

Request for Proposals

Analytical Package for an Individual Quota Program for the West Coast Limited Entry Groundfish Trawl Fishery

Actual Issue Date: August 15, 2006

Schedule/Instructions/Provisions/Clauses

Deadlines for Submissions: 4 p.m., September 14, 2005

Pacific Fishery Management Council
www.pcouncil.org

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Section 1: Proposed Schedule

Date: August 15, 2005

RFP issued and distributed

Date : September 14, 2005

Deadline for submission of proposals

All paper media proposals should be submitted to

Pacific Fishery Management Council
ATTN: JIM SEGER
7700 NE Ambassador Place
Portland OR, 97220
503-820-2280

Proposals can also be e-mailed to to:

jim.seger@pcouncil.org.

All e-mail correspondence related to this RFP
should have a subject line line of “RFP for Analysis
of Trawl Individual Quotas”

Date: September 30 or earlier

Selection of finalists or contract award

All deadlines are 4 PM Pacific Daylight Time on the date indicated.

Section 2: Description of Specifications/Work Statement

Section 2.1 Scope of Work

The Pacific Fishery Management Council (Council) announces its formal Request for Proposals (RFP) for work on the first of a two phase project to assess the potential biological, economic and social effects of a groundfish trawl individual fishing quota program in a draft Supplemental Environmental Impact Statement, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Social Impact Analysis (EIS/RIR/IRFA/SIA). A principle focus of the assessment produced by the end of the second phase will be the estimation of direct, indirect and cumulative impacts on the human environment of proposed management alternatives in contrast with a no action alternative.

While this analytical project is being carried out in a two stage process, the current RFP covers only the first stage. The first stage entails the development of the introductory chapters, outline, and analytical framework/approach for the EIS/RIR/IRFA/SIA. It will entail the gathering of information and sufficient analysis to fully develop a detailed, specific and documented analytical framework/approach to address each feature of the alternatives and their likely impacts along with an assessment of the overall differences in impacts among the alternatives. The second stage will be the completion of the baseline and impact analysis on the basis of the product from the first stage.

The Council has identified seven management regime alternatives for consideration. One of the alternatives is a no action alternative, five would implement a trawl IFQ management regime, and one would implement a permit stacking management regime. The five IFQ management regime alternatives vary primarily in terms of the species covered and the complementary regulations used to manage nonIFQ species or species with very low OYs. An IFQ program can entail a variety of design features with respect to elements such as initial allocation; IFQ transfer; and program administration, monitoring and enforcement. The Council has developed three different IFQ program designs for consideration. The organization of the management regime and IFQ alternatives are described in the information sheet provided in the appendix to this RFP. Contract bidders should also be aware that additional detail on the provisions of the IFQ programs and some initial analysis have already been developed and may be requested from the Council office.

In conjunction and complementary to the development of IFQ alternatives, the Council is also working on the intersector allocations necessary to determine the amounts of each OY that will be available for the trawl fishery. This effort will not likely be completed until after the trawl IFQ program final decision. Adoption of a trawl IFQ program would not guarantee the trawl sector any particular share or amount of the available harvest.

Trawl harvest may increase or decrease in the future as a result of fluctuations in the OYs or changes in the intersector allocations over time. The analytical framework/approach should provide information useful in assessing the robustness of the alternatives and net impacts over a reasonable range of possible future trawl harvest levels.

The document to be provided at the end of the first stage is to include the following elements. These elements should appear in the format that will be used for the completed analytical package.

1. A glossary of terminology and list of acronyms.
2. The first two chapters of an EIS (introduction and alternatives) with the exception of sections summarizing impacts - Elements to be included in the first two chapters are provided in the example outline provided in the appendix to this RFP and will largely be drawn from the scoping summary and information documents provided by the Council. The main augmentation to be provided by the contractor is the summary of “Criteria Used to Evaluate the Impacts of the Proposed Action.”
3. An outline of sections for the baseline description of the affected environment and description of information to be included in each section - The information identified for inclusion should not be encyclopedic but rather relevant to and in support of issues to be covered in the impact analysis. Tables and figures should be specifically identified and described with respect to their content and the sources for the data to be used in each table. The production of blank tables with titles, labels and footnotes might be an efficient way to ensure that the descriptions provided are sufficiently complete with respect to the intent of this contract.
4. An outline of the impact analysis section(s) plus text explaining the analytical approach that will be used - The analytical text for each impact section should be the same as that which would be expected to appear in the completed analytical package but should stop short of assessing the impacts of the various alternatives and providing a comparison of results. Appendices should be specified, outlined and annotated with analytical approaches, as appropriate. Direct indirect and cumulative impacts should be explicitly addressed. Each impact section should
 - a. identify potential impacts,
 - b. identify criteria to be used in assessing each type of impact,
 - c. explain mechanisms of action that relate the proposed regulatory action to the impact and criteria,
 - d. specify the quantitative approach and metrics or qualitative approach for evaluating effect of the proposed action on the impact criteria,
 - e. identify impact thresholds (if already specified in policy documents),
 - f. detail the methods, models and data sets to be used in the analysis, and
 - g. provide background information and documentation explaining and substantiating the recommended analytical approach, including references.

