

Draft Amendment 23: Draft Decision Document

Overview

- This document summarizes the alternatives under consideration and primary draft analyses used to evaluate potential impacts of Amendment 23 alternatives on various valued ecosystem components (VECs).
- The VECs for the Northeast Multispecies (groundfish) Fishery Management Plan are: biological (regulated groundfish and other, non-groundfish species), essential fish habitat, endangered and protected species, economic, and social.
- Table 1 is a summary of the alternatives in the draft amendment. The main document should be reviewed for full description of each alternative; the summary table does not include all the details for each alternative.
- Table 2 highlights the expected impacts for all alternatives under consideration compared to No Action.

Purpose and Need / Goals and objectives of Amendment 23 (Section 3.0)

Need - to implement measures to improve the reliability and accountability of catch reporting in the commercial groundfish fishery to ensure there is precise and accurate representation of catch (landings and discards).

Purpose - adjust the current monitoring program to improve accounting and accuracy of collected catch data. It is the Council's intent that the catch reporting requirements are fair and equitable for all commercial groundfish fishermen, while maximizing the value of collected catch data, and minimizing costs for the fishing industry and the National Marine Fisheries Service.

This action would maintain the current goals and objectives of the groundfish monitoring program developed in Framework 48, but consider measures to better address Goal #1: improve documentation of catch, described as "improved catch accounting" during the scoping process for this action.

The objectives associated with that goal are:

- 1) Determine total catch and effort, for each sector and common pool, of target or regulated species; and
- 2) Achieve coverage level sufficient to minimize effects of potential monitoring bias to the extent possible while maintaining as much flexibility as possible to enhance fleet viability.

Table 1. Amendment 23 Alternatives

	Alternatives	Description
4.1	<i>Commercial Groundfish Monitoring Program (Sectors only)</i>	
4.1.1	Sector monitoring standard (coverage level)	
4.1.1.1	Sector Monitoring Standard Option 1 (No Action)	Minimum coverage levels must meet CV precision standard specified in SBRM using fishery performance criteria, and other factors can be considered
4.1.1.2	Sector Monitoring Standard Option 2 (Fixed total at-sea monitoring coverage level based on % of trips)	Fixed total would be identified for deploying human observers at-sea. Sectors would achieve the standard through use of human observers or options for substitute sector monitoring tools (Section 4.1.2)
	Sub-option 2A – 25%	
	Sub-option 2B – 50%	
	Sub-option 2C – 75%	
	Sub-option 2D – 100%	
4.1.1.3	Sector Monitoring Standard Option 3 (Fixed total at-sea monitoring coverage level based on % of catch)	Fixed total would be identified for deploying human observers at-sea. Sectors would achieve the standard through use of human observers or options for substitute sector monitoring tools (Section 4.1.2)
	Sub-option 3A – 25%	
	Sub-option 3B – 50%	
	Sub-option 3C – 75%	
	Sub-option 3D – 100%	
4.1.2	Sector monitoring tools (options for meeting monitoring standards)	
4.1.2.1	Sector Monitoring Tools Option 1 – EM in place of human at-sea monitors	Sectors could choose EM to monitor catch in place of human at-sea monitors (but not to replace NEFOP observers). EM would only be required to run on trips selected for coverage under the selected coverage rate selected above. Vessels would be required to submit a vessel monitoring plan (VMP) that would document installation of EM system and plans for operation.
4.1.2.2	Sector Monitoring Tools Option 2 – Audit model EM	Approve the use of audit model EM in place of human at-sea monitors (but not to replace NEFOP observers). EM runs 100% of trips and subset of hauls or trips reviewed to verify VTR reported discards. Video review rate would be determined by NMFS and could be reduced through evaluation by NMFS. The Council supports the initial review rates provided from NMFS in its proposed EM option for sectors. Vessels would be required to submit VMP that would document installation of EM system and plans for operation.

	Alternatives	Description
4.1.2.3	Sector Monitoring Tools Option 3 – Maximized retention EM	Approve the use of maximized retention EM in place of human at-sea monitors (but not to replace NEFOP observers). EM runs 100% of trips and verifies that all allocated, non-prohibited GF are landed, paired with dockside monitoring to sample catch. Vessels would be required to land all GF of all sizes, no discarding of non-prohibited fish. Vessels would be required to submit VMP that would document installation of EM system and plans for operation.
4.1.3	Total Monitoring Coverage Level Timing	Has varied over time, but ASM coverage level usually available before SBRM analysis used to determine NEFOP levels. Regulations require sectors submit prelim rosters by Dec 1.
4.1.3.1	Coverage Level Timing Option 1 (No Action)	Announced when necessary analyses are available.
4.1.3.2	Coverage Level Timing Option 2 – Knowing total monitoring coverage level at a time certain	3 weeks prior to annual sector enrollment deadline – this option would only apply to current CV method for target coverage levels (4.1.1.1).
4.1.4	Review process for sector monitoring coverage	
4.1.4.1	Coverage Review Process Option 1 (No Action)	No official schedule – sector monitoring coverage rates would be reviewed periodically as part of the goals and objectives of the sector monitoring program
4.1.4.2	Coverage Review Process Option 2 – Establish a review process for monitoring coverage rates	Once 2 years of fishing year data is available and periodically after that. Metrics would be developed and indicators for how well program has improved accuracy while minimizing costs. This review would most likely be done by the Groundfish PDT with substantial support by NEFSC and GARFO.
4.1.5	Addition to list of framework items	Council would be able to consider adding new sector monitoring tools that meet or exceed monitoring standards or vessel specific coverage levels by framework action.
4.2	<i>Commercial Groundfish Monitoring Program Revisions (Sectors and Common Pool)</i>	
4.2.1	Dockside monitoring program (DSM) (Sectors and Common Pool)	
4.2.1.1	DMS Option 1 (No Action)	No current requirement, but a sector can develop as part of its operations plan, and NMFS can approve.
4.2.1.2	DSM Option 2 – Mandatory DSM for entire commercial GF fishery	Mandatory DSM for entire GF fishery (sectors and common pool) at 100% of all trips.
4.2.2	Dockside monitoring program structure and design	
4.2.2.1	DSM funding responsibility	
4.2.2.1.1	DSM Funding Responsibility Option A – Dealer responsibility	
4.2.2.1.2	DSM Funding Responsibility Option B – Vessel responsibility	

	Alternatives	Description
4.2.2.2	DSM program administration	
4.2.2.2.1	DSM Administration Option A – Individual contracts with DSM providers	
4.2.2.2.2	DSM Administration Option B – NMFS administered, single DSM provider	
4.2.2.3	Options for lower dockside monitoring coverage levels (20% coverage)	
4.2.2.3.1	Lower coverage levels Option A	DSM would be randomly assigned to ports with total groundfish landings volumes in the 5 th percentile of total annual landings (2016-2018) at a lower coverage level, 20%. Periodic re-evaluation of what constitutes a low volume port would occur after 2 years of data available, every 3 years after that.
4.2.2.3.2	Lower coverage levels Option B	Vessels with less than 46,297 pounds annual average (2016-2018) or dealers that receive landings from vessels with less than 46,297lbs pounds would have lower coverage, 20%. Periodic re-evaluation of what constitutes a low volume vessel would occur after 2 years of data available, every 3 years after that.
4.2.2.4	Options for DSM safety and liability associated with fish hold inspections	
4.2.2.4.1	Fish hold inspection Option A – DSM fish hold inspections required	Would be allowed access for inspection, they must have insurance, they can refuse but must document reason.
4.2.2.4.2	Fish hold inspection Option B – Alternative methods for inspecting fish holds (cameras)	Cameras can be used to verify all retained catch is offloaded.
4.2.2.5.3	Fish hold inspection Option C – No fish hold inspection required, captain signs affidavit	Captain certify all catch has been removed, subject to penalties
4.3	Sector Reporting	
4.3.1	Sector Reporting Option 1 (No Action)	Weekly reporting of landings and discards and year end reports.
4.3.2	Sector Reporting Option 2 – Grant RA authority to streamline sector reporting requirements	RA could revise reporting requirements if specific details are deemed sufficient by the RA.

