West Coast Groundfish Trawl Catch Share Program Five-year Review –Annotated Outline (Blueprint)

November 2016

Draft—Do Not Cite

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EXECUTIVE SUMMARY

The project team will incorporate key findings and conclusions from the West Coast Catch Share Program Five-year Review into a stand-alone executive summary.

Table ES-1. Where to find Goals and Objectives covered in this outline. Note: p" indicates partially addressed, "x" fully addressed.

Goal/Objective/Standard/Key Design Component	Primarily in Chapter(s)			
	Econ. Perf. (3.1)	Comm. Perf (3.2)	Envl Perf. (3.3)	Prog Mgmt (3.4)
Amendment 20 Goal: Create and implement a capacity reduction program that achieves the following:				
Increases net economic benefits.	x			
Creates individual economic stability.	x			
Provides for full utilization of the trawl sector allocation.	x			
Considers environmental impacts.			x	
Achieves individual accountability of catch and bycatch.				x
Amendment 20 Objectives:				
1. Provide a mechanism for total catch accounting.			p	p
2. Provide for a viable, profitable, and efficient groundfish fishery.	x			
3. Promote practices that reduce bycatch and discard mortality and minimize ecological impacts.			x	
4. Increase operational flexibility.	x			
5. Minimize adverse effects from an individual fishing quota (IFQ) program on fishing communities and other fisheries to the extent practical.	p	p		
6. Promote measurable economic and employment benefits through the seafood catching, processing, distribution elements, and support sectors of the industry.	p	p		
7. Provide quality product for the consumer.	x			
8. Increase safety in the fishery	p	p		
Amendment 20 Constraints and Guiding Principles				
1. Take into account the biological structure of the stocks including, but not limited to, populations and genetics.				x
2. Take into account the need to ensure that the total optimum yields (OYs) and allowable biological catch (ABC) are not exceeded.			x	
3. Minimize negative impacts resulting from localized concentrations of fishing effort.	p	p	p	
4. Account for total groundfish mortality.			x	
5. Avoid provisions where the primary intent is a change in marketing power balance between harvesting and processing sectors.				p
6. Avoid excessive quota concentration.	p	p		
7. Provide efficient and effective monitoring and enforcement.				x

Goal/Objective/Standard/Key Design Component	Primarily in Chapter(s)			
	Econ. Perf.	Comm Perf	Envl Perf.	Program Mgmt
	(3.1)	(3.2)	(3.3)	(3.4)
Amendment 20 Constraints and Guiding Principles (cont.)				
8. Design a responsive mechanism for program review, evaluation, and modification.				x
9. Take into account the management and administrative costs of implementing and oversee the IFQ or co-op program and complementary catch monitoring programs, as well as the limited state and Federal resources available.				x
Magnuson-Stevens Act: National Standards				
1. Achieve OY and prevent overfishing.			x	
2. Use best available scientific information.				x
3. Manage stocks as a unit.				x
4. Ensure that allocations are fair and equitable, promote conservation, and prevent excessive shares.	p			p
5. Consider efficiency in utilization; do not have economic allocation as sole purpose.	p			
6. Allow for variations and contingencies.				x
7. Minimize costs; avoid duplication.				x
8. Consider fishing communities to provide for their sustained and to minimize adverse economic impacts.		x		
9. Minimize bycatch, and bycatch mortality.			x	
10. Promote safety of human life at-sea.	x			
Catch Share Review Policy: Key design components included in MSA 303A				
Allocations				x
Eligibility		p		p
Transferability		p		p
Annual catch limits (ACLs) and accountability measures (AMs)			x	
Accumulation limits/caps	x			
Cost recovery				x
Data collection/reporting, monitoring, and enforcement	p			x
Duration				x
New entrants		x		
Auctions and royalties				x

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ACRONYMS AND ABBREVIATIONS

ABC	Acceptable biological catch
ACL	Annual catch limit
AMP	Adaptive Management Program
CAB	Community Advisory Board
Council	Pacific Fishery Management Council
CFA	Community fishing association
CP	Catcher-processor
CPUE	Catch per unit of effort
CS	Catch share
CV	Coefficient of variation
DTL	Daily trip limit
EA	Environmental assessment
EDC	Economic Data Collection Program
EM	Electronic monitoring
FMP	Fishery management plan
FR	First receiver
GMT	Groundfish Management Team
I/O	Input/Output Model
LAPP	Limited access privilege program
lb	Pound
MS	Mothership
MSC	Marine Stewardship Council
NEPA	National Environmental Policy Act

NGO	Non-governmental organization
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOAA GC	NOAA General Counsel
NWFSC	Northwest Fisheries Science Center
ODFW	Oregon Department of Fish and Wildlife
OLE	Office of Law Enforcement
OY	Optimum yield
POP	Pacific Ocean perch
QP	Quota pound
QS	Quota share
Review Guidance	Draft Guidance for Conducting Reviews of Catch Share Programs (NMFS)
SS	Shoreside
TAC	Total allowable catch
TNC	The Nature Conservancy
WCR	West Coast Region

1.0 INTRODUCTION

This document is an annotated outline of the catch share program review elements, as informed and modified by guidance received from the Pacific Fishery Management Council (Council) in June 2016. This document will evolve based on Council and National Marine Fisheries Service (NMFS) discussion in November and at subsequent meetings; for this reason, sections may be added, removed, or amended over time.

The document is organized as follows:

- Chapter 1—This chapter provides an introduction, addresses the mandate for review, and discusses guiding requirements of the MSA and the groundfish fishery management plan (FMP).
- Chapter 2—This chapter discusses the history of the trawl rationalization program.
- Chapter 3—This chapter lays out a methodology for evaluating the trawl rationalization program's performance.
- Chapter 4—This chapter identifies gaps in current research or data collections that could better inform future program reviews.
- Chapters 5—This chapter highlights key findings and conclusions from the review.
- Chapter 6—This chapter will likely be incorporated in the final draft of the document. It will contain brief summaries of recommended program modifications from each of the advisory bodies involved in this review, as well as preferred Council recommendations, if any.
- Chapter 7—This chapter lists references cited in the document.

The introduction will describe objectives of the review, beginning with the mandate for program review and NOAA Headquarters' guidance for conducting reviews. The following section provides goals and objectives for the program, as laid out in Amendment 20 to the groundfish fishery management plan, as well as those in the Magnuson-Stevens Fishery Conservation and Management Act (MSA) National Standards and its specific limited access privilege program (LAPP) requirements.

1.1 Mandate for Review

The Council is required by law to review the catch shares program. The MSA mandates that all LAPPs "include provisions for the regular monitoring and review by the Council and the Secretary", specifying a requirement for "a formal and detailed review 5 years after the implementation of the program" (further detail proved in Section 1.1.1). It is also required as part of Amendment 20 of the

Groundfish FMP (see Section 1.1.2), as well as through a National Oceanic and Atmospheric Administration (NOAA) Headquarters draft guidance document (Section 1.1.3).

If the Council recommends future actions to revise the trawl rationalization program, this review may be used as background information for the Council's deliberations. However, this review is intentionally retrospective, and it is not designed to meet the requirements of the National Environmental Policy Act (NEPA) or other applicable laws for analyses of the potential effects of future action alternatives.

1.1.1 MSA

The purpose of this review is to meet the MSA requirement at §303A(c)(G) that LAPPs be reviewed by the applicable Fishery Management Council five years after initial program implementation. The groundfish trawl rationalization program, implemented in January 2011, meets the MSA definition of a limited access privilege program at §3(26). Therefore, the Council and NMFS are now under statutory obligation to begin this program review, which requires an assessment of how well the trawl rationalization program's implementation has met the original goals and objectives of Amendment 20 to the FMP. The MSA does not specify what information should be included in the review, except, at minimum: a summary of progress made toward meeting the program's goals and those set out by the Magnuson-Stevens Act, in addition to any suggested modifications to the program to better meet the intended goals.

1.1.2 Amendment 20

Appendix E.2.1.6 of Amendment 20 provides for a formal program review as well as guidance for potential outcomes. The requirement is stated as follows:

> *The Council will conduct a formal review of program performance no later than five years after implementation and every four years thereafter. The result of the evaluation could include dissolution of the program, revocation of all or part of quota shares, or other fundamental changes to the program. At the time of its first review, the Council will consider also the use of an auction or other nonhistory based method when distributing quota share that may become available after the initial allocation.*

1.1.3 NOAA Headquarters Guidance

In the Council's June 2016 briefing book, Report 8, Agenda Item G.5.b, NMFS provided its *Draft Guidance for Conducting Reviews of Catch Share Programs* (Review Guidance). The Review Guidance is intended to help structure catch share program reviews so that reviews are transparent, efficient, and effective, and meet MSA requirements. The process includes a diverse review team responsible for conducting analyses of effects that have taken place since the baseline period, as well as establishing a mechanism for public input. This review should determine if the program is meeting its goals and objectives, described below.

1.2 Management Goals and Objectives

This program review assess the program performance with respect to the objectives listed below:

- The success of the trawl rationalization program in meeting the initial goals and objectives of the program, as identified in Amendment 20 to the FMP
- Meeting the goals and objectives of the FMP
- Meeting MSA National Standards at §301(a)
- Meeting LAPP requirements in MSA at Section §303A

1.2.1 Amendment 20 Goals and Objectives

Amendment 20 described the trawl rationalization program's goal, objectives, and constraints and guiding principles as the following:

Goal

Create and implement a capacity rationalization plan that increases net economic benefits, creates individual economic stability, provides for full utilization of the trawl sector allocation, considers environmental impacts, and achieves individual accountability of catch and bycatch.

Objectives: The above goal is supported by the following objectives:

- Provide a mechanism for total catch accounting.
- Provide for a viable, profitable, and efficient groundfish fishery.
- Promote practices that reduce bycatch and discard mortality and minimize ecological impacts.
- Increase operational flexibility.
- Minimize adverse effects from an individual fishing quota (IFQ) program on fishing communities and other fisheries to the extent practical.

- Promote measurable economic and employment benefits through the seafood catching, processing, distribution elements, and support sectors of the industry.
- Provide quality product for the consumer.
- Increase safety in the fishery.

Constraints and Guiding Principles: The above goal and objectives should be achieved while the following measures occur:

- Take into account the biological structure of the stocks including, but not limited to, populations and genetics.
- Take into account the need to ensure that the total optimum yield (OY) and allowable biological catch (ABC) are not exceeded.
- Minimize negative impacts resulting from localized concentrations of fishing effort.
- Account for total groundfish mortality.
- Avoid provisions where the primary intent is a change in the marketing power balance between the harvesting and processing sectors.
- Avoid excessive quota concentration.
- Provide efficient and effective monitoring and enforcement.
- Design a responsive mechanism for program review, evaluation, and modification.
- Take into account the management and administrative costs of implementing and overseeing the IFQ or co-op program and complementary catch monitoring programs, as well as the limited state and Federal resources available.

