required time period	Yes	
		Logbooks submitted complete	Yes	
		Number of trips on hard drive does not exceed maximum trips allowed under vessel's EFP	Yes	
		Video recording continued until the vessel offload occurred (except if MSCV)	Yes	
Functionality Issues	All vessels	Pre-Trip Function Test Completed	Partial	Missing Function test on Trip 3.
		If a critical malfunction occurred, the vessel stopped fishing until it was resolved or downgraded (Note: they are allowed to complete the haul if gear is already deployed)	N/A	
Data Quality Issues	All vessels	Sensor and Video Data Complete (No Time Gaps)	No	Trip 2: 4m8s unclassified time gap on 6/8/22 at 0652. Review was unaffected.
		All catch handled inside of camera view and consistent with VMP. Camera views are unobstructed, lighting adequate, etc. Ability to identify the species of fish caught and/or discarded or the fate of the catch is uncompromised by image quality	Yes	
	Fixed Gear vessels	All discarded fish displayed and measured (if intact from head to tail)	N/A	

THE END…