In particular, the impacts considered should take into account concerns referenced during the scoping process. The impact analysis will not only need to address the tradeoffs between the major alternatives but also evaluate specific design features

- of the IFQ program. For example, the differences between using a 1998-2003 or a 1994-2003 qualifying period for the initial allocation of IFQ. Design options considered during scoping but not included as part of the IFQ program alternatives will also need to be covered in the analysis. This coverage should be such that one of the non-included features could be incorporated as part of the final Council action and the likely effects of such incorporation readily understood by the Council. A complete list of these design features can be found in Appendix B to the scoping document, available from the Council office.
5. An annotated outline for a section covering consistency with the groundfish FMP, goals and objectives for the current action, Magnuson Stevens Fishery Conservation and Management Act (MSA) national standards, and other applicable MSA provisions (such as Section 303(b)(6)). The annotated outline should indicate the information that will be used to assess performance with respect to these standards and criteria and its location in the impact analysis section.
 6. An annotated outline for a section covering cross cutting mandates (see example outline in the appendix to this RFP for a listing of mandates). The annotated outline should indicate the information that will be used to assess performance of the alternatives with respect to criteria in cross cutting mandates and its location in the impact analysis section.
 7. A list of preparers.
 8. A list of references.

The description of data sets should include a description of the fields to be included in the data sets, the level of aggregation, the scope of the data, and the source. An example description is as follows: a set of landings data including vessel identifier, species landed, weight and revenue; aggregated at the daily level; for nontribal trawl vessel groundfish landings taken with groundfish trawl gear under jurisdiction of the Council; and acquired from the PacFIN data system. The first phase, and this contract, do not cover the acquisition of data, except to the extent that the contractor may need to acquire some data to assess its utility for the proposed purposes.

The document transmitted to the Council is to be in Microsoft Word format with Microsoft Excel spreadsheets, as needed.

The work product resulting from the first phase should be sufficient to

1. ensure that when the analytical package is completed, if the outline and analytical framework/approach have been followed, all relevant impacts will have been addressed in a manner that meets Federal requirements pertaining to the analysis of regulatory proposals;
2. efficiently convey important results and allow reviewers to easily locate information central to the requirements of all relevant legislation, executive orders and guidelines.
3. provide analysts with substantial specific guidance on the approaches to be used and work to be done to complete each section of the impact analysis;

4. ensure that analysts working on different sections of the final document use consistent assumptions;
5. ensure that analysts working on different sections consider impacts across a consistent scope (e.g. time, entities, areas);
6. ensure that analysts do not duplicate efforts and that individual work products meet multiple needs; and
7. ensure that analysts are using consistent terminology (e.g., minimize the number of terms used for IFQs/ITQs/TIQs/IQs/Quota-Shares/Shares and standardize their usage.)

Proposals submitted should cover only those tasks covered under the first phase of this project as indicated in Section 2.1. After the first phase is complete, a separate process will be initiated to complete drafting of the analytical package.

Those submitting proposals should review and take into account initial analysis already conducted as part of the scoping process. This analysis is available on request from the Council office.

Section 2.2 *Tasks to Be Completed*

Dates provided are initial targets and subject to negotiation. The contractor proposal should specify a realistic set of dates given the contractors capabilities and other time commitments. To ensure the work product is efficiently developed and achieves its intended purpose, the contractor must work closely with Council staff.

1. Develop a draft document that includes introductory chapters, a detailed outline, and an analytical framework/approach (as described in Section 2.1) for a document meeting all analytical requirements from NEPA (including the contents and format requirements specified in 40 CFR 1502), the MSA, and other applicable laws and executive orders (analytical package). Provide the initial outline and early drafts of example annotated impact sections to Council staff for review and comment.
2. Present the draft document to a workshop attended by approximately 30 to 50 scientists/analysts, managers, industry representatives, and members of the public (travel expenses of selected participants, except those employed by contractor to be paid by Council). The draft document should be distributed to participants at least two weeks in advance of the meeting. Establish dates for the workshop in coordination with workshop attendees and announce the date no later than two months in advance of the workshop. Provide facilitators and rapporteurs for the workshop and organize the workshop as needed to cover the tasks within the time planned for the workshop (approximately 3 days but adjusted as necessary based on contractors proposal).
3. Provide complete documentation of all comments received pertaining to issues to be covered in the analysis and methods to be used. Within the document, include

methods proposed during the workshop or in other forums but not recommended for use in the analysis and provide the rationale for the recommendations.

4. Provide progress reports and updates to the Council office on at least a monthly basis.
5. Present a revised draft document at the March 2006 Council meeting for review by the Council and its advisory bodies (draft document due at the Council office by February 15, 2006 for the March Council meeting).
6. Modify the document in response to comments received at the Council meeting and provide a finished document to the Council by April 10, 2006.