	Alternatives	Description
4.4	<i>Funding/Operational provisions of groundfish monitoring program (Sectors and Common Pool)</i>	
4.4.1	Funding Provisions Option 1 (No Action)	Industry is required to fund at-sea monitoring costs.
4.4.2	Funding Provisions Option 2 – Provisions for an increase or decrease in funding for the GF monitoring program	
4.4.2.1	Funding Provisions Sub-option 2A – Higher monitoring coverage levels if NFMS funds are available (Sectors Only)	At-sea monitoring could be set at higher coverage levels than required if NMFS gets additional funds. Could be done on a limited basis to evaluate bias.
4.4.2.2	Funding Provisions Sub-option 2B – waivers for monitoring requirements allowed (Sectors and Common Pool)	Vessels could be issued waivers to exempt them from industry-funded monitoring requirements, for either a trip or the fishing year, if coverage was unavailable due to insufficient funding for NMFS shoreside costs for the specified target coverage level.
4.5	<i>Management uncertainty buffers for the commercial groundfish fishery (Sectors only)</i>	
4.5.1	Management Uncertainty Buffer Option 1 (No Action)	5% of the ABC by default, and for stocks with less uncertainty it is set at 3% (no state water catch), for stocks with more it is set at 7% (zero possession and discard only stocks)
4.5.2	Management Uncertainty Buffer Option 2 – Elimination of management uncertainty buffer for Sector ACLs with 100% monitoring of all sector trips	Revise the management uncertainty buffer for the sector ACL for each allocated groundfish stock to be zero, if the option for 100 percent at-sea monitoring is selected.
4.6	<i>Remove commercial groundfish monitoring program requirements for certain vessels fishing under certain conditions</i>	
4.6.1	Removal of monitoring requirements Option 1 (No Action)	Sector vessels fishing exclusively with extra-large mesh gillnets greater than 10 inches and in the SNE/MA or inshore GB BSA are not subject to at-sea monitoring
4.6.2	Removal of monitoring requirements Option 2 – Vessels fishing exclusively west of <u>72 30 W</u> would not be subject to monitoring requirements on trips in that area	
4.6.2.1	Removal of monitoring requirements Option 2A (Sectors only)	Sector vessels fishing exclusively west of 72 30 W would not be subject to <u>at-sea monitoring</u>
4.6.2.2	Removal of monitoring requirements Option 2B (Sectors and Common Pool)	Vessels fishing exclusively west of 72 30 W would not be subject to <u>DSM</u>

	Alternatives	Description
4.6.3	Removal of monitoring requirements on trips in that area	Option 3 – Vessels fishing exclusively west of <u>71 30 W</u> would not be subject to monitoring requirements
4.6.3.1	Removal of monitoring requirements Option 3A (Sectors only)	Sector vessels fishing exclusively west of 71 30 W would not be subject to <u>at-sea monitoring</u>
4.6.3.2	Removal of monitoring requirements Option 3B (Sectors and Common Pool)	Vessels fishing exclusively west of 72 30 W would not be subject to <u>DSM</u>
4.6.4	Review process for vessels removed from commercial groundfish monitoring program requirements	
4.6.4.1	Review process for vessels removed from commercial groundfish monitoring program requirements Option 1 (No Action)	Currently there is no formal review process to verify that the catch composition from vessels fishing on trips not subject to monitoring requirements have little to no groundfish.
4.6.4.2	Review process for vessels removed from commercial groundfish monitoring program requirements Option 2: Implement a review process	After two years of fishing data is available, and every three years after that, the PDT would review catch composition from vessels fishing on trips not subject to monitoring requirements to verify that the catch composition has little to no groundfish.

Primary methods used for impact analyses

Biological (DEIS Part 3a, Section 7.0): The PDT prepared four analyses to support initial development of A23:

- 1) discard incentives for Northeast multispecies (groundfish) stocks;
- 2) observer effects in the groundfish fishery;
- 3) groundfish catch ratios on observed and unobserved trips; and
- 4) methods to predict groundfish catch on unobserved trips using observed trip information in the presence of observer bias.

The SSC reviewed these analyses and the SSC review and individual reports are included in the DEIS as appendices. In summary, the reports concluded that observed groundfish trips are not representative of unobserved trips and overall improvements to monitoring are expected to potentially have positive biological impacts from lower fishing effort and improved stock assessments.

For specific alternatives, the PDT completed other biological analyses. For example, the PDT examined how various levels of observer coverage (10%-100%) and observer bias (1X, 2X, 5X, and 10X) could influence the estimation of groundfish catch. Observed and estimated discards from 2010-2017 were compared and the results show that for highly utilized stocks where catch is comprised mostly of landings, the effects of observer coverage and bias are relatively low. However, under high levels of bias (10x) and low levels of coverage (10–25%), simulated true catch for some stocks was significantly inflated over the true catch that occurs with no bias. It is important to note that this analysis focuses on discards reported in observer data, i.e. primarily sublegal discards, which comprise only a small amount of total catch. It cannot provide any context for the amount of illegal discarding of legal-sized fish that may occur on unobserved trips and how that affects total catch estimation. Lack of compliance with groundfish regulations including unreported illegal discarding of legal-sized fish that may occur on unobserved trips could bias total catch estimates at magnitudes far greater than uncertainty related to sub-legal discards. The PDT also explored the potential magnitude of missing catch for GOM cod in more depth because it was a highly constraining stock in 2016-2017 producing economic incentives to discard legal-sized fish, and the stock size has changed substantially over the last ten years. The analysis concluded that based on many assumptions, a rough multiplier on an upper bound of potential missing GOM cod is about 2.3.

Physical Environment/EFH (DEIS Part 3a, Section 7.0): The effects on essential fish habitat (EFH) associated with these alternatives, if any, would be indirect, and related to whether a particular change to the monitoring system influences either the magnitude of effort in the fishery, the location of that effort, or both. While some management actions have the ability to affect the types of gears used in a fishery, which could have large influences on the magnitude of impacts to EFH because different gears have very different seabed impacts, the alternatives in Amendment 23 would apply regardless of gear type and seem unlikely to lead to gear switching. Thus, this analysis assumes that vessels that currently fish with trawls will continue to fish with trawls, gillnets with gillnets, etc. The EFH impacts focus on changes in the amount or location of fishing that might occur as a result of the implementation of the various alternatives. Impacts of the fishery on EFH are more dependent on annual catch limits and only somewhat related to at-sea monitoring coverage requirements, to the extent that these requirements impose a cost burden and reduce the likelihood of a trip occurring.

