Partial Coverage Cost Efficiencies Workplan

January 2020[1]

1 Introduction

At the October 2019 Council meeting, the Council recommended an increase in the observer fee percentage from 1.25 percent to 1.65 percent for the Partial Coverage Observer Program (the partial coverage program), and dovetailed that recommendation with continued development of mechanisms to improve cost efficiencies in the program as its highest priority moving forward. Specifically, the Council's Motion from the October 2019 meeting requested immediate work to focus on:

- *Pelagic trawl EM combined with shoreside sampling;*
- *Integrated monitoring plan for fixed gear that combines EM, shoreside sampling, and at-sea observer coverage as needed (e.g., consider whether the 15% hurdle is still the appropriate baseline level for observer coverage in combination with EM coverage; develop average weight protocols to support the use of EM);*
- *Optimizing the size and composition of the fixed gear observed and EM fleets, taking into account both cost priorities and data needs for average weights and biological samples (including consideration of expansion of the zero-coverage pool to include vessels fishing from remote ports harvesting small amounts of fish).*

This workplan provides the Council an opportunity to give direction on future staff tasking related to cost efficiencies under the partial coverage program. The Council's goal of cost efficiencies is to spend the limited, available funding more efficiently such that more coverage (both Electronic Monitoring (EM) and observers) is achieved for the cost. To this end, this document reviews six potential options for improving cost efficiencies guided by the Council's October Motion under the partial coverage program. These options include: 1) Pelagic Trawl EM, 2) an integrated fixed gear EM program, 3) fixed gear EM optimization for cost efficiency, 4) expanding the size of the fixed gear EM program, 5) changes to Zero Selection, and 6) consideration of different cost implications for built-in partial coverage flexibilities. The workplan evaluates each project's pros and cons, identifies the potential cost savings, details implementation considerations, outlines potential next steps, and clarifies staff workload and timeline implications. Beyond this scope, this workplan does not currently attempt to analyze the impacts

[1] Prepared by Kate Haapala (NPFMC), Jennifer Ferdinand (AFSC), Jennifer Mondragon (NMFS).

of any potential option on fishermen, managers, or data users (stock assessments and scientific research, catch accounting and inseason management).

2 Potential Options to Improve Partial Coverage Cost Efficiencies

This section expands on six potential options for cost efficiencies. Table 1 highlights how each project could impact the Council's Monitoring Objectives for the Observer Program, its potential for cost savings, and some pros and cons. Table 2 contains information on the current status, next steps, and staffing needs for each potential project.

2.1 **Pelagic Trawl EM:** The Council has taken action to make the Pelagic Trawl EM Exempted Fishing Permit (EFP) a priority under the partial coverage program for 2020. **The trawl EM EFP seeks to improve cost efficiencies by reducing monitoring costs through a combination of at-sea EM systems and shoreside observing.** Key project goals include providing PSC counts at a lower cost than at-sea observers while also reducing the observer effect.

NMFS approved a pelagic trawl EM EFP application in 2019 for the 2020 and 2021 fishing years. For 2020, 49 catcher vessels and nine tenders are expected to participate in the EFP throughout both the Bering Sea and Gulf of Alaska (GOA). Vessels fishing under the trawl EM EFP will be placed in the trawl EM trip-selection pool and carry EM systems in lieu of observers (100% at-sea EM; plus 30% shoreside monitoring in GOA or 100% shoreside monitoring in the Bering Sea). EM is being used aboard participating pelagic trawl Pollock catcher vessels to verify no-to-low discard. Because the pelagic trawl Pollock fishery has very low bycatch, minimal sorting of catch at-sea, and very low levels of at-sea discard, the project will test the model of replacing at-sea observers with shoreside observers to sample catch at the trip level.

It is possible that pelagic trawl EM could be a component of a more cost effective partial coverage program through the EFP's duration and into the future. EM equipment can verify retention, and when coupled with shoreside observers, improve salmon counts and accomplish biological sampling, potentially reduce monitoring costs and improve the quality of data. **Cost savings from trawl EM could support higher selection rates for coverage in other selection categories for the partial coverage program.** However, there are EM deployment and review costs and the actual cost of a shoreside sampling program for pelagic trawl EM is currently unknown.