Section 3: Instructions, Conditions, and Notices to Contract Bidders

3.1 Basis of Contract Award

The contract will be awarded based on the following criteria.

1. Costs
2. Experience and training of those who will work on the project.
3. Past performance, previous experience and expertise in development of analytical packages for regulatory actions, including environmental impact statements, regulatory impact reviews, regulatory flexibility analyses and MSA required analyses.
4. Previous experience and knowledge of West Coast fisheries and the West Coast Federal regulatory environment.
5. Proposed processes, soundness of the approach for development of the work product, likelihood of providing a document of the quality and thoroughness requested, and likelihood of meeting the deadlines presented in the proposal.

Bidders should carefully follow the instructions below in the section “Information Requested from Contract Bidders”

3.2 Information Requested from Contract Bidders

Each contract bidder is asked to include at least the following in their proposal:

1. A list of qualifications of each person who will manage or work on the project.
2. A brief statement of previous experience the firm has had in developing analytical packages for proposed regulatory actions; experience in the West Coast groundfish regulatory environment; and experience with developing analyses for fisheries managed under the MSA.
3. A list of all other fisheries related projects the bidder has worked on during the past ten years.
4. The proposed approach, organization and timeline for developing the specified work product.
5. The duration, approximate timing, design and staffing proposed for the workshop specified in Task 2 of Section 2.2.
6. Total costs and a detailed breakdown

To assist in evaluation, proposals should be submitted in a document with the following organization.

A. Proposal Narrative

1. Table of Contents
2. List of Tables and Figures, if applicable
3. Short Introduction and Summary
4. Discussion of Processes and Approaches to be Used in Developing the Work Product
5. Program Organization, Including Project Management And Organization Of Personnel Working On The Project
6. Proposed Schedule
7. Contractor Experience and Personnel Qualifications, Including Subcontractors
8. Supporting Data or Other Information

B. Budget

1. General Cost Proposal
2. Cost Breakdown Including Projected Hours and Personnel Costs for Each Employee and Subcontractor to be Involved on the Project, Travel, And Other Costs Such as Indirect Costs and Overhead

3.3 Level of Funding

Not to exceed \$200,000 for this contract. Additional funding is expected for the second phase of developing the analytical package (not covered under this contract).

3.4 Submission Instructions

Submissions will be considered confidential. All information must be submitted via paper media or email. Email submissions are preferred. Proposals may not be submitted by FAX. The bidder is responsible for confirming that the Council has received the proposal by the deadline.

All paper media proposals should be submitted to

Pacific Fishery Management Council
ATTN: JIM SEGER
7700 Ambassador Place NE
Portland OR, 97220
503-820-2280

Proposals as well as written questions can also be sent via e-mail to pfmc.comments@pcouncil.org. All e-mail correspondence related to this RFP should have a subject line line of “RFP for Analysis of Trawl Individual Quotas”

Appendix

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July Information Sheet

Chapters 1 and 2 from the Scoping Results Summary

Example Outline From the 2005-2006 Annual Specifications Analytical Package

Example Text for Impact Sections

July 2005 Information Sheet

INSERT WHEN COMPLETED (18 PAGES)

Chapters 1 and 2 from Scoping Results Summary

The following scoping results summary provides background information on the proposals the Council will be considering. Additional analysis already developed by the Ad Hoc Trawl Individual Quota Analytical Team is available from the Council website.

INSERT WHEN COMPLETED

Example Outline from the 2005-2006 Annual Specifications Analytical Package

The following is an example outline provided for contract bidders. The document developed by the contractor need not follow this outline but should, at a minimum, include the main elements listed. Greater detail is expected in the outline to be provided by contractors. For example, breakouts may be needed for separate treatment of impacts to vessels owners, crew, permit owners, suppliers, families etc.

Organization of the final outline should be driven by efficiency considerations both in terms of the development of the material and the conveyance of information to the reader. The document outline and text developed should allow reviewers to easily locate information central to the requirements of all relevant legislation, executive orders and guidelines.

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Example Text for Impact Sections

The following example text is drawn from the 2005-2006 annual specifications EIS. It is intended to provide a general indication of the type of material that is expected under the contract, with respect to impact evaluation. **However, it is not as detailed as is requested in the RFP.** Each impact section should

- a. identify potential impacts,
- b. identify criteria to be used in assessing each type of impact,
- c. explain mechanisms of action that relate the proposed regulatory action to the impact and criteria,
- d. specify the quantitative approach and metrics or qualitative approach for evaluating effect of the proposed action on the impact criteria,
- e. identify impact thresholds (if already specified in policy documents),
- f. detail the methods, models and data sets to be used in the analysis, and
- g. provide background information and documentation explaining and substantiating the recommended analytical approach, including references.

See Section 2.1 of the RFP for additional information on what is expected in the requested document.