1.2.2 West Coast Groundfish FMP Goals

The FMP objective's subject areas—Conservation, Conservation, Economics, Utilization, Social Factors—are well matched to the goals of Amendment 20, as well as to FMP and MSA goals. The FMP has three management goals, which are described below:

1. Conservation—Prevent overfishing and rebuild overfished stocks by managing for appropriate harvest levels and prevent, to the extent practicable, any net loss of the habitat of living marine resources.
2. Economics—Maximize the value of the groundfish resource as a whole.
3. Utilization—Within the constraints of overfished species rebuilding requirements, achieve the maximum biological yield of the overall groundfish fishery, promote year-round availability of quality seafood to the consumer, and promote recreational fishing opportunities.

The FMP also has 17 objectives that provide more details for meeting the FMP's three management goals (Chapter 2, FMP[1]). This review will not address each of these goals or objectives individually; instead, it will use the Amendment 20 objectives to refine and inform the review of how well the trawl rationalization program meets the FMP's management goals.

MSA National Standards

The MSA National Standards are presented below.

1. Optimum Yield: Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.
2. Scientific Information: Conservation and management measures shall be based upon the best scientific information available.
3. Management Units: To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.
4. Allocations: Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (a) fair and equitable to all such fishermen; (b) reasonably calculated to promote conservation; and (c) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privilege.
5. Efficiency: Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.
6. Variations and Contingencies: Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.
7. Costs and Benefits: Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.
8. Communities: Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirement of paragraph (2) [i.e., National Standard 2], in

[1] http://www.pcouncil.org/wp-content/uploads/2016/03/GF_FMP_FINAL_Mar2016_Mar282016.pdf

order to (a) provide for the sustained participation of such communities, and (b) to the extent practicable, minimize adverse economic impacts on such communities.

9. Bycatch: Conservation and management measures shall, to the extent practicable, (a) minimize bycatch and (b) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.
10. Safety of Life at Sea: Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

As mandated by the MSA, NOAA Fisheries has developed guidelines for each National Standard. When reviewing FMPs, FMP amendments, and regulations, the Secretary of Commerce must ensure that they are consistent with the National Standard guidelines. The final rule for revising the guidelines for National Standards 1, 3, and 7 published on October 18, 2016, however the updated guidance does not establish requirements to revise existing management plans. The revisions improve and streamline the National Standard guidelines to enhance their utility for managers.

1.2.3 MSA LAPP Requirements

MSA specifies requirements for LAPPs submitted by a Fishery Management Council relevant for analysis in the Five-Year Review. Section 303A(c) requires LAPPs to achieve the following:

- Assist in rebuilding a stock if it is overfished.
- Contribute to reducing over capacity if the fishery is over-capitalized.
- Promote safety, fishery conservation, management, and social and economic benefits.
- Include an effective system for enforcement, monitoring, and management.

2.0 HISTORY OF THE GROUNDFISH TRAWL PROGRAM

This section provides important background and context for the implementation and design of the Groundfish Trawl Catch Share Program. This program, also called the "trawl rationalization program," consists of an IFQ program for the shorebased trawl fleet and cooperative programs for the at-sea mothership (MS) and catcher-processor (CP) trawl fleets.

This chapter will include the following:

- A brief history of stock status, historical fishing effort, utilization rates for target species, and groundfish fishery management before the 2011 implementation of the Groundfish Trawl Catch Share Program
- A discussion of the process by which the Council and NMFS implement overall groundfish harvest specifications
- The history of the development and initial implementation of the trawl rationalization program
- A description of the development, design, and structure of the program
- A discussion of how the current trawl rationalization program has evolved since its initial implementation

3.0 PROGRAM PERFORMANCE

This chapter will assess progress towards goals and objectives for the catch share program. Goals and objectives are grouped into four general subject themes: economic performance, community performance, environmental performance, and program management performance.

3.1 Economic Performance

Many of the Council's goals and objectives for the West Coast Groundfish Trawl Catch Share Program are economic in nature. In addition, the economic benefits of the fishery and the distribution of these benefits are expected to change given evolving incentives and constraints arising from the shift to catch shares management. This section will monitor progress toward the goals and objectives of the program related to economic performance.

The economics section of this review is intended to provide as much data as possible, without being unnecessarily lengthy. Tables and figures will provide annual data from 2009 to 2015, wherever possible. Data from 2015 will be preliminary and, in some cases, may not be included in the draft document due to the collection cycle of the Economic Data Collection Program (EDC) data (Steiner 2016). In cases where published or working paper research is cited, the time series may be shorter. Where Trawl Rationalization Program pre-catch shares to post-catch shares changes are discussed, NMFS will generally reference the pre-catch shares average (2009 to 2010) to the post-catch shares average (2011 to 2015), unless another metric is more appropriate to define the specific statistic. Unless otherwise noted, figures will be from participation in the catch share program only (i.e., revenue from the catch share program, as opposed to total annual revenue from all fishing activities). These changes cannot be statistically identified as being caused by the catch share program; they are included to facilitate the discussion of trends and changes. The report will also incorporate other factors that are likely to have a strong influence on the trends (e.g., low whiting total allowable catch (TAC) from 2009 to 2010 relative to recent years or high relative fuel prices from 2011 to 2013) and will appreciate input from the Community Advisory Board (CAB) and other reviewers on these factors in the draft document. Wherever annual averages or medians across groups of vessels are presented, variance measures will be as well. The distribution of some data is skewed; this is one of the reasons the EDC program has developed FISHEyE, which displays data disaggregated along several variables: target fishery, vessel size, homeport, and state. For data collected through the EDC,

these disaggregations are available at the FISHEyE website[2] and the EDC reports[3]. For most analyses involving catcher vessels, data will be provided for whiting vessels and non-whiting vessels (as mutually exclusive categories) as well as for the entire fleet of catcher vessels. Any vessel making a whiting trip in a year is included in the whiting vessels category; however, it is possible to separate the vessels that participate in both the whiting and non-whiting fisheries in FISHEyE. Finally, data confidentiality rules restrict the display of some categories of data if there are less than three entities or if a single entity's response comprises more than 90 percent of all relevant responses (see Steiner 2016 for more information).

3.1.1 Changes in Net Economic Benefits

Increase net economic benefits (Amendment 20 Goal); Promote social and economic benefits (MSA LAPP requirement); Contribute to reducing capacity (if overcapitalized) (MSA LAPP requirement); Maximize the value of the groundfish resource as a whole (FMP Goal); Efficiency: Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose (MSA National Standard 5)

In the transition to catch shares management, a variety of changing regulations and incentives were expected to result in changes in net economic benefits from the fishery. Increases in net economic benefits result from consolidation of fishing activity on more efficient vessels and increases in product value brought about by changing incentives (from maximizing catches to maximizing the value of quota caught). Analysts predicted consolidation of the overcapitalized fishery, expecting less efficient vessels to lease or sell their quota to more efficient vessels willing to pay more to lease the quota than the inefficient vessel could realize from fishing it (Lian et al. 2009; Amendment 20 EIS Section 4.9, 4.10 [for mothership (MS) processing capacity]; PFMC and NMFS 2010). Lian et al. (2009) predicted that the preponderance of remaining catcher vessels would be in the 60-to-70-foot range, and that the remaining fleet would be expected to be more efficient. Analysts did not make specific predictions about how product value would change, but the following objective was included in the program: "Provide quality product for the consumer." This section analyzes changes in net economic benefits (net benefits summed over all active participants in the fleet), as opposed to individual net economic benefits, which will be analyzed in Section 3.1.2: Individual Economic Outcomes).

[2] https://dataexplorer.northwestscience.fisheries.noaa.gov/fisheye/
[3] https://www.nwfsc.noaa.gov/research/divisions/fram/economic/economic_data_reports.cfm

3.1.1(a) Net Economic Benefits

- Fleetwide net revenue from the catch share program (FISHEyE/EDC data)
  - Catcher vessels (CVs) total, whiting vessels, and non-whiting vessels
  - Catcher-processor (CP) total
  - MS total
- Processing industry-wide net revenue from groundfish (FISHEyE/EDC data)
  - Total, whiting processors, and non-whiting processors

3.1.1(b) Factors Affecting Net Economic Benefits

The subsections below expand on the factors that affect net economic benefits. They are broken into four categories: consolidation, efficiency, product value, and quota market performance.

3.1.1(b)(1) Consolidation

- Number of vessels fishing (FISHEyE/EDC data)
  - CVs total, whiting, and non-whiting
  - CVs by home port (available at the following website: https://dataexplorer.northwestscience.fisheries.noaa.gov/fisheye/PerformanceMetrics/): total, whiting, and non-whiting
  - Number of permits not attached to active vessels ('latent permits')
  - CVs average size of active vessels
  - CP total
  - MS total
- Number of buyers, first receivers, and processors
  - Number of processors (total, whiting, and non-whiting shoreside processors) (FISHEyE/EDC data)
  - Number of non-processing first receivers (EDC data)
  - Number of fish-buying locations and change in spatial distribution (EDC data)
- Potential consequences of consolidation
  - Spatial distribution of landings: landings by delivery port (fish tickets)
  - Gini coefficient of revenue inequality (by sector) (EDC data)(Yitzhaki 1979)

- Qualitative discussion of vessel-level market power versus controlling interest market power (for which sufficient data are not available)
- Qualitative discussion about the effect of changes in the number of buyers

- Possible reasons that consolidation is not as great as predicted:
  - Learning the quota market system takes skill that is developed over time
  - Groundfish is a minor portion of many vessels' incomes (include data on average percent of revenue from catch share fishery with standard deviation (total, whiting vessels, and non-whiting vessels--FISHEyE/EDC data).
  - Owners may be delaying sales of quota shares until they have better information on the full market value of vessel, permit, and quota shares, while fishing in the meantime.
  - High variation in whiting TAC means capacity must remain available, even if unused in some years.
  - Observer subsidy decreased to zero in 2016, meaning that vessels are only recently paying full cost of observer coverage, and some vessels have had an opportunity to replace observers with Electronic Monitoring in the Exempted Fishing Permit pilot program in 2015-2016, in which cameras and data storage costs were subsidized for vessels.
  - Vessel and quota owners are waiting to see if conditions improve after trailing actions are completed.
  - Vessel caps to limit consolidation may be more constraining than intended.

3.1.1(b)(1)(A) Limiting Consolidation

Avoid excessive quota concentration (Amendment 20 Objective)

Vessel quota pound (QP) and quota share (QS) ownership limits were intended to prevent excessive control of quota by a participant.