It is possible that the shoreside component for the pelagic trawl EM EFP could have valuable "lessons learned" for the fixed gear EM program with respect to developing a shoreside sampling component to better integrate EM data alongside at-sea observer data. However, these potential lessons may not be fully transferable to the fixed gear EM fleet. The trawl and fixed gear fleets have important distinctions that could affect potential cost savings for a shoreside component, including the number of vessels operating in each sector, the number of trips taken, the number of geographically dispersed ports that receive deliveries, and different catch handling practices – including at sea discard in the fixed gear fleet. Staff have not been tasked to explore the feasibility or cost of a shoreside sampling program for fixed gear EM in comparison to trawl EM. This would require tasking staff for a scoping paper and cost analysis.

Currently, the pelagic trawl EM EFP requires significant staff resources because implementation for the pelagic trawl EM EFP began in January 2020. Next steps for this project include evaluation of EFP data and continued monitoring by the EM Trawl Committee. This EFP constitutes an extensive amount of staff workload and effort, particularly throughout 2020, though it is possible to expect more moderate staff resources in 2021.

2.2 **Integrated Fixed Gear Monitoring:** The Council took final action to establish EM as a part of the North Pacific Observer Program in December 2016, and has worked to integrate EM into the established Observer Program process by which the Council and NMFS can annually determine the best monitoring tool for the Alaska fixed gear fisheries, in the Observer Annual Deployment Plan (ADP). **The fixed gear EM program has the potential to improve cost efficiencies to the partial coverage program by providing catch estimation data at a lower cost than at-sea observers.** Although the cost of installing EM equipment on vessels is relatively high, vessels that remain in the program may be able to produce data for multiple years at lower monitoring costs. The primary post-installation costs for EM include maintenance, licensing, and data review.

To improve the program-wide, per-day cost of monitoring under the partial coverage program, the Council could consider action towards integrating fixed gear EM data. This could potentially free up more at-sea observer days, if EM integration achieves a higher selection rate with a lower daily cost. **Integrating fixed gear EM data to count towards achieving the 15% baseline selection rate across all strata to address coverage needs for catch accounting purposes and stock assessment would require staff to be tasked for an analysis on how to get average species weight data for catch and bycatch accounting and how to accomplish biological sampling to support stock assessment.** This is because fixed gar EM only provides data on encounter rates and numeric catch accounting.

In March 2019, the Partial Coverage Subgroup agreed a preferred first step towards EM integration could be to leverage the current efforts on developing EM under the Pelagic Trawl EM EFP and the work done by the Trawl EM Committee (March 2019 Subgroup meeting). Specifically, the Partial Coverage Subgroup wanted to explore if it is possible to shift the fixed gear partial coverage fisheries into a system that primarily relies on EM and is supported by shoreside observers/port sampling. A shoreside sampling component may reduce the per-day cost (e.g., by reducing observer travel costs for at sea deployment), depending on the contract cost for shoreside deployment, but there would also be associated EM data review costs, especially as the pot-vessel fleet expands.

There are uncertainties for the cost savings of developing a shoreside sampling component for fixed gear EM, and it is possible that a shoreside component may not cost less than deploying observers at-sea. In addition, unless there is full retention in the fixed gear fleet (by a reference fleet or other solution), the biological sampling at shoreside facilities would be for limited species and would be size biased to only market-sized fish. There may also be biases associated with the shoreside sampling of full retention trips, as a vessel's hold size, in combination with the effort related to retaining species that are typically discarded, may influence other behaviors of fishermen on full retention trips, such as where they fish and for how long. The amount of fishery-dependent biological data, such as weight information, collected by at-sea observers will likely decrease in proportion to the number of eligible partial coverage vessels that transition towards EM use. As such, this option could also have implications for stock assessment data as the biological sampling shoreside would be for limited species and would be size biased to only market-sized fish (e.g., no sampling of discards).

