

**NMFS Report: EM Cost Estimates and Information Requests
Prepared by NMFS West Coast Regional Office
PFMC Meeting, June 21-30, 2021**

At the March 2021 Pacific Fishery Management Council Meeting, the Council requested that NMFS provide the follow information:

- 1) *Refined and vetted cost information table that will allow Council to compare:*
 - a) *Observer costs;*
 - b) *EFP costs (PSMFC cost for video review);*
 - c) *Third party [EM service provider] review costs (with a range of 3rd party providers); and,*
 - d) *NMFS costs for 2022 and projected annual costs, to the best of their ability, beyond so that we have a sense of the decrease in costs that they have indicated are likely.*
- 2) *Cost per sea-day for each gear type.*
- 3) *A copy of the completed video protocols that are used by EM Providers to make their cost estimates.*
- 4) *An overview of any actions or changes made to the preliminary analysis to reduce the expense of the audit shop.*
- 5) *An update on service provider application process – do they have everything they need to provide cost estimates to potential clients?*
- 6) *Any other information or issues that NMFS feels would be beneficial for the Council to know.*
- 7) *Business rules – in order to estimate costs, we need to know what triggers 100% review and how often that is expected to happen.*
- 8) *Confidentiality and fed records – [are there] unknowns that have cost implications? Give update on policy updates from May policy.*
- 9) *Streamlining of sorting requirements – seems like this has stalled, looking for an update there.*

Items 1, 2, 3, 4, 6, & 7

NMFS provided a report at the March 2021 Council meeting that addressed items 1a-d and 4 above. That report contained cost estimates for observers, the EM EFP, third party EM service providers, and NMFS's projected costs and cost savings (see Agenda Item G.5.a [Supplemental NMFS Report 8](#)). NMFS has worked with third party EM service providers and Pacific States Marine Fisheries Commission (PSMFC) to provide additional cost information in this report to address #2 above.

With respect to #3 and #7 above, NMFS provided EM service providers with the amount of time PSMFC spends conducting video review for each gear type, as well as the time PSMFC spends completing other video review-related work (tracking, reporting, correspondence with vessels, general staff time), and administrative tasks (program management, QA/QC, database maintenance, providing hard drives, etc.). Since third party EM service providers will follow the same protocols for video review, reporting, and other data services tasks that PSMFC has used in the EM EFP, PSMFC's time spent on these tasks is an appropriate measure of time third party EM service providers can expect to spend on these tasks (see the final [2021-2022 EM Program](#)

[Manual](#) for protocols). These metrics allowed EM service providers to apply their own salary rates and other costs in developing their own estimates.

One significant difference between PSMFC's costs to date during the EM EFP and third party provider costs will be the difference in review rates. PSMFC has been reviewing 100% of hauls during the EFP. Beginning in 2022, the minimum review rate for bottom trawl and fixed gear trips will be 25%, but actual review rates for each vessel will depend on that vessel's performance. As explained in [Supplemental NMFS Report 5](#) from the March 2021 Council meeting, the existing EM EFP data has limited utility in projecting likely review rates for individual vessels under the logbook audit model, because of the difference in incentives that would be expected to affect vessel crew behavior. Therefore, EM service providers assumed 100% review of all gear types to provide a conservative estimate of video review costs for this report, and for comparison to PSMFC's video review costs under the EFP. In this way, bottom trawl and fixed gear vessels actual review costs would be expected to be lower than what is shown in this report, depending on the individual vessel's performance.

NMFS received cost estimates from PSMFC and 4 third party EM service providers for this report. PSMFC provided cost estimates for video review only (Table 1). EM service providers were asked to separate EM costs into those costs that are driven by the number of sea days fished by a vessel (called Video Review Costs in Table 1) and those costs that are not driven by the number of seadays fished by a vessel (called Annual Costs in Table 1). The Annual Costs (Per Vessel) include amortized equipment and installation costs, 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. Because EM service providers have different business and pricing models, the cost categories the 4 providers produced differed. In several cases there were not 3 estimates of a single category to meet the "rule of 3" for reporting confidential data. Therefore, NMFS had to aggregate the providers' cost estimates into the broader categories in Table 1. NMFS still provided seaday-driven video review costs separate from other costs, in order to provide individual vessel owners the most detailed information possible. All the providers' costs are captured in the categories in Table 1, so the aggregated estimates are still representative of providers' projected costs. NMFS provided both an average and median cost estimate to illustrate the distribution of the third party providers' estimates.