- Limits vary by species: include table E-2 of FMP Appendix E (PFMC 2010).
- Calculate the percentage of vessels that are operating near each of the following limits in each year (data from the West Coast Region [WCR]/ Cowen).
  - Vessel Use Limit: limit on total QP that may be registered for a single vessel during the year by species

  - Vessel Unused QP limit: for overfished species and Pacific halibut, a daily limit on the amount of unused QP that may be registered to a vessel
  - Aggregate annual vessel limit on total pounds

- Calculate the percentage of quota shareholders that are near each of the following limits (can only do this for the most current QS ownership information) (data from WCR/Cowen).
  - QS individual control limit (at the person level) by species
    - How much was initially allocated in excess of the control limits?
  - QS collective (common ownership) control limit (at the collective level) by species
  - QS aggregate limit (2.7 percent), which is more binding than the sum of the individual limits

- MS sector CV vessel limits
  - Number of permits that have accumulated additional MS/CV endorsements

- MS sector processing limits: limit on the maximum annual mother sector Pacific whiting allocation that a person owning a MS permit may cumulatively process
  - Percentage of whiting allocation processed by each MS permit

3.1.1(b)(2) Efficiency

- Lowe Multifactor Productivity Index [Productivity is the relationship between the quantity of fish produced and the amount of inputs used to harvest.] for whiting and non-whiting sectors, both adjusted and unadjusted for biomass (Walden et al. 2014, Thunberg et al. 2015, update to 2015 using EDC data.)
- Lowe Multifactor Productivity Index, Productivity Growth, and Technical Change for non-whiting shoreside sector (Mamula and Collier, 2015)

3.1.1(b)(3) Product Value

- Production value per pound (markups) at the product level (EDC data)
- Product forms by species (Figure 17 EDC FR report (Guldin et al. 2016), p 24)
- Combine above to investigate change in percentage of higher priced products being produced (potentially indicate increase in quality).

- Certifications (Marine Stewardship Council, Monterey Bay Aquarium) [qualitative discussion and implications]
- Consumer accessibility to products from catch share fishery
- Incentive effects of 100 percent catch accounting on product quality [qualitative discussion]
    - Discourages high grading; could result in lower quality product.
    - Encourages more selective fishing; could result in higher quality product, especially with gear switching.

3.1.1(b)(4) Quota Market Performance

- Quota market affects overall fishery performance (Holland 2016, updated to include 2016 data from quota transactions database).
    - Number of transfers by type (self-trade, cash sale, barter, cash and barter, other)
    - Quota prices and pounds transferred by species
    - Development over time

3.1.1(c) Income and Employment Impacts through Associated Sectors of the Industry

Promote measurable economic and employment benefits through seafood catching, processing, distribution elements, and support sectors of the industry (Amendment 20 Objective)

Net economic benefits from the fishery have indirect effects as the revenue is spent in the local economy on processing, distribution, and support sectors of the industry. This can result in changes in economic impacts, and it can be measured as income and employment impacts resulting from an input/output model framework. Benefits like increased fleet efficiency and lowered total harvest costs achieved through consolidation (fewer vessels fishing and processors processing predicted in the Amendment 20 FEIS) may have concomitant negative impacts, such as a decrease in direct employment. The total impact on employment also includes a multiplier effect, a result of other businesses in the community supplying goods and services to vessels, as well as processors and employees of vessels and processors spending their earnings within the community (e.g., in grocery stores, restaurants, health care providers).

- Direct employment in the fishery (on vessels and in processing facilities) (EDC data)
    - Total
    - By sector

- Input/Output (I/O) Model income and employment effects by year (direct+indirect effects) (West Coast I/O model using EDC data)
- Total
    - By sector
    - By port compared to counterfactual, for non-whiting (Table 5 from Leonard and Steiner working paper, with discussion on p 17-18)
    - Crew outcomes: See the next section on individual economic outcomes.

3.1.2 Individual Economic Outcomes

Provide for a viable, profitable, and efficient groundfish fishery (Amendment 20 Goal); Create individual economic stability (Amendment 20 Objective); Increase operational flexibility (Amendment 20 Objective)

In addition to affecting net economic benefits, the catch share program was expected to alter the distribution of those benefits, i.e., individual (vessel, processor, quota owner, crewmember, etc.) economic outcomes. This includes their profitability, stability, and operational flexibility. This section includes an analysis of various measures of profitability for groups of vessels and processors. It provides information to help determine the drivers of differences. Indicators that provide information about the many ways in which the catch share program affected the operational flexibility of vessels and processors are included in this section. The Amendment 20 EIS (Section 4.6, PFMC and NMFS 2010) predicted higher gross revenues because of greater utilization of target species, but higher expenses for harvesters receiving no or inadequate shares because of the cost of buying or leasing shares. This objective includes efficiency, which was addressed in the previous section on net economic benefits.

3.1.2(a) Individual Viability and Profitability

3.1.2(a)(1) Distribution of Net Revenue

- Average (and standard deviation) and median annual net revenue from catch share fishery (FISHEyE/EDC data)
    - CVs average/median net revenue for shoreside whiting, at-sea whiting, and non-whiting vessels
    - CVs average/median net revenue per pound (lb) for shoreside whiting and at-sea whiting
    - CVs average/median net revenue per day for non-whiting

- CVs average (and standard deviation) and median net revenue by port for whiting and non-whiting
- CVs distribution of net revenue, for all, whiting and non-whiting vessels (vessels ordered by revenue and aggregated to 3s) (Figure 61, 62, 63 Steiner et al. 2016a EDC CV report p 157)
- CVs average variable costs per day by home port, for whiting and non-whiting vessels
    - Fuel
    - Crew
    - Captain
    - Observers
        - Observer cost as percentage of revenue by vessel size
    - Buyback fees
- CPs average (and standard deviation) and median net revenue
- MS average (and standard deviation) and median net revenue
- Processing FR average (and standard deviation) and median net revenue for whiting and non-whiting processors

3.1.2(a)(2) Quota Leasing Activity

- Quota prices and trade volumes by species (quota transactions database)
- CVs average and median net revenue including quota costs for whiting and non-whiting vessels (EDC data)
    - This is not comparable to above net revenue calculations because of mismatched fiscal years in data; it also theoretically should not be compared to the above net revenue calculations because quota expenses are transfer costs, not variable costs.
- CVs distribution of net revenue including spending on and revenue from quota leasing (vessels ordered by revenue and aggregated to 3s) (EDC data)
- CVs table of vessels' net spending on quota as a percent of revenue percent of vessels in each quartile) (EDC data)
- Shoreside processor whiting quota
    - Evidence as to how processors are using processor whiting quota (IFQ Apex Viewer, i.e. quota transactions database)

  - Extent to which processors owned vessels and thus received non-whiting quota shares
  - Qualitative discussion of how processors are using quota (Russel social science survey in progress)

- MS sector
  - MSCV catch history assignment trades, including a mandatory field for whether or not the transaction was monetary, and if so a price.
  - It is difficult to assess full participation costs on catcher vessels participating in the mothership sector, as within year trading/leasing of harvest rights occurs through private formal or informal intra-coop contractual lease.

- CP sector
  - It is difficult to assess full participation costs for catcher processors participating in the catcher/processor sector, as trading and leasing of harvest rights occurs through private formal or informal intra-coop contractual lease arrangements "to accommodate the inseason needs of member vessels" (PWCC Report, 2014).

3.1.2(a)(3) Crew and Production Worker Outcomes

- Average number of crew members on vessels (EDC data)
- Total number of crew on vessels (EDC data)
- Average compensation per day per crew member (EDC data)
- Total days fished in the catch share fishery (EDC data)
- Average annual compensation per crew member (EDC data)
- Average compensation per pound of catch share fish (worker productivity) (EDC data)
- Average compensation per dollar of revenue from catch share fish (are sharing in gains/losses in efficiency from the catch share program?) (EDC data)
- Average annual compensation per crew member versus average number of days fished (Steiner and Russell working paper) (EDC data)
- Number of production workers in production facilities by month (Figure 5 EDC FR report, p 15, showing seasonality of crew for each species)
- Number of non-production workers (EDC data)
- Average hourly compensation of production and non-production workers (EDC data)

3.1.2(b) Efficiency

- Refer to Section 3.1.1(b)(2)

3.1.2(c) Stability

- Coefficient of variation of vessels' total revenues pre and post catch shares [See Table 2, Holland and Kasperski 2016, Holland and Kasperski working paper.]
- Flexibility of program (cite next section) has contributed to landings becoming less stable over a season, which anecdotally negatively affects some processors set up to process the steady supply of groundfish year-round, which was a result of the trip limit system.
    - Monthly purchases of groundfish by year and monthly production workers employed (Figure 5, Guldin et al. 2016 EDC FR report, p 15) (and provide by state if confidentiality allows) (Fish tickets and EDC data)
    - NMFS cannot assess what is best for processors; processors could potentially use price mechanisms to incentivize steady deliveries.

3.1.2(d) Flexibility

Catch share programs increase flexibility in many aspects of the fishing process (Reimer, Abbott, Wilen 2014). Vessels can fish according to what is individually optimal. Processors can offer incentives for vessels to fish according to what is optimal for them. The resulting fishing patterns may shift. In addition to the information presented here, Section 3.2.2 contains qualitative information about how fishermen have adapted to the program.

3.1.2(d)(1) Timing of Landings

- Driven by efficiency (take fewer, larger trips, in a more condensed/efficient time frame) and opportunities in other fisheries
- Beginning, end, and middle of at-sea whiting fishing season (Figure 4, Steiner et al. 2016b EDC MS report, p 12)
- Catcher vessels also participate in crab and shrimp, and the program provides the flexibility to condense trawl groundfish landings. This may increase participation in crab and shrimp. Harvesters may shift away from groundfish in good crab and shrimp years.
    - Percent of revenue from crab and shrimp pre and post, recognizing crab and shrimp have cyclical biological cycles and are susceptible to harmful algal

blooms (such as the consumer safety concerns about domoic acid in for 2015/2016 Dungeness crab)

  - Monthly purchases/landings of each species (Figure 5, Guldin et al. 2016 EDC FR report, p 15)

- Frequency of landings: catch share program may incentivize fewer, larger trips
  - Consistency/frequency of landings (Figure 5, Guldin et al. 2016 EDC FR report, p 15, and EDC data)
  - Average number of trips, trip length, and delivery size by CVs (whiting and non-whiting)

- Qualitative discussion of marketing issues discussed at Pacific Groundfish Quota Program Workshop (2016) and community hearings

3.1.2(d)(2) Location of Landings

- Target species changes may lead to delivery location changes.
- Competition among processors or alternatively, long-term or stronger agreements between processors and vessels may develop (Guldin working paper)
- Number of buyers (especially non-processors) has decreased (Figure 3 Guldin et al. 2016 EDC FR report, p 12).
- Consolidation/quota leased or sold to vessels in another location
  - Number of vessels fishing by state, port (EDC data/FISHEyE)

- Latitude and depth of fishing by sector (Figures 14, 16, 18, and 19 in Somers et al. 2015)

3.1.2(d)(3) Cooperatives and Risk Pools

- Co-ops and risk pools can increase flexibility in terms of overages, but their rules may restrict other aspects of the fishing process [descriptive process] (Holland and Jannot 2012).

3.1.2(d)(4) Participation

- Catch share program vessels participate in many fisheries (Figure 38, Steiner et al. 2016a EDC CV Report p 72).
- Vessels can decrease participation in groundfish if they have better options, or increase participation in groundfish if other options are limited (e.g., bad crab year).

  - Days at sea by IFQ participants in groundfish in comparatively-high revenue and comparatively-low revenue crab and shrimp years (PacFIN ex-vessel revenue and observed days at sea 2011-2016)
  - Days at sea by IFQ participants in crab and shrimp in comparatively-high revenue and comparatively-low revenue crab and shrimp years (PacFIN ex-vessel revenue and EDC self-reported days at sea, 2011-2015)

- Vessels can lease their quota if they decide to rebuild their vessel, or something happens to their vessel, or if they have health problems (qualitative discussion).