Protected Resources (DEIS Part 3a, Section 7.0): The potential impacts on protected resources are evaluated for their impacts on species protected under the Endangered Species Act (ESA) of 1973 and/or the Marine Mammal Protection Act (MMPA) of 1972. This impact analysis considers how the fishery may overlap with protected species in time and space, as well as records of protected species interaction with particular gear

types (e.g. gillnet, bottom otter trawl). Impacts of at-sea monitoring coverage are indirect, as monitoring provides additional information on interactions between protected species and fishing gear. Any expected changes in fishing effort have direct impacts on protected species.

Economic (DEIS Part 3b, Section 7.0): The draft economic impacts include both quantitative and qualitative analyses.

For most alternatives in section 7.4.3 (monitoring program revisions for sectors only) and in 7.4.7 (management uncertainty buffers) there are three components:

- 1) Quantitative *static* monitoring costs that are estimated by applying the cost of each alternative to realized fishery data in FY 2018. The static analyses assume that all sector vessels select the same at-sea monitoring system;
- 2) Quantitative *dynamic* fishery impacts based on changes expected to occur across the fleet from additional monitoring costs. The dynamic analyses attempt to capture the distributional impacts across the fishery by modeling the monitoring tools each vessel is *expected* to select under various monitoring coverage levels; and
- 3) Qualitative assessment of the risk of noncompliance and enforceability of alternatives.

The PDT used two primary models to analyze the monitoring standard and monitoring tool alternatives; the cost efficiency model and the quota change model (QCM):

- 1) The cost efficiency model focuses of quantifying costs for the different monitoring tools under consideration (human at-sea observers, at-sea electronic monitoring using Audit model, and at-sea electronic monitoring using maximum retention model). Estimates are based on cost functions from four separate pilot EM programs in place in this region. The costs include equipment, field services, data review and data storage.
- 2) The QCM analyzes the impacts of each combination of measures on sectors in terms of fishery wide behavioral changes as a result of increased monitoring costs. This more dynamic model estimates which vessels and trips are likely to take place as operating costs increase; some vessels may choose to lease their ACE, others may stop fishing or increase effort in other fisheries, and some may increase groundfish fishing effort. As monitoring or ACE leasing costs change, individual fishing effort will change as operators evaluate their anticipated profits.

Impacts are reported for six metrics:

- 1) gross revenues (sum of all revenue generated on groundfish trips);
- 2) ASM costs estimated dynamically under the QCM;
- 3) cost of operations (ice, fuel, food, quota costs, leasing fees, etc.);
- 4) operational profits (difference between gross revenues and cost of operating and monitoring);
- 5) profit percent (proportion of gross revenues represented by operational profits; and
- 6) change in profit percent relative to the "Status Quo" (modeled version of FY2018 using the QCM), described in more detail below.

Costs and benefits are not uniformly distributed across the fleet; as operating costs increase, smaller vessels and those with lower groundfish fishery participation are more negatively impacts. The DEIS includes estimated costs by various factors to illustrate these potential distributional effects (days absent categories, vessel home port, vessel size, and sector).

For the electronic monitoring alternatives several important assumptions are made:

- 1) review rates will decline over three years (50% to 30% to 15% for Audit model and 50% to 50% to 25% for MaxRet);
- 2) vessels enroll in a program for three years;
- 3) costs vary by year where year 1 is cost of equipment and installation and year 2 and 3 costs include only operations and maintenance; and
- 4) costs do not vary across at-sea monitoring sub-options and review rates apply to all days a vessel is absent or fishing.

In recognition of the fact that some portion of EM costs may be subsidized, a second set of models estimate costs without including equipment and installation, under the assumption that industry would only be required to pay for the operational costs of the programs. Therefore, the EM alternatives include two scenarios: without subsidy "0" and with subsidy "1". The ability to smooth costs, potentially either under a subsidy or if financing is available, is a significant driver of EM program participation.

An additional "blended" dynamic analysis was completed to model a vessel's selection into one of the three monitoring technologies: human observers, EM Audit and EM Max Retention. Since this action may approve both EM models as voluntary equivalent substitutes for human observers the DEIS includes a model that estimates costs if each vessel selected the lowest cost technology under each coverage rate alternative (25%-100%). Costs of the two EM options are estimated based on the Cost Efficiency model previously discussed. Three factors drive which vessels chose which programs:

- 1) EM costs for the Audit and MaxRet models;
- 2) individual preferences; and
- 3) the cost of the ASM alternative, which varies by the percent coverage option selected by the Council.

Generally, EM is a lower cost alternative to human observers when a vessel fishes more than 20 days a year. Below this threshold, the cost of equipment, installation, maintenance and video review combine to make human observers the more cost-effective option. However, preferences matter greatly, and many sectors and vessels will not opt into the option that has the lowest cost due to a preference for EM and/or human observers. These preferences may be driven by fishing practices such as high-volume fishing and long trips, or by vessel construction and equipment (i.e. an on deck conveyor for sorting catch).

To estimate the potential economic effects of removing the management uncertainty buffers, the sector sub-ACLs that would result were input into the quota change model and used in the stand-alone human observer only model and the blended dynamic EM and human observer model (with and without subsidy). These "buffer" analyses are presented with subsidy and without. The quantitative analysis considered four dimensions of distributional effects: days absent, sectors, vessel size and home port. Overall, since the impacts of monitoring catch either dockside or at sea are primarily a function of time spent fishing, vessels that make more trips under the groundfish fishery, or spend more time fishing for groundfish, will be more impacted than those fishing less.

The economic analyses include the No Action (industry funded monitoring with human at-sea observers), as well as a "status quo" alternative, which is also No Action in terms of industry funded monitoring with human observers, but under contemporary conditions, specifically, since the federal government has been compensating groundfish vessels for human at-sea observers, the full costs of monitoring under No Action have not been fully realized by the fleet. When considering the impacts of new alternatives under consideration in Amendment 23, comparison to the status quo alternative may be more appropriate since

groundfish vessels have been compensated for monitoring costs since at-sea monitoring was required under Amendment 16.

Finally, most alternatives also have a qualitative compliance and enforceability score. Compliance is defined as the extent to which participants activities are in accordance with all rules and regulations such as retention and reporting requirements both at-sea and dockside. Enforceability is defined here as the ability for enforcement officials (NOAA OLE or US Coast Guard) to detect and prosecute violations.

For most alternatives in section 7.4.4 (Monitoring program revisions for sectors and common pool, or dockside monitoring options) and 7.4.8 (Removal of monitoring program requirements under certain circumstances) there are two impact analysis components:

- 1) Quantitative *static* analysis of DSM (and ASM, where appropriate) costs: Costs of each DSM alternative are determined by applying cost estimates to realized fishery data from FY 2016 to FY 2018.
- 2) Qualitative assessment of the risk of noncompliance and enforceability of alternatives.

Quantitative, static costs of the DSM alternatives were estimated using information of realized ASM costs per day absent, and using this to derive an estimate for what an hourly cost may be for DSMs, then using assumptions about how long it takes to observe offloads at various volumes, offloading costs were estimated. In addition to offloading costs, travel costs associated with sending monitors to minor ports were estimated by assuming each monitor would be sent from, and return to, the nearest major port (defined here as Boston, Gloucester, New Bedford, Portland, Chatham, Point Judith, Seabrook, Rye, and Portsmouth).

For impacts of a comprehensive DSM program for all sector and common pool trips (7.4.4.1.3), total dockside monitoring costs were estimated for all offloads that occurred in FY2016 to FY 2018. Distributional impacts for such a program were investigated by calculating total costs by group (common pool and sector), port category (major vs minor) and VTR state of offload. In addition, costs as a percent of revenue were calculated for various vessel length classes to gauge distributional impacts on profitability.