4.5 Socioeconomic Impacts

A screening for potentially significant socioeconomic impacts was conducted. Section 1.4.4.5 provides a summary of the main issues that are the subject of the socioeconomic impact analysis.

4.5.1 West Coast Groundfish Fishery - All Sectors

This section includes analysis of management measures affecting all sectors. The sectors benefitting from the resource can be placed into three groups: consumptive users (e.g. recreational fishers, commercial harvesters and processors), nonconsumptive users (e.g. divers interested in viewing wildlife), and nonconsumptive nonusers (e.g. members of the general public who derive value from knowing that fish species are being maintained at healthy biomass levels). Subsequent sections of the analysis address in more depth the impacts of the management alternatives on each sector.

4.5.1.1 Criteria Used to Evaluate Impacts

This section addresses two issues that cut across all sectors. The first is the overall level of harvest mortality planned for the 2004 fishery (total OY levels). The second is how the resource benefits will be divided up among sectors (allocations).

Total OY Levels

In this analysis the short- and long-term economic effects of harvest policy decisions are assessed. These harvest policy decisions determine the level at which ABCs and OYs are set. The harvest policy issues before the Council for the 2004 fishery primarily involve stocks with new assessments. The issues include questions of whether to adopt the new assessment in place of the previous assessment, the assumptions to use in the assessment, and for some overfished stocks, the level at which the rebuilding probability should be set. For most species for which a

change in the OY is being considered, there are a range of options being considered. For the following species the range of OY options is not related directly to trade-offs between long- and short- term biomass and harvest opportunities: canary rockfish, Pacific whiting, lingcod, shortspine thornyheads, and yelloweye rockfish. For canary rockfish the range of OYs in the EIS is based on a recreational commercial allocation issue, greater proportions of harvest allocated to the commercial fishery require lower OYs to maintain the same long-term effects on biomass. For Pacific whiting the range of OYs is intended to include the range of possible OYs that may come from a stock assessment that has yet to be produced. For lingcod, shortspine thornyheads and yelloweye, the changes in OY from status quo reflect expected growth of the stock between years and continuation of the status quo harvest policies used for the 2003 fishery.

With respect to the harvest policy issues for the 2004 fishery, the trade-off between production in the current year and probable levels of harvest in future years will be examined. While, one year’s harvest will not usually have a significant impact over the long-term, the current year’s harvest is generally set in the context of a harvest policy decision that is likely to be implemented over a longer term. The choice of an OY option affects current year harvests and is a strong indicator of the harvest policy that will guide the selection of OYs over the long-term. The long-term effects are generally considered “cumulative effects” and would be considered in Section 4.5.1.3, however, because of their close tie to the immediate direct and indirect impacts, they will be considered in detail in Section 4.5.1.2 on direct and indirect effects.

In economic terms from a societal point of view, the choice between alternative harvest policies generally entails a fundamental tradeoff between current versus future costs and benefits. The individuals point of view may vary from the societal view. For some of the individuals benefitting from harvest, the time horizon of concern may extend only to the point at which they expect to stop relying on fishery harvest. If these individuals expect to participate in the fishery for only a relatively short time, they may not experience the future harvest reductions that would be the consequence of excessive harvest in the near term. On the other hand, many if not most of those who benefit from current harvest also value the resource as something to bequeath to future participants in the fishery and to the benefit of the general public. There are also those who derive benefit from not harvesting the resource. The view of these individuals also varies from the societal view as for them there is no trade-off: lower harvest levels bring higher present biomass levels and result in larger future biomass levels as well. All of these different types of views, in aggregate, comprise the societal point of view with respect to economic effects.

For the discussion of short-term effects of the OY options, net social benefits are the primary type of impact evaluated using rough indicators that summarize relative differences between OY levels of the management alternatives. Other relevant types of socioeconomic impacts listed in Table 1.4.4-1 will be covered in the sections on each sector. The following is a summary of the indicators of net benefits that will be used in the analysis of total OY levels. The indicators are divided into those which will be used to look at the cumulative effects of the individual species OY decisions when taken together and those used to assess the effect of the decision on they OY for each species separately.

Indicators of Net-benefit	Management Alternatives (All Low OYs together, All <i>Med</i> OYs together, etc.)	Individual Species
Short-term		
Commercial & Tribal	Total Revenue	OY for the sector. Indicator of whether the species is a constraint on harvest of the complex.
Recreational	Number of Groundfish Trips (Quality indicators: Change in Harvest, Change in Restrictions)	OY for the sector (quality indicator)

Non-consumptive Use	Total Biomass Removed Under OYs	Total Biomass Removed Under OY
Harvesters and Non-consumptive Use	Long-term Qualitative discussion of effects on biomass and harvest for groundfish fishery in aggregate (reference to biological impacts)	Where available from stock assessments, quantitative information on the effects of erroneous assumptions on future biomass and harvest.