Individual vessel owners can use the information in Table 1 to generate approximate cost estimates. For example, an existing EM EFP vessel owner could multiply the number of seadays they fish using each gear type to the video review seaday rates in Table 1 to generate a total annual video review cost. Then they can add the annual "program costs" to determine a total annual cost for monitoring from EM to compare to their costs using an observer for the same number of seadays. As noted above, however, NMFS can only provide aggregated cost estimates to comply with confidentiality requirements. By definition, aggregate cost estimates obscure cost differences between providers. Each provider has indicated that pricing will likely differ for operations based on a range of factors, such as whether the vessel already has equipment installed, levels of participation, routine maintenance, and other vessel-specific variables. Actual costs will likely be higher or lower than the estimate provided here depending on unique operational characteristics not reflected in the aggregate information below. NMFS

strongly encourages vessel owners to work with all prospective service providers directly to obtain more detailed cost estimates and to see what competitive price advantages different providers can offer to best suit individual operations. Confidentiality requirements for reporting cost data, and a lack of detailed information about each individual vessel operation (fishing plans for future years, maintenance routines, etc.) put NMFS at a disadvantage in brokering an exchange of this type of pricing information between private businesses.

Table 1. Component EM Costs

	Third Party Provider		PSMFC
	Average	Median	
Annual Costs (Per Vessel)			
EM unit and installation (new vessels)	\$2,366	\$2,439	
Program costs (current vessels)	\$4,956	\$5,150	
Video Review Costs (Per Sea Day)			
Bottom trawl	\$165	\$172	\$214
Midwater trawl	\$74	\$69	\$89
Fixed gear	\$161	\$165	\$179

To provide a total EM cost per seaday for each gear type as the Council requested, NMFS converted the Annual Costs in Table 1 into a per seaday cost for EM units and installation and program costs, and added it to the per seaday video review cost for each gear type to get a total per seaday cost from EM for each gear type in Table 2. Per seaday cost estimates are further divided into “new vessel” (including equipment and installation costs) and “current vessels” (not including equipment and installation costs), and both an average and median estimate are shown based on whether the average or median provider estimate was used in the calculation.

Since PSMFC only provided video review costs, NMFS substituted the third party EM service provider’s equipment and program costs to generate a total EM seaday cost for PSMFC for comparison. Table 2 also contains the observer seaday cost for each gear type based on the average cost reported to the Economic Data Collection Program 2015-2019. The EM EFP cost shown in Table 2 consists only of equipment and field services, based on the cost estimates provided by Heather Mann for the March 2021 report, because NMFS is paying for the video review and other program costs during the EFP. In this way, it is not an apples-to-apples comparison to the other costs in the table. Ms. Mann’s estimates from the March 2021 report included only ongoing maintenance costs, so NMFS substituted the average third party providers’ equipment and installation costs to generate a per sea day cost for new vessels.

Table 2. Total industry EM cost per sea day by gear type compared to observers and EFP

Total Industry Costs (Per Sea Day)	EM - Third Party Provider		PSMFC		Observer	EM EFP
	Average	Median	Average	Median	Average 2015-2019 EDC	
New vessels (incl. equipment and installation)						
Bottom trawl	\$342	\$356	\$392	\$398	\$537	\$181
Midwater trawl	\$142	\$140	\$158	\$160	\$510	\$146
Fixed gear	\$390	\$402	\$407	\$416	\$499	\$198
Current vessels (not incl. equipment and installation)						
Bottom trawl	\$285	\$297	\$334	\$339	\$537	\$124
Midwater trawl	\$120	\$117	\$136	\$137	\$510	\$124
Fixed gear	\$316	\$326	\$333	\$339	\$499	\$124