To estimate impacts of lower coverage levels for minor ports (7.4.4.2.3.1) and low-volume vessels (7.4.4.2.3.2), offloads in each low-coverage category were randomly selected in 200 simulations to generate mean estimates of DSM costs under each option.

Finally, to estimate impacts of removing monitoring requirements for trips fishing under certain conditions (7.4.8), the realized number of fishing trips occurring in each proposed exemption area over fishing years 2016-2018 were used to determine the scope of economic impacts for each option. Then each realized trip was run through the DSM cost model to estimate potential cost reductions as opposed to full DSM coverage, and the average ASM cost per day absent was used to determine potential ASM cost reductions.

As with the other economic sections, compliance and enforceability scores were also assigned, when relevant. In some cases, scores were not assigned, but a brief discussion accompanied qualitative impacts, where appropriate.

Across all of the economic analyses there are important caveats and limitations to consider. Overall, several alternatives in this action may have substantial effects on aggregate revenues and costs as well as the distribution of operating profits within the fishery.

Social (DEIS Part 3b, Section 7.0): The DEIS includes specific analysis of the potential social impacts on affected communities as well. The social impact factors included are: size and demographic characteristics, attitudes beliefs and values of fishermen, social structure and organization non-economic social aspects of the fishery, and historical dependence on and participation in the fishery. The 2012-2013 and 2018-2019 Crew Survey

(described in the Affected Environment) provides demographic characteristics of groundfish fishery crew, job characteristics, and characterizes general attitudes and beliefs towards fishing regulations.

No Action Groundfish Monitoring Program - Background

Currently groundfish sectors are responsible for developing and implementing a monitoring program, described in their operations plans, that satisfies NMFS and Council requirements for monitoring sector catch and discards. Amendment 16 specified a target coverage level standard for sectors and required industry-funded at-sea monitoring beginning in 2012. For observer or at-sea monitor coverage, minimum coverage levels must meet the coefficient of variation in the Standardized Bycatch Reporting Methodology. Any electronic monitoring equipment or systems used to provide at-sea monitoring will be subject to the approval of NMFS through review and approval of the sector operations plan. For common pool vessels, the monitoring program is exclusively covered by NEFOP human at-sea observers. Vessels are subject to SBRM levels based on the individual fishing type.

The biological benefits from improved monitoring will depend on the amount of unknown mortality from missing catch. Potential economic and social benefits of improved catch accounting are: ensuring that fishing practices are accurately and properly incentivized by price signals derived from the ACE lease market; fair and equitable distribution of benefits among fishermen, dealers, consumers, and other interested parties; improved stability and reliability of fish stock assessments and allocations derived from them; and respect for and validation of the rules governing sectors.

Table 2. Draft Impacts of Amendment 23 alternatives

	Alternatives	Biological Impacts (regulated groundfish and other species)	Economic and Social Impacts	Other impacts (protected resources and EFH)
4.1	Commercial Groundfish Monitoring Program (Sectors only)			
4.1.1	Sector monitoring standard (coverage level)			
4.1.1.1	Sector Monitoring Standard Option 1 (No Action)	The average total, target and realized coverage levels from 2010-2017 have been 25% and 22% respectively (13% ASM-only). There are multiple uncertainties with the current system (i.e. observed trips are not representative of unobserved trips), which have negative biological impacts on regulated groundfish and other species.	<p><u>Static monitoring costs</u> – Estimated at 13% and 22%. At 13% \$0.86 - \$0.93 mil. and \$1.45-\$1.57 mil. at 22%. NEFOP contribution to observer coverage rates overall is about \$0.64 mil.</p> <p><u>Dynamic fleet and vessel impacts</u> – Similar costs to static estimates above for 13% and 22% (\$0.9 mil. and \$1.5 mil. respectively). Aggregate fleet-wide revenue \$1 mil. lower under 13% coverage (\$70.8 vs. \$71.3 mil.). Increased cost may induce fisherman with higher operating costs to exit fishery. Larger vessels that participate more could see increase in gross revenue and operating profits.</p> <p><u>Enforceability and Compliance</u> – Low and Low. The risk of noncompliance under status-quo levels of monitoring has a high risk of non-compliance with reporting requirements, and a very low ability for enforcement to detect and prosecute violations.</p> <p>Overall, if the industry bears the cost for monitoring (No Action) there will be negative impacts relative to status quo, since industry has been reimbursed for monitoring costs. Impacts are increasingly negative when risks of non-compliance and low enforceability are considered.</p> <p><u>Social Impacts</u> – For all at-sea monitoring options: neutral to negative social impacts depending on the coverage level option. Higher at-sea monitoring</p>	<p>For all human at-sea monitoring coverage options: at-sea monitoring has indirect low positive to positive impacts on protected species, depending on the coverage level option, by providing information on interactions with fishing gear.</p> <p>For all human at-sea monitoring coverage options: impacts to EFH are negligible to positive, depending on the coverage level option.</p>

	Alternatives	Biological Impacts (regulated groundfish and other species)	Economic and Social Impacts	Other impacts (protected resources and EFH)
			coverage levels could produce negative impacts on crew attitudes if the increased costs result in decreases in crew compensation, and could exacerbate existing negative attitudes towards fisheries management.	
4.1.1.2	Sector Monitoring Standard Option 2 (Fixed total at-sea monitoring coverage level based on <u>% of trips</u>)	Higher levels of monitoring are expected to have positive biological impacts on groundfish and other species. In the short-term improvements in monitoring reduce fishing mortality through better catch accounting. In the long-term analytical assessments should improve with better catch data, thus improvements in catch advice and management.	Overall, the static and dynamic economic impacts of Option 2 range from neutral to negative (more negative as coverage rate increases). The risk of non-compliance and ability to enforce violations improves under higher coverage standards (higher scores under higher coverage standards). Overall, operating costs are higher (negative impacts from reduced profits) under higher coverage standards, but enforceability and risk of non-compliance improve under higher standards (positive impacts).	
	Sub-option 2A – 25%	A 25% fixed percentage coverage rate is expected to have neutral biological impacts relative to the No Action. Further, 75% of the groundfish trips would not have accurate estimates of discards since PDT analysis has shown that observed trips are not representative of unobserved trips.	<u>Static monitoring costs</u> - \$1.64-\$1.8 mil., similar to No Action at 22%. <u>Dynamic fleet and vessel impacts</u> – Aggregate fleet-wide revenue slightly higher than No Action 22% coverage (\$71.5 mil.). Operating profits slightly lower than 13% coverage, and equal to 22% estimate. <u>Enforceability and Compliance</u> – Low and Low.	
	Sub-option 2B – 50%	Low positive compared to No Action (22% average coverage rate). This option would provide accurate estimates of groundfish landings and discards for half of all the groundfish trips.	<u>Static monitoring costs</u> - \$3.24 - \$3.54 mil. <u>Dynamic fleet and vessel impacts</u> – Aggregate fleet-wide revenue slightly lower than at 25% (\$71.1 mil). Operating profits substantially lower than at 25% (\$48.2 mil, or \$2 mil. lower than at 25%). <u>Enforceability and Compliance</u> – Medium and Low.	
	Sub-option 2C – 75%	Positive compared to No Action (22% average coverage rate). Since 75% of all groundfish trips will have accurate estimates of discards	<u>Static monitoring costs</u> - \$4.57 - \$5.2 mil. <u>Dynamic fleet and vessel impacts</u> - Aggregate fleet-wide revenue higher than at 50% (\$72.3 mil). Operating profits lower than at 50% (\$47.6 mil).	