To move EM integration forward, the Council could task staff to work on conducting a feasibility assessment for using shoreside data to provide proxy weights for EM discard counts, conduct a gap analysis of the level of at-sea sampling that would be necessary to achieve data needs, and to better understand the options for contracting a shoreside program. Once the costs and data needs are fully understood, the Council and the agency could evaluate different pathways for integrating EM data. This would require extensive staff resources and beginning this work in the immediate future would require directing staff away from work on the trawl EM EFP.

2.3 **EM Optimization for Cost Efficiency:** There are opportunities for cost savings under the fixed gear EM program by optimizing the composition of the EM fleet for cost efficiencies. EM

optimization changes have the potential to reduce program-wide, per-day costs of monitoring if EM achieves a higher selection rate with a lower daily cost.

When taking action to develop the fixed gear EM program, the Council's problem statement stated:

> *"The Council recognize[d] the benefit of having access to an assorted set of monitoring tools in order to be able to balance the need for high-quality data with the costs of monitoring and the ability of fishery participants, particularly those small vessels, to accommodate human observers."*[2]

As such, the current fixed gear EM program uses a voluntary design that works to minimize operational impacts for participants, which has been a key component for stakeholder support of EM in the partial coverage program. However, the voluntary programmatic design feature also allows larger vessels capable of carrying an observer, or vessels taking relatively few trips, to opt into the fixed gear EM program. **Optimizing the fixed gear EM program for cost efficiencies would likely entail limiting voluntary participation in the EM program to ensure EM equipment is used cost effectively (for example, not installed on vessels taking very few trips).** Changing this programmatic design feature could potentially reduce program-wide, per-day costs of monitoring if EM achieves a higher selection rate with a lower daily cost, but it will also reduce programmatic flexibility and likely impact stakeholder support for the partial coverage program.

Fixed gear EM optimization for cost efficiencies will **require a determination of the relative costs of EM versus observers.** 2018 was the first year of the implemented EM program option for fixed gear vessels under the partial coverage program, which means the costs of the program are not yet perfectly understood. EM costs and deployment of EM on hook and line vessels were evaluated in the 2018 Annual Report (NMFS 2019). EM deployment on pot vessels was still in pre-implementation phase in 2018 as the data were not used for catch accounting in this first year of the regulated program.[3]

To move EM optimization for cost efficiencies forward, the Council could task staff to develop a scoping paper that considers: 1) the optimal size and composition of the EM pool; 2) how many vessels are supported by a particular EM service port; 3) the number of trips taken by a vessel annually, as well as the temporal and spatial distribution of those trips; 4) and the longevity of vessels within the EM pool (e.g., does the vessel remain in the pool after their initial installation and socialization into the program?). Once we have determined what an optimal EM fleet would look like, NMFS could change the criteria in the ADP that determine which vessels are eligible to opt-into EM and the Council could encourage ideal candidates to opt into the EM pool. EM optimization would be an iterative process taking two to three years.

2.4 Expand the Size of the Fixed Gear EM Program: There are potential opportunities for cost savings under the partial coverage observer program by expanding the size of the fixed gear EM pool, which could result in higher selection rates for less cost than the current cost per observer day. This project is related to the previous idea of optimizing the size of the EM pool. However, in this scenario the size of the EM pool would be expanded based solely on any vessel that volunteered to be in the EM pool. In other words, the eligibility for an expanded EM pool would

[2] EM Integration Analysis, Public Review Draft available at: https://meetings.npfmc.org/CommentReview/DownloadFile?p=76e243f4-af9f-483a-b30d-71321c0ed872.pdf&fileName=C9%20EM%20analysis%20Public%20Review%20Draft.pdf.

[3] EM deployment in 2018 and 2019 was fully funded through alternate funding sources and no observer fees were used to pay for EM deployment. EM deployment for 2020 will continue to be funded outside the observer fee.

not specifically be connected to cost efficiency. Rather, overall cost efficiency would be achieved through an expanded fixed gear EM pool under the assumption that a mature EM program proved to be more cost efficient than the current cost per observer day. While the cost of initially installing EM equipment on vessels is relatively high, vessels that remain in the program for multiple year could produce data at lower monitoring costs. The primary post-installation costs for EM include maintenance, licensing, and data review.