NMFS is not currently charging its administrative costs for the EFP and, while EM EFP vessels are using EM in the EFP, WCGOP’s costs for administering the catch share observer program are reduced. When the EFP ends, NMFS will begin recovering its administrative costs for the EM Program and WCGOP’s costs for administering the catch share observer program may increase if some vessels go back to using observers. NMFS did not include cost recovery fees in the seaday cost estimates in Table 2. The amount a vessel pays in cost recovery fees depends on the amount of pounds landed, not the amount of seadays fished, so it was not possible for NMFS to convert the cost recovery costs into an accurate seaday rate. However, this does not decrease the utility of the information in Table 2 for comparison between monitoring options, because the industry’s cost recovery fees will increase after the EFP ends whether vessels choose to continue using EM or return to using observers. In addition, the increase in cost recovery fees is equal between EM and observers for the shorebased IFQ sector (\$65,754)¹ and therefore, it is not necessary for comparing the costs of observers vs. EM as options for monitoring. The increase in cost recovery fees for the mothership sector is approximately \$20,000 more for EM (\$144,532) than for observers (\$124,876). The increase in cost recovery fees will be an increase in costs for the fleet, however, when transitioning from the EFP to regulatory program and so should be taken into account in that comparison.

Item 8

Regarding #8, NMFS has provided the draft procedural directive on Information Law Application for Data and Supporting Guidance for Electronic Monitoring Programs for Federally Management U.S. Fisheries for the Council’s review in the briefing book for this meeting. The draft procedure directive is not substantively different from the positions NMFS provided in our [Supplemental NMFS Report 6](#) Electronic Monitoring Records-Related Q&A for the March 2021 Council meeting and does not change the cost estimates provided in this report. When asked,

¹ The difference in cost recovery fees is the same for the shorebased IFQ sector for observers and EM because it driven by the 3% fee cap rather than the costs generated by this sector.

EM service providers agreed that there was no outstanding information related to this procedural directive that would affect cost estimates.

Item 5

Regarding #5, NMFS WCR received permit applications from 5 prospective EM service providers in June 2020, which will be considered for a permit for 2022. We did not receive any applications from any additional providers in June 2021. The Permits and Monitoring Branch are reviewing the applications and working with providers to complete their EM Service Plans, and plans to issue final permit decisions in September 2021. In preparing this report, NMFS reached out to prospective service providers to ask whether providers have the information they need to provide cost estimates to potential clients. One EM service provider noted it is difficult to provide definitive cost estimates without knowing how many vessels the provider will be working with or how those vessels will perform in the video review, because these factors will determine how fixed costs are shared across vessels and seadays and how much actual video is reviewed. NMFS has requested that PSMFC re-run its simulations of pass rates this summer using the final business rules and generate individual performance reports for each EFP vessel to use as a baseline. EFP vessels can then share these reports with prospective service providers. Another service provider said they needed information about how summary data would be submitted to NMFS, which will affect database specifications. NMFS has now provided this information. No other information was identified as being needed from NMFS.

Item 9

With respect to the status of modifications to the bottom trawl EFP, PSMFC facilitated a meeting with EFP sponsors and bottom trawl participants in May 2020 to discuss possible alternative catch handling approaches to reduce the sorting burden for bottom trawlers. However, that meeting was not able to produce any concrete proposals. NMFS is aware of two current pilot projects to address alternative sorting methods for bottom trawl. Environmental Defense Fund has been working on a pilot project with Saltwater Inc., the Alaska Fisheries Science Center, and F/V Cape Windy to use artificial intelligence to minimize sorting time for bottom trawl vessels. They presented an update on their project at the January 2021 Groundfish Electronic Monitoring Policy and Technical Advisory Committees meeting and submitted a [written update](#) to the March 2021 briefing book. FlyWire is working on an EFP with west coast bottom trawl and whiting vessels to trial alternative catch handling approaches to reduce the time and labor burden for crew and also approaches to streamline review and reporting of data to NMFS in the third party model. NMFS is currently reviewing FlyWire's EFP application with fishing expected to begin late summer 2021.