	Alternatives	Biological Impacts (regulated groundfish and other species)	Economic and Social Impacts	Other impacts (protected resources and EFH)
		this option has positive biological impacts on groundfish and other species.	<i>Enforceability and Compliance</i> – Medium-high and medium.	
	Sub-option 2D – 100%	Positive compared to No Action (22% average coverage rate). Discard mortality would be fully accounted for under 100% coverage.	<i>Static monitoring costs</i> - \$5.44 - \$6.0 at 91% ASM (assuming 9% NEFOP coverage). <i>Dynamic fleet and vessel impacts</i> - Aggregate fleet-wide revenue lower than 75% (\$71 mil). Operating profits lower than at 75% (\$46.2 mil). <i>Enforceability and Compliance</i> – High and High.	
4.1.1.3	Sector Monitoring Standard Option 3 (Fixed total at-sea monitoring coverage level based on <u>% of catch</u>)	Higher levels of monitoring are expected to have positive biological impacts on groundfish and other species. The PDT completed a simulation analysis of what coverage levels would be necessary to achieve a given coverage rate of total catch for any given allocated stock. The simulations show that 50% coverage across all trips would result in a 90% probability that at least 25% of the total catch of every allocated stock was observed.	Overall, the static and dynamic economic impacts of Option 3 are negative (more negative as coverage rate increases). The risk of non-compliance and ability to enforce violations improves under higher coverage standards (higher scores under higher coverage standards). Overall, operating costs are higher (negative impacts from reduced profits) under higher coverage standards, but enforceability and risk of non-compliance improve under higher standards (positive impacts).	
	Sub-option 3A – 25%	A 25% percentage coverage rate of total catch of each allocated groundfish stock is expected to have low positive biological impacts for regulated groundfish relative to the No Action. However, there are still concerns that the unobserved portion of groundfish trips would not have accurate estimates of discards since PDT analysis has shown that observed trips are not representative of unobserved trips.	<i>Static monitoring costs</i> - \$3.24 - \$3.54 mil. <i>Dynamic fleet and vessel impacts</i> – Aggregate fleet-wide revenue slightly lower than at 25% (\$71.1 mil). Operating profits substantially lower than at 25% (\$48.2 mil, or \$2 mil. lower than at 25%). <i>Enforceability and Compliance</i> – Medium and Low.	
	Sub-option 3B – 50%	The simulation exercise showed that increasing coverage rates to 70% of trips would confer roughly a 90% chance that 50% of total catch was observed for each allocated	<i>Static monitoring costs</i> - \$4.3 - \$4.8 mil.	

	Alternatives	Biological Impacts (regulated groundfish and other species)	Economic and Social Impacts	Other impacts (protected resources and EFH)
		groundfish stock. Thus, 50% monitoring coverage rate of total catch of each allocated groundfish stock is expected to have positive biological impacts. However, there are still concerns that the unobserved portion of groundfish trips would not have accurate estimates of discards since PDT analysis has shown that observed trips are not representative of unobserved trips.	<u>Dynamic fleet and vessel impacts (under 75% coverage):</u> Fleetwide revenue may increase by \$1.4 million, offsetting static costs. <u>Enforceability and Compliance</u> – Medium and medium.	
	Sub-option 3C – 75%	Increasing coverage rates to 90% of trips would confer roughly a 90% chance that 75% of total catch was observed for each stock. Therefore a 75% percentage coverage rate of total catch of each allocated groundfish stock is expected to have positive biological impacts relative to the No Action. However, there are still concerns that the unobserved portion of groundfish trips would not have accurate estimates of discards.	<u>Static monitoring costs</u> - \$5.44 - \$6.0 at 91% ASM (assuming 9% NEFOP coverage). <u>Dynamic fleet and vessel impacts</u> - Aggregate fleet-wide revenue lower than 75% (\$71 mil). Operating profits lower than at 75% (\$46.2 mil). <u>Enforceability and Compliance</u> – High and High.	
	Sub-option 3D – 100%	Positive compared to No Action (22% average coverage rate). Discard mortality would be fully accounted for under 100% coverage.	<u>Static monitoring costs</u> - \$5.44 - \$6.0 at 91% ASM (assuming 9% NEFOP coverage). <u>Dynamic fleet and vessel impacts</u> - Aggregate fleet-wide revenue lower than 75% (\$71 mil). Operating profits lower than at 75% (\$46.2 mil). <u>Enforceability and Compliance</u> – High and High.	
4.1.2	Sector monitoring tools (options for meeting monitoring standards)			
4.1.2.1	Sector Monitoring Tools Option 1 – EM in place of human at-sea monitors	Generally neutral impacts assuming data from EM equivalent to human observers. For stocks that are more difficult to identify from video (red hake), potential low negative impacts compared to human observers. But EM can	Depending on the coverage level selected, this option may be more costly than human observers as year one equipment and installation costs are approximately \$10k per vessel. That equates to approximately 15-20 observed sea days. Video review can be anywhere from \$150 to \$700 per day. If video review for these vessels	For all sector monitoring tools options: EM may have indirect negative impacts to protected

	Alternatives	Biological Impacts (regulated groundfish and other species)	Economic and Social Impacts	Other impacts (protected resources and EFH)
		monitor every tow and there is no potential for coercion or falsifying data.	were to average \$400 per day, the Council would need to select an ASM level that induces more than approximately 35 observed sea days for vessels opting EM in place of ASM in order for this option to reduce costs. Distributional impacts expected – vessels that participate more, or are more efficient may have positive economic impacts (EM cheaper than human observers), and vessels that participate less may have negative economic impacts . <u>Enforceability and compliance</u> – low, and similar to scores above under each coverage level Social Impacts – For all Sector Monitoring Tools options: Long-term neutral to positive social impacts if EM is more cost effective than human at-sea monitors over time, but short-term negative impacts as a result of the initial costs associated with installing EM equipment and additional responsibilities that accompany the maintenance of EM systems.	species – potential loss of information on interactions. However, any loss of data is not expected to have a significant adverse impact. For all sector monitoring tools options: low negative impacts to EFH if substitution facilitates greater fishing effort.
	Blended Analysis of sector monitoring tools (econ only)	N/A		
4.1.2.2	Sector Monitoring Tools Option 2 – Audit model EM	If developed correctly, audit model EM should produce similar biological impacts to 100% human observer coverage, and positive biological impacts compared to current No action rates. Potentially low negative impacts for stocks difficult to identify from video.	<u>Static monitoring costs</u> – In year 1 cost of \$5.72 mil. (\$2.68 with subsidy); year2 = \$2.01 mil.; and year3 = \$1.23 mil. <u>Enforceability and Compliance</u> – High and High, but non-compliance still possible if review rate is low, cameras focused on discards rather than landings, and no dockside monitoring component.	