Next steps to move this project forward would be similar to the previous EM optimization for cost efficiency: determine the relative costs of EM versus observers as well as estimates for cost scaling EM, and work to develop proxy weight protocols and methods for collecting biological samples (either through some level of observer coverage and/or shoreside sampling). The current fixed gear EM pool may be expanded through the ADP process, though staff are not currently tasked to this project. These tasks would require a moderate amount of staff time and resources.

2.5 Change the Definition of Zero Selection: Changing the definition of the Zero Selection pool could provide the Council an opportunity for cost savings in the partial coverage observer program by re-evaluating those vessels placed into the Zero Selection pool. Currently, vessels are placed in Zero Selection primarily based on the vessel's size and gear – hook and line and pot vessels under 40 ft and jig vessel regardless of length are placed in Zero Selection; hook and line and pot vessels 40 ft and over (and all trawl) are included in the sampling frame. **If vessels that take very few trips per year were added to Zero Selection, and these vessels were taken out of the EM pool, then it could improve the efficiency of the EM program, but it is less certain the level of impact these changes would have on observer deployment rates.**

To move changes to the definition of Zero Selection forward, the Council would need to consider the potential for efficiency gain from redefining Zero Selection criteria, and moving vessels in or out of the sampling frame, while not reducing the number of trips (or catch) that remains in the frame. This would require staff to work with the Fishery Monitoring and Advisory Committee (FMAC) as well as the Partial Coverage Fishery Monitoring and Advisory Committee (PCFMAC, formerly the 'Partial Coverage Subgroup').[4] Potential data needs include: an analysis of vessels that might be candidates for a re-evaluated zero selection pool, an evaluation of data quality and management impacts for changing the Zero Selection pool, and an estimation of cost efficiency gains from a revised Zero Selection pool. Changing the definition of Zero Selection would not require a change in the regulations, as the criteria for who is in Zero Selection are contained in the Annual Deployment Plan.

2.6 Cost Implications of Partial Coverage Flexibilities: This section of the workplan reviews different flexibilities that are built into the partial coverage observer program's design. **In general, these flexibilities are costly. Re-evaluating these flexibilities provides the Council an opportunity to take action on staff tasking for an analysis of the potential cost savings for any particular option.**

- **The current partial coverage program requires a three-day notice for deploying at-sea observers.** Utilizing a three-day window is expensive, as it gives both the agency and the observer provider a relatively short advance warning. This design was utilized to increase the level of flexibility afforded to fishermen to minimize the impact of their fishing trip (e.g., timing of the trip). Cost savings could potentially be incurred by extending the length of the notice for deploying at-sea observers, though this change would require buy-in from the industry by logging their fishing trips in the ODDS system further in

[4] At the Council's October 2019 meeting, the Council established the Partial Coverage Fishery Monitoring Advisory Committee (PCFMAC) and endorsed the scope purpose and tasking for the Council's three monitoring committees (FMAC, PCFMAC, and Trawl EM Committee) as described in the staff document, "Strategic overview of Council monitoring committees. The October 2019 Strategic Overview of Council Monitoring Committees document is available on under agenda item C3: https://meetings.npfmc.org/Meeting/Details/823.

advance from their departure date. **The actual cost savings of extending the trip notification period are uncertain at this time and would require further analysis from staff as well as a regulatory change.**

- **Under the current partial coverage program, observers and their equipment are not staged at a select number of primary ports (e.g., Dutch Harbor, Kodiak, or Sitka).** Industry stakeholders have expressed concern over the costs (e.g., airline baggage fees) related to transporting observer equipment such as baskets. While observer equipment is currently staged at the primary ports of Kodiak and Dutch Harbor, this is primarily done for the full coverage observer program because of the emphasis of flexibility inherent to the partial coverage program. When a partial coverage trip is selected for coverage, regardless of what port that vessel departs from, an observer can travel to the port with their equipment to leave on time. Staging observer equipment will decrease programmatic flexibilities, as vessels would be required to depart from ports where equipment was staged, and the actual cost savings are uncertain at this time and would require further analysis from staff.