3.1.2(d)(5) Diversification

- Effective Shannon Index (measure of revenue diversification) over species groups, comparing vessels that remained in the catch share fishery with those that exited (Figure 3, Holland and Kasperski 2016, Holland and Kasperski working paper)

3.1.2(d)(6) Specialization

- Number of vessels doing both mid-water whiting trawl and bottom trawl groundfish (EDC data)
- Refer to gear switching section below (3.1.2(d)(7)), midwater non-whiting below, and non-quota species below.
- Emergence of mid-water non-whiting trawl by whiting CVs
  - Number of vessels, revenue, and lbs of non-whiting caught by year with midwater gear
  - Currently limited by seasonal midwater trawl closures
- Non-quota species or grouped species within the FMP
  - Emergence of big skate fishery (was an Ecosystem Component Species within the FMP): (Table 2-4, PFMC 2015c[4], PFMC[5])

[4] http://www.pcouncil.org/wp-content/uploads/2015/10/I9_Att1_Skates_Range_of_Alternatives_Nov2015BB.pdf
[5] 2016 http://www.pcouncil.org/wp-content/uploads/2016/03/F3_Att1_17-18_GF_SpexCouncilDoc_APR2016BB.pdf

- Targeting of blackgill rockfish that was grouped within a group quota category (Minor Slope South of 40°10' N latitude complex) (PFMC 2015a)[6], PFMC 2015b[7])

3.1.2(d)(7) Gear-switching Provision

- Number of trawl permit "gear switchers," number of fixed gear permit "enterers," lbs caught by each by year, and percent of sablefish quota by year, split between north and south sablefish quota (EDC data)
- Type of fixed gear used and amount caught by gear type
- Net revenue per pound of sablefish caught with fixed gear versus caught with trawl (trawl includes value of Dover sole and thornyheads) (Steiner and Holland working paper)

3.1.2(d)(8) Carryover Provision

- Allows for an overage in one year to be covered by up to 10 percent of the following year's QP; likewise, the provision also allows QP that were not used in one year to be carried over into the following year, up to 10 percent
    - Percent of vessels using the overage carryover, and for which species (Region/Cowen database)
    - Percent of vessels carrying over unused quota and for which species

3.1.2(d)(9) Limits on Flexibility

- Regulations that are in the process of being removed/adjusted [This will be a qualitative discussion, citing SRIII and community hearings.]
    - Council trailing actions website for pending, on-hold, and in-discussions actions[8]
    - General dissatisfaction with the speed at which things move through Council and NMFS (Pacific Groundfish Quota Program Workshop (2016) and community hearings)
    - Many of these regulations restrict vessels' ability to specialize and create niche markets for themselves.

[6] http://www.pcouncil.org/wp-content/uploads/2015/10/I6_Att1_A26_BGill_Allocation_EA_Nov2015BB.pdf
[7] http://www.pcouncil.org/wp-content/uploads/2015/11/I6a_Sup_GMT_Rpt_Nov2015BB.pdf
[8] http://www.pcouncil.org/groundfish/trawl-rationalization-amendment-20-and-intersector-allocation-amendment-21-trailing-actions/

- Vessel caps (refer to *Limiting Consolidation* above section)
    - Tow-level Monte Carlo simulation of expected catches by gear, latitude, and depth bins to yield catch distributions of overfished species, then compared to quota holdings to estimate the probability of exceeding vessel aggregation limits (for whiting and non-whiting sectors, if possible) (Holland project in progress; Holland and Jannot 2012)
    - Can limit ability to specialize; if just a few vessels target a species (ie, arrowtooth), they can hit the cap and be far under the TAC.

3.1.3 Other Economic Goals and Objectives

3.1.3(a) Utilization

Provide for full utilization of the trawl sector allocation (Amendment 20 Goal); Within the constraints of overfished species rebuilding requirements, achieve the maximum biological yield of the overall groundfish fishery, promote year-round availability of quality seafood to the consumer, and promote recreational fishing opportunities (FMP Goal)

- Tables of quota utilization by species and year
- Quota market performance (Holland 2016, updated to include 2016 data) (Section 3.1.1 , Changes in Net Benefits)

3.1.3(a)(1) Factors Contributing to Non-whiting Underutilization

- ABC for many non-whiting species is far higher than catch ever was (Dover, rockfish, Other flatfish) (Figure 3, Steiner et al. 2016a EDC CV report); Matson 2016).
- Some species with high ABCs are not very marketable (average price/lb from Figure 3, Steiner et al. 2016a EDC CV report [fish tickets and EDC data and qualitative discussion])
- Risk (real or perceived) of a lightning strike of low quota species (Holland, 2016)
- Multispecies fishery--The program is now accurately accounting for all mortality, where NMFS was not doing so before. In a multispecies fishery (with not particularly selective gear), it is likely unrealistic to achieve high attainment of all species.
- Demand for and the resulting high price of sablefish are influenced by the following:
    - Sablefish prices caught by fixed versus trawl gear (Steiner and Holland, working paper)
    - Demand for sablefish by fixed gear vessels (gear switchers) (Steiner and Holland working paper)

  - Demand for sablefish quota in order to target Dover sole (Steiner and Holland, 2016 working paper)

- Quota reserves (unclear how much vessel will need or want at end of year, so reluctant to put it on the market. qualitative discussion; Holland, 2016)
- Regulatory discards are no longer allowed.
  - Aggregate discard rate by trawlers of sablefish pre and post, taking into account discard mortalities used (observer catch and discard data)
  - Aggregate ratio at which Dover sole and sablefish are caught by trawlers pre and post (Observer catch and discard data)
  - Apply pre-discard rate and Dover-to-sablefish ratio to get approximate increased attainment of Dover if sablefish discards were the same as they were for pre-catch shares.
- Gear switching provision (cite table of fixed gear number, amount, etc., above) decreases amount of Dover sole and thornyhead caught as DTS complex with trawl.
  - Apply Dover-to-sablefish ratio to the trawl sector sablefish caught with fixed gear to get the approximate increased attainment of Dover if all sablefish were caught with trawl gear (observer catch and discard data).
- Vessels operating near annual vessel use limits for some species could reduce utilization of other species.
  - For those vessel-species combinations (cite accumulation limit section), summarize percentage of QS use for other species.
- Flexibility allows differences in timing of fishery prosecution with consequences for the quota market. Vessels planning to fish late in the year may hold quota for a longer time.
  - Number of CVs targeting groundfish in fourth quarter of year (fish tickets)
  - Amount of non-whiting quota of constraining species held by vessels primarily targeting whiting in the fourth quarter of year (Vessel Accounts Database)
- Marketing issues: It is hard to market at low and unpredictable volumes (qualitative, cite Pacific Groundfish Quota Program Workshop 2016 report), especially as high value product (fresh).
- A loss of historical markets to cheaper foreign imports during rebuilding periods

3.1.3(a)(2) Factors Contributing to Whiting Underutilization

- There was near full utilization from 2009 to 2013. Utilization fell for both sectors in 2014 and then declined dramatically in 2015, generally attributed to biological and environmental factors [See Figure 2, Steiner et al. 2016a, p 10].
- Bycatch concerns (PFMC 2016b[9])
    - Mothership sector ran into darkblotched limits in 2014; resulted in voluntary halt to fishing and emergency reallocation from shoreside sector. After reallocation, fleet had difficulty finding suitable aggregations of whiting.
    - Shoreside sector had high widow rockfish bycatch rates in 2014.
    - Resulting proposal to transfer limited amount of canary, darkblotched rockfish, Pacific Ocean perch (POP), and widow rockfish from shoreside whiting to motherships.
    - MS sector was concerned by high bycatch rates in shoreside fishery. However, MS did not experience them, possibly due to preventative co-op rules.
    - Pending transfer proposal, 2015 inseason action to transfer darkblotched rockfish
    - Increases in allocations for canary, darkblotched, and widow rockfish in 2017-2018 (because rebuilt) may reduce the degree of constraint, but may also reflect increases in abundance, which may lead to increasing bycatch rates.
    - There is a cost of bycatch avoidance, but likely cannot be separated from recent catch per unit of effort (CPUE) concerns (below).
- Whiting CPUE concerns
    - 2015 had unprecedented climate conditions: warm blob in the North Pacific (Peterson et al. 2016).
    - CPUE (observer data), Revenue per day and per pound of catch (EDC data), net revenue per day and per pound (EDC data), and fuel cost per day and per pound (EDC data) for mothership and shoreside sectors
    - Warm blob may have affected whiting aggregations and bycatch species location simultaneously.

[9] http://www.pcouncil.org/wp-content/uploads/2016/06/G4_Att5_DraftAppB_JUN2016BB.pdf

- Processing capacity
    - For MS sector, at-sea catcher vessels depend on motherships being able to accept deliveries. Concerns: 2013 fire, 2015 decision not to return from Alaska.
    - For the shoreside sector, number of buyers (EDC data)
    - The highly cyclical nature of whiting abundance means processing capacity has to be flexible.

3.1.3(b) Interdependencies with Other Fisheries

Discuss interdependencies with other fisheries (Headquarters Guidance); Minimize adverse effects on other fisheries to the extent practical (Amendment 20 Objective); Minimize negative impacts resulting from localized concentrations of fishing effort (Amendment 20 Objective)

- Amendment 20 EIS (Section 4.8, PFMC and NMFS 2010) predicted increased pressure on pink shrimp, Dungeness crab, and other operationally similar fisheries due to spillover of excess vessels.
    - Number of vessels that ceased participating in groundfish (since 2009 and 2010), but continue to fish in shrimp, crab, and other fisheries (fish ticket+EDC data)
    - Number (and percentage) of vessels traveling to Alaska to fish (fish ticket+EDC data)
- Concern of conflict between open access and Daily Trip Limit (DTL) sablefish fishery and gear switching vessels south of Pt. Conception
    - Observer maps of effort (observer effort data)
    - Number of vessels fishing in open access and DTL sablefish fishery (fish tickets)
    - Landings history by sector (OA + DTL sablefish fixed gear, trawl) in south. The southern trawl quota historically was not used (fish tickets).
    - Possible market implications of increased landings (qualitative discussion)
    - Local depletion is a larger issue for less mobile fleets.
- Participation in other fisheries is a majority of revenue for many vessels (cite percent of revenue figure above, EDC data).
    - Whiting vessels say whiting fishery may not exist if not for the Alaska pollock fishery.

  - Crab and shrimp are very important to revenue of non-whiting vessels, and these species have strong, environmentally dependent cycles. Participation in groundfish is likely to be lower in years when crab and/or shrimp fishing is good and vice versa.