The analysis provides only an approximate indicator of the effects of the OY decisions on net benefits for two reasons. First, the indicators do not capture all of the factors necessary to calculate net benefits. For example, a complete calculation of net benefits needs to include an assessment of costs. The reasons for the shortcomings in the indicators used for analysis will be discussed in sections on each sector. Second, the analysis of the alternatives does not isolate the effects of the OY decisions from the effects of other management decisions. Due to the large number of management measures that vary between alternatives, it is not practicable to compare every permutation. For example, there are 1,296 potential combinations of OY and allocation options (more if combinations are considered that would use the high OY for one species and the medium or *Low OY* for another species). Consideration was given to omitting the summary indicators for management alternatives from this portion of the analysis and providing only a qualitative analysis of the OY options, however, we believe the summary values of the management alternatives provide useful information regarding the general direction and magnitude of differences between the OY options (the management “alternatives” include both the OYs and the management measures to achieve them, as distinct from the OY “options,” which refers only to the OY levels and not the management measures used to achieve the OY levels).

Short-term Impacts

Short-term socioeconomic impacts arising from the choice of harvest mortality level (OY) for the current year are evaluated for the fishery in aggregate and for each sector. The evaluation of fishery wide effects is provided in this section and the sector specific effects are covered in the sections on each sector (Sections 4.5.2 through 4.5.7).

For consumptive-use sectors, the best available proxies for net social benefits of harvest are estimates of total expected revenue for the commercial fishery and number of recreational trips for the recreational fishery. Explanation of factors limiting our ability to provide a quantitative assessment of net social benefits is provided in sections on each sector. Also provided in those sections are further discussions that qualitatively, and in some cases quantitatively, elucidate changes in net benefits related to each sector under the alternatives.

For the commercial fishery, an estimate of total revenue is provided for each management alternative. Additional indicators are provided on the choice of individual species OYs including: change in the OY for the commercial sector, whether or not the species is expected to be a major constraint on harvest of the groundfish complexes, 2002 exvessel value for the species, 2002 exvessel value for the complexes in main depth strata in which the species is taken, exvessel value for the 2004 OY based on 2002 prices and assuming the total commercial OY is landed. The indicators of whether or not the species is a constraint on harvest and the ratio of the value of the OY species to the aggregate value of the complexes in the depth strata in which the species is taken provide a sense of how marginal changes in the OY for that species might affect the aggregate result for the management alternative. One precaution in interpreting the ratio of the OY species to the harvest for the depth strata is that the depth strata may have complexes that can be targeted and managed separately that include the species of interest to greater and lesser

degrees. This ability to regulate the complexes might allow reductions to be achieved with less effect on the harvest for the depth strata than would be implied by the aggregate ratio. Additionally, applying a ratio to evaluate a marginal effect presumes that the species is a constraint on harvest and that there is not a means of reducing impacts without reducing harvest of the complex. Reducing the OY for a species may have no effect on harvest of the complex if the species in question is not a binding constraint, i.e. total harvest of the complex is constrained by the need to conserve some other species in the complex. While the initial indication in this analysis may be that a species is not a binding constraint on harvest at a particular OY level, it may become a constraint as the OY is incrementally reduced; or a species that is constraining may become nonconstraining as the OY is increased. Further, a nonconstraining species may become a constraint as the OYs for other species are increased, and a constraining species may become nonconstraining as the OYs for other species are reduced. If there is a means of reducing impacts on a species other than reducing harvest of a complex (such as an area closure), operating costs would likely increase, while revenue from the complex remains stable with the exception of a decline in revenue from the species being conserved.

For the recreational fishery, estimates of changes in the number of trips are provided for each management alternative. However, the more significant effect may be changes in the quality and value of the individual trip as management measures, such as bag limits, become more or less restrictive. For the analysis of the effect of individual species OYs on recreational fishing, 2002 trips taking groundfish in the depth strata in which the species of interest occurs will be used as an indicator of the breadth of effect of any change in quality of the trips resulting from a change in trip restrictions. Change in the OY allocated to the recreational fishery will be used to indicate the amount of change in recreational harvest required. This change will have to be achieved either through a change in the number or quality of trips. A third indicator shows how regulations will achieve the desired change in catch. A change achieved primarily through a closure reduces effort in an area while changes in harvest that are achieved through trip catch limits affect the quality of trips. In the former case, trips are not necessarily eliminated, but rather the timing or location of the trips may change, changing their quality. In the latter case, the change in trip quality may also affect effort, however, the degree of effort changes in response to changes in restrictions of this nature are uncertain and generally not part of the pre-season management modeling used to assess the effect of the regulation on total harvest. Additional information on the effect of regulations on effort and trip quality is provided in Section 4.5.4.