- **The current partial coverage program allows vessels to operate out of any port with a Federal Fishing Permitted processor.** This flexibility allows vessels to operate as they usually would but increases costs for travel and observer down-time. There are potential programmatic cost savings by reducing the number of ports from which observers can deploy. Actual cost savings are uncertain at this time and would require further analysis from staff.

- **Trip selection compared to Vessel Selection.** There is an opportunity for cost efficiencies under the partial coverage program by re-evaluating trip selection as the sole method for assigning observers and EM. From 2013 to 2014, the partial coverage program used the vessel rather than the trip for vessels greater than or equal to 40 ft and less than 57.5 ft as the primary sampling unit from which to randomize observer deployment. Under this approach, selected vessels were required to carry observers for all trips during their selected 2-month period. Using vessel selection reduces the need for observer travel, and when combined with full monitoring, generates representative data. While this ‘reference fleet’ concept was used in 2013 and 2014 in the North Pacific, it was abandoned in our region in 2015 due to poor rates of observation of selected vessels (i.e., vessels disproportionately canceled their trips or did not fish in their selected time period). Cost savings could be accomplished through vessel selection or other deployment models that increase the amount of time observers spend on a selected vessel to reduce travel cost and observer down-time. As with the other flexibilities incorporated into the existing program, actual cost savings are uncertain at this time and would require further analysis from staff.

Table 1. Potential Impacts, Pros/Cons, and Cost Savings of Each Option

Project Title	Potential to achieve Council's monitoring objectives?		Ability to improve Cost Efficiency	Pros	Cons
Pelagic Trawl EM	Minimize monitoring effect	Yes	- During the EFP, there is large budgetary benefit to the program since EFP is funded through grants. - Long term, cost efficiencies are still unknown and will be assessed during the EFP. Costs will include EM deployment, video review and data storage, and the costs of a shoreside sampling program.	- Broad support from industry and other stakeholders - Possible cost efficiencies gained by stationing observers shoreside (e.g., reduced human capital costs). - Provide PSC counts at a lower cost than at-sea observers - Reduce the observer effect	- Depending on scale of "maximized" retention, could impact NMFS' ability to collect data on discarded species (e.g. biologicals from sharks).
	Improve discard estimates	Depending on scale of "maximized" retention, could impact ability to collect data			
	Improve PSC monitoring	Potential to improve PSC monitoring if it includes shoreside observers and shoreside plant components to enable PSC sampling			
	Enable fish-depend. data collection (e.g. stock assessment)				
	Flexible & responsive program	Yes			
	Distribute burden fairly & equitably	Yes – though it will depend on how EM program develops & who pays for what			
	Minimize operational impact for participants	Yes			
	Positive stakeholder support	Yes			
Integrated Fixed Gear Program	Minimize monitoring effect	Initial analysis shows less evidence of a monitoring effect in EM hook-and-line as compared to observer hook-and-line pool. The monitoring effect could be eliminated if the current model was changed to full EM coverage with trips post-selected for review	The costs for shoreside sampling component are unknown and may not provide any cost savings compared to at-sea observers.	- Shoreside sampling from fixed gear vessels could provide census counts and biological samples for retained catch at a lower cost than at-sea observer days. - Integrating EM data to re-evaluate the	- Without a shoreside sampling program, less fishery-dependent biological data (including weight information) will be collected and count towards the re-

	Improve discard estimates	Depending on scale of full or "maximized" retention, could impact ability to collect discard data		15% hurdle, while considering potential data gaps and needs for both catch accounting and stock assessments, could potentially free up observer days or lead to higher coverage rates.	evaluated hurdle. - Unless there was full retention (by a reference fleet or other solution), the biological sampling shoreside would be limited to retained species and would be biased to market-sized fish (e.g., no sampling of discards).
	Improve PSC monitoring	Potential to improve PSC monitoring if combined with shoreside sampling program & full retention			
	Enable fish-depend. data collection (e.g. stock assessment)	Potentially negative; Important to recognize tradeoffs between types of fishery-dependent data collected by at-sea observers versus EM if the 15% hurdle is re-evaluated			
	Flexible & responsive program	Potential to design a flexible and responsive program, but need to consider how implementation of different elements would be accomplished			
	Distribute burden fairly & equitably	No change			
	Minimize operational impact for participants	Potentially negative as full retention would impact vessels, and shoreside sampling program might require changes in processing plants.			
	Positive stakeholder support	Potentially negative, even though the Council has received public testimony in favor, as operational impacts might			