- Increased allowances in the directed Pacific halibut fisheries due to a reduction in trawl fishery halibut mortality
- Interaction between the limited entry fixed gear sablefish stacking program and the shoreside trawl catch share program
  - Number of vessels participating in both
  - Spatial and temporal overlap of deliveries

3.1.3(c) Safety

Increase safety in the fishery (Amendment 20 Objective); Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea. (National Standard 10); Promote safety (MSA LAPP requirement)

- History of safety-related regulations in the fishery (U.S. Coast Guard project in progress)
- Incident rates per day at sea (Coast Guard data/Pfeiffer working paper)
- Risk-taking index measures: percent of trips beginning in poor weather conditions (Pfeiffer working paper)
- Percent of trips departing at midnight (observer data)
- Percent of Pacific Coast Groundfish Trawl Social Study survey participants reporting increase in safety (Russel social survey in progress)
- Other concerns and discussion of effects they might be having: 24-hour clock [safer for vessels to leave and return on tides], cost of 100 percent observer coverage, season length, investment incentives, consolidation leading to bigger (safer) or smaller boats?, third-party catch monitors and observers mean all boats and first receivers are inspected to make sure they meet a minimum level of safety for the catch monitor/observer to be around [qualitative discussion].

3.2 Community Performance

3.2.1 Introduction

This section will describe and analyze the effects of the Groundfish Trawl Catch Share Program on communities and social relations within communities, including the effects of the program on entry-level participants. The related policy guidance is particularly concerned with the following groups:

- Fishing communities
- New entrants
- Entry-level vessel owners
- Small vessel owners
- Captains
- Crew

The outline for this section is shaped by the program's goals and objectives, national guidance for conducting catch share program reviews, feedback from program managers, and public comment.

Much of the data and discussion in this section will come from the Northwest Fishery Science Center's Pacific Coast Groundfish Trawl Fishery Social Survey, as well as from a variety of other sources including PacFIN data, Pacific Fishery Management Council documents, West Coast Region permit, quota, and ownership data, and academic papers. Social survey data is available for the baseline year (2010), 2012 and 2015/2016.

3.2.2 Fishing Communities

Because the Groundfish Trawl Catch Share Program spans from Washington to California and affects many communities in different ways, this section will provide community-level data and analysis wherever possible, and it will split out whiting and non-whiting data. When confidentiality issues arise at a particular level of disaggregation, data will be displayed at the next higher level of aggregation.[10] In general, the primary focus will be on communities that received landings from the

[10] This document will contain tables that show aggregated information for a region, with communities in that region broken down below. When possible, tables will show the data both at the aggregated regional level and at the individual community level. If there are too few data points for a specific community or the data are not available, data will be provided where possible and the designation "confidential" or "not available" will be

trawl sector in the five years before or the first five years of the trawl catch share program (including vessels that have gear switched). Ports that fall into this category for the shorebased fishery are listed in Table 3-1 in all caps under the port group of which they are a part. Ports that received limited entry trawl landings from 1994 through 2004 but not after are listed in lowercase letters.

For the at-sea fisheries (catcher vessels delivering to motherships, mothership processors, and catcher processors) EDC and USCG data will be used to identify related fishing communities. Motherships and catcher-processors are generally associated with Bellingham, Seattle, and Tacoma.

In addition to the ports in which trawl delivers are made, consideration will also be given to impacts on communities that have not received any trawl landings.

used, as needed. This will be done to allow readers to find their community, see that information was considered, and determine groupings and why, for example:

Area	**Data**
Region 1	1,000
Community A	*Confidential*
Community B	*Not Available*
Community C	*Confidential*
Region 2	2,000
Community D	1,600
Community E	350
Community F	50

Table 3-1. Port areas (bold underline) receiving shorebased limited entry trawl or catch share landings in at least one year from 1994 through 2015.

Washington	Oregon	California	
PUGET SOUND Anacortes ***BELLINGHAM BAY*** **BLAINE** Everett Laconner **SEATTLE** **NORTH WA COAST** **LAPUSH** **NEAH BAY** Port Angeles Port Townsend **SOUTH AND CENTRAL WA COAST** Aberdeen Chinook ***ILWACO*** Long Beach ***WESTPORT***	**ASTORIA** ***ASTORIA*** **TILLAMOOK** **GARIBALDI (TILLAMOOK)** **NEWPORT** ***NEWPORT*** **COOS BAY** ***CHARLESTON (COOS BAY)*** Florence Winchester Bay **BROOKINGS** ***BROOKINGS*** Port Orford	**CRESCENT CITY** ***CRESCENT CITY*** **EUREKA** ***EUREKA*** Eureka Area Fields Landing Humboldt Loleta **FORT BRAGG** Albion Caspar Elk ***FORT BRAGG*** Little River Point Arena **BODEGA BAY** **BODEGA BAY** ***INVERNESS*** Marshall Novato **TOMALES BAY**	**SAN FRANCISCO** Alameda ***ALVISO*** ***BERKELEY*** China Camp **OAKLAND** Pacifica ***PINOLE*** ***PRINCETON / HALF MOON BAY*** Richmond Rodeo ***SAN FRANCISCO*** Vallejo **MONTEREY** ***MONTEREY*** ***MOSS LANDING*** **SANTA CRUZ** Watsonville **MORRO** ***AVILA*** ***MORRO BAY*** **SANTA BARBARA** Conception ***OXNARD*** ***SANTA BARBARA*** Ventura **LOS ANGELES** San Pedro **SAN DIEGO** San Diego

Note: Bold indicates port landings in at least one year after 2015, and bold italics indicate port landings in at least one year after 2011; lower case indicates a port that has not had a trawl delivery since before 2005.

3.2.2(a) Community Related Criteria and Program Evaluation Guidance

The Amendment 20 goals and objectives and National Standards emphasize minimizing adverse impacts on communities and providing for their sustained participation.

Amendment 20: Objective 5. Minimize adverse effects from an IFQ program on fishing communities and other fisheries to the extent practical.

National Standard 8. Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirements of paragraph (2), in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

Minimization of impacts on communities is perhaps the broadest of all the criteria used to evaluate the catch share program. Virtually every economic and social impact on the fishing industry and its individual participants can be potentially characterized as an impact on communities. With this in mind, drafters will attempt to limit this assessment to some of the most salient indicators, leaving a complete and more nuanced exploration of impacts on communities to more specialized studies.

The draft *National Guidance for Conducting Reviews of Catch Share Programs* provides the following additional guidance relevant to communities.

> *. . . when analyzing effects on communities per National Standard 8, analysts should adapt the social indicators developed by Jepson and Colburn (2013) to assess community vulnerability, resilience, and dependency on the CSP to the extent possible (p. 8).*
>
> *Restrictions on transferability may serve to meet other objectives, such as equity, per National Standard 4, providing for the sustained participation of and minimizing adverse economic effects on fishing communities, per National Standard 8, . . . The review should determine whether existing transferability provisions are conducive to achieving the specified objectives, keeping in mind that trade-offs often exist between objectives. (p. 11)*

These transferability provisions are particularly relevant to a community's ability to establish community fishing associations that can acquire quota, relations among fishing community members, and entry-level participants.

3.2.2(b) Geographic Shifts in Industry Community Engagement

Catch share-specific community engagement will be assessed for each port based on the following indicators.

- Value of trawl catch share fisheries landings for each community
- Pounds of trawl catch share fisheries landings for each community

- Number of permitted catch share vessels landing in the community—disaggregated as shoreside IFQ vessels (whiting and nonwhiting) and at-sea participants
- Processors and other first receivers with catch share landings in the community—disaggregated as shoreside IFQ whiting and nonwhiting receivers.

Estimates of personal income generated in the communities are provided in Section 3.1.1(c) summarized here in the context of estimates of total community income and fishing income.

Results will be displayed in tabular or graphic form, and, if possible, in map form (maybe a map of the West Coast with increasing or decreasing circles for each metric). The assessment will cover 1994 through 2015 for those ports identified as active in recent years.

3.2.2(c) Changes in Infrastructure

Using information on infrastructure from the West Coast fishing community profiles developed by the Human Dimensions Team of the Northwest Fisheries Science Center (NWFSC), an initial baseline will be constructed. Key informant interviews will be conducted to expand on the initial baseline (as needed) and to develop information on shifts in the number, location, and conditions of the following:

- Ice plants
- Fuel docks
- Docks and moorages
- USCG facilities
- Maintenance and dredging schedules (changes in values for criteria used prioritize schedules)

Processing plants and buying stations will be discussed in the previous section. As part of this blueprint, comment will be sought on any other key infrastructure that should be considered in the survey.

3.2.2(d) Control of Quota Share by Community Residents

Another fishery asset to be evaluated with respect to the fishing communities is QS ownership: how much of the total quota is owned by residents of fishing communities and in what other communities do QS owners reside? These data are publically available from the WCR IFQ account site; therefore, aggregation will not be necessary. QS has only started trading since early 2014, so the data series that might indicate trends in distribution of QS owners will be limited.

3.2.2(e) Changes in Community Vulnerability, Reliance, Involvement and Dependence

In addition to an assessment of engagement (covered in Section 3.2.2(b)) the national guidance on catch shares recommends that, when possible, catch share reviews include an assessment of vulnerability and resilience. At this time, "a viable measure of resilience" has not been developed (Jepson and Colburn, 2013, p. 6). In this section, vulnerability and reliance will be evaluated using indicators developed by the Human Dimensions Team of the Northwest Fisheries Science Center. Involvement and dependence will be evaluated using PacFIN data for the shorebased fishery and NorPac and related data for the at-sea fishery.

These indicators will be evaluated for the three years prior to the program (2008 to 2010) and compared to the years after 2011 for which adequate data are available.

Community vulnerability for each port will be assessed using three indices: personal disruption, population composite, and community poverty (Breslow, et al., 2014). The following are the indicators that go into each of these indices.

Personal Disruption

- Percent within the community unemployed
- Percent of the community with no diploma
- Percent of the community living in poverty

Population Composition

- Percent of community identifying racially as "white alone"
- Percent of community with female single headed households
- Population age 0 to 5
- Percent that speak English less than well (*ibid.*)

Poverty Index

- Percent within the community receiving assistance
- Percent of families within the community living below the poverty level
- Percent of the community over 65 years old living in poverty
- Percent of the community under 18 years old living in poverty (*ibid.*)

General community fisheries reliance will be assessed for each port based on the following indicators.

- Value of commercial fisheries landings per capita for each community
- Pounds of commercial fisheries landings per capita for each community
- Processors with landings per capita for each community
- Permits per capita for each community

Additionally, a measure of the importance of a particular species or species group relative to all species landed in a community will be assessed (sometimes referred to in Council documents as a simple measure of dependence) as well as involvement. This quasi-measure of dependence can be expressed as a percentage (community landings or value of catch share fisheries/total community landings or value for all species). Such a measures can be reported for those communities that were engaged in the shoreside IFQ fishery for all years from the baseline through 2015. The baseline is established by measuring each variable for each community for 3 years prior to implementation of the catch shares program. Involvement (the ex-vessel value of a port's trawl catch share landings as a percent coastwide trawl catch share landings) will also be evaluated for communities engaged in the shoreside IFQ fishery. Data from PacFIN will be used for these analyses.

For the at-sea fishery, the value of total catch by vessels home-ported in each port will be assessed based on home port assignments made for the analysis in Section 3.2.2(a) and NorPac data on amounts of at-sea harvest. Another important contributor to West Coast fishing communities is income from Alaska fisheries. In general, this information is not available to West Coast analysts due to confidentiality restrictions. However, it may be possible to get some data summaries of Alaska activities for the group of vessels homeported in each port.