	Alternatives	Biological Impacts (regulated groundfish and other species)	Economic and Social Impacts	Other impacts (protected resources and EFH)
			<i>Overall, year 1 static monitoring costs are slightly higher than Sub-Option 3D, 100% ASM, but are significantly lower in subsequent years or under the subsidized scenario. Un-subsidized costs under Option 2 would have a negative impact on the fishery relative to No Action, and possibly more highly negative impacts relative to Status Quo.</i>	
4.1.2.3	Sector Monitoring Tools Option 3 – Maximized retention EM	If developed correctly, max retention EM should produce similar biological impacts to 100% human observer coverage, and positive biological impacts compared to current No action rates. Potentially low negative impacts for stocks difficult to identify from video. If there is a shift to targeting smaller younger fish likely negative biological impacts.	<p><u>Static monitoring costs</u> - In year 1 cost of \$5.19 mil. (\$2.15 with subsidy); year2 = \$2.15 mil.; and year3 = \$1.82 mil.</p> <p><u>Enforceability and Compliance</u> – High and High, but non-compliance still possible if review rate is low, cameras focused on discards rather than landings, and no dockside monitoring component.</p> <p><i>Overall, year 1 static monitoring costs are slightly higher than Sub-Option 3D, 100% ASM, but are significantly lower in subsequent years or under the subsidized scenario. Un-subsidized costs under Option 2 would have a negative impact on the fishery relative to No Action, and possibly more highly negative impacts relative to Status Quo.</i></p>	
4.1.3	Total Monitoring Coverage Level Timing			
4.1.3.1	Coverage Level Timing Option 1 (No Action)	Option 1/No Action and Option 2 would not be expected to have direct or indirect impacts on regulated groundfish species. This measure is administrative because it only affects the timing of information availability for business planning (no impact).	Low negative to the extent it affects the ability for businesses to anticipate annual operating costs and make participation decisions as a result. Vessels have been compensated so unclear what impacts have been to date.	
4.1.3.2	Coverage Level Timing Option 2 – Knowing total		Indirect positive impacts if individuals able to forecast monitoring costs and compare costs across providers to adopt cost-minimizing strategies. Federal	

	Alternatives	Biological Impacts (regulated groundfish and other species)	Economic and Social Impacts	Other impacts (protected resources and EFH)
	monitoring coverage level at a time certain		reimbursement has been uncertain so difficult to assess realized impacts.	
4.1.4	Review process for sector monitoring coverage			
4.1.4.1	Coverage Review Process Option 1 (No Action)	Option 1/No Action would not be expected to have direct or indirect impacts on regulated groundfish species. This measure is primarily administrative (<i>no impact</i>).	No direct economic impacts are anticipated.	
4.1.4.2	Coverage Review Process Option 2 –Establish a review process for monitoring coverage rates	Establishing a review could have indirect positive impacts on groundfish from an evaluation of the efficacy of monitoring coverage rates to determine, for example, whether there is evidence of bias, and whether the monitoring standards are being met.	If review occurs more frequently than under Option 1/No Action, some positive economic impacts may result if issues with monitoring coverage levels or other components of the monitoring program are detected and determined to be suboptimal to achieve the goals of the program, such as if illegal behavior persists affecting ex-vessel markets, the ACE lease market, and reduced competitiveness among rule-followers and rule-breakers.	
4.1.5	Addition to list of framework items	This option would not be expected to have direct or indirect impacts on regulated groundfish species or other species. Impacts would be fully analyzed in future actions (<i>no impact</i>).	This measure is expected to have neutral economic impacts. There is no expectation that the establishment of this administrative measure will have any discernibly positive or negative economic impact.	
4.2	Commercial Groundfish Monitoring Program Revisions (Sectors and Common Pool)			
4.2.1	Dockside monitoring program (DSM) (Sectors and Common Pool)			
4.2.1.1	DMS Option 1 (No Action)	In the absence of dockside monitoring, information on sector catches is expected to be less reliable, and it is possible that sectors could exceed their ACE, increasing the risk of overfishing. Under No Action, there is a much	No direct economic impacts to the fishing industry since DSM costs will be similar to recent fishing years (\$0). <u>Enforceability and Compliance</u> – Low and low to medium, so indirect negative impacts .	For all dockside monitoring options: dockside monitoring has no impacts, direct or

	Alternatives	Biological Impacts (regulated groundfish and other species)	Economic and Social Impacts	Other impacts (protected resources and EFH)
		greater probability that landings could be misreported and/or underreported, which has occurred in the groundfish fishery in the recent past. Thus, negative impacts on groundfish and other species are possible under this option.	<p>Reduced quota accountability decreases the functionality of the quota market to send appropriate price signals when quota is limiting and reduces the benefits of efficient harvesting strategies, such as decreased catch of non-target stocks. Additionally, overharvesting degrades long-term fishing revenue.</p> <p><i>Social Impacts – Neutral to positive social impacts as this would maintain status quo of no DSM requirement, and could precipitate positive impacts on the attitudes and beliefs among fishery participants and stakeholders who have in the past voiced concerns with such a DSM program.</i></p>	<i>indirect</i> , on protected species.
4.2.1.2	DSM Option 2 – Mandatory DSM for entire commercial GF fishery	This option intended to deter misreported landings, and provide independent verification of groundfish landings; therefore, should result in increased certainty in the magnitude of groundfish catches at the species level. More accurate in-season monitoring of landings, which will help ensure that sectors do not exceed the ACE, and that common pool vessel do not exceed daily catch limits. This independent verification of catch will reduce the risk of overfishing. Therefore, positive biological impacts for regulated groundfish species and low positive for other species.	Low negative direct impacts since operating costs would increase, could increase consolidation into major ports to reduce monitoring costs, but increased dockside monitoring may lead to indirect positive economic impacts from increased quota accountability. Range of total dockside monitoring costs about \$900,000, approximately \$130 per trip, or about \$4,000 per vessel annually (in 2010 average cost was \$110 per trip). Additional uncertainties and caveats were explored and sensitivity analyses presented to provide greater range of possible costs. Common pool costs are expected to be higher than sector costs because over 50% of common pool offloads in minor ports. Predicted monitoring costs at vessel-level varies greatly, with larger proportion of total revenues for smaller vessels and vessels landing farther from major ports. For larger vessels over 50 feet, average costs for DMS ranges from 0.5% to under 3%.	

	Alternatives	Biological Impacts (regulated groundfish and other species)	Economic and Social Impacts	Other impacts (protected resources and EFH)
			<p><i>Enforceability and Compliance</i> – High and high, but only ensures dockside reporting requirements unless coupled with at-sea monitoring.</p> <p><i>Social Impacts</i> – Negative social impacts due to increased costs and responsibilities for commercial groundfish captains and crew.</p>	
4.2.2	Dockside monitoring program structure and design			
4.2.2.1	DSM funding responsibility			
4.2.2.1.1	DSM Funding Responsibility Option A – Dealer responsibility	Option A and Option B would not be expected to have direct or indirect impacts on regulated groundfish or other species. This measure is primarily administrative, no impact .	<p>Direct economic impacts are uncertain</p> <p><i>Enforceability and Compliance:</i> neutral, neutral</p>	
4.2.2.1.2	DSM Funding Responsibility Option B – Vessel responsibility		<p>Direct economic impacts are uncertain</p> <p><i>Enforceability and Compliance:</i> neutral, neutral</p>	
4.2.2.2	DSM program administration			
4.2.2.2.1	DSM Administration Option A – Individual contracts with DSM providers	Option A and Option B would not be expected to have direct or indirect impacts on regulated groundfish or other species. This measure is primarily administrative, no impact .	<p>Relative to Option B, economic impacts may be neutral to low positive, because of flexibility in contract negotiation, but may increase possible transaction costs.</p> <p><i>Enforceability and Compliance:</i> neutral, neutral</p>	
4.2.2.2.2	DSM Administration Option B – NMFS administered, single DSM provider		<p>Relative to Option A, economic impacts may be neutral to low negative, because of decreased flexibility in contract negotiation, but this option may minimize possible transaction costs.</p> <p><i>Enforceability and Compliance:</i> neutral, neutral</p>	