Non-consumptive use sectors and nonuse sectors both derive greater benefit when harvest is forgone in favor of increasing biomass. Absent the data necessary to produce dollar estimates for non-consumptive values, change in total biomass provides proxy information on the relative differences in nonuse values between the alternatives. With respect to the short term, the differences in OY between the options reflect the differences in the amounts of biomass that would be left, with lower OYs leaving greater total biomass in the ocean (in the very short term). Based on the concept that marginal utility diminishes with each additional unit of a good acquired, for most nonconsumptive users the importance of the additional biomass left in the oceans diminishes as total biomass increases. Thus, ideally it would be useful to put the proposed removal in the context of the amount of biomass presently in the ocean. However, each option is based on a different set of modeling assumptions and each set of modeling assumptions implies a different current biomass. If it were known that the *High OY* alternative assumptions were correct, nonconsumptive users might be as happy with the *High OY* alternative as they would be if the *Low OY* alternative were proposed and it was known that the *Low OY* alternative assumptions were correct. Some clarity can be gained from this complex situation by evaluating the outcomes from the point of view that there is one real biomass and one real level of stock productivity, both of which are unknown. Thus for any of the OYs we are not absolutely certain

of the proportion of the total stock removed or, after taking into account growth, whether total biomass over the short term will increase or decrease as a result of the removal. The more significant effect on biomass is long-term in nature, related to the application of a harvest policy over a number of fishing years. The effect is related to the probability and size of negative outcomes that may result from managing under a false set of harvest assumptions. This risk to biomass is discussed under the section on long-term impacts. Additional information on nonconsumptive use values is provided in Section 4.5.7.

Long-term Impacts

In general, those assumptions that result in higher OYs in the present entail a higher risk that future biomass, and hence harvests, will be at lower than optimum levels. Lower OYs entail a risk that current harvests will be at lower than optimum levels. If frequency distributions of possible future harvest outcomes were available, the proper calculation of the costs of increased risk to future production resulting from higher harvests in the present would be to multiply the change in the potential net value of harvest for the future period by the probability of that outcome occurring. While the probability of the adverse outcomes are generally not available, for some stocks information is provided that indicates the degree of adverse effect from making the wrong assumption. That adverse effect is expressed as a change in biomass. The adverse effect would extend over a number of years as future harvests would have to be reduced to rebuild the stock. The differences between the options in the biomass resulting from erroneous assumptions will be used as a proxy indicator of the potential adverse economic impact.

Ideally, the differences in biomass would be translated into a difference in OY and a difference in net revenue in the commercial fishery or a difference in number of trips and experience value in the recreational fishery. In the commercial fishery, the change in value for the individual species would be expanded to adjust for changes in opportunities within the complex in which the individual species is taken, under the assumption that if harvest of the species is not allowed, harvest of the complex would likely be diminished or the cost of harvest increased by measures imposed to reduce incidental catch of the species. The ratio of the exvessel value of the complex to the exvessel value of the single species, as provided in the analysis of short term impacts, provides a rough multiplier that translates the single species economic effect into an effect for the complex (assuming proportional changes in costs and revenues and other caveats provided in the description under short-term impacts). If the time at which future changes in harvest might occur could be taken into account, a discount rate would be applied to determine the present value of the change. The present value of a future harvest is generally viewed to be lower than the same harvest taken in the present. For example, losing \$100 of net profit 5 years from now would be viewed as the equivalent of losing \$78 today (applying a 5% discount rate). In cases where the negative outcome of a wrong assumption is minor, a more risk prone stance may be warranted if there would be sufficient compensation from current production. On the other hand, where the negative outcome of a wrong assumption is substantial, a more risk averse stance may be warranted.

An attempt is made here to use biomass as an indicator of long-term risk and costs associated with harvest policy decisions. Numerous factors make quantification of socioeconomic impacts difficult over the long term, as follows. Estimates of stock biomasses and therefore OYs are not stable from one year to the next and, given ecological principles, there is likely to be some inverse correlation in the natural variation of biomass among the various species that make up the groundfish complex. Thus, the species constraining harvest of a multispecies complex is likely to change over time. Additionally, a changing socioeconomic environment is likely to change allocation decisions across time. Finally, the needed models have not been developed to relate

harvest policies in a multispecies fishery to specific estimates of future harvest levels permissible for the complex as a whole.

In assessing the risk of adverse outcomes, the dynamics of the decision system need to be kept in mind. Overtime, bad assumptions in stock assessments that result in overharvest should result in lower than projected estimates of biomass in future stock assessments (barring the intervention of other factors such as trends in ocean productivity). If detected soon enough, corrective actions may be taken such that the adverse effect of the erroneous assumption is reduced in duration by an adjustment based on the actual response of the stock to the harvest policy. Under Amendment 16-1, for stocks under rebuilding plans, there are mandatory assessments of rebuilding progress with each new stock assessment.

Allocations

Decisions on how to allocate harvest among sectors have implications for net social benefits, business profits, distribution of benefits and costs, impacts on adjacent fisheries, fairness and equity, income and employment. There are also indirect affects on public health and safety. The distribution of costs and benefits among sectors will be addressed as reflected by the distribution of OY. Social costs and benefits for each sector, profits, impacts on adjacent fisheries, and impacts on public health and safety of each alternative will be addressed in the analysis for each sector. Effects on income and employment will be addressed in the section on communities.