3.2.2(f) Changes in Employment and Character of Jobs

This section will contain information regarding how have the number and seasonality of jobs changed within each community. Data will be presented for both crew and processing labor.

Crew: EDC data will be used to estimate the total crew employment in each fishing community (both number of positions and number of crew workers) and those jobs associated with the trawl catch share program. Seasonality of landings and average crew size per vessel will be used to estimate seasonality of crew employment in the catch share fishery—except that these data will not account for participation in Alaska fisheries. Average compensation per fishing day will be calculated (see Section 3.1.2(a)(3).

Processing Labor: EDC data will be used to provide total annual and monthly employment by shorebased processors. For processing vessels (motherships and catcher-processors), EDC data on total employment will be reported, along with numbers of processing crewmembers and non-processing crew members. Average compensation will also be calculated (See Section 3.1.2(a)(3).

3.2.2(g) Provisions Mitigating Potential Impacts on Communities

In the original program, two particular provisions were called out as potentially mitigating the impact of the catch share program on communities. One was the ability of communities to buy quota, and the other was the possibility that control caps might indirectly create more geographic dispersion of quota. A third provision, potential use of adaptive management quota to benefit communities, has yet to be implemented. The adaptive management program has not been implemented; it is discussed under program management performance (Section 3.4.6).

3.2.2(g)(1) Quota Acquisition by Communities

This section contains information regarding evidence in the IFQ data base that communities have organized and acquired quota. It explores whether there is other information about such acquisitions (e.g., news stories). Key informant interviews will be used to develop a complete list of community organizations that may be buying QS (e.g., the CFAs discussed in Section 3.2.2(h)(1)(C)).

3.2.2(g)(2) Control Limits

It is unlikely that it will be possible to evaluate the impact of control limits on dispersion of quota among communities. The number of QS owners at or close to the control cap in each community may provide an indication that the constraint may be having an impact, though the amount of QS not purchased and its resultant geographic distribution cannot be determined. Additionally the effects of requirements to divest down to control limits by November 30, 2015, can be examined for tendencies to divest within or outside the communities and relations with those to whom divestitures were made. Data on divestiture transactions would have to be sufficiently aggregated to preserve confidentiality. The relation of quota share ownership to communities is also addressed in Section 3.2.2(d).

3.2.2(h) Community Perceptions and Relations

The sections below contain information regarding community identity, connections, risk pools, and co-ops. They also provide information regarding marketing, gifting, and personal use, as well as stress lines within communities. Gear switching, grounds preemption, absentee quota holders, MS processors, and consolidation impacts are also discussed below.

3.2.2(h)(1) Community Connections and Identity

This section has three parts: connections and identity within the community, disconnections and stress within the community, and connections between any given fishing community and others. Information on each is presented in the subsections below.

3.2.2(h)(1)(A) Community Identity

Community identity as a fishing community and type of fishing community may be associated with changes in community participation indicated by the data in Sections 3.2.2(a) through 3.2.2(f). The NWFSC's Pacific Coast Groundfish Trawl Fishery Social Survey data and interviews will be queried for additional insights into changing perceptions about fishing community identities. Interviews include information about the "feel of the community and how it is changing." While the results are hard to quantify, themes can be outlined and illustrative quotes provided. Some of the interviews from small ports may have to be screened for confidentiality. This section will also contain information regarding disconnections between the location of fishing and processing activities and where people live (e.g., people living outside the community in which they fish, including people fishing out of multiple ports).

3.2.2(h)(1)(B) Cooperation—Risk Pools and Co-ops

This section will summarize available information about the number of risk pools, risk pool objectives, number of participants, and amount of quota. Most of this information will be developed by interviewing key informants and examining publically available data on quota holdings. Landings associated with a risk pool are likely considered confidential, and data on them would not releasable without permission of the risk pool. If such authorizations are provided, landings data may also be included. If there are more than three risk pools, it may be possible to release summarized landings data.

In the MS sector, regulations allow for formation of multiple co-ops and for catcher vessels to opt-out of participation in co-ops. However, only one co-op was formed to date, initially it appears that no catcher vessels have chosen to opt-out of a co-op, but this needs to be verified. Additionally, vessels without co-op permits are allowed to participate in the co-ops. Delivery data will be examined to determine whether this has that occurred and, if so, how many vessels have done so and how much fish has been delivered has been taken by those vessels (as a group).

3.2.2(h)(1)(C) Cooperation—Community Fishing Associations (CFAs)

This section will summarize available information about the number of CFAs, CFA objectives, number of participants, and quota purchases, if any. Most of this information will be developed by interviewing key informants and examining publically available data on quota holdings. Landings associated with CFAs are likely considered confidential, and data on them would not releasable without the CFA's permission. If such authorizations are provided, landings data may also be included. If there are more than three CFAs, it may be possible to release summarized landings data.

3.2.2(h)(1)(D) Direct Marketing, Gifting and Personal Use

During public hearings, testimony was received that some connection between the fishing vessels and communities may have been lost with the requirement that all fish go through a first receiver. It was reported that fish can no longer be passed over the side to friends, family, or a charity, and selling directly to local markets may have become more difficult. Personal use of catch may also have been impacted.

The effects of the catch share program on direct marketing, gifting to communities and personal use will be explored. Prior to the catch share program, fishermen had to record such transactions on fish tickets. What are the mechanisms for such transactions now? How many vessels have first receiver licenses now compared to the number of vessels that were authorized to buy from themselves under state regulations prior to the implementation of the catch share program? What is the distribution of such operations among communities? Data from fish tickets will be evaluated to assess the amount of fish kept for personal use compared to numbers before the program.

3.2.2(h)(2) Stress Lines within Communities

Conflict between groups of fishermen over government regulations and accompanying fishing practices not only create divisions in policy debates, but also have the potential to create divisions and animosity among members of a particular community and between communities. These issues often go to individuals' senses of what is fair and equitable in their dealings with one another.

In this section, information from the NWFSC's Pacific Coast Groundfish Trawl Fishery Social Survey and interviews will be used to highlight where some of those rifts may be occurring and perceptions regarding them. Where quantitative data indicating the degree of conflict are available, that information may also be summarized here. The purpose of this section is to identify the nature of issues and concerns rather than to conduct a full evaluation of the merits of the concerns that are

expressed. The following are examples of topics that might appear here and how they would be covered.

3.2.2(h)(2)(A) Gear Switching

This section will present the issues and briefly summarize data indicating the amount of gear switching occurring (number of vessels, gear, and catch). A more detailes summary of the data is provided in Section 3.1.2(d)(7). There will be cross references to other sections provided here relative to some of the specific impacts of gear switching (e.g., quota attainment).

3.2.2(h)(2)(B) Grounds Preemption

This section will contain a discussion of the issue and, if possible, will provide a measure of the amount of conflict that might be occurring (number of local vessels harvesting in an area and their catch, as well as out-of-area vessels and their catch, presented by month or season, while preserving confidentiality). The area and time information is likely to be too coarse to enable firmly establishing a conflict.

3.2.2(h)(2)(C) Absentee Quota Holders

This section will contain descriptions of the changing relationships between asset owners and those who go out on vessels. At some of the hearings, concern was expressed that those who own assets in the fishery, quota in particular, are not going out on the vessels. There are EDC data on whether vessel owners are present during fishing operations.

This section will contain descriptions of the changing relationships between quota owners, those own vessels, and those that fish on board vessels. At some of the hearings, concern was expressed that those who own assets in the fishery, quota in particular, are not going out on the vessels.

It may be possible to develop some indication of the degree of distance between quota owners and those that may more likely be direct participants in the fishery (vessel owners). Some quota share permit owners no longer own vessels (lease their pounds annually), and some vessel owners do not own quota shares and have to purchase quota pounds annually. This section will provide a name and address comparison of quota share account holders and vessel owners to indicate a possible relationship with the number of absentee quota owners. However, results would be qualified. There are many examples of relationships where this method would result in an incorrect match. Finally, the percentage of time the owner of a vessel served as captain on board their vessel can be reported using EDC data.

3.2.2(h)(2)(D) MS Processors

Concern has been expressed over the circumstances in which there is limited availability of MS processors such that catcher vessels cannot sell their fish. Perceptions related to this issue will be discussed here. Because there are so many potential causes of under attainment of harvest, it is not clear what data might inform this issue at this time.

3.2.2(h)(2)(E) Consolidation Impacts

This section will provide information of what happened to vessels that left the fishery.

- Did they continue fishing in other fisheries and delivering to the same community?
- Did they move to a different community?
- Did they stop fishing?

PacFIN data will be used to evaluate these questions. Data may have to be aggregated across communities for confidentiality.

When processors left a community, what happened to the other products that the processor previously received and the vessels that delivered those products? Did some processors continue to reside in the community, but stop processing groundfish? If so, what happened to the vessels that previously delivered to that processor? Were they able to continue to deliver groundfish other processors in the port area?

3.2.2(h)(3) Interactions between Communities and Others

The sections below will contain information regarding interactions between trawl and other communities. They will also address general public concerns and relationships with the fishing industry.

3.2.2(h)(3)(A) Interactions between Trawl and other Communities

The social survey interview results include statements both about respondents' perception of their own communities (Section 3.2.2(h)(1)(A)) and others. These will be summarized here and may contain clues about possible impacts of the Groundfish Trawl Catch Share Program on non-trawl communities. Data on north/south QP trading may also provide clues about connections between communities.

3.2.2(h)(3)(B) Interactions with the General Public

This section will address changes in the reputation of the trawl industry. It will briefly summarize certifications and environmental performance of the trawl fishery (cross referencing to other sections). Key informants will be interviewed regarding their perceptions of the trawl fishery before and after the Groundfish Trawl Catch Share Program was implemented.

3.2.2(i) Changing Nature of Harvesting Businesses/Jobs and Adjustments by Those Exiting the Fishery

Responses to the social survey will be used to address changes to the nature of the experience of being a fisherman and running a fishing business. The social survey collects information on changes in job satisfaction, quality of relations with coworkers, stability, standard of living, and changes in lifestyle. These data are available for vessel and quota owners, captains, some crewmembers, and a limited number of processing plant laborers.

This section will also provide a very brief summary of some of the changes in the nature of the tasks, for example, those presented below:

1. Need for account managers and administrative burden
    a. Online accounts
    b. Transferring QPs to a vessel account, selling QPs and QS (including determining appropriate quota prices)
    c. Quota account reconciliation with landings and discard reports
    d. Additional permits to be renewed
    e. EDC forms
    f. Vessel limits to consider
    g. General regulatory complexity and anticipating regulatory changes
2. Need for participation in fishing associations or hiring a representative for Council meetings, keeping track of complex regulations, and possibly selling QP or QS through brokers

The social survey interviews also have information on those who have exited the fishery, why they exited, and what they are doing now.

3.2.3 Entry Level Participants and New Entrants

The sections below contain information on Council policy and entry level participants, new entry, and retiring fishermen. They also provide information on small vessels and FRs.