	Alternatives	Biological Impacts (regulated groundfish and other species)	Economic and Social Impacts	Other impacts (protected resources and EFH)
4.2.2.3	Options for lower dockside monitoring coverage levels (20% coverage)			
4.2.2.3.1	Lower coverage levels Option A	Relative to No Action (no required dockside monitoring program), Option A and Option B would have positive impacts on regulated groundfish, since the dockside monitoring program is intended to deter misreported landings, and provide independent verification of groundfish landings, and therefore should result in increased certainty regarding the magnitude of groundfish landings at the species level.	Compared to No Action (no DSM) this option has low negative direct economic impacts , less than 1% fleetwide revenue. Under 30% of recent offloads to ports with low gf landings and 50% of total DSM costs from these ports. If coverage reduced from 100% to 20% coverage at these ports, total estimated costs of DMS go to \$600,000 (from \$900,000), 39% reduction. <i>Enforceability and Compliance</i> – medium to high and medium to high.	
4.2.2.3.2	Lower coverage levels Option B		This includes about 100 unique or common pool vessels from 2016-2018, if coverage reduced to Compared to No Action (no DSM) this option has low negative to negative direct economic impacts . Coverage of 20% DSM for these vessels would cost about \$600,000, a 36% reduction from 100% DSM. Overall, low-volume vessels account for 65% of landed non-groundfish pounds, but only 2.3% of all landed groundfish pounds. <i>Enforceability and Compliance</i> - medium to high and medium to high.	
4.2.2.4	Options for DSM safety and liability associated with fish hold inspections			
4.2.2.5.1	Fish hold inspection Option A – DSM fish hold inspections required	Fish hold inspections as part of a DSM help to ensure that all landings are accounted for, which therefore should result in increased certainty in the magnitude of groundfish catches at the species level. This independent verification of catch will reduce the risk of overfishing; positive biological impacts for regulated groundfish and low positive for other species.	Low negative to low positive impacts This option may increase the cost burden to either dealers or vessels, thus low negative economic impacts. However, without hold inspections, the ability to misreport landings is increased, and in a quota managed fishery there exists an incentive to evade quota constraints through misreporting or underreporting catch. Therefore, overall fish hold inspections are expected to have low positive impacts	

	Alternatives	Biological Impacts (regulated groundfish and other species)	Economic and Social Impacts	Other impacts (protected resources and EFH)
			from improved compliance and enforceability of reporting requirements.	
4.2.2.4.2	Fish hold inspection Option B – Alternative methods for inspecting fish holds (cameras)	Similar positive and low positive impacts to Option A, provided that alternative methods (cameras) can account for all catch.	Neutral to negative impacts , relative to Options A or C due to possible increased cost burden associated with purchasing cameras, to the extent this occurs. Low positive impacts from improved compliance and enforceability of reporting requirements.	
4.2.2.4.3	Fish hold inspection Option C – No fish hold inspection required, captain signs affidavit	Low positive impacts since this option would not include an independent verification of catch, captain only.	This alternative would have neutral economic impacts relative to Option A, since neither requires vessels to purchase and maintain additional equipment, but potentially positive economic impacts relative to Option B, for vessels that do not already have cameras as part of an EM system. Negative impact on both compliance and enforceability relative to Option B or C since reducing the ability to perform hold inspections has been noted by enforcement to limit their capabilities to investigate possible illegal activities	
4.3	Sector Reporting			
4.3.1	Sector Reporting Option 1 (No Action)	Option 1/No Action and Option 2 would not be expected to have direct or indirect impacts on regulated groundfish species. This measure is primarily administrative (no impact).	Neutral to low negative impacts on the groundfish fishery to the extent that it simplifies the reporting process and reduces transaction costs associated with complying with regulations.	
4.3.2	Sector Reporting Option 2 – Grant RA authority to streamline sector reporting requirements		Neutral to low positive impacts on the groundfish fishery to the extent that it simplifies the reporting process and reduces transaction costs associated with complying with regulations. In addition, if discards and ACE balances were determined more quickly, fishing businesses might make benefit from more certain	

	Alternatives	Biological Impacts (regulated groundfish and other species)	Economic and Social Impacts	Other impacts (protected resources and EFH)
			financial planning, such as when to lease in or lease out quota.	
4.4	Funding/Operational provisions of groundfish monitoring program (Sectors and Common Pool)			
4.4.1	Funding Provisions Option 1 (No Action)	Option 1/No Action would not be expected to have direct or indirect impacts on regulated groundfish species. This measure is primarily administrative (no impact).	Neutral to high negative impacts on the groundfish fishery, depending if and what the degree of funding limitations might be for NMFS to administer the program.	
4.4.2	Funding Provisions Option 2 – Provisions for an increase or decrease in funding for the GF monitoring program			
4.4.2.1	Funding Provisions Sub-option 2A – Higher monitoring coverage levels if NMFS funds are available (Sectors Only)	Sub-Option 2A would be expected to have indirect positive impacts on regulated groundfish species, as there is a potential for higher monitoring coverage levels under this option.	Neutral to strongly positive impacts relative to No Action/Option 1 depending on the coverage rate and programs selected under Sector Monitoring Standards and Tools since it could cover up to 100% of monitoring costs in a given year which could compromise a significant proportion of operating costs in any given year.	
4.4.2.2	Funding Provisions Sub-option 2B – waivers for monitoring requirements allowed (Sectors and Common Pool)	Sub-Option 2B would be expected to have indirect low negative impacts on regulated groundfish species, as there is a potential for lower monitoring coverage levels under this option.	Positive impacts on fishing businesses to the extent that fishing effort would be constrained by the monitoring standard and coverage rate selected in this action.	
4.5	Management uncertainty buffers for the commercial groundfish fishery (Sectors only)			
4.5.1	Management Uncertainty Buffer Option 1 (No Action)	Option 1/No Action would likely have neutral to low positive biological impacts to regulated groundfish, as management uncertainty buffers are a part of the ACL-setting process,	Overall, the direct economic impacts of Option A/No Action are the loss of potential fishery revenue, 3-7% of each stock’s ACL, which has a neutral to low-negative	

	Alternatives	Biological Impacts (regulated groundfish and other species)	Economic and Social Impacts	Other impacts (protected resources and EFH)
		designed to constrain fishing effort to allowable levels. Maintaining current management uncertainty buffers would likely keep the groundfish fishery operating at current levels, and changes in effort would not be expected.	impact on the fishery, depending on the stock and fishing effort in any given year. <u>Enforceability and Compliance</u> – neutral and neutral to low negative.	
4.5.2	Management Uncertainty Buffer Option 2 – Elimination of management uncertainty buffer for Sector ACLs with 100% monitoring of all sector trips	It is difficult to predict whether the removing the buffers would result in substantial increases in fishing effort. This option has the potential to increase fishing effort and landings since setting the buffer to zero would result in higher sector ACLs. Therefore, relative to No Action, Option 2 has the potential to result in low negative impacts on regulated groundfish. However, 100% monitoring is required to select Option 2, and having comprehensive monitoring would essentially create a census of commercial catch. This would provide positive impacts to regulated groundfish as there would be greater certainty in the magnitude and age structure of the commercial catch, and lower risks of the sector ACL being exceeded.	Under FY18 conditions, a ~3-5% increase in the sector sub-ACLs allows fleet-wide catch and revenues from groundfish to increase by 7-8%, and overall catch and revenue to increase by greater than 5% (~5.5%). However, compared to No Action, monitoring costs under any of the 100% coverage options (ASM, EM, or blended) increase operating costs and decrease operating profits relative to status quo, meaning the direct economic impact is low-negative to negative . <u>Enforceability and Compliance</u> – high and high. Overall, while operating expenses increase under Option 2 relative to No Action, where No Action represents status quo levels of monitoring, revenues are maximized under this option relative to other monitoring options in this action, maximizing operating profits relative to the other 100% monitoring options in this action.	Impacts on protected species range from direct low negative to negative impacts, to indirect low positive impacts . This option has the potential to increase fishing effort, which would have negative impacts on protected species. However relative to Option 1/ No Action, Option 2 may also result in indirect positive impacts to protected species since 100% monitoring is required to select Option 2.