Exvessel value and recreational trips are used as summary indicators of the net social benefits for each management alternative. These indicators provide an overview of the result from the interaction of allocation, OY and other management measure decisions. For the OY decision, biomass was also relevant to the assessment of net social benefits. However, with the exception of canary rockfish, the total harvest will not generally vary with the allocation decision. Therefore, the long-term impact on biomass resulting from the allocation decision is minimal.^{1/}

Historic and proposed distribution of harvest among sectors is provided on the individual species allocation decisions to help assess social costs that are not well captured by the fishery wide exvessel value and total recreational trip proxies: (1) disruption and dislocation costs, (2) fairness and equity, (3) compliance, and (4) conservation behavior.

The following is a summary of the indicators for these social costs. Additional descriptive information on the indicators is provided in the subsequent text. The Council final action created a specific allocation only for black rockfish. Therefore a detailed assessment is provided only for that species.

Indicators of Social Costs	
Disruption and Dislocation Costs	Changes in species related economic activity (trips and exvessel revenue) and OY relative to past OY levels
Fairness and Equity	Decision basis and reasonableness (limited objective standards)
Compliance Behavior	Perceptions of fairness and equity

1/ However, there may be secondary effects of allocational decisions that do have a long-term affect on biomass levels. One example may be the differences among the gear types in their impacts on habitat and consequently on productivity of the ocean environment. Habitat impacts are discussed in Section 4.1.

Disruption and Dislocation

Costs associated with disruption and dislocation are part of change, a necessary element of maintaining an efficient economy. However, where change is needed, attention should be given to the attendant disruption and dislocation costs. These adjustment costs need to be balanced with the expected costs and benefits of the post change activities. If it is possible to achieve the same end result with less disruption and dislocation (lower adjustment costs), social benefits are likely to be greater. On the other hand, there may be circumstances where greater disruption and dislocation speeds or enhances the achievement of benefits or results in greater benefits, such that there is sufficient compensation to cover the greater adjustment costs.

The groundfish FMP management objective 14 states:

When considering alternative management measures to resolve an issue, choose the measure that best accomplishes the change with the least disruption of current domestic fishing practices, marketing procedures and environment.

The degree of change of harvest, as compared to *No Action*, provides an indicator of the relative magnitude of disruption and dislocation costs for each sector. Over the short-term, very small reductions in harvest can sometimes be absorbed as reductions in income for owners and workers in the fishery and industry related businesses and communities (workers and capital become underemployed and the rate of investment is reduced).^{2/} Larger changes in harvest will likely result in some firms laying off employees or going out of business (workers and capital become unemployed). When unemployment occurs there is greater economic and social disruption as costs are incurred in the adjustments necessary to enter other employment.

Disruptive impacts of the management alternatives will be evaluated based on aggregate changes in harvest, changes in exvessel revenue and changes in recreational trips for the affected groups. Each management alternative is based on a unique combination of OY level and allocation schedule. Aggregate results for the groundfish fishery provide information on the combined effects of the management measures.

The relative magnitude of disruptive impacts with respect to individual species allocation decisions will be represented by changes in the magnitude of harvest allocated to the sector. For the OY/allocation options around which each alternative is structured, distribution of harvest among sectors and major management areas is provided in comparison to actual harvests for the species to be allocated (black rockfish, bocaccio, canary rockfish, lingcod, widow rockfish and yelloweye rockfish) for 1998 and 2002 and expected harvests for 2003.

In order to illustrate the full range of possible harvest constraints for individual sectors or geographic areas, each allocation option is applied to each species OY. This range is provided only for the individual species that are the subject of the allocation options. The resources are not available to produce, analyze and summarize quantitative economic information on the multispecies fishery for multiple combinations of OY and allocation schemes within the time

2/ Lack of alternative employment or consideration of adjustment costs keep workers and capital from moving to another productive activity.

frame required for the Council and NMFS decisions on the 2004 groundfish fishery. Therefore, the broader effects on exvessel value and recreational trips supported by the groundfish complex are not provided. A rough indicator of the effect of each OY/allocation combination on exvessel revenue or recreational trips can be inferred by referencing the proportional difference between the allocation level for the OY/allocation scheme in question, as compared to that for the management alternative with the most similar allocation level. If the species in question is a constraint on management (see Section 2.1) then this proportional difference can be applied to the exvessel value or recreational trips modeled for the sector in question to roughly infer a hypothesis on the effect of the OY/allocation scheme on exvessel revenue or recreational trips. If the species is not a constraint on management, then there is not likely to be a substantial effect on the sector being considered with respect to the change in allocation level. If the species is not a constraint on a particular sector under a management alternative but would become a constraint under the OY/allocation scheme in question or *visa versa*, a rough estimate cannot be inferred and additional analysis will be required to develop an estimate of the economic effect.