		change public support.			
Optimize Composition of EM Pool for Cost Efficiency	Minimize monitoring effect	Could result in more incentive for bias if vessels no longer eligible for EM take "observer trips" to minimize impact of having observers on their boats.	Yes - Would result in cost efficiencies for EM program (since EM eligibility would be based on cost efficiency).	EM optimization changes have the potential to reduce program-wide, per-day costs of monitoring if EM achieves a higher selection rate with a lower daily cost.	Optimizing the fixed gear fleet by limiting who is eligible to opt-in (e.g. to ensure EM equipment is not installed on vessels taking few trips) reduces vessel flexibility.
	Improve discard estimates	No change			
	Improve PSC monitoring	No change			
	Enable fish-depend. data collection (e.g. stock assessment)	No change			
	Flexible & responsive program	No change			
	Distribute burden fairly & equitably	No change			
	Minimize operational impact for participants	If an optimized EM program determined that some vessels are no longer eligible to opt in (e.g., vessel only logs one trip), those vessels would remain eligible for random selection under the partial coverage program. It is possible that some of these vessels are small and not well-suited for carrying an observer			
	Positive stakeholder support	Could result in negative reaction if some vessels are			

		no longer eligible for EM			
Expand EM Pool Size	Minimize monitoring effect	Initial analysis shows less evidence of a monitoring effect in EM hook-and-line as compared to observer hook-and-line pool. The potential to avoid a monitoring effect is even better if the current model is changed to one that is full coverage with trips post-selected for review	Expanding the EM pool size has potential to reduce programmatic costs over the long run. While the cost of installing equipment on EM vessels is relatively high, vessels that remain in the program produce data for multiple years at lower monitoring costs (primarily maintenance, licensing, and data review).	Increasing size of EM pool could result in higher selection rates for less cost than the current cost per observer day, even when considering the cost of video data review.	Until proxy weight protocols are established, expanding the EM pool will only provide a better understanding of encounter and bycatch rate, and not count towards the 15% hurdle or stock assessments.
	Improve discard estimates	Could improve discard counts but degrade discard weights without a shoreside component, and EM expansion may lose speciation of discards (e.g., for skates) and injury assessments for discarded halibut			
	Improve PSC monitoring	Could improve PSC counts but will degrade current PSC weight data and lose injury assessments for discarded halibut			
	Enable fish-depend. data collection (e.g. stock assessment)	Could increase data gaps if not correctly combined with some amount of at-sea or full retention & shoreside coverage			
	Flexible & responsive program	Inflexible to all data needs other than counts			
	Distribute burden fairly & equitably	No change			
	Minimize operational impact for participants	Yes			

	Positive stakeholder support	Yes			
Expand Zero Selection	Minimize monitoring effect	Potential to decrease monitoring effect if vessels are changing behavior due to EM or observers.	Yes- Moving vessels into zero selection would reduce number of vessels needing to be monitored with the same budget.	- Has the potential to improve the cost effectiveness of EM deployment within the current EM pool. - Increasing the number of small vessel trips in the zero selection pool could impact the number of vessels eligible for the EM pool, sea day, and equipment costs but with a minimal impact on the number of trips in the sample frame.	- Increases data gaps by removing more vessels from sampling frame. - Could result in less representative trips being applied to the zero selection pool as the composition of these pools become more disparate.
	Improve discard estimates	Could increase data gaps by putting more boats in zero selection			
	Improve PSC monitoring				
	Enable fish-depend. data collection (e.g. stock assessment)				
	Flexible & responsive program	No change			
	Distribute burden fairly & equitably	While the cost burden would be equitable, the observer burden would not as monitoring would increase on one sector by removing vessels from another sector.			
	Minimize operational impact for participants	Yes			
	Positive stakeholder support	Yes			
Partial Coverage Flexibilities	Minimize monitoring effect	No Change	Yes - has potential to significantly increase cost efficiency by eliminating most expensive options.	Understanding what drives up cost would enable evaluation of tradeoffs between cost and goal of minimizing impact on vessel operation.	Reducing flexibility will impact participants.
	Improve discard estimates	No Change			
	Improve PSC monitoring	No Change			
	Enable fish-depend. data collection	No Change			