	Alternatives	Biological Impacts (regulated groundfish and other species)	Economic and Social Impacts	Other impacts (protected resources and EFH)
4.6	<i>Remove commercial groundfish monitoring program requirements for certain vessels fishing under certain conditions</i>			
4.6.1	Removal of monitoring requirements Option 1 (No Action)	Under Option 1/No Action, impacts on regulated groundfish are expected to be low negative because reducing observer coverage also reduces the precision of discard estimates. Groundfish catches are low on these trips, but have the potential to introduce bias if not applied across all broad stock areas – limiting the ability of using info in stock assessments.	No Action has positive economic impacts on the groundfish fishery to the extent that it minimizes monitoring costs, but may carry some risk of non-compliance since discards and landings are not independently verified and incentives for non-compliance exist in the fishery, even when catch of allocated stocks may be small. <i>Social Impacts</i> - For all removal of monitoring requirements: neutral social impacts for commercial groundfish fishery participants and communities, since the measures to remove monitoring requirements apply to vessels that catch very few groundfish and primarily target non-groundfish stocks and species.	For all removal of at-sea monitoring requirements: Impacts on protected species are (directly and indirectly) low negative to negative . Reducing monitoring coverage may result in increased fishing effort in these areas, and results in loss of data on interactions with fishing gear.
4.6.2	Removal of monitoring requirements Option 2 – Vessels fishing exclusively west of <u>72 30 W</u> would not be subject to monitoring requirements on trips in that area			
4.6.2.1	Removal of monitoring requirements Option 2A (Sectors only)	Low Negative biological impacts to regulated groundfish from Option 2A and 2B, as lower monitoring coverage would likely reduce the accuracy of catch estimates. However, catch composition for groundfish on trips fishing in this area is relatively low (less than 5% with exception of S. windowpane) and majority of total groundfish catch would receive monitoring.	Because of the low levels of groundfish landings in this area, exempting these trips from monitoring coverage is expected to result in positive economic impacts to those who fish in the exempted area, but neutral economic impacts on the fishery as a whole, relative to No Action/Option 1. <i>Enforceability and Compliance</i> – neutral to positive and positive. May nevertheless incentivize increased effort	For all removal of monitoring requirements, impacts on EFH are negligible to slight negative .

	Alternatives	Biological Impacts (regulated groundfish and other species)	Economic and Social Impacts	Other impacts (protected resources and EFH)
			and possibly illegal behavior in the fishery in order to avoid observer costs as well as costs imposed	
4.6.2.2	Removal of monitoring requirements Option 2B (Sectors and Common Pool)		Direct economic impacts of Sub-Option 2B are low positive to positive when compared to a comprehensive DSM program under Option 2, alternative 7.4.4.1.2. Overall direct economic impacts are low positive because the overall cost reductions of this alternative are small compared to the estimated cost of a comprehensive DSM program, but distributional impacts may be more strongly positive . <u>Compliance/Enforceability:</u> Indirect economic impacts may be low negative relative to No Action due to possible negative impacts on compliance and enforceability of reporting requirements	
4.6.3	Removal of monitoring requirements Option 3 – Vessels fishing exclusively west of <u>71 30 W</u> would not be subject to monitoring requirements on trips in that area			
4.6.3.1	Removal of monitoring requirements Option 3A (Sectors only)	Low Negative biological impacts to regulated groundfish from Option 3A and 3B, as lower monitoring coverage would likely reduce the accuracy of catch estimates. Catch composition for groundfish on trips fishing in this area is relatively low for some stocks, but substantial for others (S. windowpane, SNE/MA winter flounder, SNE/MA YT flounder, and ocean pout). Some of these stocks are in rebuilding plans.	Compared to Sub-Option 2A, levels of groundfish landings in the proposed exemption area are substantially higher, exempting these trips from monitoring coverage is expected to result in positive to high positive economic impacts to those who fish in the exempted area, but at most low positive economic impacts on the fishery as a whole, relative to No Action/Option 1, depending on the coverage rate selected under 4.1.1.1. <u>Compliance/Enforceability:</u> Compared to Sub-Option 2A, this option is expected to have negative effects on compliance since it affects a larger proportion of total fishing effort. With respect to enforceability, this alternative is expected to have neutral to low negative impacts compared to No Action and neutral to low negative impacts relative to Sub-Option 2A.	

	Alternatives	Biological Impacts (regulated groundfish and other species)	Economic and Social Impacts	Other impacts (protected resources and EFH)
4.6.3.2	Removal of monitoring requirements Option 3B (Sectors and Common Pool)		Exempting trips in this area from monitoring coverage is expected to result in positive to high positive economic impacts to those who fish in the exempted area, and low positive to positive economic impacts on the fishery as a whole, relative to No Action/Option 1, depending on the DSM coverage rate selected under 4.1.1.1. <u>Compliance/Enforceability:</u> Compared to Sub-Option 2B, this option is expected to have negative effects on compliance since it affects a larger proportion of total fishing effort. With respect to enforceability, this alternative is expected to have negative impacts compared to No Action and low negative impacts relative to Sub-Option 2B since it may reduce the ability for enforcement to detect misreporting dockside.	
4.6.4	Review process for vessels removed from commercial groundfish monitoring program requirements			
4.6.4.1	Vessels removed from monitoring requirements do not have formal review process (No Action)	This option would not be expected to have direct or indirect impacts on regulated groundfish species. This measure is primarily administrative, no impact .	There may be some negative, indirect economic impacts if no review process is implemented and changes in effort or catch composition by exempted vessels change drastically.	
4.6.4.2	Implement a review process for vessels removed from commercial groundfish monitoring program requirements	Requiring a periodic review could have indirect positive impacts on groundfish by confirming that measures for removal of monitoring requirements are not impacting estimates of groundfish catch. If impacts are found in the review exemptions can be revisited.	Overall, this alternative is expected to have neutral economic impacts since it is not expected that a review will impose any additional costs on fishing businesses. <u>Compliance/Enforceability:</u> Neutral to low positive impacts on compliance relative to status quo if it limits potential effort shifts in the two years before the review begins, however, if fishermen have a high discount rate, they may still perceive that benefits associated with reducing or eliminating short-term (1-2	

	Alternatives	Biological Impacts (regulated groundfish and other species)	Economic and Social Impacts	Other impacts (protected resources and EFH)
			year) monitoring costs to be worth shifting operations to an exempted area, depending on whether Option 2 or 3 is ultimately selected.	