3.2.3(a) Entry Level Participants (Including New Entrants)

The national guidance on program reviews places a special emphasis on new entrants[11] and notes that the needs of new entrants were to be considered as part of the original program design. The MSA required the following:

> *In developing a limited access privilege program to harvest fish a Council or the Secretary shall . . . . include measures to assist, when necessary and appropriate, entry-level and small vessel owner-operators, captains, crew, and fishing communities through set-asides of harvesting allocations, including providing privileges, which may include set-asides or allocations of harvesting privileges, or economic assistance in the purchase of limited access privileges (MSA 303A(c)(5).*

In the development and approval of the trawl catch share program, the Council and Secretary determined that such assistance was not needed and that a number of program features would likely benefit new and entry level participants. This section will review those features in the context of the performance of the program.

3.2.3(b) Council Policy on Entry Level Participants

The Council has considered entry level and small vessel owner-operators, captains, and crew, and certain elements of the program were designed with impacts on these groups in mind.

1. Allocating based on the history of the permit, allowing new entrants to receive a greater initial allocation than they would if the allocation were based just on their personal history in the fishery (Section A-2.1.1).
2. Including an equal allocation component as part of the initial allocation formula for permits, this will benefit historically smaller producers (Section A-2.1.3).
3. Not including a minimum holding requirement provision; this might be more difficult for smaller vessels to comply with than larger vessels (A-2.2.1).
4. Specifying a broad class of eligible owners that includes crew and fishing communities (Section A-2.2.3.a).

[11] "The issue of new entrants is one that cuts across multiple program design features, including but not necessarily limited to allocations (e.g., is there a set-aside?), transferability (e.g., do the transferability rules make it more or less difficult for new entities to participate in the program?), duration (are QS prices increasing over time as a result of the QS' duration?), and auctions (e.g., are auctions being used to provide another means for new entities to participate in the program?). An additional consideration is whether loan programs have been established to help new entities participate in the program, consistent with Section 303A(g) and 303A(c)(5)(g) of MSA." *Draft National Guidance for Conducting Reviews of Catch Share Programs.*

5. Specifying that the QS/QP be highly divisible so as to facilitate the acquisition of QS/QP in small increments by crewmembers, those who have just entered the fishery, and operators of small vessels (Section A-2.2.3.d).
6. Including provisions for a set-aside, as needed, to support an AMP that may be used at some future time to address community concerns or create other incentives to benefit the groups listed in 303A(c)(5)(C) or for other purposes (Section A-3).

The first two of these factors were pertinent for individuals who may have acquired fishing operations, including limited entry permits just prior to the allocation of quota. Items 3, 4, and 5 have been pertinent since implementation of the program and the start of quota trading January 1, 2014.

3.2.3(c) New entry

- How have the barriers and advantages (profits and stability) to entry changed since the start of the program?
- Are QS accounts being opened by what appear to be new entrants and are small amounts of QS being acquired?
- Are vessels and limited entry permits coming under what appears to be new ownership (ownership by entities not previously in the fishery)?
- Under current conditions in the fishery, is it reasonable to expect that someone might be able to generate income by acquiring small amounts of quota, as anticipated in the original analysis?
- What are the theoretical differences between the amounts a new entrant would pay for quota and the amounts that someone who received an initial allocation would pay for quota? (see Pinkerton and Edwards, 2009)
- How are new entrants perceived? Use the social science survey data and public comment to address. There have been indications in public comment that new entrants are perceived by some as a threat.
- How many MSCV permits have been transferred and how many appear to have been purchased by owners that are new to the fishery.
- How many MS permits and MS vessels have been transferred and how many appear to have been purchased by owners that are new to the fishery.
- How many CP permits and CP vessels have been transferred and how many appear to have been purchased by owners that are new to the fishery.
- How much investment (and debt load) is required to enter the fishery? The social science interview data as some information on this

3.2.3(d) Retiring Fishermen

Eventually quota owners will retire and they must have people to sell their quota to (new entrants).

- What are the current statistics on age of fishermen in the fleet?
- What are the implications of the graying of the fleet?
- Using the social science survey data describe families who are planning to pass down their fishing knowledge and assets.

3.2.3(e) Small Vessels

One avenue for new entry is the acquisition of a smaller vessel before moving up to larger vessels. These smaller vessels need not necessarily be trawl vessels. However, testimony was provided that the small beach draggers used to be the entry avenue for individuals who eventually wanted to own larger trawlers (Astoria, September 28, 2016). What has happened to the number of small beach draggers from 1994 through to the present? Is there any indication in ownership information whether those who have sold smaller vessels have purchased larger ones? This may be very difficult to get at and may need to be de-prioritized. Summarize data on small trawler activity by geographic area.

3.2.3(f) First Receivers

- How many new receivers have entered each year? Estimate based on ownership of the new first receiver permits.
- What are the total deliveries received by new receivers? Use fish tickets. Data may be confidential.

3.3 Environmental Performance

One of the primary intentions of Amendment 20 was to reduce the incidental catch of overfished groundfish species to assist in rebuilding plans. Rebuilt stocks also translate to increased allocations and resumed target fisheries. This section will assess the progress of the program toward Amendment 20 and MSA goals concerning environmental performance.

Considers environmental impacts (Amendment 20 goal)/Promote practices that minimize ecological impacts (Amendment 20 objective)

3.3.1 Catch limits and OY

Prevent overfishing, achieve OY (MSA National Standard 1)

- Has the fishery stayed below catch limits? Look at percent ACL caught through time (pre and post IFQ) for target species (whiting, Dover sole, thornyhead, sablefish, lingcod, petrale sole) (Matson 2016, Somers et al. 2016) and constraining species (canary rockfish, darkblotched rockfish, widow rockfish, bocaccio, yelloweye rockfish, POP, petrale sole, sablefish, and Pacific halibut)(Somers et al. 2016)
- Is the fishery attaining trawl portion of OY? (also see Section 3.1.3) --Current FMP definition of OY is "the long –term average of the stock or stock complexes ACLs" (Groundfish FMP). Discussion of this definition—it is biologically unrealistic to expect to achieve maximum of all species at the same time (NMFS 2016 National Standard 1 Guidelines).
- Where is there overfishing and where is there underutilization?
- Reallocation of rebuilt species (discussion only, no graphs).
- Interaction between rebuilding species and catches.

3.3.2 Status of stocks

Assist in rebuilding overfished species/ Promote Fishery Conservation and Management (MSA LAPP requirements)

- Has the biomass of the target or constraining stocks changed through time?
- List of stocks rebuilt since program implementation (NOAA NMFS Species Information System [https://www.st.nmfs.noaa.gov/sis/#no-back-button])—have newer assessments updated status?
- Investigate correlations between reduced bycatch and any recovery of the stocks.
- If information is available, look into concerns about localized depletion of stocks.

3.3.3 Incidental Catch/bycatch

Promote practices that reduce bycatch and discard mortality (Amendment 20 objective)/ Account for total groundfish mortality (Amendment 20 constraint)/Minimize bycatch and bycatch mortality (MSA National Standard 9)

3.3.3(a) Protected Species

- ESA interactions prior to and after 2011 implementation (Jannot et al. 2016, Good et al. 2015, Gustafson et al. 2015, , Lee et al. 2015). Where possible include impacts related to switching gear types.
- Marine mammal interactions by gear type (Jannot et al. 2016, Hanson et al. 2015 observer reports)

3.3.3(b) Non-target Fish or Invertebrate Stocks

- Has the bycatch of rebuilding/rebuilt stocks changed? Look at total mortality by fishery across time (Somers et al. 2016), discard rate per tow or trip, and discard rate per landed target species. Include information on midwater rockfish trawls if possible (many fishermen feel they cannot really target rockfish until gear rule is completed, and they get more access to RCAs).
- Has the bycatch of constraining stocks changed (Somers et al. 2016)? Look across time by fishery at total mortality, discard rate per tow or trip, and discard rate per landed target species.
    - If bycatch has changed, are there anecdotal accounts of what is working or not working? (Workshop 2016) [This may be covered in other sections.]
- Has bycatch of incidental species changed?
    - Look at percent ACL achieved compared to changes in catch limits (as stocks rebuild, catch of these limiting species will increase).
    - Underutilization ties to limits on bycatch (choke species). Briefly discuss high bycatch events (sometimes called lightning strikes).
    - Increase in diversity of bycatch (Somers pers comm)
    - Possible information on bycatch of non FMP species. Include changes in bycatch of groups—rockfish, flatfish, etc.

3.3.4 Habitat Impacts

- Has total number or hours of tows changed (Somers et al. 2015)?
    - Show decreases in days at sea.
    - Data on total number of tows (or tow hours), pots, etc., discussed above and from effort report (Somers et al. 2015).
- Has the footprint of tows changed (larger/smaller area fished)?
    - Observer program has effort maps for 3 time periods in the effort report.
    - Compare with habitat maps, where available (not complete). In addition to total area fished (larger/smaller?) has the type of habitat changed – deeper? Rockier? Different parts of the coast?
    - Discuss other information/data as available.
- Has gear switching had an impact on habitat? Compile information from existing studies on gear impacts on habitat.
    - Number of fishermen who have switched gears (see section 3.1.2.(d)(7)).
    - Anecdotal information where available on fishermen who have modified gears to reduce bycatch or habitat impacts (Workshop 2016).
    - Discussion of impacts on habitat, if available.
- Has there been an increase or decrease in lost gear? (Good et al. 2015)

3.4 Program Management Performance

The MSA LAPP provisions, as well as Amendment 20, emphasize the importance of efficient and effective enforcement, monitoring, and management of the catch share program. This section will present indicators of management performance in addition to some qualitative assessments.

3.4.1 Program Management Costs

This section will summarize the annual cost recovery reports and include information about incremental costs in the first five years of the program, and then discuss the fees recovered for those costs as required by the MSA.

Take into account the management and administrative costs of implementing and overseeing the IFQ or co-op program and complementary catch monitoring programs, as well as the limited state and Federal resources available (Amendment 20 objective)/Minimize costs and avoid unnecessary duplication. (MSA National Standard 7)

- Total incremental costs by office and sector (Cost Recovery Reports)
- Types of incremental activities undertaken (i.e. permit offices now issuing MS and CP coop permits) and note aspects not considered incidental such as travel, supplies, equipment, NOAA GC time.
- Costs as a percentage of ex-vessel value (Cost Recovery Reports)
- Incorporate annual cost recovery reports by reference (2013 to 2016).
- Qualitative sidebar: highlight data management costs for states and feds that have to aggregate and deliver data rapidly between different systems for quota management, as well as adapting to flexibility provided under new program in existing database infrastructure. Include discussion of other costs to states directly related to management and administration.
    - Highlight management efficiencies with qualitative input from Federal and state managers: i.e., for the Oregon Department of Fish and Wildlife (ODFW) no paper fish tickets is easier for enforcement (no data entry).

Recover costs (MSA LAPP requirement).

- Cost recovery fee by sector (HQ Standardized Indicators) (Cost Recovery Reports)
- Incorporate by reference annual cost recovery reports (2013 to 2016)
- Compare methodology to other regions

3.4.2 Accounting and Accountability

Individual accountability was built into the catch share program through full monitoring of discards and landings. This section will evaluate the program's monitoring provisions as a mechanism for total catch accounting.