	(e.g. stock assessment)				
	Flexible & responsive program	No impact flexibility of program design but would impact vessels			
	Distribute burden fairly & equitably	Impacts could be different for different vessels			
	Minimize operational impact for participants	Would impact vessel operations			
	Positive stakeholder support	Reduced flexibility would have to be balanced with increased cost efficiencies			

Table 2. Project logistics for implementation, next steps, and workload

Project	Implementation Considerations	Current Status	Next Steps	Staff Workload & Timeline Implications
Pelagic Trawl EM	Pre-implementation needs to occur under EFP. Implementation would require change in regulations.	- EFP approved for fishing in 2020 and 2021. - Programming ODDS and CAS to support EFP implementation underway. - Development of port sampling program underway (biologicals for stock assessment and PSC sampling). - Review of VMPs underway - Video review protocols under development.	- Implementation of EFP starting Jan 2020. - Extensive coordination b/t NMFS and permit holders throughout project - Evaluation of EFP data. - Continued monitoring by the EM Trawl Committee.	- Extensive effort in 2020 but expect more moderate effort in 2021.
Integrated Fixed Gear Program	New program elements likely to require changes in regulations.	The Plan Team has been tasked with evaluating biological sampling needs to support stock assessments.	- Evaluate port sampling as a lower cost means of providing biological samples and proxy weights for piece counts. - Conduct a feasibility assessment for using shoreside data to provide a proxy weight for EM discard counts. - Conduct a gap analysis of the level of at-sea sampling that would still be necessary. - Analyze the contracting options for a shoreside sampling program. - Coordinate development of common elements in the trawl and fixed gear EM programs, such as port	- Extensive staff effort. - 2021 is the earliest start date for staff work to be able to leverage lessons learned from trawl EM shoreside program development.

			sampling, cost metrics, data review options etc., to the text possible using the existing PCFMAC, FMAC, or Trawl EM Committee.	
Optimize Composition of EM Pool for Cost Efficiency	Implementation through ADP process.	In 2020, NMFS incorporated number of trips per year as one element in prioritizing among the vessels that opted into EM to decide which vessels were approved for EM.	- Development of an EM cost model to evaluate optimal size & composition of fixed gear EM pool. - Estimates of recurring cost to maintain current EM pool - Estimates for data review and storage costs for hook-and-line and pot gear. - The Council could reconstitute the Fixed Gear EM workgroup or identify another forum, such as the PCFMAC, to provide detailed guidance on optimization.	- Moderate staff effort; EM optimization is likely to be an iterative process taking two to three years, as vessels were incentivized to opt into EM and current EM vessels are returned to the observer selection pool.
Expand EM Pool Size	Implementation through ADP process.	The 2020 ADP included an evaluation of expanding the EM pool and the impact on data gaps.	- Analyze impacts on proxy weight protocols. - Estimates for cost scaling as EM pool increases (the number of vessels is one key metric, but the number of days/trips fished by those vessels is equally important).	Moderate staff effort.
Expand Zero Selection	Implementation through ADP process.	A data set vessel demographics and fishing patterns was created in 2017[5] could provide a staring place for analysis.	-An analysis would need to be completed to determine if there are vessels that might be moved in or out of zero selection. -Evaluate data quality and	Moderate staff effort.

[5] See Option 2: Zero Selection in https://www.npfmc.org/wp-content/PDFdocuments/conservation_issues/Observer/OACsubgroupDP9-15-17.pdf

			management impacts.	
Partial Coverage Flexibilities	Some aspects could be done through ADP process; others might require change to regulations	No work has been done	-Identify and prioritize areas of decreased flexibility that are acceptable to the affected fleet; analyze the potential cost savings. - Analyze cost categories from the recently completed observer contract to improve understanding of how flexibilities drive cost. - Model potential cost savings of reduced flexibilities based on cost assumptions from the prior observer contract.	Moderate staff effort.