The value of the individual species to a sector should be put in context of the broader fishery. For the commercial sector, exvessel value is provided for the individual species and the other species in the depth strata in which the species of concern is harvested. The opportunity to harvest an individual species may be of value for the direct amount the fish can be sold as well as for the opportunity it provides to harvest other species in a fishery complex. For the recreational fishery, the number of trips with groundfish catch, by depth strata, is used as an indicator of the number of trips potentially harvesting a recreational species. The stringency of recreational management measures designed to reduce harvest mortality for a particular species also affects the value of the recreational experience. Absent an ability to relate a change in trip value to a change in management measures, the management measures themselves will have to serve as the primary indicator of the relative quality of trips under the different management alternatives (see Section 4.5.4 for additional discussion).

Fairness and Equity

Executive Order 12866 (*Regulatory Impact Review*) includes equity as a factor to be included in cost-benefit analyses. National Standard 4 dictates that allocations be made in a fair and equitable manner. Because of the wide-ranging views in our society about what constitutes equitable allocation, there are not generally accepted standards against which an objective analysis can conclude that one allocation decision is more fair and equitable, or of greater social value, than another. There are no widely accepted measuring sticks for equity similar to those for evaluating such factors as economic efficiency. Therefore, analysis is necessarily limited to pointing out the major decision that would likely affect the perceived fairness and equity of proposed allocations and the rationale for those decisions. It will be up to each individual involved in the process to evaluate for him or herself whether the recommended allocation are, or would be, evaluated by the general public to be, on the whole, fair and equitable.

Compliance

Perception of fairness and equity has implications for the costs of management through its impact on incentives for compliance. In general, systems that are broadly perceived to be unfair or inequitable are more likely to result in noncompliance. As such, enforcement costs will be increased.

Conservation Incentives

Impacts of allocation on incentives for precautionary conservation action was one of the issues raised during scoping. Allocations based on historic catch during a period in which harvest was voluntarily reduced may reduce future incentive for voluntary conservation actions. The disincentive for individual, sector or state agencies to voluntarily reduce harvest mortality will introduce an increased element of risk into the management system. The cost associated with that risk can be measured as the amount one would be willing to pay in the present to avoid the increased possibility of a negative outcome in the future.



4.5.2 Commercial Fleets (Non-Tribal)

4.5.2.1 Criteria Used to Evaluate Impacts

Changes in exvessel revenue will be used as an indicator of the directions of change expected in net economic benefits derived from harvest by the commercial seafood vessels. Subgroups of the groundfish fleet will be examined to determine if any particular group is experiencing greater effects than others. The primary divisions will be between the limited entry trawl, limited entry fixed gear and open access fishery. The open access fishery will be divided between those vessels deriving more than 5% of their gross income from groundfish (vessels which may be more likely to engage in directed groundfish fishing) and those deriving less than 5% of their gross income from groundfish (vessels more likely to be taking groundfish incidental to other fishing activities).

A more accurate quantitative assessment of changes in exvessel revenue would require the inclusion of an assessment of the changes in fishing costs. Comprehensive information on fishing costs for the West Coast groundfish fishery is not available. There is some cost information available from surveys and studies on some segments of the fleet, however, this information is not comprehensive and has not been turned into a model that can be used to appraise effects of changes in harvest regulations on net fishing revenue. Additionally, estimates of net fishing revenue would need to be adjusted with appropriate shadow prices (the real cost after taking into account all opportunity costs) in order to use the results to generate estimates of social net economic benefits). For example, expenditures on harvest, such as the cost of labor, do not count as an economic opportunity cost if the labor would otherwise be unemployed. Additionally, if the labor would have been employed but at a lower earnings rate, then the difference between the earnings in the fishery and next best alternative employment would not be counted as a cost (i.e., only the next best wage rate would be counted as a cost). The cost of an existing vessel is another cost to the firm that would not be considered a cost from the national viewpoint of a social net benefit analysis. If firms cannot make a profit given the capital costs of an existing vessel, the vessel will tend to be resold at lower prices until the vessel price is low enough to make its operation economically viable. The vessel is likely to stay active so long as revenue is sufficient to cover the operation and maintenance costs of the vessel.) If profits in the fishery are such that a vessel is likely to be replaced if lost, the cost of the vessel would become a consideration in a long-term analysis.

Changes in operational flexibility resulting from regulatory constraints will be addressed qualitatively as an indicator of impacts on production costs.

Effects on human health and safety will be discussed primarily in terms of the effect of revenue changes on vessel maintenance and the effect of changes in the RCA on travel distances to fishing ports.

The cumulative impact section will discuss the effects of the recently implemented VMS system, the possible expansion of that system, and the possible implementation of trawl permit buyback and ITQ programs. These regulatory changes will be discussed in terms of their likely effects on vessel revenue and operational costs.

Changes in revenue will be used as an indicator of the magnitude of likely harvest pressure that may be brought to bear on adjacent fisheries as a result of reduction in opportunity in the groundfish fishery.