Provide a mechanism for total catch accounting (Amendment 20 objective)

- Description of total catch accounting in the Groundfish Trawl Catch Share Program (includes a reconciliation of fish tickets, observer, and EM data)
- Qualitative description of observer program/EM coverage, IFQ system, catch monitors, process for incorporating observer and EM data, vessel account system

Achieves individual accountability of catch and bycatch (Amendment 20 goal)

- Is catch accurately accounted for in a timely way?
    - Number/percentage of trips covered by EM/observers pre- and post-catch shares (how many (what proportion) of trips are achieving individual accountability) (NOAA OLE)
    - Number of landings covered by catch monitors (and instances of receipts with no monitor)
    - Instances of vessels exceeding quotas by year (2011-2016, Permit Quota Data)
    - Instances of discrepancies between the vessel accounting system and either fish tickets or observer data, discussion of delays finalizing observer discard data in vessel accounting system (has this process improved since implementation?)
    - Average time to get e-ticket data submitted after delivery and into the vessel account system, average percentage of submissions within 48 and 72 hours (PSFMC), observer and EM data timeliness.
- Qualitative sidebar tradeoff discussion: Managing influx of new data streams added administrative burden and costs to states and NMFS (storage and processing of data).
- Qualitative discussion of increased precision for assessments, implications for management
- Discussion of potential accountability shortfalls:
    - Not all species equally accounted for (lack of consistency in shoreside monitoring for non-FMP, non-protected species. Many of those species can be

"discarded" shoreside with no record, and operating procedure varies between states, ports, and plants)

- Some bycatch unaccounted for if not retained by gear, ghost fishing, reference habitat impacts in Environmental Performance Section 3.3.4.

3.4.3 Enforcement and Monitoring

Provide effective enforcement, monitoring, and management (MSA LAPP requirement)/Provide efficient and effective monitoring and enforcement (Amendment 20 constraint)

- Number/type of enforcement actions pre and post catch shares
- Reference OLE, Coast Guard, observer, and Electronic Monitoring update reports in the council record.
- Discussion: More sophisticated program/participants need more sophisticated enforcement compared to the management in place prior to the implementation of catch shares.
- Discussion: Role of instantaneous, high-quality data in compliance, compared to the management in place prior to the implementation of catch shares
- Use of regulations and administrative processes in Amendment 20 to achieve compliance goals compared to management in place prior to the implementation of catch shares
    - EDC completion requirement tied to permit renewals: include percentage of EDC forms submitted by the September 1 deadline, and that completed by the permit November 30 renewal deadline each year.
    - Annual opt-out provision for vessels in deficit, include number of opt-outs every year.
    - Qualitative discussion: self-reporting of compliance issues
- Tradeoffs: Costs/benefits of having 100 percent at sea and shoreside monitoring
    - Table: Average costs by home port of catch monitors and observers by year (from EDC)
    - Discussion: Benefits of 100 percent monitoring for enforcement, scientific management (less uncertainty)
    - Discussion: Potential benefits of 100 percent monitoring? Marine Stewardship Council certification, Seafood Watch green, NMFS' sustainable label

Provide an information collection and review process to provide any additional information needed to determine whether any illegal acts of anti-competition, anti-trust, price collusion, or price fixing (MSA LAPP requirement).

- Qualitative description from permit group (ownership interest data) and enforcement/General Council

Monitor transfers of privileges (including sales and leases) (MSA LAPP requirement)

- Qualitative description of requirements from permit group: don't receive information on leases or informal transfer arrangements, but do track sales of privileges.
- QS limits (individual and collective) for individual species/species groups and aggregate limits for all non-whiting QS. QS caps are automatically checked when a transfer is proposed and rejected if any of the limits are exceeded.

Require fish harvested under LAPP to be processed on U.S. vessels or on U.S. soil (MSA LAPP requirement)

- Brief qualitative description citing Amendment 20 regulatory text and EIS

3.4.4 Program Review

This section includes a brief summary of and references to existing annual review documents, as well as a qualitative description of the five-year review process and any other review and evaluation mechanisms currently in place.

Design a responsive mechanism for program review, evaluation, and modification (Amendment 20 constraint)/Require regular monitoring and review of program (MSA LAPP requirement).

- List paperwork requirements and time estimation associated with the program
- Discussion of other administrative requirements, such as the quota share and vessel account system, and electronic fish-ticket requirements.
- Summarize description of program review process in Amendment 20.
- Trailing actions: include a list of trailing actions that have been implemented, dates, reference public input during September 20016 community hearings about frustrations with NMFS implementing Council actions.

Qualitative description and citation links to annual reports:

- EDC Annual Reports/FISHEyE
- WCR Annual IFQ report

- Observer Reports and Data Products[12]
    - Groundfish Mortality Report
    - Observer coverage rates
    - Waivers
    - Observed total catch of individual species (including discards)
    - Spatial data
    - Depths summary
    - Biological Meta-data (length, weight) from individual specimens
    - Marine Mammal, Seabird, Sea Turtle observed bycatch (2002-2014)
    - Eulachon observed bycatch (2002-2014)
    - Green sturgeon observed bycatch (2002-2014)
    - A number of reports were created in response to the 2012 National Marine Fisheries Science (NMFS) Biological Opinion on Continuing Operation of the Pacific Coast Groundfish Fishery, to document bycatch and fishing effort in the West Coast Groundfish Fisheries. These reports can be found in Agenda Item D.4 of June 2015 Briefing Book[13]
- Annual state reports to Council
- MS and CP cooperative reports

3.4.5 Litigation

Reacting and responding to lawsuits requires the time of the Council, NOAA GC attorneys, and NMFS staff. Some of these suits have resulted in new rulemakings or have required some sort of agency response. Thus, litigation may impede progress on the development and implementation of groundfish actions (Iudicello and Lueders 2016). This section will include brief summary of plaintiffs, cases, and rulings and outcomes (if available) from court cases related to the Groundfish Trawl Catch Share Program including the following: *Pacific Coast Federation of Fishermen's Ass'n v. Blank* (allocation), *Pacific Dawn v. Bryson (*Pacific Dawn I*)* (allocation), Pacific Dawn II (allocation), *Glacier Fish Company LLC v. Pritzker* (cost recovery), and *Pacific Choice Seafood Company v. Pritzker (divestiture).*

[12] https://www.nwfsc.noaa.gov/research/divisions/fram/observation/data_products/sector_products.cfm
[13] http://www.pcouncil.org/resources/archives/briefing-books/june-2015-briefing-book/

3.4.6 Science-based Management

This section will include a qualitative description and assessment of management use of best available science information available to inform decisions.

Use best scientific information available (MSA National Standard 2)

- Brief qualitative description of provisions for science-based management, citing Amendment 20 EIS
- Discussion: Increased biological sampling with 100 percent observer coverage, which provides stakeholders with more confidence in scientific results/stock assessments
- Discussion: Have the provisions in the catch share program that have improved the quantity and quality of scientific data available, for example, 100 percent at-sea and dockside monitoring, resulted in improvements to estimates of stock status? How have those improvements been incorporated into the management/policy process (e.g., less uncertainty in specifications)?
- Review how other regions incorporate latest scientific information.
- Increased potential for informed in-season management action with 100% monitoring?

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

- Brief qualitative description citing Amendment 20 EIS

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

- Brief qualitative description citing Amendment 20 EIS
- Sidebar discussion: NMFS does not currently take Alaska stock statuses into account.

Take into account the biological structure of the stocks including, but not limited to, populations and genetics (Am. 20 constraint)

- Discussion: Working on genetics, observers collecting genetic tissue samples; that information can be used to get to the best ACLs (in process with blackspotted rockfish, rougheye rockfish, and chinook).
- Discussion: Drawing management lines based on genetics
- Discussion: ACL takes into account life cycles for different stocks.

3.4.7 Adaptive Management

This section will describe the current use of the adaptive management program (AMP) quota, as well as discussing objectives for the program (currently all AMP quota pounds are passed through to quota share owners in proportion to their quota share holdings). In accordance with Amendment 20 A-3, "The set aside of QP for the identified objectives will be reviewed as part of the year five comprehensive review and a range of sunset dates will be considered, including 10, 15, 20 year and no sunset date options." Ideas for modifications to the AMP may be included discussed in Chapter 6, Looking Ahead.

3.4.8 Other Program Components

If a program component is required or must be considered under MSA or the NMFS Catch Share Policy, NMFS Guidance for Conducting 5/7 Year Reviews requires that it be addressed in a 5/7 year review. Amendment 20 contained additional guidance and constraints that are not directly addressed elsewhere in this review document. The following components meet one or more of these criteria:

Allocations

The Allocation Policy requires triggers be identified for allocations between sectors and for CS programs. These triggers have not yet been identified by the Council. Amendment 21 allocations are being reviewed and will not be included in this 5-year review document.

- Cite Amendment 20 FEIS criteria for the initial allocations, evaluated at the start of the program.
- Include summaries of public comment on any unforeseen impacts of the initial allocation, if any.

Eligibility

Cite Amendment 20 FEIS--The main requirements are that a U.S. citizen must be the owner and a U.S.-documented fishing vessel registered to a groundfish LE trawl permit must be used to harvest groundfish using QPs.

Transferability

- Cite Amendment 20 FEIS discussion on transferability.
- Discussion of tradeoffs between unrestricted transferability and consolidation, referencing discussion in Chapter 3.1.1 of this document.

Duration

- Cite Amendment 20 FEIS: The Council considered issuing QSs for a fixed period, after which all or a portion of the QSs would be periodically reallocated, but did not include that alternative in the final amendment.
- Reference provisions and the reasons for the Council recommendations in regard to auctions, documented in Appendices A and B of the FEIS.
- Include reference to MSA restrictions for the duration of a fishing privilege to 10 years and conditions for automatic renewal.

Auctions and Royalties

- Cite Amendment 20 FEIS: The Council considered auctions, but they were not included in any of the final alternatives for analysis.
- Reference provisions and the reasons for the Council recommendations in regard to auctions, documented in Appendices A and B of the FEIS.

Marketing power balance

Cite Amendment 20 FEIS elements considered by the Council to maintain a balance of market power between harvesters and processors, such as the 20 percent allocation of whiting QS to processors.

4.0 RESEARCH AND DATA NEEDS

If, through the review process, any environmental/biological, socio-economic, or enforcement data needs emerge, those will be identified in this chapter. The review team will similarly note any gaps in existing research that impact a sufficient review of the performance of the program.

5.0 KEY FINDINGS AND CONCLUSIONS

This section of the review will summarize the findings of the review. This will include a summary assessment of performance according to program goals and objectives, as well as according to the requirements of LAPPs under the MSA and MSA National Standard Standards.

6.0 LOOKING AHEAD

This section will include a brief, qualitative overview of potential modifications to the program identified through the Council process that might better meet the intended goals, as informed by the review analysis and public input.

7.0 SUGGESTED PROGRAM CHANGES

This report will include a list of any CAB, GAP, SSC, GMT, and NMFS suggested modifications to the program as they become available.

8.0 COUNCIL RECCOMENDATIONS

Include a summary of Council recommendations here in the final version of the report.

9.0 NEXT STEPS

Based on the input summarized above, a summary of next steps for NOAA Fisheries and the Council to make take to implement any desired or needed changes to the program.

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